

TEACHER'S AUTONOMY AND STUDENTS' CREATIVITY

By

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(Under the Direction of Bonnie Cramond)

ABSTRACT

Teacher's autonomy has become a popular research topic in the field of teacher education in the world; however, as a result of No Child Left Behind initiative, teacher autonomy has been marginalized in schools in the U.S. and, most research studies that advocate the importance of teacher's autonomy were conducted outside the United States. Therefore, the purpose of this study is to understand the role of American teachers' autonomy in predicting their students' creativity. The simple linear regression model was significant in explaining the relationship between teaching autonomy and students' creativity. Student characteristics made up the highest percentage of the variance, approximately 32%, and were, therefore, the most influential independent variable. Within student characteristics, *Gender* was the strongest indicator of influence. However, given the participants' demographic information and the school characteristics, the findings of the study, therefore, should be generalized with caution.

INDEX WORDS: Teacher Autonomy, Creative Teaching, Student Creativity, Professionalization of Teaching, Educational Reforms, Simple Linear Regression, Multiple Regression.

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DEDICATION

For everybody who made this thesis possible

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CHAPTER 1

INTRODUCTION

Throughout the world, companies and organizations are looking for people who are can compete in the world of rapid economic and technological changes in the 21st century through creativity, innovation, and flexibility. The appearance and use of new technologies have changed the nature of work everywhere. Unlike the old industrial economies in which workers were expected to perform mechanical, algorithmic, and straightforward tasks, new forms of work rely increasingly on high levels of interdisciplinary knowledge and creativity. Such new technologies require entirely different skills/abilities/capacities from those required by the previous industrial economy. Consequently, those in the field of business heavily emphasize the recruiting and retaining of individuals who have the ability to imagine new services and new opportunities or can devise ideas for inventing smarter ways to do old jobs; energy-saving ways to provide new services; new ways to attract old customers; or new ways to combine existing technologies (Robinson, 2011).

Background of the Problem

The trend of affinity for creativity has been extended to people at all levels in every sort of field—CEOs of multinational corporations and non-profit organizations, politicians, artists, scientists, students, parents, and educators. Given the speed of change and complexity of new technologies, this contemporary society needs more creative “inventors” than ever before—physicians who can create scientific theories serendipitously; journalists who can effectively advertise multimedia campaigns; artists who can capture environments in a distinctive way;

comedians who can create insightful jokes; interior decorators who can coordinate fine furniture arrangements; and people who can think outside the box to create something original and appropriate in their daily lives. Nevertheless, the current educational system in the U.S. is based on not diversity but conformity (Robinson, 2013). Differentiated instructions and a classroom climate that accepts diversity are requisite elements to support student creativity (Starko, 2010). Hargreaves and Shirley (2009) have advocated for a new educational policy that enables educators to promote differentiation and diversity in classrooms. The United States needs a new educational policy that produces creative innovators; otherwise, the U.S. will fall behind emerging countries such as China, India, and Brazil (Wagner, 2012).

As many developed countries reform their educational systems to provide children with opportunities to learn what will be necessary in the future, the United States has employed corporate-world management models in their educational systems in order to strengthen teachers as well as the performance of students (Hargreaves and Shirley, 2009). In 2001, after the Bush administration introduced the No Child Left Behind (NCLB) Act, all states were required to have standards for teaching practices, student performance, and state tests in order to ensure the quality of education (Hodge, 2003). As a result of NCLB, the teaching profession in the U.S. became highly structured and scripted, creating a less autonomous working environment in which teachers have less control over pedagogy in their classrooms. For instance, every kindergarten teacher in Chicago, Illinois, has a teaching script to follow. On day 53, teachers are required to assemble students on a rug, read *The Bath*, and warn the children about the dangers of hot water. In accordance with the script, they are also required to ask 75 questions while teaching this 25-page picture book. Every kindergarten teacher in Chicago says the same basic

words in the same way on the same day (Schwartz, 2009). Although this is an extreme example, it illustrates how modern American education has become very scripted and rigid in its curricula.

In addition, some form of reward and punishment is implied or stated by state legislatures in order to enforce the written standards. In *Teaching at Risk: A Call to Action*, the Teaching Commission (2004) argued “not only that the nation must increase base pay for teachers, but also that teachers must be measured—and compensated—on the basis of their classroom performance, including the academic gains made by their students” (p. 16). Hargreaves and Shirley (2009) explained that NCLB legislation had narrowed and dumbed down the curriculum, increasing competition among schools and fuelling the obsession with school rankings and test results. The stakes are high not only for students, but also for administrators and teachers as well (Mathers, 2001). As a result of NCLB and post-NCLB, policy makers hoped that tightened control over schools; stronger accountability for student performance, firing unqualified teachers, and increased competition among teachers and students would improve the educational systems and secure children’s academic performance. However, minor changes within the system will not make it possible to reach the goals that have been identified as crucial for success in the 21st century.

The confluence of current education reform efforts—test-based accountability, which provides extra compensation for teachers who perform their duties in an exemplary fashion and increased competition among teachers—may increase teachers’ motivation and performance and result in higher quality education. Following the predecessors, New York and Illinois, the state of Georgia has implemented a new teacher evaluation system, called the Teacher Keys Effectiveness System. The school reform was merged into the \$400 million Race to the Top grant introduced by the Obama administration, and, in part, it attempts to dislodge ineffective

teachers and to attract more high-quality instructors to the profession. Under the new system, “student-growth” scores weigh heavily in teachers’ and principals’ evaluations, and the top performers can earn extra pay increases (Sarrio, 2011; Strauss, 2013).

Nevertheless, a teacher’s performance cannot be accurately measured by students’ academic performance for two reasons. First, the teaching profession is highly contextual, so a teacher’s effectiveness relies not solely on his/her teaching ability but also on sundry variables, including students’ interactions, students’ characteristics, students’ race/gender, and students’ backgrounds. For instance, Henry and Rickman (2007) revealed that the ability level of a child’s peers in a classroom has a direct effect on the child’s cognitive skills, pre-reading skills, and expressive language skills. Lavy, Silva, and Weinhardt (2009) also found that low achieving students affect everyone’s scores in the class. Moreover, the education of a student’s mother and father has a significant effect on a student’s academic performance. Also, Hoxby (2000) confirmed that the percentage of females, the percentage of African American students, the percentage of Asians, and other compositional configurations affect everyone’s scores. Therefore, a student’s academic performance is not solely the product of his/her teachers’ efforts.

The second reason lies in the contingent and extemporaneous features of the teaching practice. In their article, Roth, Lawless, and Tobin (2000) described students as dynamic individuals and collective entities and introduced teachers’ anecdotes. For instance, Cam, a student who was pursuing her Master’s degree in an urban teacher education program, came to school with a well-prepared lesson plan. However, only a few students showed an interest in doing what Cam was trying to demonstrate in a lab; most of them were unruly and disrespectful. Consequently, the preparation for the lab work took longer than she expected, and very little time remained in the period to start the experiments. As in the case of Cam, Nadine, who was a new

teacher at a suburban elementary school, shared her experience about her students' misconduct. When she teaches in her classes, she always deals with misbehaving students by taking them outside the classroom, talking to them without an audience present, resolving the issue, and continuing the discussion in the forum selected by the students in accordance with a teacher's manual. However, one day some students unexpectedly denied their misconduct and stubbornly refused to leave the classroom with her. As a result, she stumbled through the first few months of her first year of teaching and was not able to deal satisfactorily with misbehaving students. These examples demonstrate there is no guarantee that a teaching strategy that works with some students will always work with other students or with the same students at a different time (Roth, Lawless, & Tobin, 2000). Even with the same instructions, strategies, and materials, a teacher's effectiveness is different, depending on whom he/she teaches. Teaching is contextual, contingent, and extemporaneous. Some low-achieving students might not perform well on standardized exams because of multifarious outside-of-school factors even when exposed to outstanding teachers (Berliner 2009). Test-based accountability—measuring a teacher's performance largely by students' academic performance—burdens teachers with demands for students' academic success over which the teacher does not always have complete control.

Another problematic aspect of the current educational system is that it has been created based on the needs of industrialism. According to Robinson (2010), the current education system reflects the economic circumstances of the Industrial Revolution. School structures have been organized along factory lines, having separate facilities and specialized subjects and punctuating times by ringing bells. Children are usually “put through” the system by age group as if their graduation date were their date of manufacture. The historical materialist perspective regards the model of industrialization as problematic. Prasad (2005) stated:

In Marx's view, conditions of work under capitalism are responsible for removing all *control* over work from labor and for minimizing workers' involvement in work itself. As a result, workers are *estranged* from the products of their own labor, stripped of all pride in their work, and ultimately left in a condition of total alienation. (p.120)

One can draw parallels between the current educational system and the description of work in the historical materialist view. The highly structured and scripted working conditions of teachers in the U.S. remove much of the teachers' control over individualized instruction or instruction for active learning and minimize their interpersonal relationships with students. The overall consequence is alienation; teachers in the U.S. experience their own work and abilities as commodities to be bought and sold on the wage market and return another commodity, which is their students, to the market.

The notion of industrialized educational systems is problematic since teachers' behaviors and characteristics within alienating working conditions cannot create a classroom environment in which the creativity of students can be nurtured. Esquivel (1995) described a teacher who does not foster students' creativity as an authoritarian figure controlling his/her students and preferring impersonal relationships with them. On the other hand, a teacher who fosters creativity in his/her students is one who tends to provide the students with a creativity-friendly classroom atmosphere in which the students are encouraged to pursue creative learning in class. An important teacher characteristic that fosters creativity in students is valuing interpersonal relationships with his/her students (Esquivel, 1995). Teachers' experiences with work and life under capitalist modes of production in the interest of industrialism tend to be quite far from any kind of creative praxis.

In today's increasingly flat world, citizens in the U.S. are highly concerned about how to educate their children to compete in the global market. In order to assess and develop children's academic performance, education policy makers have tended to rely on immediately and easily identifiable measurements, such as test scores, so an emphasis has been placed on short-cuts and instant success (Torrance, 1979). In order to raise the students' academic performance, initiatives that promote tight control and strong accountability for student performance have been introduced in the U.S.; as a result, teachers face more and more highly-structured, pre-scripted lessons that allow for little creativity and further exploration (Sahlberg, 2010). Therefore, people ought to be aware of the need for a radically different approach to educational system reform and the need to abandon a linear-line mode of production. Torrance (1979) asked, "Can people reared in the American culture accept a concept of creativity that cannot be attained instantly—a kind of creativity that requires perseverance, diligence, time, and hard work?" (p. 3).

Statement of the Problem

Teacher autonomy has become a popular research topic in the field of teacher education (Jiang & Ma, 2012b); however, many research studies focus on teacher autonomy in the field of second language education (Jiang & Ma, 2012a) or in the field of physical education (Sung & Reeve, 2012). Moreover, most research studies that advocate the importance of a teacher's autonomy were conducted outside the United States (Hargreaves, Berry, Lai, Leung, Scott, & Stobart, 2013; Koustelios, Zournatzi, & Karabatzaki, 2012; Öztürk, 2012)

Therefore, the purpose of this study is to understand the role of American teachers' autonomy in predicting their students' creativity. Specifically, the research questions that guide this study include:

1. To what extent does teacher autonomy, by itself, explain their students' creativity?

2. To what extent do teachers' characteristics explain the level of autonomy?
3. To what extent do teachers' characteristics explain their students' creativity?
4. To what extent do students' characteristics explain their creativity?

