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Creative Self-Efficacy: Students in General Education, with Learning Disabilities, and with Gifts and Talents

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CREATIVE SELF-EFFICACY: STUDENTS IN GENERAL EDUCATION, WITH LEARNING DISABILITIES, AND WITH GIFTS AND TALENTS

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ABSTRACT

Creative Self-Efficacy: Students in General Education, with Learning Disabilities, and with Gifts and Talents

by

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Creative self-efficacy is the belief in one's own ability to be creative. It is a component of creativity and is vital for future success. Within the construct of creative thinking, four areas of creative thinking (i.e., fluency, flexibility, elaboration, and originality) have been suggested.

The purpose of this study was to investigate the perception of creative self-efficacy in third, fourth, and fifth grade students in general education, with learning disabilities, and with gifts and talents in terms of fluency, flexibility, elaboration, and originality. Along with educational sub-type and grade level, an exploration of the relationship of gender and ethnicity were investigated. A 16-item questionnaire adapted for use at the third-grade level was used and participants were recruited from three elementary schools. A total of 495 students in the third, fourth, and fifth grades completed the questionnaire.

The results of the multivariate analysis of variance indicated that students with gifts and talents reported significantly higher perceptions of creative self-efficacy than students in general education and students with a learning disability. Unlike previous research indicating a decline in creativity and creative self-efficacy at the upper elementary level, the results of this study indicate no significant differences among grade levels in student perceptions of creative self-efficacy. For the relationship between males and females, a significant difference was found at

the fifth-grade level, with fifth-grade females reporting significantly higher perceptions for elaboration. No significant differences were found among ethnic groups.

These findings have implications for student creative self-efficacy and teacher preparation programs. Curricula and interventions need to be created to develop student creative self-efficacy within an educational context. Within teacher preparation programs, instruction regarding curricula and interventions for creative self-efficacy is needed. Through the development of student creative self-efficacy, K-12 education will prepare these students to be successful at the post-secondary levels.

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CHAPTER ONE

INTRODUCTION

Creativity has been viewed as an important construct in many fields (e.g., education, business, psychology, sociology; Burns, Machado, & Corte, 2015; Florida, 2012; Guilford, 1968; Starko, 2010). Historians have discussed creativity as far back as pre-historic times, during the time of Aristotle, and into to the 21st century (Runco & Albert 2010). The discussion has centered around whether creativity and intelligence are intertwined, meaning must a person be highly intelligent to be creative or be creative to be highly intelligent? Guignard, Kermarrec, and Tordjman (2016) indicated that the connection between the two constructs is still up for debate.

However, educational research maintains that creativity is a necessary component for success while in school as well as beyond the boundaries of school (Abbott, 2010; Amabile, 1988; Huang, Krasikova, & Liu, 2016; Jaussi, Randel, & Dionne, 2007; Tierney & Farmer, 2002). This may include participation in extra-curricular activities, clubs, performances, and other school endeavors. Upon graduation, creativity may contribute to admission to post-secondary education, career opportunities, and greater economic benefits (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001; Craft, 2003; Florida, Mellander, & Stolarick, 2008; Florida, 2012; Tierney & Farmer, 2002). While still being discussed, it appears that the development of creativity while in school (e.g., creative thinking, creative abilities, creative self-efficacy) is critical for children and youth for life success (Pajares & Schunk, 2001).

Creativity Defined

While all agree that creativity exists, the specific definition of its components continues to evolve (Schaefer, 1975; Parkhurst, 1999; Fasko, 2001). Because creativity, like intelligence, is a multifaceted construct, its components vary depending on the definition applied (Abbott, 2010). Typically, individuals are viewed as having creative ability, regardless of intellectual

ability (Guilford, 1950). However, novelty and appropriateness are the characteristics most often cited in definitions of creativity (Kaufman & Baer, 2012; Mayer, 1999; Parkhurst, 1999; Plucker, Beghetto, & Dow, 2004; Runco & Jaeger, 2012; Schaefer, 1975; Starko, 2010; Sternberg, 1995). The four definitional components that occur most often in the literature are those presented by Guilford (1950; 1968) in his *Structure of Intellect Model*. Guilford (1968) maintains that creativity is comprised of fluency, flexibility, elaboration, and originality.

The Field of Psychology

In psychology, focus is placed more upon the behavioral side of creativity (Burns et al., 2015). The field also includes the requirement that the product or creation be something that is useful. Guilford (1950, 1968) maintained that creativity was comprised of multiple components. The four constructs are: (a) fluency, (b) flexibility, (c) elaboration, and (d) originality.

Fluency. Fluency, the ability to produce a large quantity of ideas, focuses on an individual's ability to provide quantity over quality (Guilford, 1968). The assessment of fluency does not require time-consuming tasks. Measurement of the component is comprised of an open-ended question (e.g., How can a tea cup be used?). The responder then answers with as many solutions as possible. The responses are counted, regardless of how far-fetched they may seem (Guilford, 1968).

Flexibility. Flexibility is the ability to change one's thinking or thought process with ease (Guilford, 1968). Assessment of this component often asks individuals to answer questions in new ways, without the use of traditional methods of response (Guilford, 1968). The goal is to measure the differentiation of the response from the typically expected response.

Elaboration. Elaboration requires a person to add to or extend the information provided to them. The expectation is for the individual to provide as many details as possible (Guilford,

1968). Evaluation is based upon the number of details added or the extensions from the question or prompt provided.

Originality. Guilford (1968) viewed originality as the provision of a solution or idea that was outlandish or novel. The requirement, in this creative category, is that the respondent has not heard of the idea they put forth. This is particularly key for young children who do not have the life experiences of adults and are less likely to know the idea provided is new or unique. Guilford (1968) also maintained that an original idea should be socially useful.

The Field of Business

In the field of business, the ability to solve problems creatively, be innovative, and stay ahead of the competition is viewed as a vital skill (Amabile, 1988; Tierney, Farmer, & Graen, 1999). This is particularly important in leadership and managerial roles (Tierney & Farmer, 2011). Because employees must navigate challenges and efficiently manage work environments, creativity is an essential work skill in the 21st century (Proctor, 1999). With employees' ability to use creativity, companies profit (Tierney & Farmer, 2011). The profitability of companies leads to economic benefits for the entire country (Florida, 2012).

The Field of Education

In the field of education, creativity is viewed as the ability to produce multiple ideas (Craft, 2003). The goal is to go beyond the single correct answer typically taught in classrooms (Perkins, 1985). Educational views of creativity often focus on the aesthetics, that is, the artistic side (Perkins, 1985). However, true creativity in education is represented in all areas of learning (Fasko, 2001). While political agendas have addressed the need for creativity in the curricula, education currently does not include the same rigor in the implementation of creative curricula as it has in the past (Craft, 2003; Hodges, 2005).

For the purpose of this study, creativity was defined as a student's ability to produce something that is both novel and appropriate (Kaufman & Baer, 2012; Mayer, 1999; Schaefer, 1975; Starko, 2010). Both of these identifiers must co-occur in order for the produced work to be considered as creative. This study recognizes that creativity for children and youth may present itself as something that may not be novel or appropriate for an adult, who has lived more life experience (Kaufman & Beghetto, 2009). However, if the product is considered to be novel and appropriate to the individual, then it is considered a creative endeavor (Kaufman & Beghetto, 2009).

Creative Self-Efficacy Defined

Having creative ability is not enough (Schack, 1989). It is important for individuals also to exhibit creative self-efficacy in order to fully utilize their creativity (Bandura, 1997; Beghetto, 2007). Creative self-efficacy is defined as a person's belief in their ability to produce creative products (Jaussi et al., 2007; Tierney & Farmer, 2002). This is a relatively new construct and has its roots in Bandura's work on self-efficacy (1986; 1997). His research viewed self-efficacy as a person's belief in their ability to perform a task.

In business, self-efficacy focuses on the capability of beliefs, meaning that strong beliefs in oneself lead to strength in creativity (Ford, 1996). However, Tierney and Farmer (2002) linked the words self-efficacy and creativity into the term creative self-efficacy. They discussed the association between job-related knowledge and a person's creative self-efficacy. This relationship led Tierney and Farmer (2002) to suggest that a supervisor plays an important role in the development of employee self-efficacy and that supervision plays an integral role in the development of creative self-efficacy.

Educators link self-efficacy to academic ability (Lackaye, Margalit, Ziv, & Zinman, 2006; Pajares & Schunk, 2001). Often students who view themselves as being unable to do something (e.g., a mathematics skill, write an essay) will perform below their expected ability due to a lack of self-efficacy (Pajares & Schunk, 2001). Recent research focuses on the connection between self-efficacy and motivation to learn (van Dinther, Dochy, & Segers, 2011) and academic achievement (Lackaye et al., 2006; Pajares & Schunk, 2001). While the educational research to date has focused on creativity or self-efficacy in isolation, few studies have linked the two constructs as creative self-efficacy.

For the purpose of this study, creative self-efficacy is defined as a student's belief in their ability to be creative (Tierney & Farmer, 2002). Bandura's (1986) description of self-efficacy as the individual's belief in their ability to do something is combined with the term creativity. Narrowing this focus allows for specificity regarding a person's confidence in their ability to be creative, which over time may result in the actual production of creative products (Bandura, 1997; Beghetto, 2007).

The Importance of Creative Self-Efficacy

Creative self-efficacy has been linked to an increase in perceived personal competence (Beghetto, 2007), creative performance (Tierney & Farmer, 2002), and overall ability to produce creative works (Bandura, 1997; Beghetto, 2007). The sense of creative self-efficacy and the application of it in a variety of circumstances may impact student work in school as well as beyond the boundaries of the educational environment (Abbott, 2010; Amabile, 1988; Huang et al., 2016; Jaussi et al., 2007; Tierney & Farmer, 2002). However, it is not clear if children/youth, across the educational spectrum, possess this learning characteristic (Beghetto, 2006).

In Elementary and Secondary Education

Research indicates that the educational environment, as a whole, may not be conducive for the development and/or application of creative thought (Plucker, Beghetto, & Dow, 2004). It appears that educators are not trained to develop creativity in the children/youth in their classrooms (Stoltz, Piske, de Freitas, Quintal, D'Aroz, & Machado, 2015). While de Bono (1995) claimed that children/youth are innately creative, the data indicate that creativity is in decline in the current educational system (Darvishi & Pakdaman, 2012). Studies show that as students age, creative ability declines (Abra, 1989; Alpaugh, Parham, Cole & Birren, 1982; Reed, 2005). Torrance (1968) and Darvishi and Pakdaman (2012) found fourth grade to be a critical point in this decline. Torrance (1968, p. 195) called this the "fourth grade slump." The change in creative ability due to the ability of educators to teach creativity, their lack of confidence in their own creative ability, or their lack of educational training in the area of creativity may be major factors in this decline (James, 2015). The assessment of student and educator beliefs, across all educational levels and types, concerning creative self-efficacy becomes crucial as people envision education in the 21st century (Abbott, 2010). This is a skill that may prove to be more important than content knowledge as the century progresses.

In Post-Secondary Education

Creative class careers, as defined by Florida (2012), evolve from innovative post-secondary education. Many of these careers (e.g., science, engineering, education) require a college degree. Therefore, the role of post-secondary education must be to provide participants with skill sets to be innovators, developers, and creative thinkers (Florida et al., 2008). In this vein, creative self-efficacy becomes a primary belief needed to generate motivation, deep thought, and break barriers as individuals pursue more education and ultimately their careers. If

post-secondary students believe in their ability to be creative (e.g., the very definition of creative self-efficacy), they are more apt to pursue careers in the creative class (Florida, 2012). Post-secondary education must build upon the creative self-efficacy developed at the elementary and secondary levels in order to prepare students for the future (Livingston, 2010).

In Employment and Life

Recent workforce research views creativity as a key characteristic important for employment in the 21st century (Abbott, 2010; Amabile, Barsade, Mueller, & Staw, 2005; Huang et al., 2016; Jaussi et al., 2007; Tierney & Farmer, 2002). Working and living in an environment that is not conducive to creative thought and action may lead to a gap in an individual's potential to be creative and the ability to actually practice creativity (DiLiello, Houghton, & Dawley, 2011). When workers feel supported in creative endeavors, the result is a higher creative self-efficacy (DiLiello, et al., 2011). Being a creative worker involves a well-developed sense of creative self-efficacy (Huang et al., 2016). This is a life skill that begins in elementary and secondary education, moves into post-secondary studies, and must continue to be supported in the workplace (Florida et al., 2008).

The Current State of Creative Education

It appears that education does not foster student creativity (Stoltz et al., 2015). Perkins (1985) maintained that traditional schooling views finding the one 'right' answer to be appropriate. This results in educators teaching to produce only correct answers (Perkins, 1985). The interest in creativity in the field of education is evolving. However, it is typically not a skill found in the general or special education curricula (Kleiman, 2008).

General Education Students

Recently, policymakers have begun discussions about the importance of creativity in the general education curricula (Tan, Lee, Ponnusamy, Koh, & Tan, 2016). General educators often report feeling unprepared to teach creativity (James, 2015). Many teachers feel the pressure to have their students meet the expectations of standardized testing (Hodges, 2005). Thus, assessment of knowledge has superseded the development of creativity as a focused skill. With the focus on all children participating in the general education environment to the greatest extent possible (IDEA, 2004), it would seem that the lack of focus on creative thought and skill development may impact future generations as they transfer to the workplace (Florida, 2012).

Students with Learning Disabilities

Students with learning disabilities make up the largest proportion of all students with disabilities (National Center for Educational Statistics, 2016). In the 2013-2014 school year, the total percentage of the student population with a disability enrolled in public schools was 12.9% (NCES, 2016). Of that population, 4.5% were students identified with a learning disability (NCES, 2016). Historically, this disability has been linked to underachievement in academic content as predicted by multiple cognitive measures (Kavale & Forness, 2000). This is compounded by the fact that these students have average or above average intelligence (Horowitz, Rawe, & Whittaker, 2017).

A review of the literature for students who have been identified with a learning disability in conjunction with the term creativity produced little information. The majority of the research focused on twice-exceptional students (i.e., students who have been identified as having both gifts and talents in conjunction with a disability; Baldwin, Baum, Pereles, & Hughes, 2015). Research has found students with a disability to be at an overall academic disadvantage when

compared to their same-aged peers (Horowitz et al., 2017; Kavale & Forness, 2000). With the conflicting constructs of an academic disadvantage and the need for creative thinking skills being a necessity for employment (Abbott, 2010; Amabile, 1988; Huang et al., 2016; Jaussi et al., 2007; Tierney & Farmer, 2002), more research is needed to identify the role creativity plays in the education of students with learning disabilities.

Students with Gifts and Talents

The definition of a person with gifts and talents varies. In 1972, Marland included creativity as a factor for identifying students as having gifts and talents. Through the years, many researchers have proposed creative giftedness as a construct as well as a necessary component of gifted identification (Guilford, 1975; Renzulli, 2012; Sternberg, Ferrari, Clinkenbeard, & Grigorenko, 1996; Stoltz, et al., 2015). Renzulli (2012) suggested that academic and creative-productive giftedness were two characteristics of giftedness. Guignard et al. (2016) recommended that a creativity measure be included in the assessment of gifts and talents.

Students who exhibit creativity are underidentified by educators for placement in gifted programming (Kim, 2008). This is due to biases in teacher perceptions of gifted behavior (Kim, 2008). Even if creativity is exhibited by a child/youth, the lack of educator knowledge concerning creativity hinders the identification of a student as being creative (Luria, O'Brien, & Kaufman, 2016; McClain & Pfeifer, 2012). While the literature demonstrates that students with gifts and talents often demonstrate high creative ability, education is not focused on addressing this characteristic (Stoltz et al., 2015).

Statement of the Problem

Creative self-efficacy is a skill that is a necessary component of creativity (Bandura, 1997; Beghetto, 2007). Thus, developing creative self-efficacy in *all* students is important to

improve school-based performance, post-secondary education, and workforce skills (Mathisen & Bronnick, 2009). Children/youth who have strong creative self-efficacy may be more likely to delve into higher order activities with persistence and motivation (Richter, Hirst, van Knippenberg, & Baer, 2012; Tierney & Farmer, 2002). There are many potential life benefits from the development of creative self-efficacy (e.g., higher workforce self-efficacy, better career advantages, economic and personal well-being).

High workforce self-efficacy is a direct result of an individual's creative self-worth (Tierney & Farmer, 2011). Thus, making creative self-efficacy a life skill to be developed in all children/youth across the educational continuum necessary (Bandura et al., 2001; Tierney & Farmer, 2002). Without a focus on this construct throughout a child's/youth's academic life, they may experience disadvantages in 21st century careers involving innovation, novelty, or simulation (Abbott, 2010).

The development of creative self-efficacy skills to enhance the overall use of creative thinking is needed in education now more than ever (James, 2015). This will provide multifaceted opportunities as well as positive career outcomes for all students. Florida (2012) discussed the importance of creativity in relation to the national economy and personal well-being in terms of individuals attaining jobs in exciting locales, contributing to established fields (e.g., engineers), or creating new career opportunities for themselves (e.g., app developer). The economic impact of creativity is exhibited in salaries (i.e., working in a creative class position increases salaries by 16%; Florida, 2012). Higher job stability also is demonstrated in creative class careers. For example, Florida (2012) compared unemployment rates during the 2008 economic downturn and found the creative class to have the lowest overall rate (i.e., 4.4%) when compared to the working class (i.e., 15.2%) and the service class (i.e., 9%).

Tierney and Farmer (2011) believe that creative self-efficacy is a predictor of strong performance in the creative workforce domain. Thus, it is critical to ensure an employee's creative self-efficacy. The logical precursor to the workplace is the classroom, developing creative self-efficacy at the elementary and secondary levels should occur for *all* children/youth. Educators must begin to work on the development of student creativity early in their academic careers. However, the first step is to determine, as a baseline, whether students perceive they already possess creative self-efficacy.

With the goal of the development of creative self-efficacy in the educational setting, the specific problem addressed in this study was to determine an understanding of creative self-efficacy as perceived by students who are in general education, students with a disability, and students with gifts and talents. From this understanding, curricula can be developed for specific populations of students and educators trained to deliver specific interventions and strategies.

Purpose of the Study

The purpose of this study was to examine the perceptions of creative self-efficacy for students who are in general education, students with a disability, and students who have been identified as having gifts and talents. Abbott's (2010) *Creative Thinking Self-Efficacy* (CTSE) instrument was adapted, with the author's permission, for use in this study (see Appendix A). The adapted instrument was given to students in the third, fourth, and fifth grades who are in the general education classroom, to students in third, fourth, and fifth grades who have been identified as having gifts and talents, and to students in third, fourth, and fifth grades who have been identified with a disability.

Research Questions

The following research questions were asked in this study:

Research Question 1: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among students in third, fourth, and fifth grades in general education, students with learning disabilities, and students with gifts and talents?

Research Question 2: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among third-grade students, fourth-grade students, and fifth-grade students?

Research Question 3: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among females and males in the third, fourth, and fifth grades?

Research Question 4: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among ethnic groups in the third, fourth, and fifth grades?

Significance of the Study

The research literature indicates that studies of creative self-efficacy often are conducted at the secondary, collegiate, or adult levels (Beghetto, 2006). This study was conducted to help fill the gap in the literature that exists for elementary students in third, fourth, and fifth grade in the area of creative self-efficacy. It adds to the knowledge and understanding of the perceptions of elementary-age students in terms of their considerations of the four creative constructs.

Creative self-efficacy appears to be a primary stepping stone of creativity. Bandura (1997) attributed the contribution of self-efficacy to all facets of an individual's life in terms of success and satisfaction. The motivation and confidence to delve into creative activities and aspects of life that require creative thinking are far less likely to occur without a strong sense of

creative self-efficacy (Tierney & Farmer, 2002). By ensuring that students begin their educational careers early with a strong sense of self-efficacy in this area, educators can provide for their future success.

Definitions

The following definitions were used throughout this study. These terms are important to the field of creativity and creative self-efficacy to interpret the context of this study correctly.

Creative self-efficacy. Creative self-efficacy is the belief a person has in their ability to do something creatively (i.e., in a novel and appropriate way) (Tierney & Farmer, 2002). This construct is a combination of Bandura's (1986) term self-efficacy with the term creativity to define a person's belief in their ability to be creative.

Creative thinking self-efficacy (CTSE). Creative thinking self-efficacy is the belief a person has in their ability to engage in creative thinking. This term stems from Tierney and Farmer's (2002) term creative self-efficacy. Abbot (2010) extended this term to specifically look at the creative thinking aspect of self-efficacy.

Creativity. Creativity is the ability to produce something that is novel and appropriate (Kaufman & Baer, 2012). Novelty refers to something that is unknown to the originator, it does not necessarily have to be new to the world (Kaufman & Beghetto, 2009). The term appropriate refers to something that is fitting for the task at hand, that others would agree is fitting to the situation (Runco, Illies, & Eisenman, 2005).

Elaboration. Elaboration is the ability to add on or extend a thought, idea, or product (Guilford, 1968).

Fluency. Fluency is the ability to produce as many answers, or ideas, regardless of how unusual the answers or ideas may be (Guilford, 1968).

Flexibility. Flexibility is the ability to answer a question or task using a non-traditional method of response through changing and adapting an idea (Guilford, 1968).

General education. General education is education that is provided for all students, with or without disabilities. The education is required to meet the goals and objectives created by the community in which the student resides (IDEA, 2010; Nevada Administrative Code 388.042, 2016).

Gifted and talented education. Gifted and talented education is provided to students who have been identified as having gifts and talents. A gifted and talented qualification may be based upon well-above average ability in general intelligence, creativity/creative thinking, leadership, visual arts, or performing arts (Nevada Administrative Code 388.043, 2016).

Originality. Originality is the ability to develop new, unusual, and innovative (to the respondent) thinking, ideas, or products (Guilford, 1968).

Resource room. The resource room is an educational placement or setting in which students with special needs are provided services (IDEA, 2004).

Self-efficacy. Self-efficacy is the belief a person has in their ability to do something (Bandura, 1986).

Special education. Special education is instruction that is provided to students who have been identified with a disability. This instruction is developed for each individual and is provided free of charge to parents. (IDEA, 2010; Nevada Administrative Code 388.115, 2016).

Students in general education. General education students are students who have not been identified for special education services (i.e., have not been identified with a disability; Nevada Administrative Code 388.115, 2016). These students have not been identified with gifts and talents (i.e., have not qualified as having well-above average ability in general intelligence,

creativity/creative thinking, leadership, visual arts, performing arts; Nevada Administrative Code 388.043, 2016).

Students with gifts and talents. Students with gifts and talents are children/youth who have been identified as having well-above average ability. This ability can be in one or more of the following areas: general intelligence, creativity/creative thinking, leadership, visual arts, or performing arts (Nevada Administrative Code 388.043, 2016).

Students with learning disabilities. Students with learning disabilities are students experiencing difficulty in one or more basic psychological processes (e.g., written, language, mathematics). These students have an average or above average ability and have been identified with an unexplained deficit in one or more areas of ability (e.g., mathematics, reading, writing) (IDEA, 2010; Nevada Administrative Code 388.116, 2016).

Limitations of the Study

The limitations of this study are:

1. Schools were chosen for this study based on convenience sampling. Thus, the population may not be a true representation of the community.
2. Only students who were in third, fourth, and fifth grades in general education classrooms, special education classrooms, or gifted education classrooms were selected for this study. Thus, the results cannot be generalized to other age levels.
3. Only student perceptions of their creative self-efficacy were collected. Thus, the results cannot be used as a true measure of the creative self-efficacy construct.
4. Differentiated thinking is often taught in classrooms for students with gifts and talents. It may be that the results of this study reflect this teaching.

CHAPTER TWO

REVIEW OF LITERATURE

Creativity is a construct that is necessary for innovation in the 21st century (Abbott, 2010; Amabile et al., 2005; Huang et al., 2016; Jaussi et al., 2007; Proctor, 1999; Tierney & Farmer, 2002). It is linked with economic stability both for the individual and for the economy in which the person resides (Bandura et al., 2001; Craft, 2003; Florida et al., 2008; Florida, 2012; Tierney & Farmer, 2002). Because of its necessity for innovation and its economic benefits, creativity is cited often by employers as a necessary skill for workers to have as they enter employment (Abbott, 2010; Amabile et al., 2005; Huang et al., 2016; Jaussi et al., 2007; Tierney & Farmer, 2002).

Self-efficacy is a construct discussed by Bandura (1986). It is a part of a person's self-concept as well as the belief in one's own ability to be creative (Bandura, 1986). Within self-efficacy, Bandura (1986) defined four sources: (a) mastery of experience, (b) vicarious experience, (c) social persuasion, and (d) psychology of states.

Creative self-efficacy is viewed as a vital component of creativity (Bandura, 1997; Beghetto, 2006). It is a relatively new construct that combines Bandura's (1986) work on self-efficacy with the term creativity. Tierney and Farmer (2002) were the first to use the term in relation to the field of business. The literature is limited regarding creative self-efficacy, but there is growing interest in this construct in the field of business. With the synergistic relationship among business, employment, and education, it appears to be an appropriate time to investigate educational creative self-efficacy.

There is emerging research in the field of education for creative self-efficacy, most of which has not been conducted at the elementary-school level. The majority of the research in

education has been conducted at the post-secondary level. Thus, less is known about the construct for young children in education.

Creativity as an Educational Construct

Creativity is a vital ability needed in multiple domains and has become a topic of interest for competitive advantages among countries and educational institutions around the world (Huang, Peng, Chen, Tseng, & Hsu, 2017). Much of the research in creativity has been conducted with students with gifts and talents. However, this literature is theoretical in nature (Craft, 2001). A literature search for creativity for students with learning disabilities often results in articles concerning twice-exceptional students, in which the focus is on the gifts and talents side. Within the research on creativity, the investigation of males versus females as it relates to this construct has produced inconsistent results (Hong & Milgram, 2010). The literature concerning the relationship among ethnic groups and creativity has produced even more inconsistent results (Kaufman, Baer, & Gentile, 2004). Thus, creativity as an educational construct is just beginning to be discussed.

Creativity in General Education

General educators often work to include creativity as part of the learning experience for students (Wang, Chen, Zhang, & Deng, 2016). Because creativity is an educational skill believed to assist students with future successes, domain-specific creativity has become a construct of interest along with general creativity (Huang et al., 2017; Kim, 2011; Wang et al., 2016). Particularly, domain-specific mathematical and science creativity has been a focus in general education (Huang, et al., 2017).

In a study designed to evaluate creative thinking, Kim (2011) reviewed longitudinal data from the *Torrance Tests of Creative Thinking* (Torrance, 1974; i.e., 1984, 1990, 1998, 2008) to

determine if a change in student creative performance occurred over time. The study specifically looked at the possibility of changes in creative thinking when compared to student performance in creativity across grade levels.

Data were obtained from the Scholastic Testing Service for 272,599 students in kindergarten through 12th grade. The data from 1966 included 3,150 students; 1974 included 19,111 students; 1984 included 37,814 students; 1998 included 54,151 students; and, 2008 included 70,018 students. The data came from all regions of the United States.

An independent-sample *t*-test was conducted to examine the differences between years and age groups. Scores from five subcategories on the *Torrance Tests of Creative Thinking* (Torrance, 1966) were used. These include: fluency, originality, elaboration, abstractness of titles, and resistance to premature closure. For the analysis across age groups, the groups were divided into five categories (i.e., kindergarten through third grade, fourth grade through sixth grade, seventh grade through eighth grade, high school, and adults).

The analysis indicated that the subcategory of fluency showed an increase for students through third grade, with the scores becoming stagnant at fourth grade. By the sixth grade, a significant decrease was found for fluency scores. Originality increased for students through fifth grade and significantly decreased beginning at sixth grade. For elaboration and abstractness of titles, the scores increased through fifth grade and became stagnant beginning in sixth grade, and then decreased in the beginning of the seventh grade. Resistance to premature closure showed an increasing trend through third grade and became stagnant in the fourth and fifth grades, decreasing in sixth grade.

Based on the results of this study, Kim (2011) concluded that there was a sixth-grade slump instead of the well-known fourth-grade slump (Darvishi & Pakdaman, 2012; Torrance,

1968). She maintains that the data indicate a decline in creative thinking, across all age groups over time. Kim (2011) contended that the upper elementary decline and stagnation may be a result of more focus placed upon standardized testing and suggested that creativity development begin in preschool with an emphasis on creative thinking.

