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# An Extended Validation and Analysis of the Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire: A Two Phase Study

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FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

AN EXTENDED VALIDATION AND ANALYSIS OF THE EARLY CHILDHOOD  
EDUCATORS' KNOWLEDGE OF SELF-REGULATION SKILLS  
QUESTIONNAIRE: A TWO PHASE STUDY

A dissertation submitted in partial fulfillment of the

requirements for the degree of

DOCTOR OF PHILOSOPHY

in

CURRICULUM AND INSTRUCTION

by

Elizabeth Anne Willis

2015

To: Dean Delia C. Garcia  
College of Education

This dissertation, written by Elizabeth Anne Willis, and entitled An Extended Validation and Analysis of the Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire: A Two Phase Study, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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Leonard B. Bliss

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Laura Dinehart, Major Professor

Date of Defense: May 19, 2015

The dissertation of Elizabeth Anne Willis is approved.

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University Graduate School

Florida International University, 2015

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## DEDICATION

I dedicate this dissertation to EJ. You have the internal strength and grace to achieve all your happiness and aspirations in your life. Expect greatness and it will come.

## ACKNOWLEDGMENTS

I wish to thank the members of my committee and my major professor for their support. Their consistent guidance, direction and attention to detail have been most appreciated. Dr. Laura Dinehart, my major professor, was particularly helpful in guiding and shaping my research topic. Furthermore, I genuinely appreciate Dr. Len Bliss' guidance and expertise in both the quantitative methodology, analysis, and results section of this work. I valued Dr. Maureen Kenny's feedback, attention to detail and expertise in survey research; and Dr. Angela Salomon's expertise in early childhood education and development.

I have found my coursework and professors throughout the Curriculum and Instruction program to be challenging, stimulating, and inspiring. This experience has provided me with the tools with which to move forward with my research agenda with expertise and courage.

ABSTRACT OF THE DISSERTATION  
AN EXTENDED VALIDATION AND ANALYSIS OF THE EARLY CHILDHOOD  
EDUCATORS' KNOWLEDGE OF SELF-REGULATION SKILLS  
QUESTIONNAIRE: A TWO PHASE STUDY

by

Elizabeth Anne Willis

Florida International University, 2015

Miami, Florida

Professor Laura Dinehart, Major Professor

The Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire (ECESRQ) was devised to measure current teacher knowledge and implementation of pedagogical tools that enhance self-regulatory skills in the early childhood classroom. The purpose of the first phase of this study was to conduct test validation on the ECESRQ. The purpose of the second phase of this study was to (a) assess if teacher knowledge of self-regulation skills predicted teachers' attitudes and beliefs in the classroom, and if (b) the results from the ECESRQ predicted knowledge of instruction of self-regulation skills.

To address the first phase of the study an exploratory factor analysis was conducted on the Likert Style items in the ECESRQ. Three factors were extracted and named as teacher attitudes and beliefs (factor 1), children's behavior (factor 2), and child behavior (factor 3). Cronbach's Alpha was reported as high for factor 1 (.718), moderate for factor 2 (.552) and factor 3 (.529),

suggesting that the survey demonstrated high to moderate estimates of internal consistency.

To address the two questions in the second phase of the study, linear regression and multiple regression analysis were conducted. It was found that teacher attitudes and beliefs (represented by the three factors found in phase one) did not significantly predict teacher knowledge where factor 1 was the dependent variable ( $R^2=.003$ ,  $F(1, 172)=.503$ ,  $p<.05$ , 95% CI [-.627, 1.330]), for the second equation where factor 2 was the dependent variable ( $R^2=.010$ ,  $F(1, 172)= 1.732$ ,  $p<.05$ , 95% CI [-.241, 1.205]), and for the third equation where factor 3 was the dependent variable, ( $R^2=.007$ ,  $F(1, 172)=1.221$ ,  $p<.05$ , 95% CI [-.370, 1.310]).

However, in the second equation, predicting knowledge of instruction, both variables (age and factor 2) were significant in predicting knowledge of instruction accounting for 7% of the variance in the model.

Overall, the results suggest a discrepancy between teachers' attitudes and beliefs and reported classroom management implementation. This indicates that teachers believe children are capable of internal control, yet implement external over internal control in the classroom. Possibilities for this phenomenon are discussed and implications for future research are presented in the discussion of this study.



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# CHAPTER I

## INTRODUCTION

Teacher quality, accountability, and children's levels of "readiness" upon school entry, have become cornerstones of national education policies in an effort to improve long-term student academic achievement (Blair, 2003; Wilson et al., 2008). Recent work suggests that self-regulation is a significant factor in children's early and long-term academic success (Blair, 2003). Yet, the extent to which teachers understand the concept of self-regulation, and how best to implement practices that enhance self-regulation in children in early childhood education (ECE) classrooms, remains unexamined.