Significance of the Study

This study aims to spread awareness of the importance for an autonomous working environment for teachers in the U.S. The author speculates that a teacher's autonomy in the classroom plays an integral role in creative teaching and teaching to nurture students' creativity. In fact, many talented and potentially talented teachers have left their classrooms because of the dearth of autonomous working environments for teachers. According to the National Commission on Teaching and America's Future (2003), teacher attrition has been increasing. From 1990 to 1991, 1993 to 1994, 1999 to 2000, the average number of teachers who left their classrooms during the school year was approximately 200,000. In 2001, U.S. schools lost more than 287,000 teachers, 55,000 more than had been hired. In addition, one in three new teachers leaves after his/her first year of teaching; almost half of all new teachers leave their schools within the first 5 years. When asked why they leave their teaching jobs, teachers respond that the number one reason was their working conditions. Teachers crave a working environment that respects learning, honors teaching, and teaches for understanding (The National Commission on Teaching and America's Future, 2003).

Another important reason for promoting an autonomous working environment for teachers is to retain teachers' intrinsic motivation and to increase their creativity. Among teaching skills, teaching experiences, and passion, passion plays the most integral role in teaching (Perkins, 1988). Also, teachers become most creative when they are motivated by enjoyment, satisfaction, and challenging work, not by external pressures (Esquivel, 1995). Therefore, the passion they feel for teaching has a great impact on the creativity of their teaching

(Hennessey & Amabile, 1996). However, Perkins (1988) advocated that passion is not enough. Because creative teachers often encounter great difficulty, they need an autonomous environment that can offer the maximum opportunity for maintaining that passion. Therefore, there is an urgent need to be aware of the importance of setting up a working environment of psychological safety and freedom for teachers.

In U.S. public schools, teachers have had almost no authority over scheduling, curriculum and text content, and planning and allocation (Retsinas, 1982). Educational environments have become virtual factories that produce “a servile labor force”(Langen, 2004, p.22). Consequently, teachers in the U.S. tend not to have flexible working conditions, professional control, and opportunities for intellectual growth. Teachers are not able to provide students ample choices over what and how to study in an elementary classroom. Students enter an elementary school with a great alacrity, but many leave with an apathetic view of education. A systematic decrease in their academic intrinsic motivation from age 8 to 14 years has been documented (Harter, 1981; Harter & Jackson, 1992; Lepper et al., 2005; Corpus et al., 2009). Moreover, Fasko (2010) reported that teacher educators and prospective teachers generally advocate the need for creativity in youth. However, teachers found their identities thwarted, their creativity and autonomy undermined after the No Child Left Behind Act of 2001 (Crocco & Costigan, 2007), and education programs to promote the understanding and enhancement of creativity inadequate (Fasko, 2001).

This study is expected to explore a potential association between teachers’ autonomy and students’ creativity and to reveal the importance of teachers’ autonomous working environments and the key predictors of students’ creativity. The findings of this study can assist in guiding teachers in fostering greater individual initiative and creativity in their teaching.

CHAPTER 2

REVIEW OF THE LITERATURE

There has been a growing body of research on autonomy over the past decades. The term *autonomy* refers to self-regulation and self-direction (Pink, 2009a). Self-determination theorists claim that autonomy is one of the fundamental components that fuels intrinsic motivation (Ryan & Powelson, 1991). And, intrinsic motivation is central to creativity (Amabile, 1996).

Copious cases in the field of business have shown that people's experiences of autonomy can positively affect their intrinsic motivation and creativity. For example, a software company, Atlassian, has special working days called "FedEx Days" (Pink, 2009a, p. 91). On these occasional working days, the workers have complete autonomy over what to work on, when to work, where to work, and with whom they work. In return, their bosses expect the employees to show their results to the company. Because they are essentially expected to deliver something overnight, the days are named after FedEx. The pure undiluted autonomy on FedEx days has led to a whole array of fixes for existing software and ideas for new products that otherwise would have never emerged (Pink, 2009a). Inspired by the autonomous working environment at Atlassian, Google has started providing its workers 20 Percent Time in which the engineers can spend 20 percent of their time working on anything they want and have individual authority over their time, their task, their team, and their technique. Included as results from this 20 Percent Time, Google employees have produced new products such as Gmail, Orkut, and Google News (Pink, 2009b)

In the field of business, organizations and companies have paid particular attention to autonomy because research studies have bolstered its powerful effects on individuals' attitudes, performance, and creativity, which are integral parts in almost all aspects of business today (Way, 2012). For example, employees offered an autonomous working environment by their bosses at a company were allowed to take on new projects and were given ample choice over what to do and how to do it. As a result, the workers showed enhanced job satisfaction, motivation, performance (Baard, Deci, & Ryan, 2004; Wang & Cheng, 2010), and creative behaviors (Çekmecelioğlu & Günsel, 2011). The level of autonomy in the workplace was also found to determine the quality and frequency of employees' creative problem finding and solving when they generated ideas for new processes and products (Nonaka & Takeuchi, 1995) and when they were in conflicting, turbulent, or uncertain situations (Troyer, Mueller, & Osinsky, 2000). Increased autonomy in the workplace was found to play a crucial role in nurturing individual creativity not only in individual societies but also in collectivist societies as well (Liu, Chen, & Yao, 2010). These effects could carry over to educational settings.

In the field of education, the creators of the Autonomous Learner Model, Betts and Kercher, noted the importance of providing students with an autonomous environment and advocated that educators help each gifted student become an autonomous learner—"one who solves problems or develops new ideas through a combination of divergent and convergent thinking and functions with minimal external guidance in selected areas of endeavor" (Betts & Kercher, 1999, p. 14). Self-determination theorist claimed that creating a supportive context for autonomy and encouraging students to make their own choices, rather than pressuring them toward particular outcomes, facilitates positive integration of behavioral change (Deci & Ryan, 2010). Deci and Ryan (2008) revealed that providing students with autonomous learning

environments promoted greater conceptual understanding, better grades, and increased persistence at school. In addition, students also showed higher productivity, less burnout, and greater levels of psychological well-being during sporting activities (Deci & Ryan, 2008). Student autonomy is also beneficial to enhance academic performance and motivation in at-risk students (Alfassi, 2004) and potentially at-risk students (DiCintio & Gee, 1999; Elaine, 2007).

Unlike autonomy, creativity is such a complex psychological phenomenon (Weisberg, 2006). Because creativity can be observed as a property of people, processes, or products, different researchers have their own theorizations of creativity, and they have discussed the terms and theories of creativity over decades (Fisher & Williams, 2004). Also, there have been many attempts to define creativity (Sternberg, 1999; Weisberg, 2006; Starko, 2010). Almost all researchers who study creativity have their own definitions that are a bit different from one another, but their definitions also have a few things in common to some extent. The definition of creativity subsumes two elements: originality and appropriateness/effectiveness/usefulness/value (Sternberg, 1999; Robinson, 2001; Weisberg, 2006; Starko, 2010; Runco & Jaeger, 2012).

Some researchers started to pay particular attention to how creativity can be promoted, assessed, and taught in schools. For instance, pioneer and international authority on creativity Dr. E. Paul Torrance (Fisher & Williams, 2004) claimed that educators need to respond to students creative needs by creating an environment in which the students can be curious and ask questions; meet adequate levels of challenges and attempt difficult tasks; have differentiated instruction; and search for the truth (Torrance, 1970). The early work of authorities, like Dr. E. Paul Torrance and Dr. Teresa M. Amabile, on the identification and teaching of creativity has been promoted in various school programs worldwide (Bleedorn, 1998; Taylor & Littleton, 2012). Creativity has been a contemporary concern for policy makers and educators in the

United States, as well (Taylor & Littleton, 2012). In recent years, Eastern Asian countries, like China, have also started to restructure their educational systems in order to respond to the need of developing student creativity (Starko, 2013).

In attempts to nurture creativity in youth, autonomy is a foundational component of student creativity. Thomas and Chan (2013) conducted a 3-year longitudinal study to understand the development of art school students' belief about creativity. Their semi-structured interviews revealed that art school students were able to show authentic expression or sophistication in their art works. The students also reported that sometimes they felt they stultified their originality or creative expression when they had to comply with teachers' advice that they do not concur in order to avoid alienating themselves in a classroom (Thomas & Chan, 2013). Amabile (1979) also revealed that student autonomy led to student creativity. In her study, students who were not art majors were asked to form a design and express a feeling of silliness, using only the materials provided by the experimenter. One group received explicit instructions on how to make their artworks; the other group did not receive any specific instructions for performance. Judged by graduate students enrolled in an art school, the students under nonspecific instructional sets produced more creative works than the students who received the instructions. In recent years, the South Korean government has implemented the Self-directed Learning Policy to encourage South Korean students to cultivate their interests and to increase their intrinsic motivation for a few particular fields or topics, rather than to cover a gamut of subjects with low levels of interest and motivation to learn. With this policy, a creative and autonomous individual becomes the image of an educated person in Korea (Ryoo, 2011).

Teacher autonomy is defined as the teacher's "self-rule and independence in conducting their tasks in terms of process, decision making, and time management" (Song, Uhm, & Kim,

2012, p.65). Jen-Chia and Yu-Mei (2009) were interested in teacher autonomy's influence on students innovation and creativity and conducted multiple regression analysis. They used their own 26-item questionnaire with an overall α coefficient value of .963, measuring four variables: Teacher autonomy, organizational learning, group cohesion, and students innovation and creativity. The multiple regression analysis revealed that teacher autonomy was the most powerful predictor of students innovation and creativity. However, this study used teacher-rated students creativity and did not measure students creativity directly.

Although empirical evidence is still scant regarding the relationship between teacher autonomy and students' academic performance, intrinsic motivation, and creativity, this important realization has come to the policy makers in some countries, and they have decided to go against the contemporary educational norms in order to increase the quality of education. Singapore is one example. In 2005, the government introduced a unique educational policy called "Teach Less, Learn More." It provides a 10% autonomous environment, time, and space for teachers to bring individual initiative and creativity into the classroom (Hargreaves & Shirley, 2009). Thoarman (2005) reported that teachers use the free time to conduct a variety of assessment to understand the needs of their students or to customize lessons in order to appeal to students and better engage them in learning. In Finland, its government places great emphasis on high-quality teaching at both the primary and secondary levels, and teachers in Finland are considered esteemed professionals similar to medical doctors or lawyers. Teachers in Finland enjoy an autonomous working environment, exercising their professional knowledge and judgment both widely and freely in their schools (Sahlberg, 2011).