Within the construct of creativity, there are different types of creativity itself. Verbal and figural creativity are two constructs that often are compared. Dău-Gaşpar (2013) studied the verbal and figural creativity of adolescents to determine how high school students express their creativity (e.g., verbally, figurally). Because of the greater attention to and use of verbal skills at the high school level, she predicted that a higher level of verbal creativity would be found.

One hundred and five students participated in the study. All of the students were in high school and their ages ranged from 14-19 years, with the majority of the students being between 15-18 years old. The adolescents were in Grades 9, 10, 11, and 12, with 45.7% being male and 54.3% female.

To assess student creativity, the *Torrance Tests of Creative Thinking* (2008) was administered to all participants. This instrument assesses both verbal creativity and figural creativity. The assessment of verbal creativity provides scoring in three of Guilford's (1968) areas of creative thinking (i.e., fluency, flexibility, originality). For figural creativity, scoring is provided for five different areas (i.e., fluency, originality, elaboration, abstractness of titles, resistance to premature closure). Three of the areas also being from Guilford's (1968) areas of creative thinking (i.e., fluency, originality, elaboration) as well as abstractness of titles and resistance to premature closure.

The data in this study were analyzed using a paired-samples *t*-test to compare the results from the verbal and the figural creativity scores of the students. The scores were calculated into

standard scores and national percentiles. The analysis indicated that the figural creativity scores were at the 57th percentile, which is just above the national average (i.e., the 50th percentile). The verbal creativity was below the national average at the 25th percentile. A Cohen's *d* was conducted to determine the overall effect size of the findings. A small effect (d=.31) was found for the figural creativity level, while a larger effect (d=.75) was found for the verbal creativity level, meaning that a greater difference for verbal creativity was found between the groups.

Because these findings were not what Dău-Gaşpar (2013) hypothesized, she explored the causes of the results using scores from a national assessment, that demonstrated a lack of vocabulary knowledge and reading skills for high school students. By using a comparative analysis, the data indicated significant differences in fluency and originality for high school students, with originality demonstrating higher scores. Future research including larger sample sizes and a replication of the study was suggested. Investigation of the relationship between figural creativity and music also was suggested.

Further examination of the relationship of domain-specific areas of creativity was conducted by Huang et al. (2017), who explored the relationship between general creativity (e.g., divergent thinking) and domain-specific creativity. The domain-specific creativity examined in this study were in the areas of scientific creativity and mathematical creativity. Recruitment of participants was from three suburban elementary schools, resulting in 187 sixth-grade students (93 boys and 94 girls) participating. The mean ages of the students was 12.28 years old.

Several instruments were used in this study. The *Scientific Creativity Test* (SCT; Huang et al., 2017) was developed for this study to evaluate scientific creativity. It was based upon Hu and Adey's (2002) *Scientific Creativity Structure Model*. The SCT (Huang et al., 2017) has three subtests that focus on fluency, flexibility, and originality with a total score calculated by

combining scores from the three subtests. To evaluate mathematical creativity, the *Divergent Production Subtest of the Mathematical Creativity Test* (MCT; Haylock, 1997) was translated by Peng, Chen, and Huang (2015) for use in the study. The MCT is comprised of the same three subtests and a total score. Evaluation of general divergent thinking was measured by the *Newly Creativity Test* (NCT; Wu et al., 1999). In the study, the verbal subtest and the figural subtest were used and a total score calculated. Academic achievement for the sixth graders was measured using their science and mathematics average scores.

Scores for the assessments were analyzed through a correlation analysis. Results demonstrated positive correlations among science creative thinking and science achievement as well as mathematical creative thinking and mathematical achievement. Follow-up regression analyses also were conducted. These data showed that divergent thinking had a stronger influence on science creative thinking than on mathematical creative thinking.

Huang et al. (2017) concluded that the results of the study were consistent with previous research, indicating that domain knowledge had an effect on domain-specific creativity for students. That is, a student's content knowledge of a subject area had an effect on their ability to think creatively in that area. They suggested that future researchers should not use domain-general divergent thinking tests to assess creativity, but rather assess domain-specific creativity. Future research examining the relationship among motivation, personality, and domain-specific creativity also was suggested.

Studying the relationship between personality and creativity, Wang et al. (2016) examined personality types and their association with scholarly creativity and academic creativity. Four types of personality (e.g., extraversion, feeling, intuition, perceiving) and two creative styles (e.g., innovative style, adaptive style) were included in the study. The authors

predicted that the four personality types would show a different relationship with innovative style and be related to scholarly creativity, however, adaptive style would have less of a relationship to scholarly creativity than innovative style.

Students were recruited from university undergraduates. They were in either their first or second year of college. A total of 495 students participated, 305 females and 190 males. The mean age of the participants was 19.55 years old.

Personality types were assessed through the *Keirsey Temperament Sorter II* (Kelly & Jugovic, 2001). This instrument is comprised of 70 items on which students select statements relating to their perception of their personality. The *Kirton Adaption-Innovation Inventory* (Bagozzi & Foxall, 1995) was used to measure creative styles. On this inventory, the students ranked 32 items, using a 5-point scale, to indicate their perception of their ability to maintain adaptive and innovative behaviors. Scholarly creativity was measured through a subscale from the *Kaufman Domains of Creativity Scale* (Kaufman, 2012). The scale uses a 5-point Likert scale on which students ranked how creative they were for a specific creative act (1 being much less creative and 5 being much more creative).

All variables in the study were standardized and regressive models run for the analysis. Results of the analyses indicated a significant, positive relationship among extroversion and perceiving with innovative creative style, and a negative relationship with adaptive creative style. For scholarly creativity, a significant effect was found for extroversion, perceiving, and feeling, with extroversion and perceiving demonstrating a positive effect and feeling demonstrating a negative effect.

Wang et al. (2016) concluded that the results of extroversion and higher scholarly creativity was consistent with previous research. However, they believed that this study indicated

that individuals with higher levels of perceiving demonstrated higher levels of scholarly creativity. The lack of significance found between intuition and scholarly creativity was in contrast to previous research. They suggested that further research be conducted into the development of creativity for different personality types. They maintained that the research include longitudinal and experimental designs.

Teacher perceptions concerning creativity may play an important role on student creativity. Chien and Hui (2010) conducted a study to ascertain educator perspectives of student creativity. The purpose of the study was to better understand teacher perceptions and also gain an understanding of how creativity education was being promoted or hindered within the educational context.

Teachers were recruited from early childhood and kindergarten classrooms in three different cities in China (i.e., Hong Kong, Shanghai, Taiwan). All but one of the 877 individuals were women. Their teaching experience spanned from novice (i.e., less than five years) to mid-career (i.e., 5-15 years) to veteran (i.e., greater than 15 years), with almost half of the teachers being in the mid-career range.

A 5-part questionnaire was used in the study. It was developed based upon the items identified by Chien, Wang, and Chen (2001) and included five sections (e.g., demographic data, influential factors of creative performance, factors of creative performance, ecology of creativity education, barriers and improvements to creativity education). Three areas (e.g., factors of creative performance, ecology of creativity education, barriers and improvements to creativity education) were rated on a 5-point Likert scale (1 being low level of agreement and 5 being high level of agreement), with influential factors of creative performance rated on a 6-point scale (1 being the most important factor and 6 being the least important factor).

The questionnaires were distributed using several methods. The first being through the mail, the second at professional workshops and trainings, and finally, at a summer institute conducted for teachers at several universities and institutes. The teachers were asked to complete the questionnaires and return them to the researchers.

A two-way ANOVA was conducted on the data collected. Results indicated a moderately strong correlation between creative performance and improvements to creativity education, and with barriers to creativity education. A strong correlation also was found between the ecology of creativity and the ecology of creative learning. The teaching experience of the educators also was analyzed and a significant effect was found in both the ecology of creative teaching and the ecology for creative learning, with veteran teachers demonstrating higher scores in their perceptions of their creative thinking and creative learning than both the mid-career and novice teachers. The data showing that veteran teachers demonstrated higher perceptions indicates a need for the development of creativity within teacher preparation programs.

Based upon the results of the study, Chien and Hui (2010) concluded that tension regarding the implementation of creativity education within the school systems exists. The finding that veteran teachers perceived the ecology of creative teaching and the ecology of creative learning as more beneficial than the mid-career and novice teachers was attributed by the authors to the veteran teachers having additional teaching resources available to them. Chien and Hui (2010) suggested that the experience of teachers be viewed as valuable assets. They also maintained that curricula promoting creativity education be developed for use in teacher training programs.

Creativity in Gifted and Talented Education

The education of students with gifts and talents must involve curricular adaptations to meet their learning needs (Kashani-Vahid, Afrooz, Shokoohi-Yekta, Kharrazi, & Ghobari, 2017). The seminal Marland Report (1972) found that creativity was one of the areas of gifted and talentedness. As a result, many researchers have alluded to the importance of creativity being included in the education of students with gifts and talents (Guilford, 1975; Renzulli, 2012; Sternberg et al., 1996; Stoltz, et al., 2015)

The relationship between creativity and intelligence has been studied in multiple studies. However, results have been inconclusive. Preckel, Holling, and Wiese (2005) examined this relationship while studying threshold theory, suggesting a higher correlation between intelligence and creativity for those below an IQ of 120, and a lower correlation for those who have higher IQs. Thus, implying that individuals identified with gifts and talents generally demonstrate a lower creative ability.

The participants of the study were recruited from all three tracks of the German education system (e.g., the lower, middle, and top achievement tracks into which students in Germany are sorted following their fourth-grade year). Students also were recruited from a specialized school for students with gifts and talents. The students were in Grades 7-10 and their mean age was 14.5 years. The majority of the 1328 participants self-identified as male (n = 728), and 407 were from the school for students with gifts and talents.

Two instruments were used in this study. To measure intelligence, the German adaptation of the *Culture Fair Intelligence Test* (CFT 20; Cattell & Cattell, 1960; Weiß, 1998) was used. This assessment uses four figural tasks to assess intelligence and answers are in a multiple-choice format. The *Berlin Structure-of-Intelligence-test* (BIS-HB; Jäger, Holling, Preckel,

Schulze, Vock & Süß, 2005) was used to measure both intelligence and divergent thinking (creativity). The BIS-HB is a paper-and pencil assessment and measures 45 different tasks. For example, the divergent thinking aspect measures creativity in the areas of figural, verbal, and numerical content.

Both the CFT 20 and the BIS-HB assessments were given in classrooms. It took approximately 200 minutes for the students to complete the two assessments. Following completion, the data were analyzed through correlations and structural equation modeling (SEM). The correlation between intelligence and creativity, as well as the correlation with Threshold theory, was examined.

The data indicated correlations between intelligence and creativity ($r = .54$). The largest correlation in a specific area of creativity (i.e., verbal, figural, numerical) was found for verbal creativity ($r = .51$). Figural creativity ($r = .36$) and numerical creativity ($r = .38$) demonstrated a moderate correlation. Correlations for individuals with an IQ higher than 120 and those with an IQ lower than 120 were found to be similar, which means the Threshold Theory (e.g., an IQ of 120 being the threshold for level of creative ability) was not found to be substantiated.

Preckel et al. (2006) concluded that further research is needed to determine the relationship of mental speed for the assessments used and that the data did not support the Threshold Theory. They found this lack of support regardless of age or ability level, meaning that those with gifts and talents did not demonstrate any less creative ability than those without.

While Preckel et al. (2006) explored general creativity and its relationship to intelligence for students with gifts and talents, Şahin (2016b) studied the relationship of domain-specific creativity to intelligence. Three types of intelligence were investigated: general intelligence,

emotional intelligence, and academic achievement. Five domains of creativity were included in the study: scholarly, mechanic/scientific, performance, self/everyday, and art.

Students identified as having gifts and talents at the high school level comprised the 178 participants in this study, 85 were female and 93 were male. The students were from Grades 9-12. To be identified as having gifts and talents, the students were assessed using the *Wechsler Intelligence Scale for Children-R IV* (WISC-R IV; 2004) and had to score at least two standard deviations above the mean in one area of the 15 subtests of the assessment (e.g., verbal comprehension, working memory, perceptual reasoning).

Creative domains were measured by an adapted Turkish version of the *Kaufman Domains of Creativity Scale* (KDOCS-TR; Kaufman, 2012; Şahin, 2016a). Participants rated 42 items on a 5-point Likert scale (1 being much less creative to 5 being much more creative) in all five domain-specific creativity areas (e.g., scholarly, mechanic/scientific, performance, self/everyday, art). Intelligence data were collected using: (a) student grade point averages, (b) the WISC-R IV (2004), (c) the *Emotional Intelligence Specialty Scale-Short Form* (TEQ-SF; Petrides & Furnham, 2000). Both the WISC-R IV (2004) and the TEQ-SF (2000) were translated into Turkish. The WISC-R IV (2004) data and grade point averages were collected from the database of the school.

To analyze the data, a Pearson correlation test along with a multiple-hierarchical regression were conducted. Moderate correlations were found between scholarly creativity and intelligence using the verbal and performance assessments of the WISC-R IV (2004) as well as from the global TEQ-SF (2000). The other areas of creativity assessed (e.g., mechanical/scientific, performance, self/every day, art) showed no correlation with intelligence.

However, positive correlations among the TEQ-SF (2000) and art creativity and with the TEQ-SF (2000) and self/everyday creativity was found.

Şahin (2016b) concluded that the results indicated that creativity and intelligence only have a correlation in the scholarly domain which was consistent with previous research. He also concluded that there was no correlation between creativity and grade point average. Şahin (2016b) suggested that further research focus on academic grades in specific courses rather than the overall grade point average of students.

To explore the creative capacity of students with gifts and talents, Kettler and Bower (2017) examined teacher ratings of student creativity and its relationship with actual creative products produced by students. Comparisons were made among: students with gifts and talents, students in general education, and students not identified as having gifts and talents, as well as between boys and girls.

Participants in the study were 155 fourth graders with a relatively equal number of males (51%) versus females (49%). Of the participants, 41 were identified as having gifts and talents. One fourth-grade teacher participated in the study who held certification to teach students with gifts and talents and dual language learners.

Longitudinal data were collected over two school years. Two fourth-grade classes were recruited to participate each year. The students responded to an open-ended writing prompt asking them to write about themselves. Following the completion of the prompt, the teacher rated each student's work focused on creativity. A secondary measure of data collection was a rubric developed for the study. The rubric measured creative ability in two of the four areas of creative thinking (e.g., originality, elaboration). Scoring of the student papers using the rubric was completed by four trained research assistants.

Along with the rubric and teacher ratings, three creativity instruments also were used to collect data. The first instrument, *The Creativity Checklist* (Proctor & Burnett, 2004), was a 9-item assessment in which responders rated items using a 1-3 scale (1 being rarely and 3 being often). The *Renzulli Scales* (Renzulli et al., 2010) was used to assess creativity using a 6-point rating scale (1 being never and 6 being always) to rate how often a characteristic of creativity was found in the nine factors on the creativity scale. The third instrument was the *Scales for Identifying Gifted Students* (SIGS) (Ryser & McConnell, 2004) used to rate from 0-4 (0 being never and 4 being much more) the level of creative behaviors exhibited by a student when compared to their peers.

Relationships between the teacher ratings and the student creative products were analyzed. Pearson correlation coefficients were conducted and a multiple-regression analysis was conducted. The results indicated positive and significant scores. However, the results were not found to be strong with results ranging from $r = .20$ and $r = .27$, meaning that while the results were positive and significant, the relationship between the teacher ratings and the student creative products were small. The results also found that students with gifts and talents demonstrated higher scores than their general education peers on their writing samples, the *Creativity Checklist* (Proctor & Burnett, 2004), the *Renzulli Scale* (Renzulli et al., 2010), and the SIGS (Ryser & McConnell, 2004).

Kettler and Bower (2017) concluded that the results of the study provided more information regarding the relationship between creativity and giftedness. However, they suggested that more research was needed in this area to draw stronger conclusions. They also suggested that creativity be studied at different developmental points throughout childhood to ascertain the relationship between the product produced and the age of the person.

An intervention to develop creativity in students with gifts and talents was explored by Kashani-Vahid et al. (2017). Because of the importance of problem solving and creativity, the relationship between students with gifts and talents and a creative problem-solving intervention was examined with 42 fourth graders.

While 125 fourth-grade students volunteered for participation, only the 42 students who had an IQ score above 130 were asked to participate. All of the participants were female who were recruited from an elementary school. Half of the 42 qualifying students were placed in a treatment group, and half were placed in a control group that received no treatment during the study.

To evaluate creativity, the *Torrance Tests of Creative Thinking* (Torrance, 1966) was used. Only the figural test (form B) was administered to the students. Following the assessment, the treatment group participated in the Creative Interpersonal Problem-Solving intervention. The intervention lasted for 15 sessions, with each session being approximately 45 minutes long. The intervention focused on the social aspects of interpersonal problem-solving skills. The *Creativity Checklist* (Johnson, 1979) was distributed to the teachers to evaluate student creative performance both prior to and after the intervention. The checklist contained eight items that used a 5-point Likert rating scale (1 being never and 5 being consistently). A total score from the eight items was calculated.

A repeated measures ANOVA was conducted. Significant differences were found between both the experimental group pre- and post-assessments as well as the control group pre- and post-assessments. The results of the creativity checklist demonstrated significantly higher ratings for the treatment group students by the teachers following participation in the intervention. Kashani-Vahid et al. (2017) concluded that participation in the Creative

Interpersonal Problem Solving intervention resulted in higher scores in creativity for those who participated over the students with no training. It was suggested that workshops concerning creativity be provided for both parents and teachers and that the curricula be available to teachers and school administrators.

Creativity in the Field of Learning Disabilities

Creativity, while more often studied in gifted and talented education and general education, also has been explored in the field of learning disabilities. However, the results concerning the relationship of students with learning disabilities (LD) to creativity are mixed (Hong & Milgram, 2010). Of the studies, most have investigated general creative ability and often compare the students with LD to those without disabilities.

Determining creative abilities of students with LD as compared to their peers not identified as having a disability was examined by Eisen (1989). The purpose of the study was to determine if any differences concerning creativity existed between the two populations. To examine this relationship, geometric shapes were provided to students who were asked to create as many pictures as possible using the shapes. Participants were 32 students from an elementary school. Half of the participants were male and half female and their age ranged from 8 years, 5 months to 11 years, 11 months. Sixteen of the students had LD and 16 had not been identified with a disability.

Two geometric tasks were given to the students. The first task measured figural creativity and consisted of 15 shapes with which the students were told to create pictures. The resulting pictures were scored based on fluency, originality, number of pieces used, and remoteness. In the second task that measured verbal creativity, the students were given seven letters from which

they were asked to construct words using the letters. This task was scored for fluency of words created and percentage of correctly spelled words.

An ANOVA was conducted and Pearson correlations were conducted among figural and verbal creativity. The results indicated that the verbal creativity of students with LD was significantly lower than their peers without a disability. However, in the area of figural creativity, the students with LD exhibited significantly higher originality and remoteness levels.

Eisen (1989) concluded that high scores in originality were accompanied by low scores in verbal creativity. He suggested that there was a possible link between verbal deficits and low verbal creativity. Further research into the early training of creativity to alleviate low verbal creativity was suggested as well as the development of creativity measures focused specifically on students with LD.

The creative potential of students with LD was explored by Gindrich and Kazanowski (2017). The purpose of the study was to determine the creative potential and the specific dimensions of creativity for this population. Three dimensions of creative potential were measured: conformity versus nonconformity, algorithmic versus heuristic behaviors, and divergent thinking. University students, in their second or third year of studies, participated in the study. Of the 99 students who participated, 47 self-identified as having a LD, with more females than males participating.

The *Rating Scale for Intensity of LD Symptoms* (Gindrich, 2017) was used to assess how the students perceived the degree of their LD. The scale consists of 12 items on which the participants rated their perceived level of intensity of LD symptoms based upon a 5-point Likert rating scale (1 being never and 5 being very frequently). To assess creativity, the *Creative Behavior Questionnair*e (Popek, 1991) was used. It consists of 60 items on which individuals

rate their responses to statements about their creative behavior using a 3-point Likert rating system (0 being false and 2 being true). The *Alternative Uses Task* (Guilford, 1968), on which students provide as many uses for an everyday object as possible, was used to evaluate divergent and convergent thinking.

The *t*-test values were calculated for the scores from the *Creative Behavior Questionnair*e (Popek, 1991) and the *Alternative Uses Task* (Guilford, 1968). The data indicated significant differences between the two groups on the *Creative Behavior Questionnaire* (Popek, 1991) in the areas of nonconformity and heuristic behavior, both of which are considered areas of creative potential. The students with LD demonstrated lower scores than those in the non-disability group. While no significance was found between the groups for the *Alternative Uses Task* (Guilford, 1968), the mean scores for the students with LD were found to be higher than the other group.

Gindrich and Kazanowski (2017) concluded that, even though no significance was found on the *Alternative Uses Task* (Guilford, 1968), the results demonstrated that students with LD demonstrated a higher creative ability than those without a disability. Future research with persons with LD and students who are twice-exceptional was suggested.

To examine a domain-specific relationship between creativity and students identified with LD, Hong and Milgram (2010) examined a general-specific relationship (e.g., general creativity, domain-specific academic creativity) between the two. They maintained that students with learning disabilities would demonstrate general creative ability similar to their peers without a disability when academic context was controlled for.

The 130 participants were recruited from a small university, of which 70 were high school students participating in a university after-school program and 60 were university-age

students. Within the educational groupings, 70 participants were students with LD (40 at the high school level and 30 at the university level) and 60 did not have a learning disability (30 each from high school and university levels).

Creative ability was measured using two different instruments. The *Tel Aviv Creativity Test* (TACT; Milgram & Milgram, 1976) was used to assess general creative ability. The TACT (1976) uses four items on which participants are asked to demonstrate their fluency and flexibility of thinking by providing as many divergent responses as possible. In this study, only the fluency scores were analyzed. The study also used the *Ariel Real-Life Problem Solving* (ARLPS; Milgram & Hong, 2000) to assess domain-specific creativity. Two items focused on a real-life situation on which participants were asked to problem solve. The items were rated based upon the number of responses given (e.g., fluency). The students completed both instruments in a classroom at the university.

Structural equation modeling (SEM) was used for this study. Because the multivariate kurtosis demonstrated close to normal ranges, a maximum likelihood estimation was used. The data indicated that students with LD demonstrated lower creative thinking ability in academic problem solving. However, there were no significant differences for these students and their typical peers when general creative thinking ability was measured.

Hong and Milgram (2010) concluded that general creative thinking may be a method to assess creativity for both those identified as having LD and those who do not have a disability. They also suggested that creative ability may be a construct learned outside of school. Hong and Milgram (2010) suggested that further research be conducted focused on the relationship between learning disabilities and specific creative thinking and the impact on school performance.

The instruction of creativity for students with disabilities was studied by Jaben et al. (1982). The purpose of the study was to investigate the effect of the *Purdue Creative Thinking Program* (PCTP; Feldhusen, Treffinger, & Bahlke, 1970) on the creative thinking ability of students with LD.

The study involved 49 students from a self-contained classroom for students with LD. All participants could read at the third-grade level and above. Twenty-five of the children were in the experimental group and 24 in the control group.

Prior to implementation of the treatment, the students were assessed using the *Torrance Tests of Creative Thinking* (Torrance, 1974), both the verbal and figural subtests. The experimental group received the *Purdue Creative Thinking Program* (Feldhusen et al., 1970), that involved listening to 28 audio tapes, included teaching a principle of creative thinking and a famous American pioneer story, followed by students completing paper-pencil exercises. The intervention was conducted for two 45-minute sessions per week over 14 weeks. The control group did not participate in the program and continued with their regularly scheduled activities. Following the 14 weeks, the *Torrance Tests of Creative Thinking* (Torrance, 1974) were administered again.

The data were analyzed through an ANCOVA. All sub-scores of the *Torrance Tests of Creative Thinking* were analyzed. The results indicated that there were significant differences between the experimental group and the control group in overall verbal creativity and on each of the verbal subtests, fluency, flexibility, and originality.

Jaben et al. (1982) concluded that participation in the *Purdue Creative Thinking Program* (Feldhusen et al., 1970) increased the verbal creativity of the students with LD. However, they noted that the *Purdue Creative Thinking Program* (Feldhusen et al., 1970) did not increase

figural creativity for these students. They suggested that future research examine the relationship between creativity and problem solving for students with LD as a method to increase verbal abilities.

In a study designed to extend the work of Jaben et al. (1982), Shondrick, Serafica, Clark, and Miller (1992) examined the relationship between interpersonal problem-solving skills and creativity for students with LD and those without LD. It was predicted that those with LD would demonstrate lower scores in the areas of interpersonal problem solving and creativity when compared to students without a disability. A total of 92 boys participated in the study.

To measure interpersonal problem-solving skills, the *Test of Interpersonal Problem* Solving (TIPS; Feldgaier & Serafica, 1980) was used. The TIPS (Feldgaier & Serafica, 1980) provided four vignettes for students to which students listened along with a picture to view. Following the listening and viewing portion, the students were asked questions based on what they heard and saw. The students were scored in five areas (i.e., problem recognition, problem definition, alternative thinking, consequential thinking, solution adequacy). A total score that was a sum of the five areas was calculated. To assess verbal creativity, the *Alternate Uses Test* (AUT; Wallach & Kogan, 1965) was used. The students responded to four items and were scored for fluency and flexibility. Nonverbal creativity was measured using *Eisen's Test of Remoteness* (ETR; Eisen, 1989). The ETR involves 15 geometric shapes in which students create as many pictures as possible in a 5-minute time period. Student IQ scores were determined using the nonverbal *Peabody Picture Vocabulary Test-Revised* (PPVT-R; Dunn & Dunn, 1981).

Both an ANOVA and a MANOVA were used to analyze the data. Significant group differences were found regarding interpersonal problem solving on the TIPS (Feldgaier & Serafica, 1980). Students without LD demonstrated higher scores than students with LD;

however, significant differences between groups were not found for creativity on either the AUT (Wallach & Kogan, 1965) or the ETR (Eisen, 1989) instruments. For students with LD, fluency scores were significantly and negatively related to problem definition, alternative thinking, consequential thinking, and solution adequacy.

Shondrick et al. (1992) concluded that significance was not found between the two groups in the area of creativity, as scores in verbal fluency and flexibility were similar for both those with LD and those without. They maintained that the results were due to the students with LD being allowed to respond orally rather than in writing. The authors also discuss the role of the relationship between interpersonal problem solving and creativity for students with LD as it may be an important factor for this population of students. Replication of this study with other age groups was suggested.

The field of creativity has been studied beginning with the introduction of the Structure of Intellect Model (Guilford, 1950). The four areas of creative thought (e.g., fluency, flexibility, elaboration, originality) are part of the creativity paradigm in the field of education. Creativity in all three educational subtypes (i.e., in general education, in gifted education, in the field of learning disabilities) has been found to be important for student academic achievement, social/emotional aspects, and economic aspects (Bandura et al., 2001; Craft, 2003; Florida et al., 2008; Florida, 2012; Tierney & Farmer, 2002).

From the review of the literature regarding creativity, it appears that a slump in creativity occurs early on in a student's educational career. However, the exact grade/age is still up for debate (Darvishi & Pakdaman, 2012; Kim, 2011; Torrance, 1968). The slump has been suggested to be attributed to the greater educational focus on standardized testing (Kim, 2011).

Many researchers suggest future research is needed into general creativity as well as into the many aspects of domain-specific creativity (e.g., mathematical, science, self-beliefs; Huang et al., 2017; Kim, 2011; Wang et al., 2016). Along with the investigation of domain-specific creativity, future research regarding the role creativity plays with students with gifts and talents, with disabilities, and without disabilities/gifts and talents has been suggested (Eisen, 1989; Gindrich & Kazanowski, 2017; Hong & Milgram, 2010; Kettler & Bower, 2017; Shondrick et al., 1992). From the research, it appears that there is a need for curricula to be developed to enhance the teaching of creativity within the educational system (Chien & Hui, 2010).

Self-Efficacy as an Educational Construct

Self-efficacy, a term coined by Bandura (1986), is a person's belief in their own ability to do something. Bandura (1997) suggests that self-efficacy has an effect on personal effort and perseverance to do something. Four sources of self-efficacy beliefs: (a) mastery experience, (b) vicarious experience, (c) social persuasion, and (d) physiological states were suggested by Bandura (1986; 1997). Self-efficacy has been linked with academic achievement, hope, career selections, and social/emotional skills (Britner & Pajares, 2006; Hampton & Mason, 2003; Hen & Goroshit, 2014; Hojati & Abbasi, 2013). Self-efficacy has been researched in general education, in gifted education, and in the field of learning disabilities.