In this dissertation, children's self-regulation skills are presented as a well-researched and documented set of skills crucial to improving children's social-emotional competence. Ultimately, these skills have been found to contribute heavily to school readiness and long-term academic success (Blair, 2003; Blair & Diamond, 2007; Bodrova & Leong, 2007, 2008; Blair & Razza, 2007; Davidson, Amso, Anderson, & Diamond, 2006; Diamond, Barnett, Thomas & Munro, 2007; Diamond & Lee, 2011; McClelland, Morrison & Holmes, 2000; Ponitz, McClelland, Mathews, & Morrison, 2009). The primary purpose of this study was to examine the psychometric properties of an instrument titled the Early Childhood Educators' Self-Regulation Questionnaire (ECESRQ) designed by the researcher, to capture teachers' self-reported knowledge and instruction of self-regulation skills. Specifically, the data gathered could serve to inform the field of early childhood education about the potential need to implement coursework,

professional development, and continuing education programs that could teach ECE personnel to effectively implement practices that enhance self-regulation in young children.

### **Background Information**

The influence of social-emotional skills on children's school readiness and their long-term academic outcome has been heavily documented in the ECE literature (Blair, 2003; Bodrova & Leong, 2007; Diamond et al., 2007; Diamond & Lee, 2011). Children's self-regulation skills fall under the larger umbrella of Executive Function (EF) skills (Dawson & Guare, 2010). EF skills are an umbrella term for cognitive processes that allow individuals to organize, manage emotions and behavior, override immediate demands, and focus on long-term goals (Dawson & Guare, 2010). Self-regulation skills fall under the domain of social-emotional development and refer to the balance of emotional regulation to achieve higher cognitive processes (Blair & Diamond, 2008). More specifically, self-regulation skills allow children to manage their behavior in order to effectively learn academic content in the classroom. Self-regulation skills are comprised of three main sub-skills including working memory, inhibition control and attentional focusing (Ponitz et al., 2009). Self-regulation skills mature with age and are developed in a hierarchical manner (Kochanska, 1991). Specifically, the successful development of advanced self-regulatory skills, such as meta-cognition and self-reflection, are dependent upon the successful development of more basic self-regulatory skills at earlier ages (Bordova & Leong, 2007; Kochanska, 1991).

Self-regulation skills, including how the sub-skills come together, can be observed in many different classroom contexts. A few examples of how the sub-skills come together are provided below. It is important to note that the following examples do not develop self-regulatory skills per se; yet are provided to describe the mental processes used across a variety of classroom contexts. Academically, for instance, a child completing a math worksheet requires self-regulation to focus on the task at hand, listen to the directions from the teacher, evaluate the options for a correct solution, and recall the teacher's lesson in order to complete the problems correctly. Behaviorally, children in a kindergarten classroom may require self-regulation to control their impulse to speak out of turn in the classroom so as not to interrupt the teacher from generally managing the classroom environment. These examples demonstrate how self-regulatory skills contribute to, and allow one to accomplish both academic and behavioral tasks.

Children's behavioral difficulties have been rated as teachers' primary concern in the classroom and have also been associated with poorer academic performance. (Rimm-Kaufman, Pianta, & Cox, 2001). In fact, students who demonstrate low levels of self-regulation are not only at increased risk for poor academic achievement, but also for ongoing behavioral difficulties and high school dropout (Ponitz et al., 2009; Rimm-Kaufman et al., 2011). Strategies that focus and enhance the development of children's self-regulation skills in early childhood have been shown to be more effective in enhancing school readiness and long-term academic success, than strategies that focus exclusively on the acquisition of academic content (Blair & Diamond, 2008). Yet, it is unclear the

extent to which teacher preparation programs and teacher workshops provide ECE personnel with an understanding of self-regulation skills in the classroom and perhaps more importantly, the most appropriate pedagogical techniques suggested to increase these skills in the classroom (Diamond & Lee, 2011; Willis, Dinehart, & Bliss, 2014). Currently, there are few well-documented and researched early childhood curricula focused on instruction of self-regulation in the early childhood classroom. The two most commonly used programs are the Vygotskian based Tools of the Mind Program and the long standing Montessori method, devised by Maria Montessori (Diamond et al. 2007; Ervin, Wash, & Mecca, 2010). The Tools and Montessori programs are designed to enhance the development of self-regulatory skills; therefore, when children leave the programs they are able to effectively apply the skills to other academic contexts, such as completing worksheets or taking standardized tests, and to behavioral contexts such as using appropriate social skills (Bodrova & Leong 2008; Diamond et al., 2007; Ervin et al.. 2010). Given that few ECE programs currently implement curricula that focus specifically on enhancing self-regulation, the level of teacher knowledge and instruction of these crucial skills remains unclear.

### **Theoretical Framework**

This dissertation was based upon the theoretical framework of what has been called by most as Vygotsky's cultural-historical theory (Bodrova & Leong, 2007). Lev Vytotsky (1896-1934) was a Russian psychologist who died at a young age; therefore, many of his theories and pedagogical tools were incomplete and not empirically tested during his life (Bodrova & Leong, 2007).