Teachers in the countries, mentioned above, where the governments promote teacher autonomy, demonstrate that the freedom they have enables them to have more time to prepare

lessons; to introduce their practical, effective, and individualized programs or strategies; to inject more quality into teaching in response to students' aptitudes; and to provide students with room to exercise initiative and shape their own learning (Hargreaves & Shirley, 2009). Ng (2007) reported that under the "Teach Less, Learn More" initiative, every teacher in Singapore has the autonomy to use 10-20% of curriculum time, known as "white space," and also to receive an average of two hours per week to reflect on, discuss, and plan their lessons by decreasing teaching time at schools. Given the autonomous environments, they are successfully able to engage students, to amalgamate various subjects, and to provide a vibrant learning environment for the students. For instance, with the approval of their teachers, students at Bedok South Secondary School energetically work on and learn through projects, such as "designing and making movies and posters for the Singapore Heart Foundation, [and] designing gadgets, [a] handphone charger and pencil holder using IT, Computer Aided Design" (Ng, 2007, p. 7).

When reforming its public education system in the 1970's, the Finnish government focused on its teacher education programs, which provide a comprehensive framework for all prospective teachers from primary to secondary schools. The government has established probably the most competitive teacher education system in the world in which all the prospective teachers have to meet rigorous academic requirements and complete a research-based Master's thesis in Finnish graduate schools. Therefore, teaching is considered a professional career, and Finnish teachers are able to access and follow the ongoing development of their own profession and to implement freely new knowledge within their own instructional work (Sahlberg, 2010). For example, Juuti (2010) revealed that Finnish science teachers are flexible and sensitively listen to students' opinions and desires in order to customize and select appropriate teaching methods for their students. They are aware that students with a positive perception of school

science are eager to learn science through creative activities, group discussion, and group projects and students who are not interested in science tend to be satisfied with direct teaching. The teachers differentiated their teaching methods to accommodate the different interest levels of the students.

Although there is no research on the effectiveness of teachers in Singapore and Finland on students' creativity, according to data from the Programme for International Student Assessment, in 2006 and 2009, Singapore and Finland improved their educational performances and ranked in the top five among the 34 Organization for Economic Co-operation and Development countries. Moreover, autonomous teachers can provide students with meaningful information and feedback, encourage students to use the information to solve problems in their own way (Black & Deci, 2000), minimize threats to their autonomy, and convey acceptance and respect (Koestner et al., 1984). Classroom environments, including classroom routines, practices, and evaluation procedures, established by teachers, greatly influence student learning and creativity (Pintrich & Schunk, 2002; Tighe, Picariello, & Amabile, 2003). Beghetto (2006) reported that prospective teachers, who had experienced creativity-diminishing environments, tended to learn from their own past experiences and were committed to promoting creativity in students. Thus, there are clear suggestions that providing teachers with autonomous working environments can enhance students' creativity, because autonomous teachers are more likely to structure assignments that can give students autonomy, provide an opportunity for students to develop fluidity in thought, and supply their students with supportive environments in which the students can nurture their creativity.

The purpose of this study is to explore potential relationships between teacher autonomy and student creativity.

CHAPTER 3

METHODOLOGY

The purpose of this study is to investigate the role of teachers' autonomy in predicting their students' creativity. This chapter describes the methodological details employed for this study, which was designed to answer the following questions:

1. To what extent does teachers' autonomy, by itself, explain their students' creativity?
2. To what extent do teachers' characteristics explain the level of autonomy?
3. To what extent do teachers' characteristics explain their students' creativity?
4. To what extent do students' characteristics explain their creativity?

This chapter is organized into six sections describing the study's measurement framework, instrumentation, study population, data collection, data analysis, and limitations.

Measurement Framework

A retrospect view of human motivation in the mid and late 20 century was that the way to motivate people is through rewards. If school principals or policy makers reward a teacher, they expect to get more of a desired behavior; if they punish a teacher, they will probably get less of an undesired behavior. In contrast to this view of human motivation, the practicality of rewards have been challenged by self-determination theorists. According to self-determination theory (Deci & Ryan, 2010), autonomous self-regulation has been associated with a variety of positive performance and affective outcomes in the areas of education, parenting, work, health care, and sports. Self-determination theorists advocate that, because self-determination derives from intrinsic motivation and integrated extrinsic motivation, one needs to support the satisfaction of

people's basic psychological needs, competence, and relatedness in order for them to internalize behavioral regulations more fully and become more self-determined in regulating their behaviors. Those behaviors that are self-determined result in a stronger sense of personal commitment, greater persistence, more positive feelings, higher quality performance, and better mental health (Deci & Ryan, 2000).

Through this exploratory research study, I attempted to understand phenomena, particularly related to the interpretation of regression coefficients as indices of the effects of teachers' autonomy on their students' creativity. Three variables were included in the model guiding this study. In addition to teachers' autonomy, I predicted that two variables affect students' creativity in this logical model. A set of variables for both the teachers' characteristics and the students' characteristics have been identified based on the literature, expert input, and personal experience. A conceptual model of the independent and dependent variables is displayed in Figure 3.1. The development and selection of each of the variables are discussed throughout this chapter.

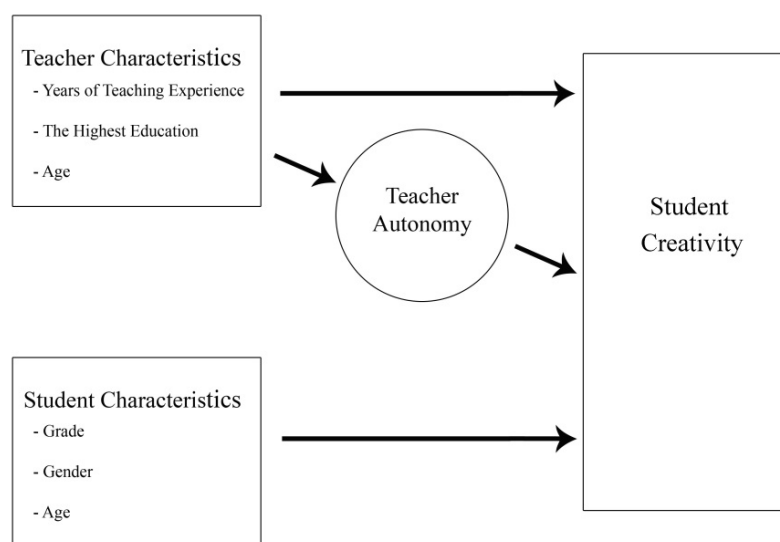


Figure 3.1 *Conceptual Model of the Study*

Instrumentation

This study requires three distinctive measures; teacher autonomy, student creativity and background variables. For data collection, principally two instruments were used; the Teaching Autonomy Scale (TAS) and Torrance Tests of Creative Tests (TTCT), Figural.

In order to measure teachers' autonomy levels, the TAS was used (See Appendix A, Teaching Autonomy Scale). Pearson and Hall (1993) developed and the TAS, a questionnaire that contains 18 scale items which were designed to elicit the degree to which teachers perceive that they have autonomy. The Cronbach alpha coefficient was used to determine the TAS's internal consistency reliability. When conducting a study to validate the TAS, the initial total number of items was 20, and the reliability was calculated to be .78. Two items were deleted because of their poor item-total correlations, and the internal reliability with the final version yielded a coefficient of .80 (Pearson & Hall, 1993). Pearson and Moomaw (2006) improved the internal consistency reliability of the TAS ($r = .83$) and confirmed two factors, general autonomy and curricular autonomy

General autonomy is related to "classroom standards of conduct and personal on-the-job discretion" while curricular autonomy is pertinent to "issues concerning the selection of activities, materials, and instructional planning and sequencing" (Pearson & Hall, 1993, p. 177).

Combining the general autonomy score and curricular autonomy score, the questionnaire also produces the total autonomy score. The TAS uses a 4-point, Likert-type scale, ranging from 1 (definitely false) to 4 (definitely true) to eliminate a neutral response. (Pearson & Hall, 1993). For this study, I chose to use the total autonomy scores in order to avoid multiple significance testing with a comparatively small population.

Demographic variables of interest were included on the 2nd page of the TAS (See also Appendix A, Teaching Autonomy Scale). Teachers' characteristics, teaching experience, and highest degree variables are pertinent to this study at the school level. Teachers' characteristics and teaching experience are expressed in terms of open-ended responses and highest degree earned in terms of five categorical responses: Bachelor's, Master's Ed Specialist, Doctorate, and Other.

The TTCT was used to measure students' creative thinking abilities. The TTCT was published by Torrance and his associates in 1966, and it has been renormed five times: in 1976, 1984, 1990, 1998, and 2006 (Kim, 2011). The TTCT was chosen for this study because it is one of the largest norming samples with 50-years of longitudinal studies over a very wide age range (ages 6 through 19) (Runco, Millar, Acar, & Cramond, 2010). The TTCT has two components: the TTCT-Figural and the TTCT-Verbal, and the TTCT-Figural was used in this study since the TTCT-Figural is the most widely used test of creativity (Colangelo & Davis, 1997; Cropley, 2000).

There are two forms (A and B) of the TTCT-Figural. Both Forms A and B are comprised of three activities, but there are slight differences between Form A and Form B. Activity 1 involves constructing a picture based on a single curved shape in both Forms A and B; Activity 2 involves completing ten incomplete linear figures in both Forms A and B. Activity 3 in Form A comprises three pages of sets of parallel lines; whereas, the activity in Form B consists of three pages of sets of small circles. Given the figures or shapes, students are asked to add lines and details, draw, and give a title to their pictures (For sample items of these activities and directions for administration, see Appendix B). These three activities are measures of five subscales of creative potential: fluency, originality, elaboration, abstractness of titles, and resistance to

premature closure. In addition to the five subscales, the TTCT also provides indications of the Creative Strengths subscales—13 criterion-referenced measures. The creative Strengths include Emotional Expressiveness, Storytelling Articulativeness, Movement or Action, Expressiveness of Titles, Synthesis of Incomplete Figures, Synthesis of Lines or Circles, Unusual Visualization, Internal Visualization, Extending or Breaking Boundaries, Humor, Richness of Imagery, Colorfulness of Imagery, and Fantasy. Although I obtained the scores of all five subscales of creative potential and creative strengths from Form A and B, only the average standard score was used in order to avoid multiple significance testing with a comparatively small population.

Study Population

The target population for this study consisted of 8 teachers and 92 students. The frequency distribution for grade is shown in Table 3.1. All of the teachers who participated in the study were Caucasian; the students were predominantly Caucasian as well. The sample of teachers and students was drawn from an inter-denominational religious school located in a small, southeastern city. This private school serves students in grades Pre-K – 12th grade, and yearly tuition is \$3684 for Pre-K and K; \$5040 for 1st grade to 4th grade; \$5484 for 5th grade to 8th grade; and \$5904 for 9th grade to 12th grade. The total enrollment is approximately 700 students, and the student-teacher ratio is 14:1.

Table 3.1
Frequency Distribution for Grade

Grade	Male		Female	
	Teacher	Student	Teacher	Student
3 rd	0	13	2	16
4 th	0	14	3	25
5 th	0	16	3	8
Total	0	43	8	49

Data Collection

Data were collected through the following procedures:

1. Approval was obtained from the school principal to administer the instruments—the TTCT-Figural and the TAS (See Appendix C, Principal Permission Form).
2. Prior to data collection, emails describing the study and informed consent forms were sent to teachers (See Appendix D, Informed Consent Form).
3. After the principal agreed to have the teachers and students participate in the study, parental/guardian permission forms were sent to parents of students in 3rd, 4th, and 5th grades (See Appendix E, Parental/Guardian Permission Form).
4. The administration of the instruments took place on a designated day scheduled by the school principal. On a day before the designated day, I attended a teachers' morning meeting to introduce myself and to follow up with the teachers.
5. I administered the TTCT-Figural to the whole class (12-15 students in each class) for one hour, and students whose parents did not provide permission were given other activities by their classroom teachers.
6. Teachers' data were collected through a confidential, paper-and-pencil survey, and the teachers completed the survey while their students took the TTCT-Figural.