Self-Efficacy in General Education

Bandura's (1986;1997) four sources of self-efficacy beliefs have become an area of interest for researchers. This is due to the influence self-efficacy has on academic achievement (Britner & Pajares, 2006). Researchers have investigated how these four sources, along with other domain specific constructs, assist with the development of a student's self-efficacy beliefs (Hampton & Mason, 2003).

Because of the similarities of the definitions of hope and self-efficacy, Zhou and Kam (2016) investigated the relationship between hope and self-efficacy. The purpose of the study was to establish whether the two constructs were really the same constructs. A factor analysis was conducted to make the determination.

The 199 participants in the study were recruited from an English department in a college. Participation was contingent upon typical research procedures, in which participant consent was obtained and participants were informed of their ability to withdraw at any point throughout the study.

To measure general self-efficacy, a Chinese version of the *General Self-Efficacy Scale* was used (Schwarzer & Jerusalem, 1995; Zhang & Schwarzer, 1995). This scale uses a 4-point Likert scale on which participants rate their beliefs regarding their personal general self-efficacy (1 being not true at all and 4 being exactly true). The measurement of hope was completed using a Chinese version of the *Dispositional Hope Scale* (Snyder et al., 1991; Sun, Ng, & Wang, 2012). This instrument is comprised of eight items on which individuals rate the items using a 4-point Likert scale (1 being definitely false and 4 being definitely true). Both assessments were co-mingled onto one instrument for the participants to complete.

A factor analysis and correlational analysis were conducted to determine the relationship between general self-efficacy and hope. The data demonstrated a large overlap between both general self-efficacy and hope. The two constructs were determined to be highly correlated ($r = .85$). The role of common method variance was tested to ensure that the effect was not distorting results. However, results demonstrated this did not have an effect.

Zhou and Kam (2016) concluded that due to the large overlap between the two constructs (i.e., general self-efficacy, hope), it is a possibility that the constructs are actually the same

construct. They suggested that future research investigate the relationships of both general self-efficacy and hope with other external variables. It was suggested that future researchers, who are investigating one construct (i.e., general self-efficacy, hope), consider investigating both in their research. Zhou and Kam (2016) maintained that the two should be evaluated as an integrated construct or that further research be conducted to demonstrate that the constructs were indeed two separate constructs.

Looking at other variables and their relationship with general self-efficacy, Azizli, Atkinson, Baughman, and Giammarco (2015) investigated the relationship between self-efficacy, specifically general self-efficacy, and domain-specific efficacy. The purpose was to compare general self-efficacy with three domain-specific efficacies: (a) engagement in future planning, (b) consideration of future consequences, and (c) overall life satisfaction. They predicted a positive relationship with all three domain-specific efficacies and general self-efficacy.

Of the 242 participants, 171 self-identified as female, 64 self-identified as male, and 7 did not select either female or male. The age of the participants ranged from 16-31 years and were recruited from a research pool and satisfied course requirements by participating in the study.

To measure self-efficacy in this study, the students completed the *New General Self-Efficacy Scale* (NGSES; Chen, Gully & Eden, 2001) that measured self-efficacy using eight items, which were rated using a 5-point Likert scale (1 being strongly disagree and 5 being strongly agree). To assess planning for the future, the *Continuous Planning Scale* (CPS; Prenda & Lachman, 2001) was used. This instrument has five items on which participants rated each item using a 4-point Likert scale (1 being not at all and 4 being a lot). The *Consideration of Future Consequences Scale* (CFCS; Strathman, Gleicher, Boninger, & Edwards, 1994) was used to evaluate the student's ability to consider future results of their behaviors. It uses a 5-point

Likert scale (1 being extremely uncharacteristic and 5 being extremely characteristic) on which the participants rated 12 items on how characteristic the statement is of their behavior. To measure life satisfaction, the *Satisfaction with Life Scale* (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was completed by the students using a 7-point Likert scale (1 being strongly agree and 7 being strongly disagree) to rate their level of agreement with the 12 statements.

The resulting data were analyzed and descriptive statistics and intercorrelations were calculated. Significance was found for all correlations in the study. A positive correlation with general self-efficacy and all three domain-specific self-efficacies were found. The SWLS (Diener et al., 1985) demonstrated the highest correlation with general self-efficacy ($r = .67$). The CFCS (Strathman et al., 1994) also demonstrated a high correlation ($r = .64$), while the CPS (Prenda & Lachman, 2001) demonstrated a moderate correlation ($r = .41$).

Azizli et al. (2015) maintained that the results of this study were consistent with previous research. Based upon the results, they concluded that individuals with higher life satisfaction benefit from future planning. They suggested that future research focus on identifying predictors for both general self-efficacy and for domain-specific self-efficacy.

Capri, Ozkendir, Ozkurt, and Karakus (2012) also investigated general self-efficacy and domain-specific self-efficacies. The purpose of the study was to ascertain general self-efficacy beliefs of the participants and their relationship with life satisfaction and burnout. The study measured the overall level of fulfillment individuals express with their life. It also considered their level of burnout from being a university student. The participants were university students, with 354 volunteering from multiple departments. Approximately 63% were identified as male (223 students) and 37% (131 students) were identified as female.

To measure the general self-efficacy of the participants, the *General Self-Efficacy Scale* (GSES; Jerusalem & Schwarzer, 1992) was adapted into Turkish for use (Celikkaleli & Capri, 2008). This scale uses 10 items on which the individual rates their level of agreement on a 4-point scale (1 being not true at all and 4 being exactly true). Life satisfaction was rated on a 5-item, 7-point Likert scale (1 being strongly agree and 7 being strongly disagree) using *The Satisfaction with Life Scale* (SWLS; Diener et al., 1985). The SWLS (Diener et al., 1985) was translated into Turkish for use in this study (Köker, 1991; Yetim, 1991). Finally, the *Maslach Burnout Inventory-Student Survey* (MBI-SS; Schaufeli, Marttinex, Marques-Pinto, Salanova, & Bakker, 2002) was also translated into Turkish for use in this study (Capri, Gunduz, & Gokcakan, 2011). The MBI-SS (Schaufeli et al., 2002) has 16 items across three subscales (i.e., exhaustion, cynicism, efficacy) on which the individual rates each item using a 7-point rating scale (0 being never and 6 being always). Burnout was demonstrated if a student had high scores in the areas of exhaustion and cynicism, or low scores in the area of efficacy.

To analyze the data, a Pearson product-moment correlation coefficient was calculated. This was calculated for self-efficacy, life satisfaction, and burnout scores. The data demonstrated significant positive relationships between general self-efficacy scores and life satisfaction ($r = .31$). Only the subscale of efficacy on the MBI-SS (Schaufeli et al., 2002) showed a significant positive relationship with general self-efficacy ($r = .38$), while exhaustion and cynicism subscales did not. For the MBI-SS (Schaufeli et al., 2002), a negative significant relationship was found between the efficacy sub-scale and exhaustion and cynicism subscales, and a positive significant relationship was found between the exhaustion and cynicism subscales.

Capri et al. (2012) concluded that the general self-efficacy and life satisfaction relationship results reflect findings from previous studies. They concluded that a higher life

satisfaction level results in a lower burnout level and suggested that universities should restructure their programs and curricula to include activities that increase student life satisfaction. They also suggested that an increase in self-efficacy beliefs would likely benefit the life satisfaction of students. No suggestions were offered for further research.

The relationship of self-efficacy to academic achievement was investigated by Motlagh, Amrai, Yasdani, Abderahim, and Souri (2011). The purpose of the study was to determine if a relationship existed between self-efficacy and a student's academic achievement. It was hypothesized that general self-efficacy does not have a direct effect on academic achievement, but rather an indirect effect through general self-efficacy on the use of self-regulation, which in turn, impacts academic achievement.

Two hundred fifty females participated in the study. A cluster sampling was used to recruit participants, with individuals entering at different stages of the study. To determine the academic achievement of each participant, their academic grade average scores were used. A self-efficacy questionnaire was developed and included subfactors of self-beliefs, self-regulation, self-evaluation, self-stimulation, and self-monitoring. The students completed this questionnaire.

A step-by-step regression analysis was conducted to determine the relationship between self-efficacy and academic achievement. Two factors demonstrated significance, the self-evaluation and self-regulation subcategories of self-efficacy showed a positive relationship with academic achievement, indicating that greater self-evaluation and self-regulation correlates with greater academic achievement. Motlagh et al. (2011) concluded that more research should be conducted regarding these sub-factors. It also was suggested that providing enrichment of both sub-factors should be done in the educational setting in order to impact academic achievement.

Continuing research related to academics, Britner and Pajares (2006) examined the relationship between self-efficacy and student science self-efficacy. The purpose of the study was to determine if self-efficacy would have an effect on a student's science self-efficacy. Previous research concerning science self-efficacy demonstrated a link to science academic achievement at the college level. This study explored this link at the middle school level. There were 319 participants in this study recruited from a middle school. Of the 319 participants, 155 were male and 164 were female.

The *Sources of Science Self-Efficacy Scale*, adapted from a mathematics scale by Lent, Lopez, Brown, and Gore (1996), was used in this study to evaluate student self-efficacy in science. The instrument included four subscales (i.e., master experiences, vicarious experiences, social persuasions, physiological states) and included 31 items on which students used a 5-point scale (1 being low level of agreement and 5 being a high level of agreement). Science self-concept was evaluated through the *Academic Self Description Questionnaire* (Marsh, 1990b), that consists of six items rated on a 6-point scale (1 being false and 6 being true). Self-efficacy for self-regulated learning was evaluated through the 12-item *Children's Multidimensional Self-Efficacy Scales* (Zimmerman & Bandura, 1994) that used a 7-point rating scale (1 being high uncertainty and 7 being high certainty). Finally, self-achievement was based on student science class grades.

A MANCOVA, along with a multiple regression analysis, were conducted. The results of the analyses indicated a significant correlation between science self-efficacy and the other sources of self-efficacy that were evaluated (e.g., self-regulatory practices, self-concept, anxiety). Science self-efficacy was the greatest predictor of a student's grade in science. Three of the four subscales from the *Sources of Science Self-Efficacy Scale* (Britner & Pajares, 2006) did not

demonstrate significant correlation with science self-efficacy, with mastery of experience being the only subscale to demonstrate a significant correlation.

Results of the analyses concurred with previous research. Britner and Pajares (2006) concluded that the three subscales that demonstrated significance should be used as science self-efficacy beliefs precursors. Future research examining science self-efficacy beliefs in other age levels was suggested. The authors also discuss the need for more research to be conducted with different economic and ethnic groups.

Self-Efficacy in Gifted and Talented Education

The overall psychological well-being of students with gifts and talents has been investigated by researchers (Chan, 2007). Self-efficacy is the belief in one's ability to do something (Bandura, 1986), which is linked with the ability to cope (Chan, 2007). This linkage is of particular importance for this population in terms of their overall well-being in school and in post-secondary environments (Gresham, Evans, & Elliott, 1988; Zimmerman & Martinez-Pons, 1990).

Gresham et al. (1988) designed a study to compare the academic and social self-efficacies of students with gifts and talents to students with mild disabilities. Both populations also were compared to their peers who were not identified as having a disability or with gifts and talents. Participants in the study were 336 students in the third, fourth, and fifth grades who were recruited from a public elementary school. The students with disabilities included students with LD, students with mild intellectual disabilities (ID), and students with emotional behavioral disorders (EBD). Students in the gifts and talents group had IQs at 130 or above. The third group who participated were students not identified with a disability or as having gifts and talents.

Academic and social domains were measured using the *Academic and Social Self-Efficacy Scale* (ASSESS; Gresham et al., 1988) that was developed for the study based upon the *Walker Problem Behavior Identification Checklist* (WPBIC; Walker, 1976) and the *Social Skills Rating Scales* (SSRS; Gresham & Elliott, 2008). The ASSESS (Gresham et al., 1988) consists of 28 items on which students rate their efficacy and outcome expectations using a 5-point Likert scale (1 being no and 5 being yes). This instrument was administered orally to the students in the general education classroom.

A MANOVA with a general linear model was used for the analysis in this study. Six separate analysis of variances were conducted. Results for students with gifts and talents indicated lower social self-efficacy than their peers who were not identified as having a disability or having gifts and talents. No significant differences between these two populations were found for academic self-efficacy.

Gresham et al. (1988) concluded that the lack of significant differences for academic self-efficacy was in contrast to what was predicted. Because students with gifts and talents often demonstrate higher academic abilities, they expected that this population of students would also show higher academic self-efficacy. Other research regarding this relationship was not consistent with these findings. They suggested that future research continue to study self-efficacy beliefs of students with gifts and talents.

The self-efficacy and strategy use of students with gifts and talents was investigated by Zimmerman and Martinez-Pons (1990). The purpose of the study was to ascertain the use of self-efficacy instruments with students with gifts and talents as well as to determine the effect of being identified as having gifts and talents on self-efficacy beliefs. Academic self-efficacy also was examined in the study to determine if students with gifts and talents demonstrated greater

levels than their peers who have not been identified as having gifts and talents. The authors predicted that students with gifts and talents would demonstrate greater academic self-efficacy and that this would increase as students grew older.

The participants were recruited from a school for the gifted and three general education schools. A total of 90 participants in Grades 5, 8 and 11 (30 participants in each grade) were selected from the school for children with gifts and talents. Another 90 students were selected from the three general education schools (30 from elementary school, 30 from junior high school, and 30 from high school).

Academic efficacy was evaluated using a scale developed for the study that consisted of 20 items, 10 items in mathematical problem-solving and 10 items in verbal comprehension. Each item was rated by the students on their self-efficacy to do what the item asked using a range from 0%-100% (0% being completely unsure and 100% being complete sure). The participants also were interviewed concerning their study practices.

A MANOVA was conducted to evaluate the verbal and mathematical efficacy of the students. A large main effect was found for the students with gifts and talents. Greater verbal efficacy and mathematical efficacy was found for students with gifts and talents over their peers not identified as having gifts and talents. Post hoc tests (Newman-Keuls procedure) were run and an increase in the verbal efficacy of students with gifts and talents was found between students in the fifth grade and students in the eighth grade, while no significant increase between students in these grades in verbal efficacy was found for students without gifts and talents. No significant increase in verbal efficacy occurred for students with gifts and talents in Grades 8 and 11. However, a significant increase in verbal efficacy for students without gifts and talents in Grades 8 and 11 was found.

Zimmerman and Martinez-Pons (1990) concluded that academic self-efficacy of high school students was higher than that of junior high school students, which was subsequently higher than elementary school-aged students. They also maintained that students with gifts and talents demonstrated higher levels of academic efficacy ($r = .59$) than their general education peers and that students with gifts and talents develop verbal abilities earlier than their peers who are not identified with gifts and talents. They suggested that teachers use self-efficacy instruments to determine the self-efficacy of their students.

Junge and Dretzke (1995) investigated the relationship between self-efficacy and mathematics. The purpose of the study was to determine the effect Bandura's (1986) self-efficacy theory had on the mathematical behavior of students with gifts and talents. Gender effects also were considered in this study. Participants for this study were 113 students identified with gifts and talents recruited from two public schools. The students were in the 9^{th}, 10^{th}, 11^{th}, and 12^{th} grades, and their mean ages were 15.6 years for males and 15.8 years for females.

The *Mathematical Self-Efficacy Scale* (MSES; Betz & Hackett, 1983) was used to evaluate student mathematical self-efficacy. The MSES (Betz & Hackett, 1983) uses 70 items on which participants rate their confidence in their ability to perform a mathematical task using a 10-point scale (0 being no confidence and 9 being complete confidence). The questionnaires were mailed to the students to complete.

A MANOVA was conducted to test for significance in mathematical self-efficacy. Based upon the analyses, male students with gifts and talents demonstrated significantly higher mathematical self-efficacy than females on three of the subtests (e.g., mathematics tasks, college courses, mathematics problems) of the MSES (Betz & Hackett, 1983).

Junge and Dretzke (1995) concluded that while there were statistically significant differences between the males and females, with males showing greater levels of mathematical self-efficacy, the female students with gifts and talents still demonstrated high levels of mathematical self-efficacy. Future research was suggested to determine the influences self-efficacy may have among genders as well as to determine if age has an effect on mathematical self-efficacy.

Garduño (2001) also investigated gender differences in mathematics self-efficacy for students with gifts and talents. The purpose of the study was to explore mathematical attitudes, self-efficacy, and overall achievement. An intervention using cooperative learning groups and problem solving was implemented as an intervention with 48 seventh and eighth grade students identified as having gifts and talents. The intervention was provided at an enrichment summer program at a university.

The students were separated into three groups, with 16 students in each group. Two of the three groups received the intervention and the third group was the control group, that was provided a competitive working situation that discouraged students from working with other students. An equal number of males and females were in each group. Three instruments were developed for this study. The *Probability and Statistics Achievement Pretest* (PSAT-PRE; Garduño, 2001) was given prior to the intervention to assess student probability and statistics content understanding. The *Probability and Statistics Achievement Posttest* (PSAT-POST; Garduño, 2001) was given following the intervention to assess the student probability and statistics content understanding. The *Probability Statistics Self-Efficacy Survey* (Garduño, 2001) was used to ascertain student self-efficacy in probability and statistics. The *Arlin Hills Attitude Survey Toward Mathematics Secondary* (ATMS; Arlin, 1976), assessed student mathematical

attitudes using a 15-item questionnaire on which students rated their attitude about mathematics on a 4-point scale (1 being no and 4 being yes).

The two intervention groups participated in a 10-lesson course over a two-week time period focused on problem solving mathematical strategies. One group implemented the course using mixed-gender groupings and the other intervention group used single-gender groups. The control group used whole-class instruction and did not work in cooperative groups. Following implementation of the 10 lessons, the instruments, with the exception of the pretest, were administered to all participants.

A MANCOVA was conducted with gender and intervention being the two independent variables. Results of the study indicate gender and treatment were not significant for student mathematical self-efficacy. Significance also was not found for achievement and self-efficacy for any of the groups. However, females in the cooperative mixed-gender groups demonstrated lower scores than females in single-gender groups or females in the control group.

Garduño (2001) concluded that cooperative learning may not necessarily improve student achievement. She suggested that students with gifts and talents participate in both cooperative learning and competitive learning groups. Garduño (2001) suggested that future research focus on the characteristics needed for students with gifts and talents when working cooperatively, competitively, and alone.

Chan (2007) designed a study to investigate general self-efficacy as well as the relationship between perfectionism and general self-efficacy. Chan (2007) wanted to determine if general self-efficacy could mediate perfectionism for a person's overall well-being. The participants in the study were 317 students in Grades 2-12. There were 189 boys and 128 girls in

the study with the mean age being 11.62 years. The children attended enrichment courses at a university, and were ranked as intellectually, academically, or nonacademically gifted.

To measure general self-efficacy, the *Schwarzer-Jerusalem General Self-Efficacy Scale* (GSE; Schwarzer, 1993) was used. The GSE (Schwarzer, 1993) has 10 items on which an individual rates their answers using a 5-point scale (1 being not true at all and 4 being exactly true). Assessment of life satisfaction was measured using the of the *Satisfaction with Life Scale* (SWLS; Diener et al., 1985) that assesses overall life satisfaction. The students rated their level of agreement with each item using a 7-point scale (1 being strongly agree and 7 being strongly disagree). The positive and negative affect of the participants was evaluated using *the Positive and Negative Affect Schedule* (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS (Watson et al., 1988) uses a 5-point scale on which individuals rated their emotions (1 being not at all and 5 being extremely). Finally, positive and negative perfectionism were measured using a *Positive and Negative Perfectionism Scale* (PNPS; Chan, 2007) developed for the study. The PNSP (Chan, 2007) was a 12-item scale on which participants rated their level of agreement using a 5-point scale (1 being strongly disagree and 5 being strongly agree).

A one-way ANOVA was conducted to examine general self-efficacy for the students identified with gifts and talents. General self-efficacy, as it related to the age of the students, was found to have significant results. The data indicated lower scores in general self-efficacy for the older students with gifts and talents than the younger students with gifts and talents. However, for gender effects in this sample, no significant effects with general self-efficacy were found. The results of the study also indicated that perfectionism did have an effect on general self-efficacy, with positive perfectionism related to higher general self-efficacy and negative perfectionism related to lower general self-efficacy.

Chan (2007) concluded that general self-efficacy may mediate the effects of perfectionism for students with gifts and talents. He also discussed that negative perfectionism may have negative effects on a student's overall well-being, positive perfectionism may enhance a student's general self-efficacy. Chan (2007) suggested that longitudinal studies be conducted and that students from other populations (e.g., students in general education, students with disabilities) be included in future studies.

Self-Efficacy in the Field of Learning Disabilities

Students with learning disabilities make up approximately 35% of the population of students with disabilities (NCES, 2016). Many studies concerning self-efficacy have compared students with learning disabilities (LD) to their peers who are not identified with a disability (Hojati & Abbasi, 2013; Lackaye et al., 2006; Tabassam & Grainger, 2002). The research has focused on the effects of school on the self-efficacy of this population (Lackaye et al., 2006).

Hojati and Abbasi (2013) investigated hope and self-efficacy as constructs for students with LD and students without LD. The goal was to determine if students with LD would demonstrate a lower score on both self-efficacy and hope than their peers without LD. Students with and without LD participated in the study. A total of 60 individuals participated in the study, 30 identified with LD and 30 without LD. The students were recruited randomly from eight elementary schools and were in the sixth grade.

The self-efficacy instruments used in this study included *The Children's Hope Scale* (Snyder et al., 1997) and the *General Self-Efficacy Scale* (Jerusalem & Schwarzer, 1992). Hope was measured through *The Children's Hope Scale* (Snyder et al., 1997) that was comprised of six statements on which students responded using a 6-point Likert scale (1 being none of the time and 6 being all of the time). To measure student self-efficacy, the *General Self-Efficacy Scale*

(Jerusalem & Schwarzer, 1992) that consists of 10 items on which students rate each item on a 4-point Likert scale (1 being not true at all and 4 being exactly true) was completed.

The data from the instruments were analyzed using a one-way ANOVA. Results indicated a significant difference between the students identified with LD and the students without LD. The significant differences were found in both hope and self-efficacy, with lower levels of self-efficacy and hope indicated by the students identified with LD.

Hojati and Abbasi (2013) concluded that the results of the study with the students with LD demonstrating lower levels of self-efficacy and hope were consistent with previous research. They suggested that the findings be used to address practical applications in hope and self-efficacy as well as in future research.

Hampton and Mason (2003) examined the interaction between self-efficacy and students identified with LD. The purpose of the study was to investigate the relationships among efficacy, gender, and being identified as having LD. The objective was to ascertain the impact of the three on student academic achievement.

For the study, 278 high school students participated. They were recruited from two urban school districts and a relatively equal number of males and females (138 and 140 respectively) participated. The students were in Grades 9-12, and had a mean age of 16.09 years.

To assess self-efficacy, the *Sources of Academic Self-Efficacy Scale* (SASES; Hampton, 1998) was used. The SASES (Hampton, 1998) evaluates Bandura's (1986) four sources of self-efficacy (e.g., mastery experience, vicarious experience, social persuasion, physiological states). Academic self-efficacy was evaluated using the *Self-Efficacy for Learning Scale* (SELS; Zimmerman, Bandura, & Martinez-Pons, 1992). The SELS (Zimmerman et al., 1992) has 11

items on which the students rated their perceived self-efficacy on a 4-point scale (with higher scores representing higher self-efficacy).

The data were analyzed using an exploratory descriptive analysis. An ANOVA also was conducted. The results indicated that students with LD demonstrated significantly lower self-efficacy than did their peers without LD. As a follow up, a structural equation modeling (SEM) was conducted. The model indicated that a learning disability was indirectly related to self-efficacy and self-efficacy was directly related to academic achievement.

Hampton and Mason (2003) concluded that a learning disability in this study did not have a direct impact on self-efficacy, but the disability did have an indirect effect due to its effect on the sources of self-efficacy (mastery experience, vicarious experience, social persuasion, physiological states). Because of these effects, they maintained that students who have higher self-efficacy most likely will demonstrate higher academic achievement. They suggested that future research examine different types of learning disabilities (e.g., mathematics, reading) in relation to self-efficacy. They also suggested that interventions for students with LD focus on improving academic achievement directly and self-efficacy indirectly.

Lackaye et al. (2006) also examined the constructs of hope and self-efficacy. However, they included the constructs of mood and effort. The purpose of the study was to investigate the self-efficacy, mood, effort, and hope of students with and without LD. Participants in this study were 246 seventh-grade students. Half of the students were identified with LD and half had not been identified with a disability.

Several instruments were used in the study. To evaluate academic self-efficacy, an adapted version of the *Hebrew Academic Self-efficacy Scale* (Zimmerman, Bandura, & Martinez-Pons, 1992) was used. This instrument has 11 items on which students rate their beliefs on a 7-

point Likert scale (1 being not sure at all and 7 being completely confident). Emotional self-efficacy and social self-efficacy were measured using an adapted version of the *Self-Efficacy Questionnaire for Children* (SEQ-C; Muris, 2001) that consists of eight items focused on emotional self-efficacy and five items dealing with social self-efficacy, each use a 5-point Likert scale (1 being not at all and 5 being very well). To evaluate effort, an adapted *Meltzer Scale for Effort* (Meltzer et al., 2004) was used. This scale has four items that evaluate effort using a 6-point scale on which students rated their perception of each statement occurring (1 being never and 6 being always). *The Children's Hope Scale* (Snyder, 2002) was used to evaluate hope based upon a 6-point Likert scale (1 being none of the time and 6 being all of the time). Mood was measured using the *Moos Scale* (Moos, Cronkite, Billings, & Finney, 1987) on which the students rated 20 items using a 5-point scale (1 being not at all appropriate and 5 being very appropriate) focused on their perception of their mood.

A MANOVA and an ANOVA were used to analyze data regarding hope and self-efficacy. The data indicated a significant difference between the students with LD and the students without LD. The students with LD demonstrated significantly lower scores in academic self-efficacy, social self-efficacy, effort, hope, and positive mood. Negative mood levels also were higher for the students with LD.

Lackaye et al. (2006) concluded that students with LD demonstrated lower overall self-perception. They maintained that this may be a result of previous academic failure. They suggested that future research be conducted to determine the causes of lower self-efficacy for this population and to determine interventions to support these learners.

Tabassam and Grainger (2002) designed a study to examine the differences between students with LD and students with LD and attention deficit hyperactivity disorder (ADHD) in

terms of self-efficacy. They also examined academic self-efficacy. Based on previous research, they predicted lower self-efficacy for both groups when compared to their peers without disabilities. Students in the third, fourth, fifth, and sixth grades from nine public schools were recruited for this study. There were 172 participants, 44 with LD, 42 with LD and ADHD, and 86 students without an identified disability.

To measure student self-concept, the *Self Description Questionnaire* (SDQ-I; Marsh, 1990a) that measures student self-concept using 76 items that individuals rated on a 5-point scale (1 being false and 5 being true). Two instruments were developed for this study to measure academic self-efficacy and academic attributional style. The *Academic Attributional Style Questionnaire* (AASQ; Tabassam & Grainger, 2002) that evaluates student academic attributional styles using 10 items on which students select between two options, one option being a success event and one a failure event. The *Academic Self-Efficacy Scale* (ASES; Tabassam & Grainger, 2002) evaluates student academic self-efficacy using 14 items rated on a 5-point scale (1 being never and 5 being always). High scores on this assessment represent high levels of academic self-efficacy.

A MANOVA was conducted for each of the three groups (e.g., students with LD, students with LD/ADHD, students without a disability) to determine if there were differences in self-concept, self-efficacy, and attributional style. Sub-group, gender, and grade level also were analyzed. The data indicated a significant effect between groups (e.g., students with LD, students with LD/ADHD, students without a disability). Students in both the learning disability group and the LD/ADHD group demonstrated significantly lower self-concept, self-efficacy, and academic self-efficacy scores than the group of students without a disability. No significant differences were found between genders or grade levels. Between the LD group and the LD/ADHD group, a

significant difference was found in the peer relation aspect of self-concept. However, the LD/ADHD group demonstrated a significantly lower score than the learning disability group in this area.

Tabassam and Grainger (2002) concluded that there was no difference between the students with LD and students with LD/ADHD on most measures. However, they were surprised that the LD/ADHD students scored lower on peer relations. They suggest that enhancing student self-perceptions may have an impact on self-efficacy and attributional patterns for students with LD. It was suggested that future research include a group with only ADHD in addition to the other groups in this study.

The literature suggests that higher self-efficacy contributes to higher life satisfaction (Capri et al., 2012). It also indicates that strong self-efficacy may mediate other personality characteristics such as perfectionism (Chan, 2007). Similar to creativity, the research on self-efficacy is studied through a lens focused on general and domain-specific self-efficacies (e.g., science, mathematics; Azizli et al., 2015; Capri et al., 2012; Zhou & Kam, 2016).

Research dealing specifically with the self-efficacy of students with LD indicates that they generally demonstrate a lower level of self-efficacy than do their peers without disabilities (Hampton & Mason, 2003). These results indicate a need to provide interventions and supports for these children/youth (Lackaye et al., 2016). This is in contrast to the data indicating that students with gifts and talents demonstrate high self-efficacy (Junge & Dretzke, 1995; Zimmerman & Martinez-Pons, 1990). Regardless of the population studied, the overarching conclusion from the research is that more research is needed to ascertain the relationship of educational achievement and self-efficacy (Motlagh et al., 2011).

Creative Self-Efficacy as an Educational Construct

Creative self-efficacy in education is a relatively new construct (Tierney & Farmer, 2002; Beghetto, 2006). Current research focuses on the specifics of this construct and what its role in education might look like (Puente-Diaz & Cavazos-Arroyo, 2016). Because creative self-efficacy may impact overall creative output, it is emerging as an educational area of research (Bandura, 1997; Beghetto, 2007).

Creative Self-Efficacy in General Education

Creative self-efficacy may have a mitigating role in overall self-beliefs (Liu, Pan, Luo, Wang, & Pang, 2017). Liu et al. (2017) designed a study to examine the relationship of creative self-efficacy with active procrastination and creative ideation. They hypothesized a positive relationship among the three components. The 853 university participants were undergraduate students whose ages ranged from 18-27. A variety of degree majors were represented in the population (e.g., art, engineering, education, management, medicine).

Three instruments were used in this study. To assess active procrastination, the *New Active Procrastination Scale* (NAPS; Choi & Moran, 2009) was used. The NAPS (Choi & Moran, 2009) is a 15-item self-report instrument on which participants rate their active procrastination, based upon a 7-point Likert scale (1 being completely disagree and 7 being completely agree). Creative self-efficacy was assessed through the *Short Scale of Creative Self* (SSCS; Karwowski, Lebuda, Wisniewska, & Gralewski, 2013). The SSCS (Karwowski et al., 2013) asks participants to self-rate their creative self-efficacy using a 5-point Likert scale (1 being definitely not and 5 being definitely yes). To evaluate creative ideation, the *Runco Ideational Behavior Scale* (RIBS; Runco, Plucker, & Lim, 2001) asks participants to evaluate

their creative ideation through 23 items that are evaluated on a 5-point Likert scale (1 being never and 5 being very often).

A regression analysis and multiple mediation analysis were conducted. Active procrastination was found to be significantly correlated with creative self-efficacy and creative ideation. Creative self-efficacy was significantly correlated with creative ideation, meaning that those with higher creative self-efficacy also demonstrated higher creative ideation.

Based upon the results of the study, Liu et al. (2017) concluded that their hypotheses that positive relationships among creative self-efficacy and both active procrastination and creative ideation was confirmed. They concluded that active procrastination had a positive effect on creative self-efficacy. Liu et al. (2017) suggested that future research use more heterogeneous samples in longitudinal studies.

Karwowski (2012) studied the creative self and its relationship with trait curiosity. Two constructs of creative self (e.g., creative self-efficacy, creative personal identity) were examined with 284 middle and high school students. Of the 284 participants, 55% were female and 45% were male.

To measure creative self-efficacy and creative personal identity, the *Short Scale for Creative Self* (SSCS; Karwowski et al., 2012) was used. The SSCS (Karwowski et al., 2012) is comprised of 11 items, with six items measuring creative self-efficacy and five measuring creative personal identity. The students rated each item using a 5-point Likert scale (1 being definitely not and 5 being definitely yes). The second assessment administered was the *Curiosity and Exploration Inventory-II* (Kashdan et al., 2009). It measures curiosity and consists of 10 items on which students rate their level of curiosity based on a 5-point Likert scale (1 being very

slightly or not at all and 5 being extremely). Because a counterbalanced order was used, the students were clustered into groups of 15-20.

Descriptive statistics and inter-correlations were calculated first. Using confirmatory factor analysis, correlations were calculated. The results indicated strong associations between creative self-efficacy and curiosity. While associations were found between creative personal identity and curiosity, they were not as strong as those between creative self-efficacy and curiosity.

Karwowski (2012) concluded that curiosity plays a greater role in creative self-efficacy and most likely is linked to an individual's perception of being creative. He also concluded that an overlap exists between curiosity and creative self-efficacy. Karwowski (2012) suggested a continuation of this research using a variety of student populations.

Beghetto (2006) examined the existence of creative self-efficacy for students at middle and high school levels. Measurements were conducted concerning motivational beliefs, classroom perceptions, and creative self-efficacy and their impact on student classroom experiences. Students from two middle schools and one high school were recruited for this study. There were 1322 total participants, with 697 from the middle schools and 625 from the high school.

A paper-pencil instrument that collected demographic information was completed by the students. To evaluate creative self-efficacy, Tierney and Farmer's (2002) 3-item *Creative Self-Efficacy Measure* on which students rated each statement using a 7-point scale (1 being very strongly disagree and 7 being very strongly agree) was used. A 5-item instrument adapted from the *Patterns of Adaptive Learning Scales* (Midgley et al., 2000) with a 5-point Likert rating scale (1 being not true and 5 being very true) was used to assess student motivational beliefs.

A hierarchical regression was conducted to analyze the data collected. A positive relationship was found for older students indicating that higher creative self efficacy and motivational beliefs were found for older students than younger students. However, negative relationships between creative self-efficacy and females and students who spoke a language other than English at home were found, indicating that these populations self-reported lower creative self-efficacy. Following these analyses, students were grouped into high and low creative self-efficacy groups. Students who scored above the 50th percentile on the creative self-efficacy instrument were placed in the high creative self-efficacy group and those who scored below the 50th percentile were placed in the low creative self-efficacy group. An ANOVA was conducted along with a MANOVA to determine if there were differences between the two groups. Results from these analyses indicated that those in the high creative self-efficacy group had stronger positive beliefs concerning their classroom experiences (e.g., academic abilities, college attendance) than the low creative self-efficacy group.

Beghetto (2006) concluded that middle and high school youth with higher creative self-efficacy are more likely to be involved in social situations. He pointed out that this goes against popular belief that students who are highly creative are likely to be more anti-social. He suggested that longitudinal and cross-sectional studies be conducted.

Putwain, Kearsley, and Symes (2012) explored creative self-beliefs through the measurement of creativity self-beliefs, academic achievement (e.g. student literacy achievement), and motivation. A positive relationship between the three constructs was hypothesized. A total population of 120 eighth-graders participated in this study, with 62 identified as male and 60 identified as female.

A correlational design was used and multiple instruments were completed. In order to measure creativity self-beliefs, the 56-item *Abedi Test of Creativity* (Abedi, 2000) that assesses all four areas of creativity (i.e., fluency, flexibility, elaboration, originality) was administered to the students. The assessment provides statements in which students self-report a response about their creativity based upon a 3-point scale (1 being low and 3 being high). For motivation, the *Academic Motivation Scale* (Vallerand et al., 1992) that asks students to rate their level of agreement regarding their motivation on a 7-point scale (1 being not at all and 7 being exactly) was adapted to focus on student literacy instead of school in general. To assess fluid intelligence, the *Raven's Standard Progressive Matrices* (Raven, 2000) was used. Students also were rated on literacy achievement by their teachers using a 12-point overall scale (1 demonstrating lower achievement in literacy and 12 demonstrating higher achievement in literacy). All data were collected over a two-week time period.

Preliminary analyses, bivariate correlations, and regression analyses were used to analyze the data. Through the bivariate correlations analysis, significant intercorrelations were found for all variables (e.g., fluency, flexibility, originality, fluid intelligence, academic achievement). Within the domains of creativity, fluency, flexibility, and originality, all showed significant positive correlations with fluid intelligence and academic achievement (i.e., literacy achievement). The regression analyses indicated that fluid intelligence composed 13% of the variance in scores in academic achievement, and creativity self-beliefs contributed 4% of the variance in academic scores as well as 8% of the variance in scores each in intrinsic and extrinsic motivation. Finally, creativity self-beliefs contributed 17% of variance in amotivation as an inverse predictor.

Putwain et al. (2012) concluded that creativity self-beliefs have a positive relationship to achievement. Three of the four domains of creativity (e.g., fluency, flexibility, originality) had positive relationships with academic achievement. They concluded that students with higher creativity self-beliefs were likely to have better academic achievement. They attributed this to the notion that these students were able to produce more ideas, with greater depth and originality. Putwain et al. (2012) suggested that future research focus on the relationship between the four domains of creativity and other school subjects (e.g., math, science).

Continuing investigation into creative self-efficacy in the academic realm, Puente-Diaz and Cavazos-Arroyo (2016) examined the relationship between creative self-efficacy and grade point average (GPA). The measurement of these constructs was conducted across two studies. In addition, during Study 2, the influence of trait curiosity on creative self-efficacy was examined. Participants in Study 1 were 399 business students recruited from a college. Study 2 included 458 students recruited from a college that included graduate students.

The same instruments were used to assess achievement goals and creative self-efficacy in both studies. To assess achievement goals, the *3 x 2 Achievement Goal Questionnaire* (Elliot, Murayama, & Pekrun, 2011) that consists of 18 items on which individuals rate their beliefs about approaches and goals using a 7-point rating scale (1 being not true of me and 7 being extremely true of me) was used. Enjoyment of schoolwork was rated using the *Enjoyment Questionnaire* (Duda & Nicholls, 1992), that measures student perception of their enjoyment of schoolwork and consists of six items on which students use a 5-point Likert scale (1 being strongly disagree and 5 being strongly agree). The *Short Scale of Creative Self* (SCSS; Karwowski, 2012, 2014; Karwowski et al., 2013) was used to evaluate creative self-efficacy and creative role identity. The SCSS (Karwowski, 2012, 2014; Karwowski et al., 2013) is an 11-item

instrument on which individuals rated their level of agreement using a 5-point rating scale (1 being definitely not and 5 being definitely yes). Student grade point averages also were collected. In Study 2 an additional assessment, the *Curiosity and Exploration Inventory-II* (Kashdan et al., 2009), was administered, and was comprised of 10 items to evaluate trait curiosity on a 5-point rating scale (1 being very slightly or not at all and 5 being extremely).

Structural equation modeling was used to evaluate the responses for both studies. An acceptable model fit was found. In Study 1, significant effects were found between creative self-efficacy and task/self-approach achievement goals, that was investigated as a singular construct. No other areas were found to have significance with creative self-efficacy in this study. Puente-Diaz and Cavazos-Arroyo (2016) discuss the significance of creative self-efficacy and task/self-approach achievement goals is similar with previous research. Because task/self-approach achievement goals were not investigated as separate constructs (e.g., task goals, self-approach achievement goals) in Study 1, they were explored as separate constructs in Study 2. In Study 2 there was not a significant relationship between achievement goals and creative self-efficacy. Creative self-efficacy in Study 2 had a positive effect on perceived performance/effort exerted, as well as an indirect effect on GPA. Puente-Diaz and Cavazos-Arroyo (2016) concluded these results indicated creative self-efficacy was important to achievement outcomes. They suggested that future research explore the relationship between creative self-efficacy and achievement goals. It also was suggested that longitudinal studies be conducted.

Creative Self-Efficacy in Gifted and Talented Education

Overall, creative self-efficacy research is very limited in education. Most of the limited research base resides in the general education realm. While not specifically focused on the

construct of creative self-efficacy, one study examined the two constructs as separate entities for students with gifts and talents.

Schack (1989) explored the relationship between self-efficacy and creativity for students with gifts and talents. Because the term creative self-efficacy had not been coined by Tierney and Farmer (2002) in 1989, this study viewed creativity as a separate entity from self-efficacy. The purpose of the study was to evaluate student perceptions of self-efficacy in relation to creativity.

The participants in the study were 294 fourth through eighth grade students. All had previously been identified as having gifts and talents and were considered to be members of the Talent Pool. The Talent Pool consisted of 15-25% of the student population. To be identified as having gifts and talents, the students had to demonstrate above average ability in academic and creative areas and have high teacher recommendations. The students were split into two groups, with 144 students receiving the intervention and 150 students representing the control group.

The intervention consisted of students being provided four mini-lessons over the course of four to five weeks. The mini-lessons focused on research methodologies. The control group continued to receive their typical gifted education programming, with no focus on research.

The measurement instrument used in the study was a self-rated, self-efficacy as creative producers survey. The students completed the self-rating survey three separate times (i.e., prior to the intervention, following the four-lesson intervention, at the end of the school year). A 6-point Likert scale was used (1 being I'm sure I could not do it and 6 being I'm sure I could do it).

This study was an ex post facto investigation. A regression analysis was conducted. Results of the study indicated that participation in the intervention group had significant effects on the self-efficacy of the students as creative producers. The younger students exhibited

significantly higher self-reports in self-efficacy as creative producers than did the older students. Female students reported higher self-efficacy than did their male peers.

Schack (1989) concluded that teachers should be aware of the impact self-efficacy has upon students with gifts and talents as it relates to creative production. He believed self-efficacy was an important construct for all students, but particularly for students with gifts and talents. Future research regarding self-efficacy ratings of performance of students with and without gifts and talents was suggested.

From this limited amount of research and the age of this study, it is clear more research needs to be conducted with students with gifts and talents concerning creative self-efficacy. The one study indicates that younger students demonstrated greater significance in self-efficacy than older students, indicating that further study is needed to investigate the causes of the decline in self-efficacy as students with gifts and talents age. Based upon the lack of educational research for this population, this construct should be included when evaluating self-beliefs of students with gifts and talents.

Creative Self-Efficacy in the Field of Learning Disabilities

The research concerning creative self-efficacy for students with LD is non-existent. A search was conducted through Google Scholar, the UNLV Library, and EBSCO. The search descriptors used were: creative self-efficacy and learning disabilities, creative self-beliefs and learning disabilities, creative self-efficacy and students with learning disabilities, creative self-beliefs and students with learning disabilities, creative self-efficacy and disabilities, creative self-beliefs and students with disabilities, creativity beliefs and learning disabilities, creativity beliefs and students with learning disabilities, creativity beliefs and disabilities, creativity beliefs and

students with disabilities. None of these descriptors returned results for creative self-efficacy in the field of learning disabilities

Because creative self-efficacy is considered to be a predictor of life success (Pajares & Schunk, 2001), research must focus on the relationship between creative self-efficacy and students with learning disabilities. This construct is important for these students to prepare them to be college and career ready. Students with disabilities have been found to be at a disadvantage in school as compared to their peers (Horowitz et al., 2017; Kavale & Forness, 2000), and a graduation gap exists between students with disabilities and students without disabilities (Achieve, 2016; Tomasello & Brand, 2018). Because creativity has been shown to be a vital component for future successes, it is important for more research to be conducted with this population of students (James, 2015).

While the research in creative self-efficacy is still in its infancy within the field of education, it demonstrates that it is indeed an important component of creativity (Bandura, 1997; Beghetto, 2007). It has been shown to have a positive effect on other constructs within creativity (e.g., creative production; Schack, 1989) as well as within individual personalities (e.g., social involvement; Beghetto, 2006). Higher creative self-efficacy has been linked to higher social involvement (Beghetto, 2006). Along with higher social involvement, a higher creative self-efficacy also has been linked with higher academic achievement and overall outcomes (Puente-Diaz & Cavazos-Arroyo, 2016; Putwain et al., 2012). With most of the research being conducted at secondary and post-secondary levels, more research is needed with elementary-age students, with and without disabilities.

Creative Self-Efficacy and Gender Differences

The study of creative self-efficacy and its relationship to gender is very limited. The research in this area has shown mixed results, with most finding varying results on how males and females view their own creative abilities.

In 2011, Stoltzfus, Nibbelink, Vredenburg, and Hyrum studied the effects of gender and gender role on creativity. The 136 participants were recruited from a university and all were undergraduates. Fifty-seven participants identified as male, and 79 identified as female. Their ages ranged from 17-31.

Two instruments were used in this study. The first instrument was the *Torrance Tests of Creative Thinking* (Torrance, 1998) used to determine the creative ability of the students. Creative ability was assessed in three of Guilford's (1968) areas of creative thinking (i.e., fluency, flexibility, originality) for two parts of the assessment that asked the participants to list unusual uses for two different items (i.e., a tin can, a cardboard box). The third part of the assessment was a picture construction task in which the students were provided a portion of a picture to complete. They also completed the *Personal Attributes Questionnaire* (Spence & Helmreich, 1978) to determine their gender role characteristics by using a 5-letter scale (A being not at all and E being very much).

To analyze the data, *t*-tests were conducted in the three areas of creative thinking (i.e., fluency, flexibility, originality). The data indicated that males had overall higher mean scores in the verbal areas, but no significant results were found in all three creative thinking areas (i.e., fluency, flexibility, originality) for the *tin can* section of the assessment. The only area on the *unusual uses* assessment with significant results was for males for originality on the *cardboard box* section of the assessment. There were no significant results for fluency or flexibility.

Stoltzfus et al. (2011) concluded that findings in this study may be a result of social developments. For example, findings that social expectations for females may negatively affect their creativity. Thus, Stoltzfus et al. (2011) suggested future research focus on the impact society has on creativity development. This would involve studies designed to measure individual personal characteristics in relationship to the development of self-esteem and self-identity.

Karwowski (2011) examined the relationship among creative self-efficacy, creative abilities, and originality. The purpose of the study was to examine the predictors of creative self-efficacy. Karwowski (2011) hypothesized that males would demonstrate higher creative self-efficacy ratings than their female counterparts. The group of 1,878 participants was comprised of 930 males, 935 females, with 13 selecting neither male nor female. The individuals were recruited from high schools in different communities (e.g., rural, suburban, urban).

Three instruments were used in this study. The *Test for Creative Thinking-Drawing Production* (Jellen & Urban, 1985) was used to measure creative ability. On this instrument, participants are provided with an incomplete drawing that they completed. The second measurement was the *Self-Reported Originality* developed by the authors for this study. It had nine items and the students rated their originality for each item on a 5-point Likert scale (1 being definitely not and 5 being definitely yes). An adjective scale also was developed for the study to assess creative self-efficacy. On this scale, individuals were given three items that they rated based upon a 5-point Likert scale (1 being definitely not and 5 being definitely yes).

The participants were placed in groups of 15-20 to complete the instruments. Completion time took approximately 45 minutes. Because the Test for Creative Thinking-Drawing

Production was timed, participants had to complete it first. After completion of the timed test, they were allowed to complete the measurements in any order they chose.

The data were analyzed first through a hierarchical regression analysis. Following this an ANOVA was conducted. Results from these analyses indicated significance in creative self-efficacy, with the construct showing a correlation with creative abilities, self-reported originality, and economic status. The data also demonstrated a high correlation between economic status and creative abilities. Results for gender also were found to be significant. Males were found to have a higher perceived creative self-efficacy than their female peers. It was determined that males with higher economic status over-perceived their creative self-efficacy, while females generally underestimated it.

Karwowski (2011) concluded that the study provided a better understanding of creative self-efficacy in relation to males and females. The overestimation of creative self-efficacy by males and underestimation by females corroborated previous research. He suggested that future research focus on the relationships among creative self-efficacy, gender, and economic status. He also suggested that, while this study did not explore the influence of teachers on student creativity, more research should be conducted in this area. A final suggestion was that delineation was needed among the constructs of creative self-efficacy, self-rated creativity, and creative self-identity.

Boling, Boling, and Eisenman (1993) explored the relationship among creativity, birth order, and gender for students in the fifth through eighth grades. This study was based upon previous research suggesting that birth order had an effect on creativity (e.g., that first-born males and last-born females demonstrated greater creativity). The sample in this study were 40 children in grades five through eight, with 22 being female and 18 being male.

The students completed three assessments individually. The first instrument was *Eisenman's Personal Opinion Survey* (1969). This instrument is comprised of 30 items focused on attitudes of creativity. The students could choose either true or false for each item. The second instrument was *12 Polygons* (Eisenman, 1991) that provides polygons with varying points (e.g., between 4 and 24 points) and asks the user to indicate their preference for complexity. The third instrument was an *unusual uses test* that asked the students to provide *unusual uses* for a brick. The scores from the three measures were combined to give an overall creativity score for each individual student.

Analyses using *t*-tests were conducted. The results were similar to previous research that indicated first-born males had higher creativity than males who were not first-born and that later-born females demonstrated higher creativity than first-born females. However, gender alone was not significant (e.g., males vs. females).

Boling et al. (1993) concluded that the results may be attributed to familial expectations of gender roles and birth orders. They suggested replicating the study with a larger population.

Karwowski et al. (2013) designed a study to explore the relationship among personality traits, creative self-efficacy, and creative personal identity. Because creative self-efficacy and creative personal identity previously was found to be correlated, they expected the relationship with personal traits to be positive. Gender differences also were examined.

A large group of 2,674 adults participated in the study, with 1,325 being women and 1,349 being men. The ages of the individuals ranged from 15-59 with a mean age of 32.29 years. All responses were completed online using digital measures.

The Short Scale for Creative Self (SSCS; Karwowski et al., 2012) was used to assess both creative self-efficacy and creative personal identity. This instrument has 11 items on which

participants self-rate their creative self-efficacy and creative personal identity using a 5-point Likert scale (1 being definitely not and 5 being definitely yes). Within the assessment, six items measured creative self-efficacy and five measured creative personal identity. To assess personality, the *Big Five Inventory-10* (Rammstedt & John, 2007) measured the personality traits (e.g., extraversion, agreeableness, conscientiousness, neuroticism, openness to experience) of individuals using a 5-point Likert scale rating (1 being definitely not and 5 being definitely yes).

A Confirmatory Factor Analysis was used for analysis. The data indicated that creative self-efficacy and creative personal identity were strongly correlated. However, the analysis of gender differences, while found to be significant, showed weak correlations. In relation to personality traits, creative self-efficacy had a strong positive relationship with openness to experience.

Karwowski et al. (2013) concluded that even though weak correlations were found between males and females, more research should be conducted focused on personality traits. They suggested that future research be conducted and include an analysis of ethnic groups.

Karwowski, Gralewski, and Szumski (2015) examined the relationship between teacher beliefs concerning student creativity and student creative self-efficacy. They also looked at the relationship between creative self-efficacy and gender. The purpose of the study was to determine whether teacher beliefs would be a mitigating factor for student creative self-efficacy or if student gender would have an effect.

Participants in the study were 1614 middle school-age students. The population was recruited from 40 different schools, with 80 different classrooms. The mean age of participants was 13.15 years. Approximately 49% of the population were female and 51% male.

Teachers were asked to rate each student using a normal curve, similar to an IQ scale with 100 being the mean. Two teachers rated each student. Following the rating, the teachers then rated students on their ability to produce ideas using a 5-point Likert scale (1 being not at all and 5 being definitely yes). To assess creative self-efficacy, a 10-item scale (five items related to language, five items related to mathematics) was completed by the students. They self-rated their ability to complete each listed activity on the scale using a percent (0-100%). The participants completed five divergent thinking tasks (Guilford, 1967) and were scored based upon their fluency (e.g., their ability to produce many ideas).

This study was a longitudinal study and the measurements were completed twice, at the beginning of the school year and at the beginning of the second semester of the school year. An exploratory factor analysis was conducted after randomly splitting the total population into two groups. The results indicated a significant difference between males and females for creative self-efficacy and math, with males demonstrating higher mathematical creative self-efficacy. Females, however, perceived themselves as having a higher creative self-efficacy in the area of language. Teacher perception of student creativity was found to have a bias towards females being more creative than males.

Karwowski et al. (2015) concluded that teacher perceptions of student creativity were important and that teacher perception was skewed in a positive direction for female students. They suggested that future research, focused on creative self-efficacy, include more measurement points (e.g., at the end of the school year).

Kettler and Bower (2017), conducted a study focusing on students with gifts and talents and creativity, and compared male versus female creativity as rated by teacher perception. The purpose of the study was to explore the differences in teacher perception ratings of males and

females. The study included 155 participants, of which 79 were male and 76 were female. They were fourth-grade students from two different school years.

Instruments for this study included a student writing sample about themselves that was scored by their teacher and then rated by their teacher using a rubric developed by the researchers. Three other creativity instruments also were used along with the writing sample. The instruments were the *Creativity Checklist* (Proctor & Burnett, 2004) on which students rate nine items using a 3-point scale (1 being rarely and 3 being often), the *Renzulli Scales-Creativity Scale* (Renzulli et al., 2010) that assesses characteristics of creativity using a 6-point rating scale (1 being never and 6 being always), and the *Scales for Identifying Gifted Students (SIGS)-Creativity Scale* (Ryser & McConnel, 2004) that assesses creative behavior levels on a scale from 0-4 (0 being never and 4 being much more).

The scores were analyzed by scoring their relationships and Pearson Correlation Coefficients were determined. A multiple regression was conducted. The data for gender indicated that females scored higher than males on their creative writing sample. These higher scores were found both for the teacher ratings and the ratings completed by the research assistants using the rubrics. Females also showed higher scores than males on all three of the creativity instruments (e.g., *Creativity Checklist*, *Renzulli Scales-Creativity Scale*, SIGS).

Kettler and Bower (2017) concluded that these results were contradictory to other recent studies that found favorable scores for males. They discussed that the research regarding gender effect at the elementary level are still mixed. Future research regarding gender differences in creative writing was suggested. They also suggested that studies focused on the relationship between gender and creativity and developmental changes be conducted.

The relationship between gender and creativity/creative self-efficacy is inconclusive, with mixed results concerning males vs. females in terms of creativity or creative self-efficacy being found (Hong & Milgram, 2010). Many of the researchers indicate that further research is needed in this area (Kettler & Bower, 2017; Stoltzfus et al., 2011). This is especially true of gender and creative self-efficacy, as the current research base is limited (Karwowski et al., 2013). Future research in this area should specifically look at gender without other confounding variables (e.g., educational subtype, ethnic groups). Or it simply may be true that one gender is not more creative than the other. Further research may find that creativity is situation specific regardless of gender.

Creative Self-Efficacy and Age Differences

Research regarding the relationship between creativity and age has been conducted and has demonstrated a "slump" (e.g., creativity declining) occurring in the later elementary years (Charles & Runco, 2000; Darvishi & Pakdaman, 2012; Raina, 1980; Torrance, 1968). Researchers suggest it is possible to alleviate the existence of a "slump" (Darvishi & Pakdaman, 2012). However, they continue to suggest that more research concerning the relationship between age and creativity continue (Beghetto, Kaufman, & Baxter, 2011; Hong & Milgram, 2010; Karwowski, 2016).

The first to examine the relationship between creativity and age was Torrance (1968) in a longitudinal study. The purpose of his study was to examine creativity across multiple grade levels. The participants were in the third, fourth, and fifth grades. Of the 350 participants, 100 were selected randomly for evaluation. The final sample consisted of 55 girls and 45 boys. The *Torrance Tests of Creative Thinking* (TTCT; Torrance, 1966) was administered to the children.

The TTCT consists of four subtests of creative thinking, fluency, flexibility, elaboration, and originality.

Mean scores and standard deviations were calculated for this study for each grade level (i.e., third, fourth, and fifth grade) in the four areas of creative thinking. A one-way ANOVA was then conducted. Overall drops and gains between grade levels also were calculated as percentages. Results from the study demonstrated a statistically significant difference between third and fourth grade for all four areas of creative thinking, with a one-half standard deviation drop found. Torrance (1968) found between a 45-61% percent drop between third and fourth grades, while only 11-38% of the students increased their scores.

Torrance (1968) concluded that the data demonstrated a slump occurring at the fourth-grade level. He discussed that while some do eventually recover from this slump, educators and parents should be concerned with students who do not. Torrance (1968) also concluded that the area of greatest growth was in the creative thinking area of elaboration, while fluency was the least likely area for growth. No suggestions were offered for further research.

Darvishi and Pakdaman (2012) investigated the four areas of creative thinking and its relationship to elementary-age children and its relationship with gender. There were 400 students in Grades 1, 2, 3, 4, and 5 recruited from public elementary schools who participated in the study, half were female and half were male. The students completed the *Torrance Tests of Creative Thinking* (TTCT; Torrance, 1966). The TTCT (Torrance, 1966) was an adapted Iranian version for use in this study. The figural form of the TTCT (Torrance, 1966) was used and took approximately 30-35 minutes for each student to individually complete.