Data Analysis

Consistent with the first research questions, simple linear regression was used to determine the relationship between teachers' autonomy and students' creativity, using the Statistical Package for the Social Sciences (SPSS). Raw scores on the TAS were summed in accordance with the scoring criteria provided by Dr. Carolyn Pearson, one of the creators of the TAS (See Appendix F, Scoring Directions for the Teaching Autonomy Scale). As dependent variables, data collected from all students in 4th, 5th, and 6th grades taking the TTCT were scored by me, who was trained and achieved .90 inter-rater reliability, in accordance with the instrument directions. For the second, third, fourth, and fifth research questions, simple linear regressions and multiple regressions were conducted to test the relationships among autonomy, teachers' characteristics, students' characteristics, and creativity. The demographic information of the teachers and students was obtained from the 2nd page of the TAS and the cover sheet of the TTCT. The regression model conveyed the level of significance of each variable on students' creativity. The level of significance is discussed in Section 4.

Limitations

Limitations to the study's external validity arose from the selection of subjects for the research. The sample for the quantitative study was limited to teachers and students at a school selected on the basis of the school principal's willingness to have her teachers and students participate in a research study on teaching autonomy and student creativity. The participants were recruited solely from one private elementary school that operates in a suburban/rural setting in a poor northern Georgia County, an area where students' families are predominantly lower- or lower-middle class. In addition, due to the extremely low proportion of ethnic minority representation in both student and teacher population, information related to race/ethnicity was

not used in this study. Given the participants' demographic information and the school characteristics, the findings of the study, therefore, should be generalized with caution.

CHAPTER 4

RESULTS

In attempts to explain the variability of a phenomenon of student creativity, I conducted simple linear and multiple regressions using SPSS in order to understand its relations with the following variables: teacher autonomy, teacher's characteristics, and student's characteristics.

Respondent Demographics

Summaries of the respondents' characteristics are shown in Table 4.1. The total number of the students was 92 (3rd grade $n = 29$; 4th grade $n = 39$; and 5th grade $n = 24$). The gender ratio is 43 boys to 49 girls, ranging in age from eight to thirteen. The total number of the teachers was 8. One hundred percent of the teacher participants were Caucasian women. The teachers' ages varied from twenty-five to fifty-five. The years of teaching experience varied; the longest was 32 years, and the shortest was 2 years. Six of eight teachers have a Bachelor's degree in education; and others have a Master's degree.

Using descriptive statistics, the sample size of 92 students was analyzed to determine the statistical Mean (the TTCT average standard score average), Median, and standard deviation for the TTCT average standard score and subscales. Minimum (lowest standard score) and Maximum (highest standard score) were identified for the average standard score and each subscale standard score. Table 4.2 reports summary characteristics of the average standard score. Average standard scores of 85 – 115 on the TTCT are considered average with a standard deviation of 15. Mean and median standard scores were within the average range with minimum standard scores at the lower extreme to maximum standard scores above the average range.

Table 4.1
Profile of Students

		Number	Percentage
Grade	3rd	29	31.5%
	4th	39	42.4%
	5th	24	26.1%
Gender	Male	43	46.7%
	Female	49	53.3%
Age	8	10	10.9%
	9	25	27.2%
	10	39	42.4%
	11	16	17.4%
	12	1	1.1%
	13	1	1.1%

Table 4.2
Summary Statistics of the TTCT

Grade	Boys					Girls				
	M	Median	SD	Min	Max	M	Median	SD	Min	Max
3rd	104.23	104.00	10.10	80	115	112.25	114.00	12.59	90	130
4th	102.71	107.00	17.98	74	130	115.64	118.00	11.89	92	142
5th	109.31	111.00	17.79	74	140	110.88	113.50	11.38	95	125

Findings Related to Research Question 1

Simple linear regression analysis was conducted to examine the relationship of the independent variable with the dependent variable. The independent variable was score of the TAS, a measure of teacher autonomy; the dependent variable was the TTCT average standardized score, a measure of the students' creativity. The summed score of the 18 items in

the TAS was calculated to derive the score representing the independent variable teacher autonomy. The higher the score, the greater the perceived autonomy.

The simple linear regression analysis results for the relationship between teacher autonomy and student creativity are shown in Table 4.3, and the scatter plots and line graph are represented in Figure 4.1. The analysis indicated that 22.9% of the variance in student creativity was explained by teacher autonomy ($R^2 = .229$). The regression model was significant in explaining the relationship between student creativity and teacher autonomy, $F(1, 90) = 4.973$, $p = .028$. The coefficient of determination was calculated as $r^2 = .052$, which, as seen in Figure 4.1, indicates a relatively moderate relationship between teacher autonomy and student creativity. Thus simple linear regression analysis revealed that teachers' autonomy, by itself, positively explains their students' creativity.

Table 4.3
Simple Linear Regression Analysis for Research Question 1

IV: Teacher Autonomy (Total Autonomy Score)			
DV: Student Creativity (TTCT Average Standard Score)			
Analysis of Variance: $F = 4.973$, $p < .05$			
$R^2 = .229$			
Factor	DF	Standardized Coefficient	t -value
Teacher Autonomy	1	.229	2.23*

* $p < .05$, ** $p < .01$, *** $p < .001$

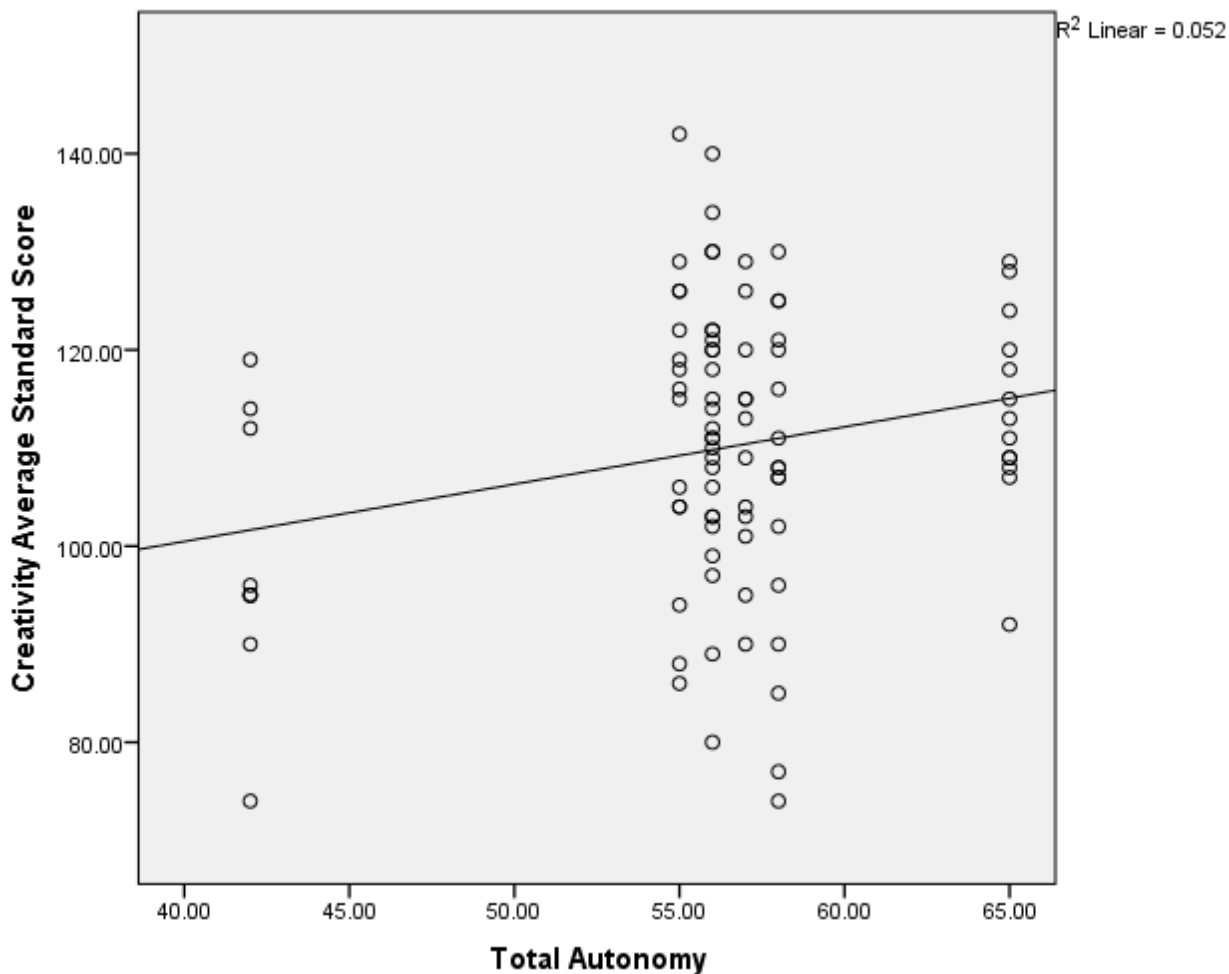


Figure 4.1 Scatter Plots and Regression Line of Student Creativity and Teacher Autonomy

Findings Related to Research Questions 2

In order to examine to what extent each teacher's characteristics influence teacher autonomy, three simple linear regressions were performed. Table 4.4 summarizes three simple regression analyses. Each regression provided a parameter estimate indicative of how much an independent variable would be expected to increase for a dependent variable. The results of simple linear regression revealed that *Years of Teaching Experience* was predictive of teacher autonomy, $R^2 = .338$, $F(1, 90) = 11.588$, $p < .01$ and that *Age* was predictive of teacher autonomy, $R^2 = .277$, $F(1, 90) = 7.478$, $p < .05$.

Table 4.4
Simple Linear Regression Analyses for Research Question 2

IV: Years of Teaching Experience			
DV: Teacher Autonomy (Total Autonomy Score)			
Analysis of Variance: $F = 11.588, p < .01$			
$R^2 = .338$			
Factor	DF	Standardized Coefficient	t -value
<i>Years of Teaching Experience</i>	1	-.338	-3.404**

IV: Teacher's Highest Degree			
DV: Teacher Autonomy (Total Autonomy Score)			
Analysis of Variance: $F = .145$			
$R^2 = .040$			
Factor	DF	Standardized Coefficient	t -value
<i>Teacher's Highest Degree</i>	1	-.040	-.381

IV: Age			
DV: Teacher Autonomy (Total Autonomy Score)			
Analysis of Variance: $F = 7.478, p < .01$			
$R^2 = .277$			
Factor	DF	Standardized Coefficient	t -value
<i>Age</i>	1	-.277	-2.735**

* $p < .05$, ** $p < .01$, *** $p < .001$

As a preliminary analysis, the relationship of each of the independent variables to each dependent variable was examined through use of the Pearson correlation in order to determine collinearity of variables. Using the Pearson correlation, it was, however, determined that all coefficients did not exceed .60 except for the correlation between *Years of Teaching Experience* and *Teacher's Age* ($r^2 = .87$). In addition, according to Collinearity Statistics, *Years of Teaching Experience* has a variance inflation factor (VIF) around 5 (VIF = 4.987), and *Teacher's Age* also

has a VIF around 5 (VIF = 4.199). Therefore, the variable *Teacher's Age* was removed from the following multiple regression analysis in order to avoid collinearity.