Descriptive statistics along with a two-way ANOVA were conducted. The descriptive statistics indicated that third grade students demonstrated the highest mean in overall creativity.

The results showed a continual rising mean in overall creativity through the third grade, and then a drop in overall mean happens at the fourth-grade level. However, the overall mean for fifth-grade increased from fourth to fifth grade, but still did not reach the previous mean found at the third-grade level. There was not a significant interaction between gender and grade level.

Based upon the results, Darvishi and Pakdaman (2012) concluded that the results indicate inconsistent trends. They discussed that the drop in creativity at the fourth-grade level occurs regardless of gender, as the decline was found in both males and females. They suggested that families and educators focus on developing and enhancing creative ability to alleviate the effects of the fourth-grade slump in creative thinking abilities.

Beghetto et al. (2011) studied student creative self-efficacy and its relationship with the ratings of teachers concerning individual student creativity. Two studies were conducted to investigate creative self-efficacy for students at the elementary level across multiple domains (e.g., science, math). One study focused on creative self-efficacy and creativity in the science domain and the other study measured both constructs in the science and math domains.

Participants in Study 1 were 595 third, fourth, fifth, and sixth grade students living in the Pacific Northwest. There were 193 students in third grade, 234 in fourth grade, 111 in fifth grade, and 57 in sixth grade. Participants in Study 2 were third, fourth, and fifth grade students also in the Pacific Northwest. There were a total of 306 participants in Study 2, with 98 in third grade, 130 in fourth grade, and 78 in fifth grade.

A self-report student survey concerning creativity and a teacher rating of student creativity was used in both studies. The student survey used a 5-point Likert scale (1 being not true and 5 being very true) on which the students rated their creative self-efficacy in science and/or math (Study 1 measured science only and Study 2 focused on science and math). The

survey was a 3-item measure of creative self-efficacy from Beghetto (2006) and the *Creative Self-Efficacy Measure* (Tierney & Farmer, 2002) on which the students rated each statement using a 7-point scale (1 being very strongly disagree and 7 being very strongly agree). The teachers rated student creativity using a rating sheet with a 5-point Likert scale (1 being lowest and 5 being highest).

A regression analysis was conducted in both studies. The data showed a negative relationship between grade and creative self-efficacy in science in both studies, indicating a drop in creative self-efficacy as students aged. A negative relationship between grade and creative self-efficacy also was found in math in Study 2, indicating that as students grew older, there was a decline in creative self-efficacy. There were no significant results for creative self-efficacy and gender or for creative self-efficacy and ethnicity in either study.

Beghetto et al. (2011) concluded that as students age, there was a decline in student creative self-efficacy in both the areas of math and science. They maintained that although the students did not demonstrate a drastic change in creative self-efficacy in fourth grade as previous studies showed, there was a decline in creativity as the students got older. Beghetto et al. (2011) suggested a longitudinal study be conducted.

Karwowski (2016) conducted two studies with adolescents and adults to determine changes in creative self-efficacy and creative personal identity. The first study included 448 middle school students and measured creative self-concept (e.g., creative self-efficacy, creative personal identity) in Study 1, and 308 participants participated in Study 2. Participants in the second study were 528 adults and participated online.

In Study 1, the students completed a questionnaire dealing with creative self-concept in class over two time intervals (six months apart). The adults in the second study completed the

same questionnaire online, twenty months apart. To measure creative self-concept, the *Short Scale of Creative Self* (SSCS; Karwowski et al., 2013) was used. The SSCS (Karwowski et al., 2013) is an 11-item instrument on which participants self-rate their beliefs about their creative self-efficacy and creative personal identity on a 5-point Likert scale (1 being definitely not and 5 being definitely yes). Of the 11 items, six measure creative self-efficacy and five measure creative personal identity.

To analyze the data, a repeated-measures ANOVA was conducted. The results for the first study indicated no significant changes in perceptions of their creative self-concept over time. In the second study a Time x Age interaction indicated significance differences. To determine where the differences were, age was broken down into smaller age sub-populations, and creative self-efficacy made significant gains over time for those in the 15-24 age group. A significant decline over time was found for those in the 25-34 age group. No significance was found for the other ages in the study.

Karwowski (2016) concluded that creative self-efficacy increased in late adolescence and early adulthood. He suggested that future research focus on elementary and middle school levels with follow up as students transition from adolescence into early adulthood.

To examine the relationship among age, general creative thinking, and domain-specific creative thinking, Hong and Milgram (2010) conducted two studies. They believed that age would have a direct effect on domain-specific creativity (e.g., academic, interpersonal problem-solving), but not on general creative thinking.

The first study included 130 high school and university students who attended the university either for classes (university students) or for an after-school program (high school

students). Approximately half of the students were identified as having LD. The second study involved 71 preschool children.

The same instruments were used in both studies. The *Tel Aviv Creativity Test* (TACT; Milgram & Milgram, 1976) was used to evaluate general creative thinking. However, in the two studies, only the fluency domain scores were analyzed. The *Ariel Real-Life Problem Solving* (ARLPS; Milgram & Hong, 2000) was used in both studies to evaluate domain-specific creative thinking (e.g., academic, interpersonal problem-solving) and also was scored for fluency.

For both studies, structural equation modeling was used for analysis. Results from both studies indicated no significant differences for age in general creative thinking. However, results for the relationship between age and domain-specific creativity (academic, interpersonal problem-solving) showed significant differences for age. The older the participant, the higher their score was in domain-specific creativity (academic, interpersonal problem-solving).

Hong and Milgram (2010) concluded that the results demonstrated that age provides more life experience, allowing individuals to have more ideas and insight for domain-specific creativity. They suggested that further research explore age and its relationship with specific creative thinking as well as the influence age has on the development of creative abilities.

The literature base for creative self-efficacy and age is still limited because most research has been done in the business field. The research on age and its relation to creativity has produced mixed results, but there appears to be a connection between the two (Charles & Runco, 2000; Darvishi & Pakdaman, 2012; Torrance, 1968). Researchers as a whole recommend more research be conducted in this area, particularly in education (Darvishi & Pakdaman, 2012).

Creative Self-Efficacy and Ethnic Differences

Ethnicity has been researched in the areas of intelligence and academic abilities, but less is known about the relationship between ethnicity and creativity (Kaufman et al., 2004). There is little to no research focusing on creative self-efficacy and ethnicity (Kaufman et al., 2004). Even the research on creativity that includes ethnicity as a variable, finds little to no ethnic differences among groups (Kaltsounis, 1974; Kaufman et al., 2004).

Kaufman (2006) studied participants across different ethnicities and genders in a study designed to investigate the perceptions of different ethnic groups concerning their creative abilities across different domains (e.g., chemistry, fashion, political science). The study recruited 3553 participants from six ethnic groups (i.e., European American, African American, Hispanic American, Asian American, Native American, and Mixed Ethnicity). The participants were recruited from colleges, churches, schools, and other local community locales (e.g., the movie theater). Females comprised the majority of the participant population with 2583 female participants, 924 male participants, and 46 listing neither female nor male. Ages in this study ranged from 14-86, with a mean age of 26.5 years.

The participants completed the *Creativity Domain Questionnaire* (Kaufman & Baer, 2004). It consists of 56 domains (e.g., chemistry, fashion, political science) on which participants self-rated their creativity using a 6-point Likert scale (1 being not at all creative and 6 being extremely creative). Not applicable also was provided as an option. In addition, demographic information was collected (i.e. gender, ethnicity, age, education).

A Principal Components analysis was first conducted to evaluate the 56 domains (e.g., chemistry, fashion, political science) on the *Creativity Domain Questionnaire* (Kaufman & Baer, 2004) and the 56 domains were narrowed to five overall domains (e.g., science, social, visual

arts, verbal art, sports). Following this, a MANOVA was conducted to examine the effects of gender and ethnicity on the domains. A follow-up univariate ANOVA was conducted to determine if there was significance for gender and ethnicity.

Results from these analyses indicated significance for both gender and ethnicity. African Americans had the highest self-rated results for creativity in the five domains, while Asian Americans rated themselves lower than other ethnic groups. For gender, the results indicated that women rated themselves higher in verbal areas, while men rated themselves as higher in the non-verbal areas. African American males and females each rated themselves as higher in the opposite domains (i.e., males rated themselves higher in verbal abilities and females rated themselves higher in non-verbal abilities) than other ethnic groups.

Kaufman (2006) concluded that the findings of African Americans rating themselves as higher than European Americans and Asian Americans was in contrast to what was typically found on intelligence assessments. He concluded that creativity assessments are promising, and suggested it as a possible way to reduce biased perceptions.

Kaltsounis (1974) investigated the differences in creative abilities between African American children and White children. The purpose of the study was to determine the relationship between ethnicity and creative ability.

Participants in the study were 111 eighth graders (52 African American and 59 White). To determine economic status, the occupation of fathers was used. Students whose father had a manual or service-related job were ranked in the low economic group, and students whose father had a professional, managerial, or business-related job were ranked in the high economic group.

The *Torrance Tests of Creative Thinking* (1966) was administered to the students. All four areas of creative thinking (i.e., fluency, flexibility, elaboration, originality) were rated and

then a *t*-test was used for analysis. The data indicated that African American students performed significantly better in fluency than the White students. The African American students also performed highest in the areas of flexibility and originality, even though this was not significant. No differences were found in the area of originality.

Kaltsounis (1974) concluded that the study demonstrated some contradicting results to previous research. This study found that students living in lower income homes exhibited higher scores in creativity and African American students scored higher in creative thinking than their White peers.

Kaufman et al. (2004) studied the relationship between creativity, gender, and ethnicity. They discussed the ambiguity in current creativity research as it related to gender and ethnicity. The purpose of this study was to investigate gender and ethnicity in relation to creative writing task performance.

For this study, student created portfolios from the 1998 National Assessment of Educational Progress Classroom Writing Study (Greenwald, Persky, Campbell, & Mazzeo, 1999) were used. Eighth-grade students from 32 different states and approximately 125 different classrooms submitted a writing portfolio. From these submissions, a sub-sample was selected for this examination and included 102 poems, 103 fictional stories, and 103 personal narratives.

To evaluate student work, 13 judges sorted the papers into low, medium, and high piles. Then each judge rated the poems, fictional stories, and personal narratives separately using a score ranging from 1-6 (1 being lowest and 6 being highest). Interrater reliability was conducted and found to be high in all types of writing.

An ANOVA was conducted for this study. A significant effect for ethnicity and poetry was found, while no significant effect was found for ethnicity and fictional stories or ethnicity

and the personal narratives. A follow-up Tukey's Honestly Significant Difference test was conducted to determine where there was significance. The results indicated a significant difference only between the Asian and Latinx students. No significance was found for the relationship between gender and creativity for the students in this study.

Kaufman et al. (2004) concluded that the study demonstrated that differences in writing ability are not found for creative writing, but rather for a student's writing skill. They suggested that when writing skill was controlled for, differences in creativity were not found for gender for ethnic groups. They suggested that future research include more research in this area to determine how creativity assessments could be used in educational assessments.

The research concerning creativity and creative self-efficacy for specific ethnic groups is just beginning. Some research has found that African American students have a higher level of creativity than other ethnic groups, while some indicate a difference for Asian and Latinx children/youth (Kaltsounis, 1974; Kaufman, 2006). With these inconsistencies and so few studies in this area, more research is needed.

Summary

Creative self-efficacy is becoming a more common term in the literature focused on creativity and creative self-beliefs. However, much of this research is in the field of business (Puente-Diaz & Cavazos-Arroyo, 2016). This is due to the expectations of employers that creative ability be a well-developed a skill (Amabile, 1988; Tierney et al., 1999). In education, creative self-efficacy has primarily focused on students at the post-secondary levels. Research focused on creative self-efficacy in education is beginning to be conducted.

It appears that in terms of creativity, self-efficacy, and creative self-efficacy more research is needed (Huang et al., 2017; Kim, 2011; Motlagh et al., 2011; Wang et al., 2016). This

is especially true for education (James, 2015). With creativity being a needed skill for all, and creative self-efficacy appearing to be an integral component of creativity, the field of education needs more research focusing on: (a) student perceptions of their own creative thought; (b) student perceptions of self-efficacy in their success, and (c) the impact of creative self-efficacy in relation to academic success. Through this research, interventions and strategies can be developed and studied so that educators have evidence-based tools to use when teaching all children/youth.

CHAPTER THREE

METHOD

The literature indicates that creative self-efficacy is a vital component of career success and aspirations (Bandura et al., 2001; Craft, 2003; Florida, Mellander, & Stolarick, 2008; Florida, 2012; Tierney & Farmer, 2002). Much of the research in this area has been conducted at the post-secondary level or after individuals are employed (Tierney & Farmer, 2002). While creativity and self-efficacy have been discussed separately in education, the field rarely combines the two constructs (Lackaye et al., 2006; Pajares & Schunk, 2001; van Dinther et al., 2011). Because creative self-efficacy is a factor of creative ability, it is important to understand the impact of the construct (Tierney & Farmer, 2002). By gaining an understanding of educational creative self-efficacy, a comprehensive intervention can be developed to teach and provide support in this area. The goal being to increase creativity for all children/youth, provide lifelong opportunities, and contribute to positive outcomes beyond the boundaries of school (Bandura, et al., 2001; Craft, 2003; Florida, et al., 2008; Florida, 2012; Pajares & Schunk, 2001; Tierney & Farmer, 2002).

This study focused on children in the third, fourth, and fifth grades in order to gain information concerning the development of creative self-efficacy in the early years of their education. By focusing on the elementary level, the data collected will contribute to the development of strategies and interventions focused on creativity development for all children/youth.

A questionnaire dealing with creative self-efficacy for students in the third, fourth, and fifth grades was adapted, with permission, using Abbott's (2010) *Creative Thinking Self-Efficacy* (CTSE) survey (see Appendix A). Children with gifts and talents, learning disabilities, and those

in general education completed the questionnaire. The goal of the study was to provide information on the perceptions of creative self-efficacy for the three populations. A comparison of grade levels (i.e., third, fourth, fifth grades), educational subtype (i.e., gifts and talents, learning disabilities, general education), ethnic group (i.e., American Indian or Alaska Native, Asian American, Black/African American, Hispanic/Latinx, Native Hawaiian or Other Pacific Islander, Two or More Ethnicities, White), and male versus female perceptions was conducted. Convenience sampling of students with gifts and talents, with learning disabilities, and those in general education was used.

Research Questions

This study addressed the following research questions:

Research Question 1: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among students in third, fourth, and fifth grades in general education, students with learning disabilities, and students with gifts and talents?

It was predicted that regardless of grade level, students with gifts and talents would demonstrate a higher perception of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than their peers who are in general education or their peers who had been identified with a learning disability. That is, students with gifts and talents in third grade would demonstrate a higher perception of creative self-efficacy than their peers in general education in third grade or their peers identified with a learning disability in third grade. Students with gifts and talents in fourth grade would demonstrate a higher perception of creative self-efficacy than their peers in general education in fourth grade or their peers identified with a learning disability in fourth grade. Students with gifts and talents in fifth grade would

demonstrate a higher perception of creative self-efficacy than their peers in general education in fifth grade or their peers identified with a learning disability in fifth grade. This prediction was made because research indicates that students with gifts and talents demonstrate a high creative ability (Stoltz et al., 2015).

Research Question 2: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among third-grade students, fourth-grade students, and fifth-grade students?

It was predicted that students in third-grade would demonstrate a higher creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than students in either fourth or fifth grades overall. This was predicted due to an overall slump in creativity previously found beginning at the fourth-grade level (Darvishi & Pakdaman, 2012; Torrance, 1968).

Research Question 3: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among females and males in the third, fourth, and fifth grades?

It was predicted that females at the third-grade level would demonstrate higher creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than male students at the third-grade level. However, it also was predicted that in the fourth and fifth grade levels, males also will demonstrate a higher creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than females in the fourth and fifth grade levels. This prediction was made based on research finding that girls may have family expectations that do not allow time for them to develop their creativity (Karwowski, 2011).

Research Question 4: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among ethnic groups in the third, fourth, and fifth grades?

It was predicted that there would be no differences in creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among the different ethnicities. This prediction was based on the lack of significance found in studies that explored creativity among the different ethnic groups (Kaltsounis, 1974; Kaufman et al., 2004).

Setting

Three elementary schools in a large, urban school district in the southwestern United States were contacted to participate in this study. Permission was obtained from the district's Assistant Superintendent of Student Support Services Division for access to the school district (see Appendix B). Three schools, one from each economic level (to ensure a variety of participants and provide a more representative sample) were selected to participate in the study. An email was sent to the principals to solicit their participation in the study (see Appendix C). Approval for access to the school sites was obtained from principals who agreed to participate (see Appendix D).

School District

The school district for this study is a large school district, serving over 320,000 students, of which approximately 64% of students qualify for free and reduced lunch. The largest ethnic population is Hispanic/Latinx, comprising approximately 46% of the student population, with other groups represented being 25% White, 14% Black/African American, 7% Multiracial, 6% Asian American, 2% Hawaiian, and less than 1% Native American. Permission for access to the

school district was obtained from the Assistant Superintendent of Student Support Services Division (see Appendix B).

Schools

Three elementary schools agreed to participate in this study, one in a low-income area of the city, one representing a middle-income neighborhood, and one in a high economic part of the city. These schools also represent diverse cultural, linguistic, and ethnic backgrounds.
See Appendix D for each school principal's letter of support. Within each of these schools, the gifted education specialists were contacted to request permission for their participation and facilitation of this study (see Appendix E). All third-grade classes, fourth-grade classes, and fifth-grade classes participated in the study, so consent for participation for each teacher in those classes was collected (see Appendix F). Demographics for all teachers (i.e. gifted education specialists, general education specialists) were collected (see Table 1).

Table 1

Teacher Demographic Information

Characteristics	School A	School B	School C	Total
Gender				
Female	13	12	12	37
Male	2	1	6	9
Other	0	0	0	0
Grade Taught				
Third Grade	6	4	7	17
Fourth Grade	3	4	5	12
Fifth Grade	5	4	5	14
Gifted Education Specialist	1	1	1	3
Education Level				
Bachelor's Degree	3	1	9	13
Master's Degree	12	12	8	32
Doctorate	0	0	1	1
Licensure				
Licensed Teacher	15	13	18	46
Licensed Substitute Teacher	0	0	0	0
Number of Years Taught				
0-5 years	5	1	7	13
6-10 years	1	2	1	4
11-15 years	2	1	7	10
16-20 years	4	7	2	13
21+ years	3	2	1	6

School A. School A enrolls 600 students, with approximately 64% of the student population identified as Hispanic/Latinx, 18% as White, 9% as Black/African American, and 2% as Asian American. Approximately 15% of the student population has an Individualized Education Plan (IEP), and 43% of the student population are identified as English Learners (ELs). All students (100%) are eligible for free or reduced breakfast and lunch. The school is designated as Title I, and has a high number of families living in poverty.

School B. School B enrolls 800 students, with approximately 46% of the student population identified as White, 21% identified as Hispanic/Latinx, 10% as Asian American, and 9% as Black/African American. Approximately 13% of the students have an Individualized Education Plan (IEP), and 4% of the student population are identified as English Learners (ELs). About one-third of the students (32%) are eligible for free or reduced breakfast and lunch. The school is not designated as a Title I school and has few families living in poverty.

School C. School C enrolls 1000 students, with approximately 26% of the student population identified as Hispanic/Latinx, 25% percent identified as White, 18% as Asian American, and 12% as Black/African American. Approximately 12% of the students have an Individualized Education Plan (IEP), and 11% of the student population are identified as English Learners (ELs). Almost half of the students (48%) are eligible for free or reduced breakfast and lunch. The school is designated as a Title I school and has approximately half of its families living in poverty.

Classrooms

The school district provides educational services in a variety of settings. These include gifted education, special education, and/or general education. The environment in which

instruction is provided is dependent upon the students' varying academic or social/emotional needs and/or Individualized Education Plan (IEP).

Gifted education classrooms. In the participating school district, gifted education occurs in a resource room setting. The eligible students receive services for 150 minutes a week in a separate, designated classroom. The curricula emphasize critical thinking, creative thinking, metacognition, and problem solving. The students are evaluated using a district created progress report.

Special education classrooms. Students with learning disabilities receive services within the general education classroom, and/or a separate resource room setting. Services are provided in accordance with their individualized education plan (IEP). These may be provided in the resource room (pull-out format) or within the general education classroom (co-teach format). Goals and accommodations can vary based on each individual student's learning needs.

General Education Classrooms. The majority of the participants receive instruction in the general education classroom. Instruction is provided to all students, including students with gifts and talents and those with learning disabilities. At the elementary level, in the school district, students receive instruction in a single classroom with one consistent teacher providing the instruction. Direct whole group as well as small group instruction is provided to support the needs of the learners within this environment.

Participants

The participants in this study were children with gifts and talents, learning disabilities, a disability other than a learning disability, and those in general education in the third, fourth, and fifth grades. The students were enrolled in a large, urban school district in the southwestern United States. The age of the students ranges between 8-11 years of age (see Table 2). An

equally distributed and number of students at each age level, educational subtype, and gender are represented.

Table 2

Student Demographic Information

Characteristics	Gifted and Talented	Learning Disabilities	General Education	Total
School Level				
Third Grade	22	14	129	165
Fourth Grade	37	10	116	163
Fifth Grade	31	11	125	167
Gender				
Female	41	15	204	260
Male	49	20	162	231
Other	0	0	1	1
Ethnic Groups				
American Indian/Alaska Native	0	0	3	3
Asian American	19	3	47	69
Black/African American	6	7	26	39
Hispanic/Latinx	11	4	138	153
Native Hawaiian/Other Pacific Islander	2	0	8	10
White	42	19	105	168
Two or More	10	2	40	53

Note. The school district allows students to gender identify as being other than a female or male.

Students with Gifts and Talents

In the participating school district, students with gifts and talents are identified through criteria that include at least one of two assessments, the *Naglieri Nonverbal Ability Test 2* or *3* (NNAT2 or NNAT3; Naglieri, 2003) depending on the date of their assessment, and/or the *Kaufman Brief Intelligence Test 2* (KBIT2; Kaufman & Kaufman, 2004). Children may be identified as having gifts and talents with a score of 98th percentile or above on a single test or via a matrix that includes various criteria (e.g., AIMSweb scores, Measures of Academic Progress (MAP) assessment scores, parental evaluations, teacher evaluations) in addition to the NNAT2/3 and/or the KBIT2. Once identified, the students receive educational services in a resource room for students with gifts and talents for 150 minutes a week and in their general education classroom.

Students with Learning Disabilities

Students with learning disabilities, in the participating school district, are identified through a variety of assessments as determined by their site-specific school psychologist. This includes the use of the *Kaufman Test of Educational Achievement, Third Edition* (KTEA-3; Kaufman, 2014) and/or the *Wechsler Intelligence Scale for Children-IV* (WISC-IV; Wechsler, 2004). Scores on these assessments are compared to the expected scores for the student's age to determine whether or not qualification for a learning disability is demonstrated through a severe discrepancy between the student's academic achievement and their intellectual ability (Nevada Administrative Code 388.420, 2016). Once identified, the students receive educational services in a resource classroom and in the general education classroom based upon their instructional need as determined by the school psychologist's evaluation.

Students in General Education

Students in general education receive instruction in the general education classroom in the areas of reading, writing, mathematics, science, and social studies. General education is provided for all students, with or without disabilities. For this study, students counted in the general education subtype are students who are not currently identified as a student with gifts and talents or as having a learning disability or other disabilities not focused on in this study.

Participant Recruitment

To recruit participants for this study, a letter of support was requested from the Assistant Superintendent of Student Support Services Division of the local school district (see Appendix B). Once this letter of support was obtained, three schools were selected for each of three economic levels (i.e., lower economic level, middle economic level, higher economic level). From these schools, a recruitment letter was sent to the principals to obtain permission for access (see Appendix C) to the school.

The number of students who participated were: 90 students with gifts and talents, 35 students with learning disabilities, and 370 students in general education. A recruitment letter was read aloud to students in their general education classes (see Appendix G). Consent forms in English and in Spanish, as needed, were sent home with each student to be completed by their parents (see Appendix H). A letter explaining the study in both English and Spanish, as needed, was attached to all parental consent forms to describe the scope of the study (see Appendix I). Student assent forms in English and in Spanish, as needed, were sent home for parents to discuss the study with their child and sign (see Appendix J). Parent consent forms and student assent forms were collected prior to the start of the study. Student demographic information was compiled (see Table 1).

Instrumentation

The instrument used in this study (see Appendix K) was adapted, with permission (see Appendix A), from Abbott's (2010) *Creative Thinking Self-Efficacy* (CTSE) survey. The questionnaire focuses on the four domains of creative thinking (Guilford, 1968): (a) fluency, (b) flexibility, (c) elaboration, and (d) originality. Modifications were made to the survey for use at the elementary level. A Fry's (1968) readability assessment was conducted on the questionnaire to determine its level of readability. The readability of the questionnaire is at the third-grade level.

Each item on the questionnaire is rated on a 5-point Likert scale, ranging from 1 (never) to 5 (always). For each of Guilford's (1968) four domains of creative thinking (i.e., fluency, flexibility, elaboration, and originality), the questionnaire contains four questions. A formative evaluation of the questionnaire was conducted with an expert in gifted education, and three elementary teachers (e.g., general education, gifted education, special education). Feedback from students in gifted education, from students in special education, and from students in general education also was collected. These students did not participate in the study. No changes were suggested by the formative evaluators.

Materials

Materials needed for this study were minimal. These materials include an adapted 16-item *Creative Thinking Self-Efficacy* (Abbott, 2010) questionnaire, a script for teachers to read aloud during the implementation of the questionnaire, and a teacher fidelity checklist.

Questionnaire

A 16-item questionnaire (see Appendix K) was adapted, with permission (see Appendix A), from Abbott's (2010) *Creative Thinking Self-Efficacy* survey. The questionnaire is comprised

of four domains related to creative thinking (i.e., fluency, flexibility, elaboration, originality). For each item on the questionnaire, the students rated their level of agreement based upon a 5-point Likert scale. The 5-point Likert scale statements were rated with: (1) never, (2) rarely, (3) sometimes, (4) often, or (5) always. Each domain was organized on the questionnaire with separate sections, all of which were labeled based upon their specific domain of creative thinking (see Appendix K).

A hard copy of the questionnaires was printed out for distribution in the classrooms, along with a script for teachers to read aloud to the students (see Appendix L). The questionnaires were printed, coded for each student, placed in envelopes, and given to the teachers facilitating the distribution of the envelopes. All questionnaires were coded in advance of the study using an alphabetic and numeric coding system. Each student's ethnicity (i.e., "Z" for students who are identified as American Indian/Alaska Native, "Y" for students identified as Asian American, "X" for students identified as Black/African American, "W" for students identified as Native Hawaiian/Other Pacific Islander, "V" for students identified as Two or More, "U" for students identified as White, "T" for students identified as Hispanic/Latinx) and educational sub-type ("1" for students in General Education, "2" for students with a Learning Disability, "3" for Students with Gifts and Talents, "4" for Students with a Disability Other than a Learning Disability). These codes were in the corner of the questionnaire. To ensure that the correct questionnaire was given to the correct student, a cover sheet with each student's name was attached to the questionnaire. As the questionnaire was distributed by the teacher to each student, the teacher ripped off the cover sheet and placed it in a provided envelope. The envelope with the cover sheet with the student names was shredded.

Facilitation of the dissemination and the collection of the surveys was completed by a doctoral student. Upon completion of the questionnaire by each class, the envelope with completed surveys was returned to the doctoral student. To maintain confidentiality, completed surveys were collected and stored in the envelope and were locked in a secure storage cabinet.

Design and Procedures

This study was conducted in four phases. During this time, the questionnaire was adapted, schools were solicited, copies of the questionnaire were made, the questionnaire was distributed and collected, the data was inputted into SPSS to be analyzed, and the results were analyzed based upon the research questions.

Phase One

During phase one, the questionnaire was adapted, with permission (see Appendix A), from Abbott's (2010) *Creative Thinking Self-Efficacy* (CTSE) questionnaire (see Appendix K). The questions were adapted so that they were relevant for use in an educational setting at the elementary level. A Fry's (1968) Readability Assessment was conducted in order to determine the readability of the questionnaire. The readability level of the questionnaire was at the third-grade level. Copies of the adapted questionnaire were given to experts (i.e., teacher in gifted education, teacher in special education, teacher in general education) in the field as well as students (i.e., student with gifts and talents, student in special education, student in general education) to do a formative evaluation. All experts felt the questionnaire was well-suited for students in the third, fourth, and fifth grades in general education, special education, and gifted education, and recommended no changes. All children felt the questionnaire was understandable and also recommended no changes.