Table 4.5 represents the multiple regression results. The analysis reported that 42.0% of the variance in teacher autonomy was explained by the two teacher characteristics: *Years of Teaching Experience* and *Teacher's Highest Degree* ($R^2 = .420$). The regression model was significant in explaining the relationship between teacher's characteristics and teacher autonomy, with $F(2, 89) = 9.507, p = .000$. The test of relative contributions of independent variables was used to explain the influence of teacher's characteristics and teacher autonomy. The test showed that *Years of Teaching Experience* was the strongest indicator of influence on teacher autonomy, with a standardized coefficient of $-.561$. *Teacher's Highest Degree* was the second strongest indicator, with a standardized coefficient of $.334$. The t -value for *Years of Teaching Experience* was significant at the $.001$ level, and the t -value for *Teacher's Highest Degree* was significant at the $.05$ level. In accordance with the multiple regression analysis, within teacher's characteristics, *Years of Teaching Experience* negatively predicts teacher autonomy, and *Teacher's Highest Degree* positively predicts teacher autonomy. Even though, for the second research question, the analysis reported that teacher's characteristics explained the level of autonomy, the findings of the multiple regression were incongruent with the results of simple linear regressions. These incongruences are discussed in Chapter 5.

Table 4.5
Multiple Regression Analysis for Research Question 2

IV: Teacher's Characteristic			
DV: Teacher Autonomy (Total Autonomy Score)			
Analysis of Variance: $F = 6.32$ and $p < .001$			
$R^2 = .421$			
Factors	DF	Standardized Coefficient	t -value
<i>Years of Teaching Experience</i>	2	-.561	-4.340***
<i>Teacher's Highest Degree</i>	2	.334	2.587*

* $p < .05$, ** $p < .01$, *** $p < .001$

Findings Related to Research Question 3

The third research question asked to what degree teachers' characteristics explain their students' creativity. First, three simple linear regressions were conducted in order to examine to what extent each teacher's characteristics influence student creativity. As shown in Table 4.6, the simple regression analyses reports that *Years of Teaching Experience* was not significantly predictive of student creativity, $R^2 = .093$, $F(1, 90) = .791$, $p = .376$; *Teacher's Highest Degree* was not significantly predictive of student creativity, $R^2 = .077$, $F(1, 90) = .535$, $p = .466$; and that *Age* was not significantly predictive of teacher autonomy, $R^2 = .116$, $F(1, 90) = 1.225$, $p = .271$.

Multiple regression analysis was also performed to further explore the relationship between teacher's characteristics and student creativity. The results of the multiple regression of the third research question can be viewed in Table 4.7. As described earlier, due to the presence of collinearity, the variable *Teacher's Age* was removed from the multiple regression analysis. The multiple regression analysis indicated that 20.9% of the variance in student creativity was

explained by the two teacher's characteristics: *Years of Teaching Experience* and *Teacher's Highest Degree* ($R^2 = .209$). The regression model was not significant in explaining the relationship between teacher's characteristics and student creativity, with $F(2, 89) = 2.032$, $p = .209$. The test of relative contributions of independent variables was used to explain the influence of teacher's characteristics and student creativity. The test showed that *Teacher's Highest Degree* was the strongest indicator of influence on teacher autonomy, with a standardized coefficient of .251, and the t -value for *Teacher's Highest Degree* was close to significant at the .05 level. The t -values for *Years of Teaching Experience* was not significant with a standardized coefficient of -.261. Therefore, for the third research question, the analysis reported that teacher's characteristics do not explain student creativity.

Table 4.6
Simple Linear Regression Analyses for Research Question 3

IV: Years of Teaching Experience			
DV: Student Creativity (TTCT Average Standard Score)			
Analysis of Variance: $F = .791$			
$R^2 = .093$			
Factor	DF	Standardized Coefficient	t -value
Years of Teaching Experience	1	-.093	-.890

IV: Teacher's Highest Degree			
DV: Student Creativity (TTCT Average Standard Score)			
Analysis of Variance: $F = .535$			
$R^2 = .077$			
Factor	DF	Standardized Coefficient	t -value
Teacher's Highest Degree	1	.077	.731

IV: Age			
DV: Student Creativity (TTCT Average Standard Score)			
Analysis of Variance: $F = 1.225$			
$R^2 = .116$			
Factor	DF	Standardized Coefficient	t -value
Age	1	-.116	-1.107

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.7
Multiple Regression Analysis for Research Question 3

IV: Teacher's Characteristic			
DV: Student Creativity (TTCT Average Standard Score)			
Analysis of Variance: $F = 2.032$			
$R^2 = .209$			
Factors	DF	Standardized Coefficient	t -value
Years of Teaching Experience	3	-.261	-1.875
Teacher's Highest Degree	3	.251	1.803

* $p < .05$, ** $p < .01$, *** $p < .001$

Findings Related to Research Question 4

The fourth research question asked whether or not there is a relationship between students' characteristics and student creativity. I examined each student characteristic's influence on student creativity using simple linear regression analyses. Table 4.8 reports three simple regression analyses. The results of simple linear regressions show that *Gender* was only significant predictive of student creativity, $R^2 = .283$, $F(1, 90) = 7.821$, $p < .006$.

Table 4.8
Simple Linear Regression Analyses for Research Question 4

IV: Grade			
DV: Student Creativity (TTCT Average Standard Score)			
Analysis of Variance: $F = .109$			
$R^2 = .035$			
Factor	DF	Standardized Coefficient	<i>t</i> -value
<i>Grade</i>	1	.035	.742
IV: Gender			
DV: Student Creativity (TTCT Average Standard Score)			
Analysis of Variance: $F = 7.821$, $p < .01$			
$R^2 = .283$			
Factor	DF	Standardized Coefficient	<i>t</i> -value
<i>Gender</i>	1	.283	2.797**
IV: Age			
DV: Student Creativity (TTCT Average Standard Score)			
Analysis of Variance: $F = 1.138$			
$R^2 = .112$			
Factor	DF	Standardized Coefficient	<i>t</i> -value
<i>Age</i>	1	.112	1.067

* $p < .05$, ** $p < .01$, *** $p < .001$

In addition to the simple linear regression analyses, multiple regression analysis was conducted to examine the relationship between student's characteristics and student creativity. Table 4.9 represents the multiple regression results for the fourth research question. The analysis showed that 32.4% of the variance in student creativity was explained by the three students' characteristics: *Grade*, *Gender*, and *Age* ($R^2 = .324$). The regression model was significant in explaining the relationship between student's characteristics and student creativity, with $F(3, 88) = 3.444$ and $p = .020$. The test of relative contributions of independent variables was used to explain the influence of student's characteristics and student creativity. The test showed that *Gender* was the only significant indicator of influence on student creativity, with a standardized coefficient of .293. The t -value for *Gender* was significant at the .05 level. The t -values for *Grade* and *Age* were not significant with a standardized coefficient of -.106 and .231. Thus, for the fourth research question, the multiple regression analysis reported that *Gender* within student's characteristics was the only factor which explains student creativity.

Table 4.9
Multiple Regression Analysis for Research Question 4

IV: Student's Characteristic			
DV: Student Creativity (TTCT Average Standard Score)			
Analysis of Variance: $F = 3.444$ and $p < .05$			
$R^2 = .324$			
Factors	DF	Standardized Coefficient	t -value
<i>Grade</i>	3	-.106	-.621
<i>Gender</i>	3	.293	2.875*
<i>Age</i>	3	.231	1.362

* $p < .05$, ** $p < .01$, *** $p < .001$

CHAPTER 5

DISCUSSION

There are several discussions on the discovery of students' creativity in the extant literature. Chapter Five presents discussions following the results of the data analysis with extra caution expended on explaining the phenomenon of teacher autonomy and student creativity at an inter-denominational religious school. This research study revealed an additional possible factor in the development of creativity that has not previously been described in the literature. Specifically, the construct of students' creativity has not previously been associated with teacher autonomy. The perspective of self-determination theory describes that teachers acting with a sense of choice, volition, and commitment tend to elicit positive performances from their students. The findings of this study may have implications about giving teachers individual authority over making important decisions that affect classroom creativity.

Although I was able to find some statistical significance with the tests, I need to be mindful about interpreting the findings due to the absence of both random assignment and variable manipulation. Pedhazur (1997) warned researchers to interpret results from multiple regression analysis in non-experimental research with extra care and caution since it is very difficult to untangle the effect of each independent variable. Cook and Campbell (1979) also addressed problems concerning the interpretation of regression equations estimated from data obtained in non-experimental research. Multiple regression analysis in non-experimental research reflects average relations between a dependent variable and a set of independent variables, not necessarily the process by which the latter produces the former. Therefore, I tried

to go back into the data and the literature to find a unifying theoretical concept that explains the phenomenon under study and to avoid fallacious arguments or misleading conclusions.

The simple linear regression model was significant in explaining the relationship between teaching autonomy and students' creativity. Teaching autonomy may play an integral role in students' creativity because autonomous teachers are able to initiate a creativity-friendly learning environment. When learning outcomes are heavily prescribed and students have few opportunities to define their own learning goals, teachers with a high sense of autonomy are more likely to be open to students' other strengths and assets and to bring greater awareness to their classroom practices than teachers with a low sense of autonomy. Such an open-minded learning environment is imperative for high ability learners to develop self-efficacy and a sense of entitlement (Hébert, 2011).

Years of Teaching Experience significantly predicted teaching autonomy. The indication that *Years of Teaching Experience* negatively predicted teacher autonomy was quite contrary to what I expected prior to conducting the analysis, since I envisioned that teachers accumulate their teaching expertise over time and have a sense of authority over their teaching practices. This profound, negative prediction could be accounted for by educational reforms after the NCLB initiatives. Nichols and Berliner (2007) stated that educational reforms based on high-stake testing have undermined the teaching profession, and the collateral damage on teachers' professional motivation, classroom creativity, and curriculum in social studies, health education, and the arts was prevalent throughout the U.S. In the *Change Over Time* study that captured the teaching profession's feelings of fear, frustration, and lost effectiveness during the era of standardized reforms, teachers in the U.S. bemoaned the loss of professional judgments and autonomy in their teaching practices (Hargreaves & Fink, 2006). Therefore, whatever degree

he/she has, the longer one teaches under the high-stake testing educational reforms, the less he/she might perceive autonomy.

However, there was incongruence in this study. A *Teacher's Highest Degree* was a positive indicator of influence on teacher autonomy in simple linear regression analysis, but a negative indicator in multiple regression analysis. This could be explained that slight fluctuations in the data were caused by sampling, measurement error, or random error and might lead to substantial fluctuations in the sizes of such estimates.