Phase Two

Hard copies of the parent explanation of the study form (in both English and Spanish; see Appendix I), and the parent consent forms (in English and in Spanish; see Appendix H) were printed, placed into envelopes, and distributed in each class. Student assent forms (in English and in Spanish; see Appendix J) were printed and placed in envelopes for distribution. Hard copies of the questionnaire, along with a hard copy of the script teachers read aloud to the class were printed and placed in another envelope for distribution (see Appendices K and L).

The gifted education specialist from each of the three schools was contacted for assistance with the dissemination and collection of the questionnaires. The gifted education specialist, along with all teachers involved, completed an informed permission form (see Appendices E and F). A copy of each third, fourth, and fifth grade class list at each school was obtained by the gifted education specialist. These class lists helped to keep track of which students returned their consent and assent forms and who did not.

All students in third, fourth, and fifth grades who participated in a general education classroom were solicited for participation in the study. Once the teachers agreed to participate in the study, communication and training regarding the implementation of the study was conducted. Each gifted education specialist was trained on the implementation of the study. The gifted education specialist then trained all third, fourth, and fifth grade teachers at their school site. In order to ensure fidelity, a doctoral student was present during the implementation of the questionnaire in each classroom and completed a fidelity task analysis (see Appendix M).

Training. All of the gifted education teachers were trained in the implementation of the questionnaire. The training was approximately one hour. The implementation of the questionnaire using a teacher script and directions was demonstrated (see Appendix L).

Following watching the demonstration, each gifted education teacher individually practiced reading the teacher script and directions and then demonstrated implementing it to the group. When the gifted education teacher demonstrated 100% fidelity, they trained the third, fourth, and fifth grade teachers at their school site replicating the training they received.

Phase Three

Once the preliminary development was completed, implementation of the study began. This study was conducted over a three-week timeframe.

Week One. Parent consent forms and student assent forms were distributed during week one of the study. The forms were distributed on the first day of the week. If forms were not returned by Thursday, a reminder letter was distributed that day. All third, fourth, and fifth grade teachers gave the completed forms to the gifted education teacher at their respective school. The gifted education teacher kept a list of each class and marked off each student who returned the form. The forms were locked in the special education office at each school. Students were able to withdraw from the study.

Week Two. During the second week of the study, parent consent forms and student assent forms continued to be collected and counted. For those students who had not returned their forms, a second reminder was sent home on Tuesday and a third reminder was sent home on Thursday. All third, fourth, and fifth grade teachers continued to give the completed forms to the gifted education teacher at their school each day. The gifted education teacher continued marking off each student who returned the form. The forms were locked in the special education office. On Friday, all parent consent forms and student assent forms at each site were collected.

Week Three. In the third week of the study, the creative self-efficacy questionnaires were distributed in each general education classroom to all students in third, fourth, and fifth

grades at the three schools. Students that had not returned their assent and parental consent forms, were provided an alternate activity to complete during the administration of the questionnaire. The teacher was able to choose either an activity of their own choosing, or a provided alternate activity which was a writing inventory that was similar in appearance to the questionnaire. Teacher fidelity checklists were collected (see Appendix M).

During the implementation of the questionnaire, the teachers read aloud the script provided (see Appendix L), and the students completed the questionnaire as the teacher read each statement. Once all statements were complete, the students returned it to the teacher, the questionnaires were placed in the provided envelope, and returned to the fidelity checker.

Phase Four

In phase four, the questionnaires were analyzed. Any questionnaires that were incomplete or done incorrectly (e.g., multiple numbers in a single statement are circled) were not analyzed. Responses from the questionnaire were entered into the Statistical Package for the Social Sciences (SPSS) for analysis. A reliability checker randomly selected 33% of questionnaires and verified the data entered into SPSS. The calculation of reliability was conducted using the formula: number of items agreed divided by the number of total items plus the items disagreed multiplied by 100 in order to obtain a percentage (i.e., [(165 questionnaires/165 questionnaires) + 0 items disagreed] x 100% = 100%). Once all data were entered into SPSS and interrater reliability was completed, descriptive and inferential statistical tests were conducted.

Data Collection

The data collected from the questionnaire, along with the demographic information, were inputted into SPSS for analysis.

Treatment of the Data

Participant responses and demographics were analyzed to answer the following research questions:

Research Question 1: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among students in third, fourth, and fifth grades in general education, students with learning disabilities, and students with gifts and talents?

Analysis. A two-way multivariate analysis of variance (MANOVA) was conducted to determine the differences in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among students in third, fourth, and fifth grades in general education, students with learning disabilities, and students with gifts and talents. The two-way MANOVA was a 3 x 3 x 4 analysis (i.e., the three educational subtypes x the three grade levels x the four domains of creative thinking) for all students participating in the study. Alpha level was set at .05.

Research Question 2: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among third-grade students, fourth-grade students, and fifth-grade students?

Analysis. A one-way multivariate analysis of variance (MANOVA) was conducted to determine the differences in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among students in third, fourth, and fifth grades. The one-way MANOVA was a 3 x 4 analysis (i.e., the three grade levels x the four domains of creative thinking) for all students participating in the study. Alpha level was set at .05.

Research Question 3: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among females and males in the third, fourth, and fifth grades?

Analysis. A two-way multivariate analysis of variance (MANOVA) was conducted to determine the differences in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among females and males in the third, fourth, and fifth grades. The two-way MANOVA was a 2 x 3 x 4 analysis (i.e., the two genders x the three grade levels x the four domains of creative thinking) for all students participating in the study. Alpha level was set at .05.

Research Question 4: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among ethnic groups in the third, fourth, and fifth grades?

Analysis. A two-way multivariate analysis of variance (MANOVA) was conducted to determine the differences in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among ethnic groups in the third, fourth, and fifth grades. The two-way MANOVA was a 7 x 3 x 4 analysis (i.e., the seven ethnic groups x the three grade levels x the four domains of creative thinking) for all students participating in the study. Alpha level was set at .05.

CHAPTER FOUR

RESULTS

Creative self-efficacy is a component of creativity that is important for success in school and post-secondary endeavors for all students (Abbott, 2010; Amabile, 1988; Huang et al., 2016; Jaussi et al., 2007; Tierney & Farmer, 2002). Much of the research concerning creative self-efficacy has been in the field of business (Puente-Diaz & Cavazos-Arroyo, 2016). Little research has been conducted in education focused on creative self-efficacy as a singular construct. At the elementary level, the research concerning creative thinking is non-existent. However, creative self-efficacy and its role in education is beginning to be explored (Puente-Diaz & Cavazos-Arroyo, 2016). Because creative self-efficacy is a vital component of creativity, and creativity is necessary for future life success, the development of student creative self-efficacy has been recognized as an educational need (James, 2015).

The purpose of this study was to compare the perceptions of creative self-efficacy of students with learning disabilities, students with gifts and talents, and students in general education in the third, fourth, and fifth grades. A questionnaire adapted, with permission, from Abbott's (2010) *Creative Thinking Self-Efficacy* (CTSE), for use at the elementary level was administered to students in the third, fourth, and fifth grades at three elementary schools. A total of 495 completed questionnaires were analyzed. Data were collected over a one-week period. Descriptive and inferential statistics were used to analyze the data.

Tests of Assumptions

To obtain a valid result from a MANOVA, the data must meet several assumptions. Prior to analysis of the data, various analyses were conducted to ensure that the data did not violate the study assumptions and that a MANOVA analysis would yield accurate results. The sample size

was required to have more cases in each cell than the number of dependent variables (Laerd Statistics, 2016). Each cell in the study had a greater number of cases than the number of dependent variables ($n > 4$). The data also were assessed for linearity. A linear relationship was found between the variables as assessed by a scatterplot and, therefore, the assumption of linearity was not violated. A test for multicollinearity was conducted. There was no evidence of multicollinearity as assessed by Pearson correlation ($r < .09$), therefore, the assumption of multicollinearity was not violated.

The data also were assessed for univariate outliers. To violate the assumption for univariate outliers, outliers must be greater than 1.5 box-lengths from the edge of the box on the boxplot. There were no univariate outliers in the data, as assessed by inspection of a boxplot for values greater than 1.5 box-lengths from the edge of the box. Because the assumption for univariate outliers was not violated, a test for multivariate outliers was conducted. There was one multivariate outlier in the data, as assessed by Mahalanobis distance ($p > .001$). The case was one within the largest cell size and, therefore, the decision was made to include the case (Laerd Statistics, 2016).

A test of normality was then conducted. Fluency, flexibility, elaboration, and originality were not normally distributed as assessed by the Kolmogorov-Smirnov test of normality (at $p > .05$). However, a MANOVA tends to be performed even if the data are not normally distributed due to a general consensus that a MANOVA is robust to normality (Laerd Statistics, 2016). Therefore, due to the robustness of a MANOVA and the large sample size, the analysis moved forward.

The final assumption, homogeneity of the covariance was assessed. There was homogeneity of covariance, as assessed by Box's M test ($p = .214$; $p = .034$; $p = .217$). Based

upon the results from the tests of assumptions, it was determined that a MANOVA was appropriate for data analysis.

Student Creative Self-Efficacy Questionnaire

The questionnaire (see Appendix K) adapted for use in this study included Guilford's (1968) four areas of creative thinking (i.e., fluency, flexibility, elaboration, originality). A Fry's (1968) readability assessment was conducted to ensure that the questionnaire was readable at the third-grade level. Each item on the questionnaire was rated using a 5-point Likert scale (1 being never, 2 being rarely, 3 being sometimes, 4 being often, 5 being always). The questionnaire consisted of 16 items. The data from the questionnaire were analyzed to answer the following questions:

Research Question 1: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among students in third, fourth, and fifth grades in general education, students with learning disabilities, and students with gifts and talents?

It was hypothesized that students with gifts and talents would demonstrate a higher perception of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than their peers in general education or their peers identified with LD. The descriptive analysis indicated that students in the third, fourth, and fifth grades with gifts and talents had higher self-report mean scores of perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than students in general education and students with LD. The descriptive analysis also indicated that students in the third, fourth, and fifth grades in general education had higher self-report mean scores of perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than students with LD. Table 3 displays the

sample sizes, means, and standard deviations of the self-reported student perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality based on grade level and education sub-type.

To test for group differences, a two-way MANOVA was conducted with two independent variables, grade level (i.e., third, fourth, fifth) and educational sub-type (i.e., students in general education, students with LD, students with gifts and talents), and four dependent variables – fluency, flexibility, elaboration and originality score (see Table 4). The interaction effect between grade level and educational sub-type on the combined dependent variables was not statistically significant, $F(11, 483) = 1.239$, $p < .196$, Wilks' $\Lambda = .940$, partial $\eta^2 = .015$. There was not a statistically significant main effect of grade level on the combined dependent variables, $F(11, 483) = 1.018$, $p < .420$, Wilks' $\Lambda = .983$, partial $\eta^2 = .008$. There was, however, a statistically significant main effect of educational sub-type on the combined dependent variables, $F(11, 483) = 2.092$, $p < .001$, Wilks' $\Lambda = .931$, partial $\eta^2 = .024$. This means a significant difference occurred within the educational sub-type independent variable, but a significant difference did not occur within the grade level independent variable.

Follow up univariate two-way ANOVAs were run and the main effect of educational sub-type considered (see Table 5). There was a statistically significant main effect of educational sub-type for fluency score, $F(3, 483) = 7.793$, $p < .001$, partial $\eta^2 = .046$, flexibility score, $F(3, 483) = 4.908$, $p < .002$, partial $\eta^2 = .030$, elaboration score, $F(3, 483) = 3.063$, $p < .028$, partial $\eta^2 = .019$, and originality score, $F(3, 483) = 7.959$, $p < .001$, partial $\eta^2 = .047$. This means for the educational sub-type, a difference occurred in all four areas of creative thinking (i.e., fluency, flexibility, elaboration, originality).

As such, Tukey pairwise comparisons were run for the differences in mean fluency, flexibility, elaboration, and originality scores between educational sub-types (see Table 6). Data are mean ± standard error, unless otherwise stated. The marginal means for fluency score were 12.582 ± .157 for the students in general education educational sub-type, 11.930 ± .513 for the students with LD educational sub-type and 14.192 ± .323 for the students with gifts and talents educational sub-type. There was a statistically significant mean difference between the students with gifts and talents educational sub-type and the students in general education educational sub-type of 1.67 (95% CI, .77 to 2.58), $p < .001$, and between the students with gifts and talents educational sub-type and the students with LD educational sub-type of 2.27 (95% CI, .73 to 3.81), $p < .001$. The mean difference between the students in general education educational sub-type and the students with LD educational sub-type was not statistically significant, 0.60 (95% CI, -.77 to 1.97), $p = .675$. This means a significant difference for fluency occurred between students with gifts and talents and students in general education, and students with gifts and talents and students with LD, but not with students in general education and students with LD.

The marginal means for flexibility score were 13.325 ± .156 for the students in general education educational sub-type, 12.638 ± .510 for the students with LD educational sub-type and 14.507 ± .321 for the students with gifts and talents educational sub-type. There was a statistically significant mean difference between the students with gifts and talents educational sub-type and the students in general education educational sub-type of 1.28 (95% CI, .38 to 2.18), $p < .002$, and between the students with gifts and talents educational sub-type and the students with LD educational sub-type of 1.85 (95% CI, .32 to 3.38), $p < .010$. The mean difference between the students in general education educational sub-type and the students with LD educational sub-type was not statistically significant, 0.57 (95% CI, -.79 to 1.94), $p = .698$.

This means a significant difference occurred for flexibility between students with gifts and talents and students in general education, and students with gifts and talents and students with LD, but not with students in general education and students with LD.

The marginal means for elaboration score were 14.411 ± .169 for the students in general education educational sub-type, 13.201 ± .552 for the students with LD educational sub-type and 15.126 ± .347 for the students with gifts and talents educational sub-type. The mean difference between the students with gifts and talents educational sub-type and the students with LD educational sub-type was statistically significant, 2.02 (95% CI, .36 to 3.67), $p < .010$. There was not a statistically significant mean difference between the students with gifts and talents educational sub-type and the students in general education educational sub-type of .79 (95% CI, -.18 to 1.77), $p = .156$, or between the students in general education educational sub-type and the students with LD educational sub-type of 1.22 (95% CI, -.25 to 2.70), $p = .143$. This means a significant difference occurred for elaboration between students with gifts and talents and students with LD, but not with students with gifts and talents and students in general education, or students in general education and students with LD.

The marginal means for originality score were 12.787 ± .181 for the students in general education educational sub-type, 11.601 ± .590 for the students with LD educational sub-type and 14.482 ± .372 for the students with gifts and talents educational sub-type. There was a statistically significant mean difference between the students with gifts and talents educational sub-type and the students in general education educational sub-type of 1.71 (95% CI, .67 to 2.76), $p < .001$, and between the students with gifts and talents educational sub-type and the students with LD educational sub-type of 2.96 (95% CI, 1.19 to 4.74), $p < .001$. The mean difference between the students in general education educational sub-type and the students with

LD educational sub-type was not statistically significant, 1.25 (95% CI, -.33 to 2.83), $p = .174$. This means a significant difference for originality occurred between students with gifts and talents and students in general education, and students with gifts and talents and students with LD, but not with students in general education and students with LD.

Table 3

Descriptive Analysis of Reported Creative Self-Efficacy by Educational Sub-Type

Area of Creativity	Educational Sub-Type	*n*	*M*	*SD*
Fluency	General Education	370	12.57	2.999
	Learning Disabilities	35	11.97	3.222
	Gifts and Talents	90	14.24	3.005
	Total	495	12.84	3.086
Flexibility	General Education	370	13.32	2.984
	Learning Disabilities	35	12.74	2.832
	Gifts and Talents	90	14.59	3.033
	Total	495	13.52	3.026
Elaboration	General Education	370	14.39	3.257
	Learning Disabilities	35	13.17	3.408
	Gifts and Talents	90	15.19	3.112
	Total	495	14.46	3.273
Originality	General Education	370	12.79	3.559
	Learning Disabilities	35	11.54	3.175
	Gifts and Talents	90	14.51	3.078
	Total	495	13.03	3.529

Table 4

Two-Way MANOVA of Grade Level and Educational Sub-Type

Effect		F	df	Error df	*p*	Partial Eta Squared
Grade	Wilks' Lambda	1.018	8	960	.420	.008
Educational Sub-type	Wilks' Lambda	2.902	12	1270	.001*	.024
Grade*Educational Sub-type	Wilks' Lambda	1.239	24	1676	.196	.015

Note. *Significance is at the $p < .05$ value.

Table 5

Two-Way ANOVA of Educational Sub-Type

Effect	Dependent Variable	F	df	Error df	*p*	Partial Eta Squared
Educational Sub-type	Fluency	7.793	3	483	.001*	.046
	Flexibility	4.908	3	483	.002*	.030
	Elaboration	3.063	3	483	.028*	.019
	Originality	7.959	3	483	.001*	.047

Note. *Significance is at the $p < .05$ value.

Table 6

Tukey HSD of Reported Creative Self-Efficacy by Educational Sub-Type

Dependent Variable	Educational Sub-Type (I)	Educational Sub-Type (J)	Mean Difference (I-J)	Std. Error	*p*
Fluency	General Education	With LD	.60	.531	.675
		With Gifts and Talents	-1.67	.352	.001*
	With Gifts and Talents	With LD	2.27	.597	.001*
		General Education	1.67	.352	.001*
	With LD	With Gifts and Talents	-2.27	.597	.001*
		General Education	-.60	.531	.675
Flexibility	General Education	With LD	.57	.528	.698
		With Gifts and Talents	-1.28	.350	.002*
	With Gifts and Talents	With LD	1.85	.594	.010*
		General Education	1.28	.350	.002*
	With LD	With Gifts and Talents	-1.85	.594	.010*
		General Education	-.57	.528	.698
Elaboration	General Education	With LD	1.22	.572	.143
		With Gifts and Talents	-.79	.378	.156
	With Gifts and Talents	With LD	2.02	.643	.010*
		General Education	.79	.378	.156
	With LD	With Gifts and Talents	-2.02	.643	.010*
		General Education	-1.22	.572	.143
Originality	General Education	With LD	1.25	.612	.174
		With Gifts and Talents	-1.71	.405	.001*
	With Gifts and Talents	With LD	2.96	.688	.001*
		General Education	1.71	.405	.001*
	With LD	With Gifts and Talents	-2.96	.688	.001*
		General Education	-1.25	.612	.174

Note. *Significance is at the $p < .05$ value.

Research Question 2: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among third-grade students, fourth-grade students, and fifth-grade students?

It was hypothesized that students in third-grade would demonstrate a higher creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than students in either fourth or fifth grades overall. The descriptive analysis indicated that students in the fourth grade had higher self-report mean scores of perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than students in the third and fifth grades. Table 7 displays the sample sizes, means, and standard deviations of the self-reported student perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality based on grade level.

To test for group differences, a one-way MANOVA was conducted to determine the effect of grade level on the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality (see Table 8). Data are expressed as mean ± standard deviation. Students in the fourth grade reported their creative self-efficacy in terms of fluency, flexibility, elaboration, and originality higher (13.33 ± 3.053, 13.85 ± 2.963, 15.04 ± 2.889, and 13.24 ± 3.605, respectively) than students in the third grade and students in the fifth grade. The differences between the grade levels on the combined dependent variables were not statistically significant, $F(2, 492) = 1.754$, $p = .082$; Wilks' $\Lambda = .972$; partial $\eta^2 = .014$. This means a significant difference did not occur within the grade level independent variable.

Table 7

Descriptive Analysis of Reported Creative Self-Efficacy by Grade Level

Area of Creativity	Grade Level	*n*	*M*	*SD*
Fluency	Third	165	12.72	3.268
	Fourth	163	13.33	3.053
	Fifth	167	12.47	2.885
	Total	495	12.84	3.086
Flexibility	Third	165	13.34	3.173
	Fourth	163	13.85	2.963
	Fifth	167	13.38	2.928
	Total	495	13.52	3.026
Elaboration	Third	165	14.12	3.770
	Fourth	163	15.04	2.889
	Fifth	167	14.23	3.034
	Total	495	14.46	3.273
Originality	Third	165	13.07	3.656
	Fourth	163	13.24	3.605
	Fifth	167	12.80	3.327
	Total	495	13.03	3.529

Table 8

One-Way MANOVA of Grade Level

Effect		F	df	Error df	*p*	Partial Eta Squared
Grade	Wilks' Lambda	1.754	8	978	.082	.014

Note. *Significance is at the $p < .05$ value.

Research Question 3: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among females and males in the third, fourth, and fifth grades?

It was hypothesized that females at the third-grade level would demonstrate higher creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than male students at the third-grade level. However, it also was predicted that in the fourth and fifth grade levels, males also would demonstrate a higher creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than females in the fourth and fifth grade levels. The descriptive analysis indicated that students in the Other group did not have a large enough sample to be included for analysis.

The descriptive analysis indicated that males in the third, fourth, and fifth grades had higher self-report mean scores of perceptions of creative self-efficacy in terms of fluency and originality than females, while females had higher self-report mean scores in flexibility and elaboration. Table 9 displays the overall sample sizes, means, and standard deviations of the self-reported student perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality based on grade level and gender. The descriptive analysis also indicated that males in the third and fifth grades had higher self-report mean scores of perceptions of creative

self-efficacy in terms of fluency and originality than females, while females had higher self-report mean scores of flexibility and elaboration. In the fourth grade, males had higher self-report mean scores of perceptions of creative self-efficacy in terms of fluency and flexibility, while females had higher self-report mean scores of elaboration and originality. Table 10 displays the sample sizes, means, and standard deviations of the self-reported student perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality based on grade level and gender.

To test for group differences, a two-way MANOVA was conducted with two independent variables – grade level (i.e., third, fourth, fifth) and gender (i.e., males, females) – and four dependent variables – fluency, flexibility, elaboration and originality score (see Table 11). The interaction effect between grade level and gender on the combined dependent variables was not statistically significant, $F(6, 488) = .836$, $p < .571$, Wilks' $\Lambda = .986$, partial $\eta^2 = .007$. There was not a statistically significant main effect of grade level on the combined dependent variables, $F(6, 488) = 1.690$, $p < .097$, Wilks' $\Lambda = .973$, partial $\eta^2 = .014$. However, there was a statistically significant main effect of gender on the combined dependent variables, $F(6, 488) = 3.129$, $p < .002$, Wilks' $\Lambda = .950$, partial $\eta^2 = .025$. This means a significant difference occurred within the gender independent variable, but a significant difference did not occur within the grade level independent variable.

Follow up univariate two-way ANOVAs were run and the main effect of gender considered (see Table 12). There was a statistically significant main effect of gender for elaboration score, $F(2, 488) = 3.193$, $p < .042$, partial $\eta^2 = .013$, but no statistically significant main effect for fluency score, $F(2, 488) = .832$, $p < .436$, partial $\eta^2 = .003$, flexibility score, $F(2, 488) = 1.219$, $p < .297$, partial $\eta^2 = .005$, and originality score, $F(2, 488) = .064$, $p < .938$, partial

$\eta^2 < .001$. This means in gender, a difference occurred in the elaboration area of creative thinking but not in fluency, flexibility, or originality.

Tukey pairwise comparisons were run for the differences in mean fluency, flexibility, elaboration, and originality scores between genders (see Table 13). Data are mean ± standard error, unless otherwise stated. The differences between genders occurred at the fifth-grade level, $F(1, 165) = 6.168$, $p < .022$, with 5th grade females scoring higher on elaboration than males. The marginal means for elaboration score were 14.758 ± .317 for females and 13.605 ± .337 for males. This means a significant difference for elaboration occurred between males and females at the fifth-grade level, with females reporting a significantly higher creative self-efficacy in terms of elaboration than males.

Table 9

Descriptive Analysis of Reported Creative Self-Efficacy by Gender

Area of Creativity	Gender	*n*	*M*	*SD*
Fluency	Males	230	13.02	3.184
	Females	264	12.67	3.001
	Total	494	12.84	3.086
Flexibility	Males	230	13.48	2.913
	Females	264	13.54	3.120
	Total	494	13.52	3.026
Elaboration	Males	230	14.10	3.220
	Females	264	14.78	3.291
	Total	494	14.46	3.273
Originality	Males	230	13.07	3.579
	Females	264	12.99	3.497
	Total	494	13.03	3.529

Table 10

Descriptive Analysis of Reported Creative Self-Efficacy by Grade Level and Gender

Area of Creativity	Grade	Gender	*n*	*M*	*SD*
Fluency	Third	Male	78	13.06	3.499
		Female	86	12.40	3.046
	Fourth	Male	76	13.39	3.042
		Female	87	13.26	3.078
	Fifth	Male	76	12.59	2.967
		Female	91	12.37	2.827
Flexibility	Third	Male	78	13.27	3.056
		Female	86	13.35	3.271
	Fourth	Male	76	13.96	2.661
		Female	87	13.76	3.217
	Fifth	Male	76	13.21	2.981
		Female	91	13.52	2.892
Elaboration	Third	Male	78	14.08	3.793
		Female	86	14.19	3.778
	Fourth	Male	76	14.62	2.781
		Female	87	15.40	2.947
	Fifth	Male	76	13.61	2.940
		Female	91	14.76	3.027
Originality	Third	Male	78	13.33	3.617
		Female	86	12.81	3.715
	Fourth	Male	76	13.21	3.693
		Female	87	13.26	3.549
	Fifth	Male	76	12.67	3.435
		Female	91	12.90	3.249

Table 11

Two-Way MANOVA of Grade Level and Gender

Effect		F	df	Error df	*p*	Partial Eta Squared
Grade	Wilks' Lambda	1.690	8	970	.097	.014
Gender	Wilks' Lambda	3.129	8	970	.002*	.025
Grade*Gender	Wilks' Lambda	.836	8	970	.571	.007

Note. *Significance is at the $p < .05$ value.

Table 12

Two-Way ANOVA of Gender

Effect	Dependent Variable	F	df	Error df	*p*	Partial Eta Squared
Gender	Fluency	.832	2	488	.436	.003
	Flexibility	1.219	2	488	.297	.005
	Elaboration	3.193	2	488	.042*	.013
	Originality	.064	2	488	.938	.001

Note. *Significance is at the $p < .05$ value.

Table 13

Tukey HSD of Reported Creative Self-Efficacy by Gender

Dependent Variable	Grade Level	Educational Sub-Type (I)	Educational Sub-Type (J)	Mean Difference (I-J)	Std. Error	*p*
Fluency	Third	Male	Female	.669	.481	.495
	Fourth	Male	Female	.13	.483	.787
	Fifth	Male	Female	.218	.478	.648
Flexibility	Third	Male	Female	-.80	.473	1.000
	Fourth	Male	Female	.202	.475	.671
	Fifth	Male	Female	-.306	.470	.516
Elaboration	Third	Male	Female	-.109	.506	1.000
	Fourth	Male	Female	-.784	.509	.124
	Fifth	Male	Female	-1.153	.503	.022*
Originality	Third	Male	Female	.519	.554	1.000
	Fourth	Male	Female	-.054	.556	.923
	Fifth	Male	Female	-.230	.550	.676

Note. *Significance is at the $p < .05$ value.

Research Question 4: Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among ethnic groups in the third, fourth, and fifth grades?

It was hypothesized that there would be no differences in creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among the different ethnic groups. The descriptive analysis indicated that students in the Native Hawaiian/ Other Pacific Islander and American Indian/Alaskan Native ethnic groups did not have a large enough sample to be included for analysis. The descriptive analysis indicated that students in the White ethnic group

had higher self-report mean scores of perceptions of creative self-efficacy in terms of fluency, and students in the Black/African American ethnic group had higher self-report mean scores of perceptions of creative self-efficacy in terms of flexibility, elaboration, and originality than students in the other ethnic groups. Table 14 displays the sample sizes, means, and standard deviations of the self-reported student perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality based ethnic group.