The teachers' characteristics—*Teacher's Highest Degree*, *Years of Teaching Experience*, and *Age*—did not seem to account for students' creativity. However, it is daunting to conclude that these independent variables have no effect on student creativity since the sample size was very small ($n = 8$). Whether or not a teacher's characteristics profoundly influence students' creativity remains in doubt as this aspect needs further study.

Student characteristics made up the highest percentage of the variance, approximately 32%, and were, therefore, the most influential independent variable. Within student characteristics, *Gender* was the strongest indicators of influence. It was quite obvious that girls scored relatively high, and boys scored relatively low. This notion is convoluted. In addition to the result that girls scored higher on the TTCT than the boys, girls made higher scores than boys in verbal skills, and their academic performance in school is equal to that of boys in math and almost equal to boys in science (Sadker & Sadker, 2010). Moreover, the Organisation for Economic Co-operation and Development (2010) reported that girls outperform boys in reading in the U.S. by a wide margin. Boys in the U.S. tend not to perform well in school.

Caw-Chellman (2011) explained that boys in the U.S. do not perform as well as girls do because of the low number of male teachers and the U.S. school curriculum. First, because 93

percent of teachers are female, male students do not have a chance to be exposed to male role models at school. Then, male students are less likely than female students to receive high expectations and are more likely to be scolded by female teachers (Ling-hui & Min-hua 2008; Caw-chellman). Second, Caw-Chellman (2011) also stated that because American education has become very scripted and rigid with its compressed school curricula after NCLB teachers need to force their students to act as the teachers wish. Since male students tend to show more active and aggressive behaviors than female students, the teachers silence male students quite often (Caw-Chellman, 2011). Consequently, at elementary schools in the U.S., boys' energetic, distinctive behaviors are no longer viewed as competent behaviors but as problematic behaviors. Educators think that boys make pointless and irrelevant attempts to distract or even embarrass educators.

Caw-Chellman's indications could also explain why boys score lower on the TTCT than girls in my study. Cramond (1995) reveals that the defining characteristics of Attention Deficit Hyper-Activity Disorder (ADHD)—inattention, hyperactivity, and impulsivity—are also key descriptors in biographies of highly creative individuals and that boys tend to be misdiagnosed as ADHD more than girls. According to the website *Boys Project*, for every 100 girls diagnosed with a learning disability, 276 boys are diagnosed with a learning disability. Therefore, creative boys could be disciplined more harshly, more publicly, and more frequently than gifted girls are. Creative male students might tend to suppress their creative and artistic expressions in today's classrooms.

There are several reasons to be cautious about over generalizing these results. In addition to the absence of both random assignment and variable manipulation, this study was conducted with a relatively small sample size and homogeneous population. Moreover, in non-experimental research, the reliability of the measure of the independent variable tends to be low to moderate.

This particularly applies to certain attributes used in such research like cognitive styles, self-concept, and attitudes. Thus, a researcher needs to be mindful about bias in estimating the regression coefficient in non-experimental research (Pedhazur, 1997). Nunnally (1960) averred, “We should not feel proud when we see the psychologist smile and say ‘the correlation is significant beyond the .01 level.’ Perhaps that is the most he can say, but he has no reason to smile”(p. 649).

However, my intention is that the main emphasis in this exploratory research is on understanding the phenomena of student creativity and teaching autonomy. Simple linear and multiple regression analyses do not enable the author to conclude that the independent variables significantly affect students’ creativity. Nevertheless, this study can be used to determine the relative importance of teacher autonomy on student creativity and create the requisite conditions for the achievement of future research studies. The findings might allow people to rethink highly scripted standards-based education reforms and question an unquestioned belief among policy-makers and education reformers that setting up clear and high performance standards for teachers improves the quality of outcomes. The fundamental task of science is to explain phenomena. The phenomena of creativity and autonomy are complex, and complex phenomena always require extensive research. In attempts to explain the variability of the phenomena of creativity and autonomy, other facets and causes, such as the population in public schools, socio-economic status, race, and different regions should be taken into consideration in future research studies.

References

- Alfassi, M. (2004). Effects of a learner-centred environment on the academic competence and motivation of students at risk. *Learning Environments Research*, 7(1), 1-22.
doi:10.1023/B:LERI.0000022281.14968.4e
- Amabile, T., & Amabile, T. (1996). *Creativity in context / teresa M. amabile ; with updates by teresa M. amabile ... [et al.]* Boulder, Colo. : Westview Press, 1996.
- Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, 34(10), 2045-2068. doi:10.1111/j.1559-1816.2004.tb02690.x
- Beghetto, R. A. (2006). Creative justice? the relationship between prospective teachers' prior schooling experiences and perceived importance of promoting student creativity. *Journal of Creative Behavior*, 40(3), 149-162.
- Berliner, D. C., Arizona State University, Education Policy, Research Unit, & University of Colorado at Boulder, Education and the Public, Interest Center. (2009). *Poverty and potential: Out-of-school factors and school success*. (). Education Policy Research Unit.
- Betts, G.T. & Kercher, J.K. (1999). *The autonomous learner model: Optimizing ability*. Greeley, CO: ALPS Publishing.
- Black, A. E., & Deci, E. L. (2000). The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective. *Science Education*, 84, 740-756.
- Bleedorn, B. D. B. (1998). *The creativity force in education, business, and beyond : An urgent*

- message / berenice D. bleedorn* Lakeville, Minn. : Galde Press, 1998; 1st ed.
- Carr-Chellman, A. (2010). Ali Carr-Chellman: Gaming to re-engage boys in learning. [Video file]. Retrieved from http://www.ted.com/talks/lang/en/ali_carr_chellman_gaming_to_re_engage_boys_in_learning.html
- Colangelo, N., & Davis, G. A. (2003). *Handbook of gifted education / editors, nicholas colangelo, gary A. davis* Boston : Allyn and Bacon, c2003; 3rd ed.
- Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation : Design & analysis issues for field settings / thomas D. cook, donald T. campbell* Chicago : Rand McNally College Pub. Co., c1979.
- Cramond, B., & National Research Center on the Gifted, and Talented. (1995). *The coincidence of attention deficit hyperactivity disorder and creativity. attention deficit disorder research-based decision making series 9508*
- Crocco, M. S., & Costigan, A. T. (2007). The narrowing of curriculum and pedagogy in the age of accountability: Urban educators speak out. *Urban Education, 42*(6), 512-535.
- Cropley, A. J. (1999). Creativity and cognition: Producing effective novelty. *Roeper Review, 21*(4), 253.
- Daniel, H. (2009). Pink, drive: The surprising truth about what motivates us.
- Daniel, W. W. (1990). *Applied nonparametric statistics / wayne W. daniel* Boston : PWS-KENT Pub., c1990; 2nd ed.
- Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, (4)*, 227. doi:10.2307/1449618

- Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology*, 49(1), 14-23.
- Deci, E. L., & Ryan, R. M. (2010). Self-determination. *The corsini encyclopedia of psychology* () John Wiley & Sons, Inc. doi:10.1002/9780470479216.corpsy0834
- DiCintio, M. J., & Gee, S. (1999). Control is the key: Unlocking the motivation of at-risk students. *Psychology in the Schools*, 36(3), 231-37.
- Esquivel, G. B. (1995). Teacher behaviors that foster creativity. *Educational Psychology Review*, 7(2), 185-202. doi:10.1007/BF02212493
- Fasko, D. (2001). Education and creativity. *Creativity Research Journal*, 13(3), 317-327.
- Generation M2: Media in the lives of 8- to 18-year-olds* (2010). 2010-01-20.
- Fisher, R., & Williams, M. (2004). *Unlocking creativity : Teaching across the curriculum* London : David Fulton, 2004.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory; strategies for qualitative research*
- Hargreaves, A., & Fink, D. (2006). *Sustainable leadership / andy hargreaves, dean fink* San Francisco : Jossey-Bass, c2006; 1st ed.
- Hargreaves, A., & Shirley, D. (2009). *The fourth way : The inspiring future for educational change / andy hargreaves, dennis shirley* Thousand Oaks, Calif. : Corwin Press ; Toronto] : Ontario Principals' Council ; Oxford, OH] : NSDC, c2009.
- Hargreaves, E., Berry, R., Lai, Y. C., Leung, P., Scott, D., & Stobart, G. (2013). Teachers' experiences of autonomy in continuing professional development: Teacher learning communities in london and hong kong. *Teacher Development*, 17(1), 19-34.
doi:10.1080/13664530.2012.748686

- Harper, E. (2007). Making good choices: How autonomy support influences the behavior change and motivation of troubled and troubling youth. *Reclaiming Children and Youth: The Journal of Strength-Based Interventions*, 16(3), 23-28.
- Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. *Developmental Psychology*, 17(3), 300-312. doi:10.1037/0012-1649.17.3.300
- Harter, S., & Jackson, B. K. (1992). Trait vs. nontrait conceptualizations of intrinsic/extrinsic motivational orientation. *Motivation and Emotion*, 16(3), 209-230.
doi:10.1007/BF00991652
- Hébert, T. P. (2011). *Understanding the social and emotional lives of gifted students*. Waco, TX US: Prufrock Press.
- Hennessey, B. A., & Amabile, T. M. (1998). Reality, intrinsic motivation, and creativity. *American Psychologist*, 53(6), 674-675. doi:10.1037/0003-066X.53.6.674
- Henry, G. T., & Rickman, D. K. Do peers influence children's skill development in preschool? *Economics of Education Review*, 26, 100-112. doi:10.1016/j.econedurev.2005.09.006
- Hodge, W. A. (2003). *The role of performance pay systems in comprehensive school reform : Considerations for policy making and planning / warren A. hodge* Lanham, Md. : University Press of America, c2003.
- Hoxby, C. (2000). *Peer effects in the classroom: Learning from gender and race variation*. Unpublished manuscript.
- Hülya Gündüz Çekmecelioğlu, & Ayşe Günsel. Promoting creativity among employees of mature industries: The effects of autonomy and role stress on creative behaviors and job

- performance. *Procedia - Social and Behavioral Sciences*, 24, 889-895.
doi:10.1016/j.sbspro.2011.09.020
- Jen-Chia Chang, & Yu-Mei Yeh. (2009). The key motivational factors of innovation and creativity of student learning in junior colleges in taiwan. *International Journal of Learning*, 16(6), 188-208.
- Jennifer, H. C., McClintic, M. S., & Hayenga, A. O. Within-year changes in children's intrinsic and extrinsic motivational orientations: Contextual predictors and academic outcomes. *Contemporary Educational Psychology*, 34, 154-166.
doi:10.1016/j.cedpsych.2009.01.001
- Jiang Yu-hong, & Ting, M. (2012). A comparative study of teacher autonomy between novice teachers and proficient teachers in the context of university english teaching reform in china. *Sino-US English Teaching*, 9(3), 963-974.
- Jiang Yu-hong, & Ting, M. (2012). A review of the research on language teacher autonomy. *Sino-US English Teaching*, 9(4), 1045-1055.
- Josh Sung-Chang Ryoo. (2011). An analysis of practical autonomy in education: The case of korean self-directed learning policy. *KEDI Journal of Educational Policy*, 8(2), 345-363.
- Juuti, K., Lavonen, J., Uitto, A., Byman, R., & Meisalo, V. (2010). Science teaching methods preferred by grade 9 students in finland. *International Journal of Science and Mathematics Education*, 8(4), 611-632.
- Kim, K. H. (2011). The APA 2009 division 10 debate: Are the torrance tests of creative thinking still relevant in the 21st century? *Psychology of Aesthetics, Creativity, and the Arts*, 5(4), 302-308. doi:10.1037/a0021917

- Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling vs. informational styles on intrinsic motivation and creativity. *Journal of Personality, 52*(3), 233-248. doi:10.1111/1467-6494.ep7390802
- Lavy, V., Silva, O., & Weinhardt, F. (2009). *The good, the bad and the average: Evidence on the scale and nature of ability peer effects in schools*. Unpublished manuscript.
- Lepper, M. R., Corpus, J. H., & Iyengar, S. S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: Age differences and academic correlates. *Journal of Educational Psychology, 97*(2), 184-196. doi:10.1037/0022-0663.97.2.184
- Ling-hui, G., & Min-hua, Z. (2008). Study on english teachers' bias towards students of different genders. *Sino-US English Teaching, 5*(2), 44-47.
- Liu, D., Chen, X., & Yao, X. (2011). From autonomy to creativity: A multilevel investigation of the mediating role of harmonious passion. *The Journal of Applied Psychology, 96*(2), 294-309. doi:10.1037/a0021294
- Mathers, J. K. (2001). State performance-based accountability systems: A national perspective. *School Business Affairs, 67*(9), 6-8,10-12.
- Mortenson, T. (2006, April 26). Boys project statistics. Retrieved from <http://www.boysproject.net/statistics.html>
- National Commission on Teaching and America's Future. (2003). No dream denied: A pledge to America's children [Electronic version]. New York: National Commission on Teaching and America's Future. Retrieved July 18, 2006, from http://nctaf.org/wpcontent/uploads/2012/01/no-dream-denied_summary_report.pdf
- Ng, P. T. (2008). Educational reform in singapore: From quantity to quality. *Educational Research for Policy and Practice, 7*(1), 5-15.

- Nichols, S. L., & Berliner, D. C. (2007). *Collateral damage : How high-stakes testing corrupts america's schools / sharon L. nichols and david C. berliner* Cambridge, Mass. : Harvard Education Press, c2007.
- Nonaka, I., & Toyama, R. (2003). The knowledge-creating theory revisited: Knowledge creation as a synthesizing process. *Knowledge Management Research and Practice, 1*(1), 2-10.
- Nunnally, J. (1960). The place of statistics in psychology. *Educational & Psychological Measurement, 20*(4), 641.
- Organisation for Economic Co-operation and Development (2010). Pisa 2009 results: Executive summary. Retrieved from <http://www.oecd.org/pisa/pisaproducts/46619703.pdf>
- ÖZTÜRK, İ. H. (2012). Teacher's role and autonomy in instructional planning: The case of secondary school history teachers with regard to the preparation and implementation of annual instructional plans. *Educational Sciences: Theory & Practice, 12*(1), 295-299.
- Pearson, L. C., & Hall, B. W. (1993). Initial construct validation of the teaching autonomy scale. *The Journal of Educational Research, 3*(3), 172. doi:10.2307/27541859
- Pearson, L. C., & Moomaw, W. (2006). Continuing validation of the teaching autonomy scale. *Journal of Educational Research, 100*(1), 44-51.
- Pedhazur, E. J. (1997). *Multiple regression in behavioral research : Explanation and prediction / elazar J. pedhazur* Fort Worth : Harcourt Brace College Publishers, c1997; 3rd ed.
- Perkins, D. N. S. (1988). Teaching for transfer. *Educational Leadership, 46*(1), 22.
- Pintrich, P. R., & Schunk, D. H. (2002). *Motivation in education : Theory, research, and applications / paul R. pintrich, dale H. schunk* Upper Saddle River, N.J. : Merrill, c2002; 2nd ed.

- Prasad, P. (2005). *Crafting qualitative research : Working in the postpositivist traditions / pushkala prasad* Armonk, N.Y. : M.E. Sharpe, c2005.
- Retsinas, J. (1982). Teachers and professional autonomy. *Educational Forum*, , 25.
- Robinson, K. (2001). *Out of our minds : Learning to be creative / ken robinson* Oxford : Capstone ; New York] : John Wiley, c2001.
- Robinson, K. (2013). Ken Robinson: How to escape education's death valley. [Video file]. Retrieved from http://www.ted.com/talks/ken_robinson_how_to_escape_education_s_death_valley.html
- Roth, W., Lawless, D., & Tobin, K. (2000). Towards a praxeology of teaching. *Canadian Journal of Education / Revue Canadienne De l'Éducation*, (1), 1. doi:10.2307/1585864
- Runco, M. A., & Jaeger, G. J. (2012). The standard definition of creativity. *Creativity Research Journal*, 24(1), 92-96. doi:10.1080/10400419.2012.650092
- Runco, M. A., Millar, G., Acar, S., & Cramond, B. (2010). Torrance tests of creative thinking as predictors of personal and public achievement: A fifty-year follow-up. *Creativity Research Journal*, 22(4), 361-368. doi:10.1080/10400419.2010.523393
- Ryan, R. M., & Powelson, C. L. (1991). Autonomy and relatedness as fundamental to motivation and education. *The Journal of Experimental Education*, (1), 49. doi:10.2307/20152311
- Sadker, D. D., & Sadker, M. M. (2001). Gender Bias: From Colonial America to Today's Classrooms. 125-151.
- Sahlberg, P., & Hargreaves, A. (2011). *Finnish lessons : What can the world learn from educational change in finland? / pasi sahlberg ; foreword by andy hargreaves* New York : Teachers College Press, c2011.

- Sarrio, J. (2011). Teachers to be graded on student test scores. *The Atlanta Journal-Constitution*. Retrieved from <http://www.ajc.com/news/news/local/teachers-to-be-graded-on-student-test-scores/nQpLG/>
- Schwartz, B. (2009). Barry Schwartz: Our loss of wisdom. [Video file]. Retrieved from http://www.ted.com/talks/barry_schwartz_on_our_loss_of_wisdom.html
- Song, J. H., Uhm, D., & Kim, J. (2012). Creativity and knowledge creation practices in the school context: The moderating role of task-related job autonomy. *Performance Improvement Quarterly*, 24(4), 61-79. doi:10.1002/piq.20122
- Starko, A. (2013). Creativity on the brink. *Educational Leadership*, 70(5), 54.
- Starko, A. J. (2010). *Creativity in the classroom : Schools of curious delight / alane jordan starko* New York ; London : Routledge, 2010; 4th ed.
- Sternberg, R. J. (1999). *Handbook of creativity* Cambridge, U.K. ; New York : Cambridge University Press, 1999.
- Strauss, V. (2012). Georgia professors blast teacher evaluation system. *The Washington Post*. Retrieved from http://www.washingtonpost.com/blogs/answer-sheet/post/georgia-professors-blast-teacher-evaluation-system/2012/07/09/gJQAFhSbZW_blog.html
- Sung, H. C., Reeve, J., & Ik, S. M. (2012). Experimentally based, longitudinally designed, teacher-focused intervention to help physical education teachers be more autonomy supportive toward their students. *Journal of Sport & Exercise Psychology*, 34(3), 365-396.
- Taylor, S., & Littleton, K. (2012). *Contemporary identities of creativity and creative work* Farnham ; Burlington, VT : Ashgate, c2012.
- The Teaching Commission (2004). *Teaching at risk: A call to action*. New York: The Teaching Commission

- Thomas, K., & Chan, J.,. (2013). *Negotiating the paradox of creative autonomy in the making of artists*
- Tighe, E., Picariello, M. L., & Amabile, T. M. (2003). Environmental influences on motivation and creativity in the classroom. In J. Houtz (Ed.), (pp. 199-222). Cresskill, NJ US: Hampton Press.
- Torrance, E. P. (1970). *Encouraging creativity in the classroom [by] paul E. torrance* Dubuque, Iowa, W. C. Brown Co. 1970].
- Torrance, E. P. (1979). *The search for satori & creativity / E. paul torrance* Buffalo, N.Y. : Creative Education Foundation, c1979.
- Troyer, L., Mueller, C. W., & Osinsky, P. I. (2000). Who's the boss? A role--theoretic analysis of customer work. *Work and Occupations*, 27(3), 406-427.
doi:10.1177/0730888400027003007
- Wang, A., & Cheng, B. (2010). When does benevolent leadership lead to creativity? the moderating role of creative role identity and job autonomy. *Journal of Organizational Behavior*, 31(1), 106-121. doi:10.1002/job.634
- Way, A. D. (2012). Creativity now! *Bized*, 11(2), 58-59.
- Weisberg, R. W. (2006). *Creativity : Understanding innovation in problem solving, science, invention, and the arts / robert W. weisberg* Hoboken, N.J. : John Wiley & Sons, c2006.

APPENDICES

APPENDIX A

The Teaching Autonomy Scale



FOSTERING CREATIVITY IN THE CLASSROOM

Different teachers approach their classes in different ways. Some teachers feel completely in control while others feel that they are very much controlled by the system in which they work. This questionnaire will ask you to describe your own experiences.

PART 1—ABOUT YOUR TEACHING

<i>Please read each of the following items and indicate to what extent you agree with</i>	Definitely True	↔	Definitely False
1. I am free to be creative in my teaching approach	1	2	3 4
2. The selection of student-learning activities in my class is under my control.	1	2	3 4
3. Standards of behavior in my classroom are set primarily by myself.	1	2	3 4
4. My job does not allow for much discretion on my part.	1	2	3 4
5. In my teaching I use my own guidelines and procedures.	1	2	3 4
6. In my situation I have little say over the content and skills that are selected for teaching.	1	2	3 4
7. The scheduling of use of time in my classroom is under my control.	1	2	3 4
8. My teaching focuses on those goals and objectives I select myself.	1	2	3 4
9. I seldom use alternative procedures in my teaching.	1	2	3 4

10. I follow my own guidelines on instruction.	1	2	3	4
11. In my situation I have only limited latitude in how major problems are solved.	1	2	3	4
12. What I teach in my class is determined for the most part by myself.	1	2	3	4
13. In my class I have little control over how classroom space is used.	1	2	3	4
14. The materials I use in my class are chose for the most part by myself.	1	2	3	4
15. The evaluation and assessment activities used in my class are selected by people other than myself.	1	2	3	4
16. I select the teaching methods and strategies I use with my students.	1	2	3	4
17. I have little say over the scheduling of use of time in my classroom.	1	2	3	4
18. The content and skills taught in my class are those I select.	1	2	3	4

PART II—DEMOGRAPHIC INFORMATION

In what year were you born? _____

What is your race/ethnicity? _____

What is your gender? _____

What is your highest degree? (Check one)

- Bachelor's
- Master's
- Ed Specialist
- Doctorate
- Other (Specify)_____

How many years of teaching experience do you have? _____

APPENDIX B

Sample Items of the TTCT Activities and Directions for Administration

Torrance Tests of Creative Thinking—Figural and Verbal Demonstrator

Directions: Do not begin until you are told to do so.