A two-way MANOVA was run with two independent variables – grade level (i.e., third, fourth, fifth) and ethnic group (i.e., American Indian/Alaska Native, Asian American, Black/African American, Native Hawaiian/Other Pacific Islander, Two or More, White, and Hispanic/Latinx) – and four dependent variables – fluency, flexibility, elaboration and originality score (see Table 15). The interaction effect between grade level and ethnic group on the combined dependent variables was not statistically significant, $F(19, 475) = .847$, $p < .752$, Wilks' $\Lambda = .925$, partial $\eta^2 = .019$. There was not a statistically significant main effect of grade level on the combined dependent variables, $F(19, 475) = .951$, $p < .473$, Wilks' $\Lambda = .984$, partial $\eta^2 = .008$. There was not a statistically significant main effect of ethnic group on the combined dependent variables, $F(19, 475) = 1.405$, $p < .092$, Wilks' $\Lambda = .932$, partial $\eta^2 = .018$. This means a significant difference did not occur within the grade level independent variable or within the ethnic group independent variable.

Table 14

Descriptive Analysis of Reported Creative Self-Efficacy by Ethnic Group

Area of Creativity	Ethnic Group	*n*	*M*	*SD*
Fluency	Hispanic/Latinx	153	12.36	3.032
	White	168	13.31	3.114
	Asian American	69	12.49	3.123
	Black/African American	39	13.05	3.292
	Two or More	53	12.85	2.951
	Total	482	12.84	3.086
Flexibility	Hispanic/Latinx	153	13.22	3.002
	White	168	13.85	3.064
	Asian American	69	12.80	3.085
	Black/African American	39	14.18	2.910
	Two or More	53	13.53	2.757
	Total	482	13.52	3.026
Elaboration	Hispanic/Latinx	153	14.05	3.332
	White	168	14.82	3.333
	Asian American	69	13.72	3.143
	Black/African American	39	14.87	3.113
	Two or More	53	14.79	3.059
	Total	482	14.46	3.273
Originality	Hispanic/Latinx	153	12.41	3.666
	White	168	13.68	3.241
	Asian American	69	12.14	3.562
	Black/African American	39	13.69	3.614
	Two or More	53	13.25	3.568
	Total	482	13.03	3.529

Table 15

Two-Way MANOVA of Grade Level and Ethnic Group

Effect		*F*	*df*	Error df	*p*	Partial Eta Squared
Grade	Wilks' Lambda	.951	8	944	.473	.008
Ethnic Group	Wilks' Lambda	1.405	24	1648	.092	.018
Grade*Ethnic Group	Wilks' Lambda	.847	44	1882	.752	.019

Note. *Significance is at the $p < .05$ value.

CHAPTER FIVE

DISCUSSION

High creative ability is a needed skill for students to have for future success (Abbott, 2010; Amabile, 1988; Huang et al., 2016; Jaussi et al., 2007; Tierney & Farmer, 2002). It may lead to greater opportunities in post-secondary education, career outcomes, and economic stability (Bandura et al., 2001; Craft, 2003; Florida et al., 2008; Florida, 2012; Tierney & Farmer, 2002). While creative self-efficacy, a component of creativity, is a relatively new construct, research in this area is vital (Pajares & Schunk, 2001). With creativity needed for future success, it is important for researchers to investigate all components of creativity in order to determine how this construct might be developed.

The purpose of this study was to analyze the levels of perceptions of creative self-efficacy of students in general education, students with LD, and students with gifts and talents in the third, fourth, and fifth grades. This study focused on Guilford's (1968) four areas of creative thinking (e.g., fluency, flexibility, elaboration, originality) using a 16-item questionnaire. Data were gathered from 495 students from three elementary schools.

The questionnaire included demographic information consisting of grade, age, gender, ethnicity, and educational sub-type (e.g., general education, with LD, with gifts and talents). The four domains of creative thinking (e.g., fluency, flexibility, elaboration, originality) were measured using a 5-point Likert scale. Each domain on the questionnaire consisted of four statements.

Student Levels of Creative Self-Efficacy by Educational Sub-Type

Question one was analyzed to determine if there were significant differences in the levels of perception of creative self-efficacy among students in general education, students with LD,

and students with gifts and talents in the third, fourth, and fifth grades. The descriptive analysis found that students with gifts and talents had higher self-report mean scores of perceived creative self-efficacy than students in general education and students with LD. The descriptive analysis also found that students in general education had higher self-report mean scores of perceived creative self-efficacy than students with LD.

The MANOVA indicated that there was a significant difference between the groups for educational sub-type. However, there was not a significant difference between the groups for grade level. To determine the main effect for educational sub-type, a follow-up univariate two-way ANOVA was conducted. The results indicated a significant main effect for all four areas of creative thinking (i.e., fluency, flexibility, elaboration, originality).

To determine where the differences occurred, a Tukey Honestly Significant Difference (HSD) was conducted. A significant difference between groups was found between students with gifts and talents and students in general education. The students with gifts and talents reported significantly higher perceptions of creative self-efficacy than students in general education for fluency, flexibility, and originality. However, significance was not found between these two groups in elaboration. The students with gifts and talents also reported significantly higher perceptions of creative self-efficacy than students with LD in all four areas of creative thinking (i.e., fluency, flexibility, elaboration, originality). No significant difference was indicated between students in general education and students with LD.

These findings indicate that while students with LD report lower mean scores of creative self-efficacy than students in general education, these two groups really are similar in their perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality. Results of this study may also be attributed to student programming. The four areas of creative

thinking are a differentiated way of thinking, and differentiated thinking is not generally programmed into general education or resource room programs, whereas in gifted programming, it is the primary focus. However, it would appear that in gifted programming, the instruction on elaboration is similar to what is occurring in general education.

Previous research investigated different aspects of creativity (e.g., general creativity, verbal creativity, figural creativity) and self-efficacy (e.g., general self-efficacy, academic self-efficacy, social self-efficacy) for students with LD and students in general education. The lack of significant differences between students in general education and students with LD in this study supports previous research conducted in general creativity that also found no significant differences between the two groups (Hong & Milgram, 2010; Shondrick et al., 1992). The significant difference between the students with gifts and talents and the students in general education corroborates previous research that indicates students with gifts and talents demonstrate higher creativity than their peers in general education (Kettler & Bower, 2017). However, measures in all of the studies were different from the instrument in this study, as the measures were assessing creative ability rather than student perception of their creative ability (i.e., creative self-efficacy).

Student Levels of Creative Self-Efficacy by Grade Level

Question two was analyzed to determine if there were significant differences in the levels of perception of creative self-efficacy among students in the third, fourth, and fifth grades. The descriptive analysis found that students in the fourth grade had higher self-report mean scores of perceived creative self-efficacy than students in the third grade and students in the fifth grade. The MANOVA indicated that there were no significant differences for the perceptions of

creative self-efficacy among third, fourth, and fifth grade students. These findings indicate that third, fourth, and fifth grade student perceptions of their creative self-efficacy are similar.

The results of this study are in contrast to previous research that indicated a slump at the fourth-grade level (Darvishi & Pakdaman, 2012; Torrance, 1968). However, previous research has indicated that the slump in creativity may occur at the sixth-grade level, a grade level not included in this study (Kim, 2011). The previous research also indicated a decline in creative self-efficacy as students age, however, that was not found in this study (Beghetto et al., 2011). The results of this study and the previous research indicate a lack of real understanding for the relationship of grade level and creative self-efficacy. The research by Torrance (1968) is now very dated, and the results from Kim (2011), Beghetto et al. (2011), and this study are conflicting. These results indicate a need to conduct more research to ascertain the optimal time to intervene with curricula.

Student Levels of Creative Self-Efficacy by Gender

Question three was analyzed to determine if there were significant differences in the levels of perception of creative self-efficacy between genders in the third, fourth, and fifth grades. The descriptive analysis found that male students in the third, fourth, and fifth grades had higher self-report mean scores of perceived creative self-efficacy in fluency and originality than female students. However, the descriptive analysis also indicated that females in the third, fourth, and fifth grades had higher self-report mean scores of perceived creative self-efficacy in flexibility and originality than did males.

The MANOVA indicated that there were no significant differences in the perceptions of creative self-efficacy for grade level. However, there was a significant difference in perceptions of creative self-efficacy for gender. A follow-up univariate two-way ANOVA was conducted to

determine the main effect for gender. The results indicated a significant main effect for elaboration, with no effect found for fluency, flexibility, or originality.

To determine where the differences for elaboration occurred, a Tukey HSD was conducted. The results for elaboration were determined to be at the fifth-grade level, with fifth-grade females reporting higher perceptions than fifth-grade males in elaboration. These findings indicate that males and females in the third and fourth grades reported no significant differences in their perceptions of creative self-efficacy. While fifth-grade females reported higher perceptions of elaboration than males, with no significant differences in the other three areas of creative thinking (i.e., fluency, flexibility, originality).

The results indicating no significance for most of the females and males are similar to previous research that also indicated no significance between males and females (Beghetto et al., 2011; Boling, 1993; Kettler & Bower, 2017). Some of the previous research that did find significant differences in gender, with males showing greater creative self-efficacy than females, showed weak correlations (Karwowski et al., 2013). The results from this study, along with previous research indicating no significance or weak correlations, may allude to a change in societal expectations for females, with females now demonstrating similar abilities to males and even showing greater ability than males in a more complex area of creative thinking (elaboration).

Student Levels of Creative Self-Efficacy by Ethnic Group

Question four was analyzed to determine if there were significant differences in the levels of perception of creative self-efficacy between ethnic groups in the third, fourth, and fifth grades. The descriptive analysis indicated that students in the Black/African American ethnic group reported higher self-report mean scores of perceptions of creative self-efficacy in terms of

flexibility, elaboration and originality than the other ethnic groups (e.g., Asian American, Hispanic/Latinx, Two or More, White). The descriptive analysis also indicated that students in the White ethnic group had higher self-report mean scores of perceived creative self-efficacy in fluency than the other ethnic groups (e.g., Asian American, Black/African American, Hispanic/Latinx, Two or More).

The MANOVA indicated that there were no significant differences in perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among ethnic groups. This indicates that although students in the Black/African American and White ethnic groups high higher self-report mean scores, their levels of creative self-efficacy were not significantly higher than their peers in the other ethnic groups. These results indicate that all ethnic groups are similar in their perceptions of creative self-efficacy, and that, regardless of the need for intervention or enrichment in creative self-efficacy, all ethnic groups will benefit from instruction.

These findings support the current research that indicates no differences in ethnic groups for creative self-efficacy (Beghetto et al., 2011). Although, there is currently limited research that studies creative self-efficacy and ethnic groups, this study suggests that further study may be warranted with particular attention to culturally relevant pedagogy (Esposito, Davis, & Swain, 2012).

Conclusions

Based on the collected quantitative data, six conclusions may be drawn from this study. These conclusions should be viewed in accordance with the limitations of the study.

1. Students with gifts and talents reported significantly higher levels of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than did students

with learning disabilities. These results indicate that students with gifts and talents, on a self-report measure, indicate higher creative self-efficacy which corresponds with previous research in creativity (Kettler & Bower, 2017).

2. Students with gifts and talents reported significantly higher levels of creative self-efficacy in terms of fluency, flexibility, and originality than did students in general education. However, no significant difference was found between these two groups for elaboration. This is an interesting finding in that elaboration is the most complex of the creative thinking constructs. This indicates that there is no difference between students with gifts and talents and those in general education on this complex level of creative thought.
3. Students in general education reported higher self-report mean scores for creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than did students with LD. However, this difference was not significant. These results indicate that students in both of these populations may be similar in creative thinking and that having LD may not impact creative self-efficacy.
4. No significant differences were found among the third-, fourth-, and fifth-grade students in their perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality. Contrary to previous research, this study did not support findings that indicate a "slump" in creative self-efficacy.
5. Fifth-grade females reported significantly higher perceptions of creative self-efficacy in elaboration than did fifth-grade males. However, no other significant differences occurred in the other grade levels (i.e., third, fourth) or for fifth grade in the other

areas of creative thinking (i.e., fluency, flexibility, originality). These results indicate that perhaps the societal expectations once placed on females may be changing.

6. Students in the Black/African American ethnic group reported higher levels of creative self-efficacy in flexibility, elaboration, and originality, and students in the White ethnic group reported higher levels of creative self-efficacy in fluency. However, these results were not significant. This indicates that all ethnic groups have the same skill level of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality.

Recommendations for Future Research

Most of the research that has been conducted to examine creative self-efficacy exists at the post-secondary levels (Beghetto, 2006). Little research has been conducted on creative self-efficacy, with most of the research being at the middle school, high school, and post-secondary levels (Beghetto, 2006; Karwowski, 2012; Karwowski et al., 2015; Liu et al. 2017; Puente-Diaz and Cavazos-Arroyo, 2016; Tierney & Farmer, 2002; 2011). However, creative self-efficacy has not previously been investigated in terms of the four areas of creative thinking (i.e., fluency, flexibility, elaboration, originality) at the elementary levels. The investigation of educational sub-type also has not been included in previous research. Future research is needed to determine the relationship of creative self-efficacy with creativity and how creative self-efficacy can be developed in younger children. Based on the results of this study, the following recommendations are suggested for future research.

1. Future research should investigate if there is a sequential development of fluency, flexibility, elaboration, and originality, or whether they all develop simultaneously. This research should examine if the development differs based on grade level, gender,

educational sub-type, or ethnic groups. The information collected from this research could be used to build a current model of creative thinking and its relation to individual self-efficacy.

2. Future research that uses both the questionnaire from this study and the *Torrance Tests of Creative Thinking* (Torrance, 1966; 1974; 1998) is suggested for all three educational sub-types (e.g., students in general education, students with LD, students with gifts and talents). This will allow researchers to compare the student perceptions of their creative ability (i.e., creative self-efficacy) with their creative ability as demonstrated through a quantitative measure. This operationalizes the relationship between creative self-efficacy and creativity. This comparison also may be made for grade level, gender, and ethnicity.
3. Using the data collected from the quantitative measures and the model building, future research should explore the development of interventions and curricula for developing creative self-efficacy. This would include whether there should be a differentiation in the curricula for students in general education, students with LD, students with gifts and talents, and/or different grade levels.
4. A replication of the present study should be conducted using other age ranges (e.g., younger age levels, at the middle school level, at the high school level).
5. Future research in teacher preparation programs is needed to investigate pre-service teacher perception of their creative self-efficacy as well as their perceived ability to develop creative self-efficacy in their students.
6. Using data from this study, an investigation of the relationship between educational sub-types and ethnic groups should be conducted.

7. Using the data from this study, future research exploring the relationship between educational sub-types and gender should be conducted.
8. Using the data from this study, future research exploring the effect economic level has on creative self-efficacy should be conducted.

Summary

Prior to this study, no research had been conducted on student perceptions of creative self-efficacy in terms of the four areas of creative thinking (i.e., fluency, flexibility, elaboration, originality) at the elementary levels. The relationship of creative self-efficacy and educational sub-type also had not been examined. This study explored creative self-efficacy within the context of the four areas of creative thinking (i.e., fluency, flexibility, elaboration, originality). Data were collected from 495 students in the third, fourth, and fifth grades to investigate student perception of creative self-efficacy. These perceptions were examined within grade levels (i.e., third, fourth, fifth), gender (i.e., females, males), educational sub-type (i.e., students in general education, students with LD, students with gifts and talents), and ethnic group (i.e., American Indian or Alaska Native, Asian American, Black/African American, Hispanic/Latinx, Native Hawaiian or Other Pacific Islander, Two or More Ethnicities, White). Previous research has compared gender (e.g., males vs. females) or subgroups (e.g., LD vs. general education), but has not explored the multidimensionality of self-efficacy (Beghetto et al., 2011; Boling, 1993; Hong & Milgram, 2010; Karwowski et al., 2013; Kettler & Bower, 2017; Shondrick et al., 1992).

This study contributes to the limited literature regarding creative self-efficacy. It adds to the research base regarding creative self-efficacy at the elementary level and its relationship with educational sub-types. This study is a first step into the exploration of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality. It corroborates the previous literature in

producing mixed results concerning creativity and creative self-efficacy in terms of grade level (Beghetto et al., 2011; Darvishi & Pakdaman, 2012; Kim, 2011; Torrance, 1968), gender (Beghetto et al., 2011; Boling, 1993; Karwowski et al., 2013; Kettler & Bower, 2017), ethnic groups (Beghetto et al., 2011 Kaltsounis, 1974; Kaufman et al., 2004), and educational sub-type (Hong & Milgram, 2010; Kettler and Bower, 2017; Shondrick et al., 1992). The results from this study indicate that further research is needed in these areas to develop curricula for these students for future success (Amabile, 1988; Florida, 2012).

The implications of this study include the need for further investigation of the construct of creative self-efficacy. Curricula and interventions are needed to prepare college and career ready learners as education approaches the second decade of the 21st century. Extrapolating from business and economic leaders, the ability to think creatively and believe in one's creative ability are imperative for success beyond the boundaries of school (Abbott, 2010; Amabile, 1988; Florida, 2012; Huang et al., 2016; Jaussi et al., 2007; Tierney & Farmer, 2002).

APPENDIX A

PERMISSION FOR USE OF CTSE (ABBOTT, 2012) SURVEY

UNLV | College of EDUCATION

University of Nevada, Las Vegas

April 2, 2018

Daniel Abbott

Dear Dr. Abbott:

I am completing a doctoral dissertation at the University of Nevada, Las Vegas entitled "Creative Self-Efficacy: Students in General Education, with Learning Disabilities, and with Gifts and Talents." I would like your permission to reprint and modify in my dissertation excerpts from the following:

Abbott, D. H. (2010). *Constructing a creative self-efficacy inventory: A mixed methods inquiry*. The University of Nebraska-Lincoln.
The excerpts to be reproduced are: Creative Thinking Self-Efficacy Scale

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If these arrangements meet with your approval, please sign this letter where indicated below and return it to me in the enclosed return envelope. Thank you very much.

Sincerely,

Jennifer E. Smith
PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

Dr. Daniel Abbott
Date: 4/16/18

Department of Educational and Clinical Studies
Box 453014 • 4505 S. Maryland Parkway • Las Vegas, NV 89154-3014
Tel: 702-895-3205 • Fax: 702-895-0984

Good luck on your research. You are free to use and reproduce, in whole or in part, any portions of the dissertation that are helpful to you!

APPENDIX B

STUDENT SERVICES DIVISION LETTER OF SUPPORT

Instructional Services Unit, Student Services Division
4170 McLeod Drive • LAS VEGAS, NV 89121 • (702) 799-5471 • FAX (702) 799-5043

March 23, 2018

Office of Research Integrity—Human Subjects
University of Nevada, Las Vegas
4505 S. Maryland Parkway, Box 451047
Las Vegas, NV 89154-1047

Subject: Letter of Acknowledgement of a Research Project at a CCSD Facility

Dear ORI—Human Subjects:

This letter will acknowledge that I have reviewed a new request by Kyle Higgins and Jennifer Smith to conduct a research project entitled, Creative Self-Efficacy in Students with Gifts and Talents, Learning Disabilities, and General Education at Clark County School District.

At which time the research project receives approval through both the UNLV Institutional Review Board, and the Department of Research of the Clark County School District, and upon presentation of the approval letter from both departments to me by the researcher, as Director of the Student Support Services Division, I agree to allow access for the approved research project.

If I have any concerns or questions, the project researcher will be contacted, or I will contact the UNLV Office of Research Integrity—Human Subjects at (702) 895-2794.

Sincerely,

Authorized Facility Representative Signature

3/22/18
Date

Cynthia Morales Assistant Superintendent
Print Representative Name and Title

APPENDIX C

EMAIL TO PRINCIPALS TO SOLICIT PARTICIPATION

Dear Sir or Madam,

Our names are Kyle Higgins, Ph.D. and Jennifer Smith, M.Ed. We are writing to request your participation in a research study about creative self-efficacy for students with gifts and talents, students with learning disabilities, and students in general education in the third, fourth, and fifth grades. Creative self-efficacy is a person's belief in their ability to be creative. This area has been studied in the business field and has been found to be linked to overall creative ability.

This study entails students in general education in the third, fourth, and fifth grades in your school, students with an identified learning disability in the resource room in the third, fourth, and fifth grades, and students with gifts and talents in the third, fourth, and fifth grades to take a 16-item questionnaire with statements that the students will rate their level of. The study should take approximately 15 minutes to complete.

Attached to this letter is a copy of the parental consent and student assent forms for you to review. If you would be willing to allow your school to participate in this study, please reply to this email and we will provide further information.

If you have any concerns or questions, you can contact Kyle Higgins at (702) 895-1102.

Sincerely,

Kyle Higgins and Jennifer Smith

APPENDIX D

PRINCIPALS LETTERS OF SUPPORT FOR PARTICIPATION

Charles & Phyllis Frias Elementary
5800 Broken Top Ave., Las Vegas, NV 89141

Pamela Lindemuth, Principal Jaime Cornell, Assistant Principal

Office of Research Integrity—Human Subjects
University of Nevada, Las Vegas
4505 S. Maryland Parkway, Box 451047
Las Vegas, NV 89154-1047

Subject: Letter of Acknowledgement of a Research Project at a CCSD Facility

Dear ORI—Human Subjects,

This letter will acknowledge that I have reviewed a new request by Kyle Higgins and Jennifer Smith to conduct a research project entitled, Creative Self-Efficacy in Students with Gifts and Talents, Learning Disabilities, and General Education at Charles and Phyllis Frias Elementary School.

At which time the research project receives approval through both the UNLV Institutional Review Board, and the Department of Research of the Clark County School District, and upon presentation of the approval letter from both departments to me by the researcher, as site administrator for Charles and Phyllis Frias Elementary School, I agree to allow access for the approved research project.

If we have any concerns or questions, the project researcher will be contacted, or we will contact the UNLV Office of Research Integrity—Human Subjects at (702) 895-2794.

Sincerely,

Pamela Lindemuth

Authorized Facility Representative Signature

4/9/18

Date

Principal

Print Representative Name and Title

Phone: 702-799-2298
Fax: 702-799-6859

O.K. Adcock Elementary School
6350 Hyde Avenue Las Vegas, NV 89107
Ph. # (702)799-4185 Fax# (702) 799-4172

Wendy A. DeMille, Principal

Office of Research Integrity—Human Subjects
University of Nevada, Las Vegas
4505 S. Maryland Parkway, Box 451047
Las Vegas, NV 89154-1047

Subject: Letter of Acknowledgement of a Research Project at a CCSD Facility

Dear ORI—Human Subjects,

This letter will acknowledge that I have reviewed a new request by Kyle Higgins and Jennifer Smith to conduct a research project entitled, Creative Self-Efficacy in Students with Gifts and Talents, Learning Disabilities, and General Education at O.K. Adcock Elementary School.

At which time the research project receives approval through both the UNLV Institutional Review Board, and the Department of Research of the Clark County School District, and upon presentation of the approval letter from both departments to me by the researcher, as site administrator for O.K. Adcock Elementary School, I agree to allow access for the approved research project.

If we have any concerns or questions, the project researcher will be contacted, or we will contact the UNLV Office of Research Integrity—Human Subjects at (702) 895-2794.

Sincerely,

Wendy A DeMille — Authorized Facility Representative Signature

4/5/18 — Date

Wendy DeMille Principal
Print Representative Name and Title

Clark County School District

ALDEANE RIES ELEMENTARY SCHOOL

9805 S. Lindell Rd * Las Vegas, Nevada 89141 * 702-799-1240 *phone* * 702-799-1275 *fax*

Mr. A. Mario Quiñonez, Principal *Mrs. Paola Zepher, Assistant Principal*

Office of Research Integrity—Human Subjects
University of Nevada, Las Vegas
4505 S. Maryland Parkway, Box 451047
Las Vegas, NV 89154-1047

Subject: Letter of Acknowledgement of a Research Project at a CCSD Facility

Dear ORI—Human Subjects,

This letter will acknowledge that I have reviewed a new request by Kyle Higgins and Jennifer Smith to conduct a research project entitled, Creative Self-Efficacy in Students with Gifts and Talents, Learning Disabilities, and General Education at Aldeane Comito Ries Elementary School.

At which time the research project receives approval through both the UNLV Institutional Review Board, and the Department of Research of the Clark County School District, and upon presentation of the approval letter from both departments to me by the researcher, as site administrator for Aldeane Comito Ries Elementary School, I agree to allow access for the approved research project.

If we have any concerns or questions, the project researcher will be contacted, or we will contact the UNLV Office of Research Integrity—Human Subjects at (702) 895-2794.

Sincerely,

Authorized Facility Representative Signature

4618
Date

Adrian Mario Quiñonez
Print Representative Name and Title

APPENDIX E

GIFTED EDUCATION SPECIALIST INFORMED PERMISSION

UNLV

INFORMED PERMISSION

Department of Educational and Clinical Studies

TITLE OF STUDY: Creative Self-Efficacy in Students with Gifts and Talents, Learning Disabilities, and General Education

INVESTIGATOR(S): Kyle Higgins, Ph.D. and Jennifer Smith, M.Ed.

For questions or concerns about the study, you may contact Kyle Higgins at (702) 895-1102

For questions regarding the rights of research subjects, any complains or comments regarding the manner in which the study is being conducted, contact **the UNLV Office of Research Integrity—Human Subjects at (702) 895-2794, toll-free at (877) 895-2794, or via email at IRB@unlv.edu.**

Purpose of the Study

You are being invited to participate in a research study. The purpose of this study to measure the level of creative self-efficacy in students with gifts and talents, as well as their peers with learning disabilities and their peers in general education.

Participants

You are being is being asked to participate in the study because you fit the criteria of a gifted education specialist.

Procedures

If you agree to participate in this study, you will be asked to assist with implementation of a brief, 16-item questionnaire about creative self-efficacy in all third, fourth, and fifth grade classrooms at your school. Creative self-efficacy is a child's belief in their ability to be creative. In order for students to participate, they will be asked to complete the questionnaire for about 15 minutes during their regular school day. You will also be asked to assist with teacher implementation and fidelity of implementation of the questionnaire. Finally, you will be asked to ensure research confidentiality by keeping all completed materials in your school's locked special education office. Demographic information, such is number of years taught, education level, etc. will be collected from you.

Benefits of Participation

As a result of this study we hope to learn more about the levels of creative self-efficacy of students with gifts and talents and compare them to the levels of creative self-efficacy of students with learning disabilities and students in general education. However, there are no anticipated individual benefits of participation for you.

#1298942-2; Expiration Date: 11/05/2019

Risks of Participation
There are risks involved in all research studies. This study may include only minimal risks. You may feel uncomfortable or confused about some of the implementation of the study.

Cost/Compensation
There will be no financial cost to you to participate in this study. The study will take about 4 hours of your time. You will not be compensated for your time.

Confidentiality
All information in this study will be kept as confidential as possible. All data that is collected will be anonymous. No reference will be made in any written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for three years after the completion of the study. After the storage time, the information collected will be deleted and/or destroyed.

Voluntary Participation
Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Permission:

I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age. A copy of this form has been given to me.

_____ _____

Signature of Participant Date

_____

Participant Name (Please Print)

#1298942-2; Expiration Date: 11/05/2019

APPENDIX F

GENERAL EDUCATION TEACHER INFORMED PERMISSION

TEACHER INFORMED PERMISSION

Department of Educational and Clinical Studies

TITLE OF STUDY: Creative Self-Efficacy in Students with Gifts and Talents, Learning Disabilities, and General Education

INVESTIGATOR(S): Kyle Higgins, Ph.D. and Jennifer Smith, M.Ed.

For questions or concerns about the study, you may contact Kyle Higgins at (702) 895-1102.

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact **the UNLV Office of Research Integrity—Human Subjects at (702) 895-2794, toll-free at (877) 895-2794, or via email at IRB@unlv.edu.**

Purpose of the Study

You are being invited to participate in a research study. The purpose of this study to measure the level of creative self-efficacy in students with gifts and talents, as well as their peers with learning disabilities and their peers in general education.

Participants

You are being asked to participate in the study because you fit the criteria of being a teacher of students in the third, fourth, or fifth grade.

Procedures

If you agree to participate in this study, you will be asked to assist with implementation of a brief, 16-item questionnaire about creative self-efficacy in all third, fourth, and fifth grade classrooms at your school. Creative self-efficacy is a child's belief in their ability to be creative. In order for students to participate, they will be asked to complete the questionnaire for about 15 minutes during their regular school day. You will also be asked to assist with the collection of student demographic information, including age, grade level, and classroom environment which will be collected during the questionnaire session.

Benefits of Participation

As a result of this study we hope to learn more about the levels of creative self-efficacy of students with gifts and talents and compare them to the levels of creative self-efficacy of students with learning disabilities and students in general education. However, there are no anticipated individual benefits of participation for you.

Risks of Participation

There are risks involved in all research studies. This study may include only minimal risks. You may feel uncomfortable or confused about some of the implementation of the study.