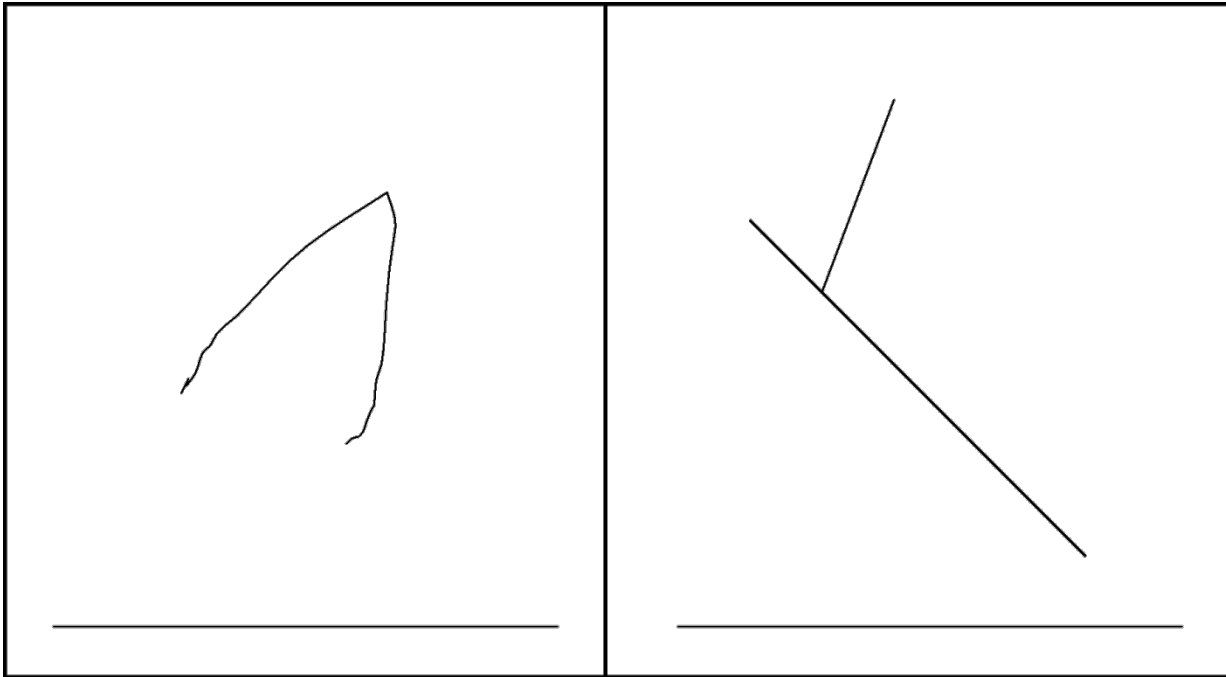
- ⌚ Try to think of things that no one else will think of.
- ⌚ Try to think of as many ideas as possible.
- ⌚ Add details to your ideas to make them complete.
- ⌚ If you finish before time is up, you may continue to add details or sit quietly.
- ⌚ Please do not go to the next activity until told to do so.



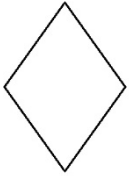
Activity 1: Try to improve this stuffed toy rabbit so that it will be more fun to play with. You have 3 minutes.

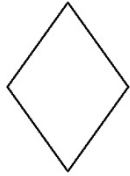
Activity 2: Just suppose that people could transport themselves from place to place with just a wink of the eye or a twitch of the nose. What might be some things that would happen as a result? You have 3 minutes.

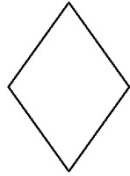
Activity 3: Add lines to the incomplete figures below to make pictures out of them. Try to tell complete stories with your pictures. Give your pictures titles. You have 3 minutes.

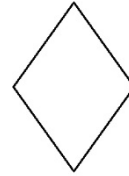


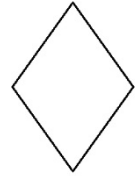
Activity 4: Add details to the shapes below to make pictures out of them. Make the diamond a part of any picture you make. Try to think of pictures no one else will think of. Add details to tell complete stories with your pictures. Give your pictures titles. You have 3 minutes.

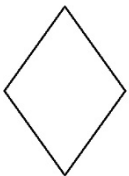


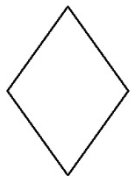


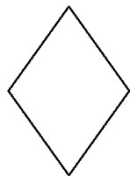


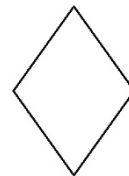


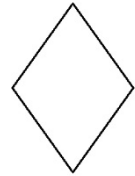












APPENDIX C

Principal Permission Form

TEACHERS' AUTONOMY AND STUDENTS' CREATIVITY

Principal Permission

As the principal of the Athens Christian Elementary School, I, _____, give permission for Takuya Iwata from the Educational Psychology Department at the University of Georgia (706-207-5546) to conduct a research study titled "Teacher's Autonomy and Students' Creativity" under the direction of Dr. Bonnie Cramond, Torrance Center Director at the University of Georgia (706-542-4248). I understand that participation of the teachers and students is voluntary. They can stop taking part at any time without giving any reason, and without penalty. They can ask to have all of their information returned to them, removed from the research records, or destroyed.

The purpose of the study is to explore potential relationships between teacher autonomy and student creativity. In spite of the fact that the teaching profession is arduous in the U.S., it lacks recognition, professionalism, and autonomy. Many talented teachers leave their classroom for pursuing better working environments. Therefore this study is to promote teachers' capacity to bring individual initiative and creativity into their teaching.

The benefits that my school may expect from it are that students whose parents allow them to take part in the research study will receive an individual report of the Torrance Tests of Creative Thinking, and the teachers may use the reports to learn something new about their students in order to teach more effectively in the future. If I agree to allow my school to take part in this study, teachers will be asked to complete a questionnaire which most people will be able to complete in less than 15 minutes, and students will be asked to take the Torrance Tests of Creativity Thinking, Figural, which takes approximately one hour.

The data will be used for educational and research purpose only. Any individually-identifiable information collected about students, teachers, and the school will be kept confidential unless otherwise required by law. The students' and teachers' identity will be coded, and all data will be kept in a secured location.

The investigator will answer any further questions about the research, now or during the course of the project, and can be reached by telephone at (706) 207-5546.

I understand that I am agreeing by my signature on this form for my school to take part in this research project and understand that I will receive a signed copy of this consent form for my records.

Name of Researcher

Telephone: _____

Email: _____

Signature

Date

Name of Participant

Signature

Date

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

APPENDIX D

Informed Consent Form

TEACHERS' AUTONOMY AND STUDENTS' CREATIVITY

Informed Consent

I, _____, agree to participate in a research study titled "Teacher's Autonomy and Students' Creativity" conducted by Takuya Iwata from the Educational Psychology Department at the University of Georgia (706-207-5546) under the direction of Dr. Bonnie Cramond, Torrance Center Director at the University of Georgia (706-542-4248). I understand that my participation is voluntary. I can refuse to participate or stop taking part at anytime without giving any reason, and without penalty or loss of benefits to which I am otherwise entitled. I can ask to have all of the information about me returned to me, removed from the research records, or destroyed.

The purpose of the study is to explore potential relationships between teacher autonomy and student creativity. In spite of the fact that the teaching profession is arduous in the U.S., it often lacks recognition, professionalism, and autonomy. Many talented teachers leave their classroom to pursue better working environments. Therefore, the study is to promote teachers' capacity to bring individual initiative and creativity into their teaching.

If I volunteer to take part in this study, I will be asked to complete a questionnaire which most people will be able to complete in less than 15 minutes. And I will not benefit directly from this research.

No discomforts or risks are expected. However, if I feel uncomfortable about completing the questionnaire, I may return a blank questionnaire.

No individually-identifiable information about me, or provided by me during the research, will be shared with others without my written permission, except if required by law. I will be assigned an identifying number and this number will be used on the questionnaire I fill out.

The investigator will answer any further questions about the research, now or during the course of the project, and can be reached by telephone at (706) 207-5546

I understand that I am agreeing by my signature on this form to take part in this research project and understand that I will receive a signed copy of this consent form for my records.

Name of Researcher
Telephone: _____
Email: _____

Signature

Date

Name of Participant

Signature

Date

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

APPENDIX E

Parental/Guardian Permission Form

PARENTAL/GUARDIAN PERMISSION FORM

I agree to allow my child, _____, to take part in a research study titled, “Teacher’s Autonomy & Students’ Creativity,” which is being conducted by Takuya Iwata, from the Educational Psychology Department at the University of Georgia under the direction of Dr. Bonnie Cramond. My child’s participation is voluntary, which means I do not have to allow my child to be in this study if I do not want to. My child can refuse to participate or stop taking part at any time without giving any reason, and without penalty or loss of benefits to which she/he is otherwise entitled. I can ask to have the information that can be identified as my child’s returned to me, removed from the research records, or destroyed.

- The reason for the study is to explore potential relationships between teacher’s autonomy and his/her students’ creativity.
- If I allow my child to take part, my child will be asked to take the Torrance Tests of Creativity Thinking, Figural, which takes approximately one hour. This is a drawing activity that will take place during the school curriculum and will not interfere with any lessons. If I do not want my child to take part, then he/she will be allowed to study as usual.
- Children who take part will receive the Torrance Tests of Creative Thinking report which gives an indication of his/her creative strengths and weaknesses.
- The research is not expected to cause any harm or discomfort. My child can quit at any time. My child’s grade will not be affected if my child decides not to participate or to stop taking part.
- My child’s data will be used for educational and research purpose only. Any individually-identifiable information collected about my child will be kept confidential in public unless otherwise required by law. My child’s identity will be coded, and all data will be kept in a secured location.
- The researcher will answer any questions about the research now and can be reached by telephone at (706) 207-5546 or email at tiwata@uga.edu. I may also contact the professor supervising the research, Dr. Bonnie Cramond, at (706) 5546-4248 or bcramond@uga.edu.

- I understand the study procedures described above. My questions have been answered to my satisfaction, and I agree to allow my child to take part in this study. I have been given a copy of this form to keep.

_____	_____	_____
Name of Researcher	Signature	Date

_____	_____	_____
Name of Parent	Signature	Date

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your child's rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602; Telephone (706) 542-3199; E-Mail irb@uga.edu.

APPENDIX F

Scoring Directions for the Teaching Autonomy Scale

The autonomy instrument has been refined to 18 items and should function well. There are two subscales: general autonomy and curricular autonomy. The general autonomy scale is obtained by adding items 1, 2, 3, 4, 7, 9, 10, 11, 13, 15, 16, 17; the curricular autonomy scale is obtained by adding items 5, 6, 8, 12, 14, 18. Items 1, 2, 3, 5, 7, 8, 10, 12, 14, 16, 18 all need to be recoded to receive the high score on the attribute. You may, instead of using the subscales, use a total score; however, to avoid singularity, be sure to use only one or the other.