Cost/Compensation

There will be no financial cost to you to participate in this study. The study will take about 30 minutes of your time (i.e., 15 minutes of your time for training on the implementation of the study and 15 minutes of classroom time to implement the questionnaire with your students). You will not be compensated for your time.

Confidentiality

All information in this study will be kept as confidential as possible. All data that is collected will be anonymous. No reference will be made in any written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for three years after the completion of the study. After the storage time, the information collected will be deleted and/or destroyed.

Voluntary Participation

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Permission:

I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age. A copy of this form has been given to me.

_____ _____

Signature of Participant Date

_____

Participant Name (Please Print)

APPENDIX G

STUDENT RECRUITMENT SCRIPT

Student Recruitment Script

Teachers: Please read the following text aloud to the students exactly as it is written.

Hello. Our names are Kyle Higgins and Jennifer Smith. We are researching about student perceptions of creative self-efficacy. A perception is what you think. Creative self-efficacy is the belief in yourself to be creative. You have been asked to be a part of our research. This is because you are a student who is in the third, fourth, or fifth grade.

To be a part our research, you will do 16 questions about your belief of your own creative self-efficacy. This study will be done during school hours in your classroom. By doing this, you will help us in understanding students in the third, fourth, or fifth grades' beliefs of creative self-efficacy.

Before you are part of our research, we will ask you to fill out a student assent form. We will also ask your parents to fill out a parent consent form. This study is completely voluntary. You do not have to do it. You may withdraw, or stop, at any time. If you decide not to be part of the research, or you want to stop doing it at any point, there will be no bad effects for you or your grades. If you do not want to be part of it, you will be given something else to do.

If you or your parent have any questions, our contact information as well as the contact information for the Office of Research Integrity is listed on the student assent form and the parent consent form.

Thank you so very much and have a great day.

APPENDIX H

PARENT CONSENT FORM IN ENGLISH AND IN SPANISH

UNLV

PARENT PERMISSION

Department of Educational and Clinical Studies

TITLE OF STUDY: Creative Self-Efficacy in Students with Gifts and Talents, Learning Disabilities, and General Education

INVESTIGATOR(S): Kyle Higgins, Ph.D. and Jennifer Smith, M.Ed.

For questions or concerns about the study, you may contact Kyle Higgins at (702) 895-1102

For questions regarding the rights of research subjects, any complains or comments regarding the manner in which the study is being conducted, contact **the UNLV Office of Research Integrity—Human Subjects at (702) 895-2794, toll-free at (877) 895-2794, or via email at IRB@unlv.edu.**

Purpose of the Study

Your child is being asked to be part of a research study. The purpose of this study is to measure creative self-efficacy as reported by students in general education, students with disabilities, and students with gifts and talents.

Participants

Your child is being is being asked to participate in the study because they are a student in the third, fourth, or fifth grade.

Procedures

If your child agrees to be a part of this study, they will be asked to complete a 16-item questionnaire. Creative self-efficacy is your child's belief in their ability to be creative. In order for your student to be a part of the study, they will be asked to complete the questionnaire. It will take about 15 minutes. It will be done during their regular school day. Demographic data such as age, grade level, educational subtype (e.g., with gifts and talents, in general education, in special education with a learning disability, in special education for something other than a learning disability), and race will be collected for this study. This data will be collected before the study. It will be coded on each student's questionnaire.

Benefits of Participation

From this study we hope to learn more about the levels of creative self-efficacy of students in general education, students with disabilities, and students with gifts and talents. However, there are no expected individual benefits for your child.

#1298942-2; Expiration Date: 11/05/2019

Risks of Participation
There are risks with all research studies. This study may include only minimal risks. Your child may feel uneasy or confused about some of the statements on the questionnaire. Based on the demographics being on the questionnaire, there are some risks to confidentiality.

Cost/Compensation
There will be no financial cost to your child to be in this study. The study will take about 15 minutes of your child's time. They will not be compensated for their time.

Confidentiality
All information in this study will be kept as confidential as possible. All data that is collected will be anonymous. No reference will be made in any written or oral materials that could link your child to this study. All records will be stored in a locked facility. They will be stored for three years after the end of the study. After the storage time, the information collected will be deleted and/or destroyed.

Voluntary Participation
The participation of your child in this study is voluntary. They may refuse to participate in this study or any part of this study. If your child decides not to be a part in this study there will be no effect on their grades. If your child chooses not to participate, they will be given another activity. They may withdraw at any time without prejudice to their relations with UNLV. You and your child are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent
I have read the above information and give permission for my child to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age. A copy of this form has been given to me.

_____ _____
Signature of Parent Date

_____
Parent Name (Please Print)

#1298942-2; Expiration Date: 11/05/2019

UNLV

AUTORIZACIÓN DE LOS PADRES

Department of Educational and Clinical Studies

TÍTULO DEL ESTUDIO: Autoeficacia creativa: estudiantes en educación general, con discapacidades de aprendizaje y con regalos y talentos

INVESTIGADOR(ES): Kyle Higgins, Ph.D. and Jennifer Smith, M.Ed.

Para preguntas y dudas sobre éste estudio, favor de contactar a Kyle Higgins al teléfono (702) 895-1102.

Para preguntas concernietes a los derechos de las personas que participant en el estudio, quejas o comentarios respecto a la manera en que éste estudio esta siendo conducido, favor de contactar la oficina para la integridad de los estudios de investigación para seres humanos de **UNLV Office of Research Integrity—Human Subjects al teléfono (702) 895-2794, sin costo al teléfono (877) 895-2794, o por medio de correo electrónico a IRB@unlv.edu.**

Propósito del Estudio

Se le está pidiendo a su hijo que sea parte de un estudio de investigación. El propósito de este estudio es medir la autoeficacia creativa según lo informado por los estudiantes en educación general, los estudiantes con discapacidades y los estudiantes con dones y talentos.

Participantes

Se le está pidiendo a su hijo que participe en el estudio porque son estudiantes de tercero, cuarto o quinto grado.

Procedimiento

Si su hijo acepta formar parte de este estudio, se le pedirá que complete un cuestionario de 16 elementos. La autoeficacia creativa es la creencia de su hijo en su capacidad para ser creativos.

Para que su estudiante sea parte del estudio, se le pedirá que complete el cuestionario. Tardará unos 15 minutos. Será hecho durante su día escolar regular. Se recopilarán datos demográficos como edad, nivel de grado, subtipo educativo (por ejemplo, con dones y talentos, en educación general, en educación especial con una discapacidad de aprendizaje, en educación especial para otra cosa que no sea una discapacidad de aprendizaje) y raza para esto. estudiar. Estos datos serán recogidos antes del estudio. Se codificará en el cuestionario de cada alumno.

Beneficios de su Participación

A partir de este estudio, esperamos aprender más sobre los niveles de autoeficacia creativa de los estudiantes en educación general, estudiantes con discapacidades y estudiantes con talentos y talentos. Sin embargo, no hay beneficios individuales esperados para su hijo.

#1298942-2; Expiration Date: 11/05/2019

Riesgos de su Participación

Hay riesgos con todos los estudios de investigación. Este estudio puede incluir solo riesgos mínimos. Su hijo puede sentirse incómodo o confundido acerca de algunas de las afirmaciones en el cuestionario. Según los datos demográficos que figuran en el cuestionario, existen algunos riesgos para la confidencialidad.

Costo/Compensacíon

No habrá ningún costo financiero para su hijo en este estudio. El estudio tomará aproximadamente 15 minutos del tiempo de su hijo. No serán compensados por su tiempo.

Confidencialidad

Toda la información en este estudio se mantendrá lo más confidencial posible. Todos los datos que se recopilen serán anónimos. No se hará referencia en ningún material escrito u oral que pueda vincular a su hijo con este estudio. Todos los registros se almacenarán en una instalación cerrada. Se almacenarán durante tres años después del final del estudio. Después del tiempo de almacenamiento, la información recopilada se eliminará y / o se destruirá.

Participación Voluntaria

La participación de su hijo en este estudio es voluntaria. Pueden negarse a participar en este estudio o en cualquier parte de este estudio. Si su hijo decide no participar en este estudio, no habrá ningún efecto en sus calificaciones. Si su hijo decide no participar, se le dará otra actividad. Pueden retirarse en cualquier momento sin perjuicio de sus relaciones con UNLV. Se recomienda que usted y su hijo hagan preguntas sobre este estudio al principio o en cualquier momento durante el estudio de investigación.

Consentimiento del Participante

He leído la información anterior y doy permiso para que mi hijo participe en este estudio. He podido hacer preguntas sobre el estudio de investigación. Tengo al menos 18 años de edad. Se me ha entregado una copia de este formulario.

Indique por favor el primer idioma del estudiante: Inglés _____, Español_____, Otro _____

_____ _____

Firma del Padre Fecha

_____

Nobre del Padre (por escrito)

#1298942-2; Expiration Date: 11/05/2019

APPENDIX I

STUDY EXPLANATION LETTER IN ENGLISH AND IN SPANISH

Dear Parent/Guardians,

Hello. Our names are Kyle Higgins and Jennifer Smith. We are from the University of Nevada, Las Vegas. We are doing a research study about student perceptions of creative self-efficacy. A perception is what you think. Creative self-efficacy is the belief in your own ability to be creative. Your student has been invited to participate in our research because they are a student who is in the third, fourth, or fifth grade.

Students will be asked to do a 16-item questionnaire about their perception of their creative self-efficacy. This study will be done during school hours in their classroom. It should take approximately 15 minutes to do. By doing this, they will help us in understanding students in the third, fourth, or fifth grades' perceptions of creative self-efficacy. Participation in this study is unpaid.

Before they participate in our research, a parent consent form will need to be filled out. Students will be asked to complete a student assent form. This study is completely voluntary. They may withdraw at any time. If they decide not to participate, or they decide to stop at any point during the research, there will be no harmful effects for them or their grades. If they decide not to participate, they will be given an alternate activity.

If you or your student have any questions throughout the study, our contact information as well as the contact information for the Office of Research Integrity is listed below.

Thank you so very much and have a great day.

Sincerely,

Kyle Higgins and Jennifer Smith

TITLE OF STUDY: Creative Self-Efficacy in Students with Gifts and Talents, Learning Disabilities, and General Education

For questions or concerns about the study, you may contact Kyle Higgins at (702) 895-1102 or the UNLV Office of Research Integrity—Human Subjects at (702) 895-2794, toll-free at (877) 895-2794, or via email at IRB@unlv.edu.

Estimados padres / tutores,

Hola. Nuestros nombres son Kyle Higgins y Jennifer Smith. Somos de la Universidad de Nevada, Las Vegas. Estamos haciendo un estudio de investigación sobre las percepciones de los estudiantes sobre la autoeficacia creativa.Una percepción es lo que piensas, y la autoeficacia creativa es la creencia en tu propia capacidad de ser creativo. Su estudiante ha sido invitado a participar en nuestra investigación porque es un estudiante que está en el tercer, cuarto o quinto grado.

Se les pedirá a los estudiantes que hagan un cuestionario de 16 ítems sobre su percepción de su autoeficacia creativa. Este estudio se realizará durante el horario escolar en su aula. Debe tomar aproximadamente 15 minutos para hacerlo. Al hacer esto, nos ayudarán a comprender a los estudiantes en las percepciones de autoeficacia creativa de tercero, cuarto o quinto grado. La participación en este estudio no es remunerada.

Antes de que participen en nuestra investigación, se deberá completar un formulario de consentimiento de los padres. Se les pedirá a los estudiantes que completen un formulario de consentimiento del estudiante. Este estudio es completamente voluntario. Pueden retirarse en cualquier momento. Si deciden no participar, o deciden detenerse en cualquier momento durante la investigación, no habrá efectos perjudiciales para ellos ni para sus calificaciones. Si deciden no participar, se les dará una actividad alternativa.

Si usted o su estudiante tienen alguna pregunta durante el estudio, nuestra información de contacto y la información de contacto de la Oficina de Integridad de Investigación se enumeran a continuación.

Muchas gracias y que tengan un gran día.

Sinceramente,

Kyle Higgins y Jennifer Smith

TÍTULO DEL ESTUDIO: Autoeficacia creativa: estudiantes en educación general, con discapacidades de aprendizaje y con regalos y talentos

Para preguntas y dudas sobre éste estudio, favor de contactar a Kyle Higgins al teléfono (702) 895-1102 o la Oficina de Integridad de la Investigación de UNLV: Sujetos Humanos al (702) 895-2794, sin costo al (877) 895-2794, o por correo electrónico a IRB@unlv.edu.

APPENDIX J

STUDENT ASSENT FORM IN ENGLISH AND IN SPANISH

UNLV

STUDENT ASSENT TO PARTICIPATE IN RESEARCH
Creative Self-Efficacy: Students in General Education, with Learning Disabilities, and with Gifts and Talents

1. Our names are Kyle Higgins and Jennifer Smith.
2. We are asking you to take part in a research study because we are trying to learn more about your level of creative self-efficacy. Creative self-efficacy is your belief in your ability to be creative.
3. If you agree to be in this study, you will rate your level of agreement with statements about creative self-efficacy by marking "Never," "Rarely," "Sometimes," "Often," "Always" for each statement. Below is a sample statement.

   "I can think of a large number of ideas or answers."

   In order to participate, you will complete the questionnaire for about 15 minutes. During the 15 minutes you will rate 16 creative self-efficacy statements.
4. Some of the things may be hard to answer.
5. Please talk this over with your parents before you decide whether or not to participate. We will also ask your parents to give their permission for you take part in this study. But even if your parents say "yes," you can still decide not to do this.
6. If you don't want to be in this study, you don't have to participate. Remember, being in this study is up to you and no one will be upset if you do not want to participate or even if you change your mind later and want to stop. If you choose not to participate, there will be no effect on your class grades.
7. You can ask any questions that you have about the study. If you have a question later that you did not think of now, you can call Kyle Higgins at (702) 895-1102. If I have not answered you questions or you do not feel comfortable talking to me about your question, you or your parent can call the UNLV Office of Research Integrity—Human Subjects at (702) 895-2794 or toll-free at (877) 895-2794.
8. Signing your name at the bottom means that you agree to be in this study. You and your parents will be given a copy of this form after you have signed it.

_____ _____

Print Your Name Date

_____

Sign Your Name

UNLV

AYUDA ESTUDIANTIL PARA PARTICIPAR EN LA INVESTIGACIÓN
Autoeficacia creativa en estudiantes con regalos y talentos, discapacidades de aprendizaje y educación general

1. Nuestros nombres son Kyle Higgins y Jennifer Smith.
2. Le pedimos que participe en un estudio de investigación porque estamos tratando de obtener más información sobre su nivel de autoeficacia creativa. La autoeficacia creativa es su creencia en su capacidad de ser creativo.
3. Si acepta participar en este estudio, calificará su nivel de acuerdo con las declaraciones sobre autoeficacia creativa marcando "Nunca", "Rara vez", "A veces", "A menudo", "Siempre" para cada afirmación. A continuación se muestra una declaración de muestra.

   "Puedo pensar en una gran cantidad de ideas o respuestas".

   Para participar, completarás el cuestionario por aproximadamente 15 minutos. Durante los 15 minutos calificarás 16 declaraciones de autoeficacia creativa.
4. Algunos temas pueden ser difícles de contestar.
5. Por favor habla de esto con tus papás antes de decider si deseas participar o no en el estudio. También le pediremos permiso a tus papás para que puedas formar parte de éste estudio. Pero aunque tus papás estén de acuerdo, tu puedes decider no hacerlo.
6. Si tu no deseas participar en éste estudio, no tienes que hacerlo. Recuerda que el estar en éste estudio depende de ti, y nadie se molestará si no quieres participar o si después cambias de opinion y quieres terminar tu participación. Si decides no participar no habrá ninguna repercusión en tus calificaciones.
7. Puedes hacer cualquier pregunta que tengas sobre éste estudio. Si tienes alguna pregunta después que no se te haya ocurrido con anterioridad, puedes llamar a Kyle Higgins al teléfono (702) 895-1102. Si no he respondido tus preguntas, o no te sientes en confianza para hacerme determinada pregunta, pueden tú o tus papás llamar a la oficina para la integridad de los estudios de investigación para seres humanos de UNLV (the UNLV Office of Research Integrity—Human Subjects) al teléfono 702-895-2794 o sin costo al teléfono 877-895-2794.
8. Firmar tu nombre en la siguiente parte significa que estas de acuerdo en participar en éste estudio. Tú y tus papás recibirán una copia de este document después de haberlo firmado.

_____ _____

Nombre (por escrito Fecha

_____

Firma

APPENDIX K

INSTRUMENT

Student Creative Self-Efficacy Inventory

Please fill this out by circling each answer:

Grade:	Age:	Gender:
3rd 4th 5th	8 9 10 11	Female Male Other

Directions: Read each statement and tell how you think by circling: 1 (never), 2 (rarely), 3 (sometimes), 4 (often), 5 (always).

Fluency	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
1. I can think of a large number of ideas or answers.	1	2	3	4	5
2. I can come up with many answers to a problem.	1	2	3	4	5
3. I can find many unlike answers for a hard problem.	1	2	3	4	5
4. I can think of many answers to a hard problem.	1	2	3	4	5

Flexibility	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
5. I can come up with many kinds of answers.	1	2	3	4	5
6. I can answer problems in many ways. Each answer is unique and special.	1	2	3	4	5
7. I can think of many types of ideas while thinking about a problem.	1	2	3	4	5
8. I can answer problems in unlike ways.	1	2	3	4	5

Elaboration	Never	Rarely	Sometimes	Often	Always
9. I can think of ways to explain a 'crazy' thought. I do this by using what I already know.	1	2	3	4	5
10. I can make my wild ideas sound normal to my friends.	1	2	3	4	5
11. I can tell stories based on dreams I had. This is even if I need to fill in answers.	1	2	3	4	5
12. I can link new ideas to things I have learned before.	1	2	3	4	5

Originality	Never	Rarely	Sometimes	Often	Always
13. I can be the first in a group to come up with an original idea.	1	2	3	4	5
14. I can find a new answer before other people.	1	2	3	4	5
15. I can beat other people in coming up with a new idea first.	1	2	3	4	5
16. I can think of ideas no one else has.	1	2	3	4	5

APPENDIX L

TEACHER SCRIPT FOR QUESTIONNAIRE IMPLEMENTATION

Teacher Script and Directions

Teachers: ***Please pass out the correct survey to each student. A cover sheet with each student's name has been attached to each student's questionnaire. As you pass out the questionnaire to the students, please tear off the cover sheet with the student's name and place it in the provided envelope that is labeled "Cover Sheet with Student Names." For those not participating, please hand out either the alternate activity or have them do an activity of your choosing.***

Teachers: ***Please read the following aloud to students:***

> *Please do not trade surveys. The researchers have asked that each student keep the survey that I hand to them. Please get a pencil. Please do not write your name, but please circle what grade you are in. You will circle either third grade, fourth grade, or fifth grade.*

Teachers: ***Please wait 15 seconds for students to circle their grade level. Then please read the following aloud to students:***

> *Please circle how old you are. You will circle either 8, 9, 10, or 11.*

Teachers: ***Please wait 15 seconds for students to circle their age. Then please read the following aloud to students:***

> *Please circle what gender you are. You will circle female, male, or other.*

Teachers: ***Please wait 15 seconds for students to circle their gender. Then please read the following aloud to students:***

> *We are going to complete a 16-item questionnaire about your perceptions of your creative self-efficacy.*

For each question, you will rate your perception by marking either **Never, Rarely, Sometimes, Often,** or **Always**. *Never means that you do not ever do it. Rarely means that you hardly ever do it. Sometimes means you do it every now and then. Often means you do it quite a lot. Always means you constantly do it. Please only select one choice for each question.*

Teachers: ***Please read question one and Never, Rarely, Sometimes, Often, or Always aloud to the students. Allow 30 seconds for students to mark their answers. Then continue with the same procedure for each of the other questions until all 16 questions are completed.***

Teachers: ***Please read the following aloud to students:***

Thank you for participating in the student perceptions of creative self-efficacy questionnaire. Please hand your questionnaires to me.

Teachers: ***Please collect the questionnaires. Then please place the questionnaires in the envelope marked "Completed Questionnaires." Please leave any extra questionnaires in the envelope that was provided. Please return the envelopes to the UNLV doctoral student who observed in today's implementation of the questionnaire.***

APPENDIX M

TASK ANALYSIS OF INTERVENTION IMPLEMENTATION

Date _____

Creative Self-Efficacy in Students in General Education, with Learning Disabilities, and with Gifts and Talents Task Analysis

Steps	**Completed**
1. The teacher hands out appropriate coded surveys to students.	
2. The teacher tells students to get a pencil.	
3. The teacher reads aloud for students not to write their name, but to circle their grade level and allows 15 seconds wait time.	
4. The teacher reads aloud to students to circle their age and allows 15 seconds of wait time.	
5. The teacher reads aloud to students to circle their gender and allows 15 seconds of wait time.	
6. The teacher reads aloud the descriptors for Never, Rarely, Sometimes, Often, and Always.	
7. The teacher reads aloud each question and Never, Rarely, Sometimes, Often, or Always to the students and allows 30 seconds of wait time per question.	
8. The teacher thanks the students for participating.	
9. The teacher collects the questionnaires and places them in the provided envelope.	
10. The teacher hands the envelope to the doctoral student.	

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CURRICULUM VITAE

Jennifer E. Smith
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CURRENT POSITION
Gifted and Talented Education Specialist
Aldeane Comito Ries Elementary School (Title I)
Las Vegas, Nevada

EDUCATION
University of Nevada, Las Vegas
Department of Early Childhood, Multilingual, and Special Education
Advanced to candidacy in May 2018
Title of Proposal: Creative Self-Efficacy: Students in General Education, with Learning Disabilities, and with Gifts and Talents
Specialization Areas: Learning Disabilities, Students with Gifts and Talents, and Dual Language Learners
Las Vegas, Nevada

Doctoral Student, 2015-2018
University of Nevada, Las Vegas
Department of Early Childhood, Multilingual, and Special Education
Las Vegas, Nevada

Gifted and Talented Education Endorsement, 2015
University of Nevada, Las Vegas
Department of Educational and Clinical Studies
Las Vegas, Nevada

Masters of Education, 2010
University of Nevada, Las Vegas
Department of Curriculum and Instruction
Emphasis Areas: Math and Educational Technology
Las Vegas, Nevada

Bachelor of Arts, 2003
University of Northern Colorado
Interdisciplinary Studies: Liberal Arts, Elementary Education, Concentration in German
Greeley, Colorado

PROFESSIONAL EXPERIENCE

Public School Experience

August 2014-Present
Gifted and Talented Education Specialist
Aldeane Comito Ries Elementary School (Title I)
Clark County School District
Las Vegas, Nevada
Responsibilities of position: Develop and provide differentiated instruction, including creativity, critical thinking, metacognition, social/emotional skills, and content based standards, for students who have been identified with gifts and talents; train and provide support to teachers for all students; develop and provide enrichment for high-ability learners; develop and provide enrichment and intervention for those with high behavioral needs; assist with intervention and/or identification of students, with and without gifts and talents as well as with and without disabilities, through Response to Intervention team meetings; collaborate with colleagues to implement school events; participate in school committees

August 2011-August 2014
Grade 4 Teacher
Aldeane Comito Ries Elementary School (Title I)
Clark County School District
Las Vegas, Nevada
Responsibilities of position: Develop and provide differentiated instruction for students in the fourth-grade based upon content standards; assist with intervention and/or identification of students through Response to Intervention team meetings; collaborate with colleagues to implement school events; participate in school committees

September 2007-August 2011
Grade 3 Teacher
Aldeane Comito Ries Elementary School (Title I)
Clark County School District
Las Vegas, Nevada
Responsibilities of position: Develop and provide differentiated instruction for students in the third-grade based upon content standards; assist with intervention and/or identification of students through Response to Intervention team meetings; collaborate with colleagues to implement school events; participate in school committees

August 2006-September 2007
Grade 3 Teacher
Gordon McCaw Elementary School (Title I)
Clark County School District
Las Vegas, Nevada
Responsibilities of position: Develop and provide differentiated instruction for students in the third-grade based upon content standards; serve as grade level chair; collaborate with colleagues to implement school events; participate in school committees

July 2005-August 2006
Grade 3 Teacher
Kalei'opu'u Elementary School
Hawaii Department of Education
Waipahu, Hawaii
Responsibilities of position: Develop and provide differentiated instruction for students in the third-grade based upon content standards; collaborate with colleagues to implement school events; participate in school committees

August 2004-July 2005
Grade 3 Teacher
Gordon McCaw Elementary School (Title I)
Clark County School District
Las Vegas, Nevada
Responsibilities of position: Develop and provide differentiated instruction for students in the third-grade based upon content standards; collaborate with colleagues to implement school events; participate in school committees

SCHOLARSHIP

Refereed Publications in Progress

Smith, J. E. (In Progress). Creative self-efficacy for students with gifts and talents. TARGET JOURNAL: *Gifted Child Today*.

Smith, J. E. (In Progress). Enhancing creativity for twice-exceptional learners: Children with learning disabilities and gifts and talents. TARGET JOURNAL: *Teaching Exceptional Children.*

Grants

Archaeological Creativity. McDonald's MAC Grant, Las Vegas, Nevada, Jennifer Smith, Project Director (FUNDED $491.85, November, 14, 2016)

Project BELL. U.S. Department of Education, Office of Special Education, Jennifer Smith, Project Director ($224,999, submitted for ESP 789 Grant Writing for Human Services).

National Conference Presentations
National Association for Gifted Children (NAGC)
November 15-18, 2018
Poster Presentation
Creative Self-Efficacy in Elementary-aged Students with Gifts and Talents

Council for Learning Disabilities (CLD)
October 11-12, 2018
Interactive Poster Presentation
Developing Creativity and Creative Self-Efficacy Through Video Modeling

Council for Learning Disabilities (CLD)
October 13, 2016
Interactive Poster Presentation
Twice-exceptionality: Breaking the Misguided Perceptions for Identification

Doctoral Summit
August 18, 2016
University of Nevada, Las Vegas
Interactive Poster Presentation
Twice-exceptionality: Breaking the Misguided Perceptions for Identification

Research
School Lead for IES Funded Project
University of Nevada, Las Vegas
August 2016- Present
A Multi-site Randomized Controlled Trial to Assess the Efficacy of the Numbershire Level One Gaming Intervention for Improving Math Outcomes for Students with or at-risk for Math Learning Disabilities

Professional Workshops
Growing Good Thinkers
Gifted and Talented Education (GATE) Department
January 2017
Presentation
Lego Robotics

Guest Lectures
EDSP 465 Student Growth Models and Data-Based Instructional Decision Making
October 5, 2016
University of Nevada, Las Vegas
Response to Intervention

UNIVERSITY TEACHING

Undergraduate

Fall 2018	EDSP 432 Parent Involvement and Family Engagement for Students with and without Disabilities (Online)
Spring 2018	EDSP 465 Student Growth Models and Data-Based Instructional Decision Making (Face-to-face)

SERVICE

School-based Service Committees
August 2017-Present
Battle of the Books School Facilitator
Aldeane Comito Ries Elementary School
Las Vegas, Nevada

August 2017-Present
Science Committee
Aldeane Comito Ries Elementary School
Las Vegas, Nevada

August 2016- Present
Response to Intervention Committee
Aldeane Comito Ries Elementary School
Las Vegas, Nevada

August 2015- August 2016
Curriculum, Instruction, and Assessment Committee
Co-chair
Aldeane Comito Ries Elementary School
Las Vegas, Nevada

August 2014-August 2015
Curriculum, Instruction, and Assessment Committee
Aldeane Comito Ries Elementary School
Las Vegas, Nevada

August 2013-August 2014
Response to Intervention Committee
Grade Level Representative
Aldeane Comito Ries Elementary School
Las Vegas, Nevada

August 2011-August 2013
Curriculum, Instruction, and Assessment Committee
Aldeane Comito Ries Elementary School
Las Vegas, Nevada

August 2007-August 2011
Response to Intervention Committee
Grade Level Representative
Aldeane Comito Ries Elementary School
Las Vegas, Nevada

August 2006-August 2007
Grade Level Chair
Gordon McCaw Elementary School
Henderson, Nevada

EDUCATIONAL AND PROFESSIONAL AFFILIATIONS AND MEMBERSHIPS

Council for Learning Disabilities
March 2016- Present

National Association for Gifted Children
March 2018- Present

Council for Exceptional Children
- Division for Learning Disabilities
- Teacher Education Division
- Technology and Media Division
- The Association for the Gifted Division

August 2018-Present