Because of his early death, Vygotsky's cultural-historical theory is seen as a framework for understanding learning and teaching, not necessarily a set proof (Bodrova & Leong, 2007). Many of his theories were elaborated and his concepts established by his successors, including Alexander Luria (1902-1977; Bodrova & Leong, 2007). Luria and other scholars have empirically tested his theories and frameworks and established new child development approaches for psychologists and educators (Bodrova & Leong, 2007).

Bodrova and Leong (2007) have provided a concise and useful overview of Vygotsky's cultural historical theory, particularly as it pertains to early learning. Vygotsky's theoretical framework is based upon a socio-cultural approach to cognitive learning and development. Vygotsky argued that cognition develops through social interaction between the child and his/her environment (Bodrova & Leong, 2007). Therefore, the development of a child cannot be completely understood without reference to the social and cultural environment in which the child is embedded. Vygotsky maintained that development cannot be removed from its social context. He argued that the context and environment contribute heavily to the process of making meaning within the child's mind and the construction of knowledge (Bodrova & Leong, 2007). The classroom environment includes elements such as, the physical environment, the students, and the teacher. These elements all represent children's social-cultural context from which they learn. According to Vygotsky, these elements must be taken into account when discussing children's learning and development (Bodrova & Leong, 2007). It is important to note that although children are often exposed to



various social contexts, the current study focused specifically on the value of the teacher's role in the classroom. From the perspective of Vygotsky's cultural historical theory, the teacher is a crucial factor in the classroom environment, influencing children's development (Bodrova & Leong, 2007). It is through this lens that this dissertation examines the importance of teacher knowledge and instruction of self-regulation skills in the ECE classroom.

While assessing teacher knowledge and instruction of self-regulation skills in the ECE classroom remains the overarching purpose of the ECESRQ, results from a pilot study ( $N=118$ ) using exploratory factor analysis (EFA) of the ECESRQ (Willis et al. 2014) identified three factors. The three factors extracted included teacher attitudes and beliefs, child behavior and classroom management techniques (Willis et al. 2014), demonstrating that there are underlying contributing factors to teacher knowledge and instruction of these skills. Each of the three factors are social in nature, as defined by Vygotsky, as they involve interaction with the surrounding environment between the teacher and students (Bodrova & Leong, 2007). Moreover, the factors relate to the context of the teacher's role in the classroom demonstrating consistency with the factors of the ECESRQ (Willis et al., 2014) and with Vygotsky's cultural historical theory (Bodrova & Leong, 2007). Additionally, the three factors identified are supported in the teacher training literature (Darling-Hammond, 2010; Jennings & Greenberg, 2008; Munby, Russell, & Martin, 2001; Noddings, 2005; Novak & Pelaez, 2004). Their implications for contributing to effective ECE teacher

training programs are discussed in detail, effectively bridging the gap between research and practice.

It is important to note that Vygotsky was not only a theorist, but also a pedagogue. Vygotsky's pedagogical tools and approaches closely follow his framework of cultural historical theory (Bodrova & Leong, 2007). Vygotsky believed that all humans possessed mental tools (Bodrova & Leong, 2007). Mental tools, similar to mechanical tools, can be used, created and taught to others. However, mental tools, as they begin to develop are extrinsic and concrete, and as the child gets older, the tools become internalized and abstract (Bodrova & Leong, 2007). Vygotsky's mental tools are what we refer to today in education as our self-regulation skills (Bodrova & Leong, 2007). Mental tools help humans master their behavior, control their emotions, impulses, and memory, plan ahead and solve complex problems (Bodrova & Leong, 2007). Mental tools assist children in mastering their own physical, cognitive and emotional behavior (Bodrova & Leong, 2007). Vygotsky believed that once children were able to acquire their mental tools, they were able to gain independence (Bodrova & Leong, 2007).

Vygotsky's theory of the development of children's mental tools was based in the social context of play (Bodrova & Leong, 2011). In order to further understand Vygotsky's terms, it is important to clarify a few of Vygotsky's pedagogical terms. Vygotsky used the phrase, "proximal zones of development" to refer to the implementation of a task a child is developmentally able to perform with independence (the zone of actual proximal development). If children are in

need of some assistance (a subsequent zone of proximal development), then they must be guided or “scaffolded” by the teacher to attain the subsequent zone of development. Through supervised play in the classroom, the child enacts different roles and scenarios. In each scenario, the role-played involves interaction with other players to follow through the scenario. The teacher’s role is to provide a child a path for independence (Bodrova & Leong, 2007); therefore, the teacher scaffolds the play from basic scenarios to more complex scenarios. For example, a simple scenario would be a fire fighter in a station, and a complex example would be a fire fighter who has left his job for the day and on his way home encounters a distressed cat in a tree or a child crying. Vygotsky believed that through play, children learn the rules and learn how to self-regulate their own emotions, because they are within the parameters of the role. For example, the child is governed by the role of the fire fighter, and must act and respond in their role, as a fire fighter might do, not as what a mother might do, or what a child might do. Recent research has demonstrated that the early childhood program, Tools of the Mind, has successfully promoted children’s self-regulation skills in classrooms (Bodrova & Leong, 2011). Tools of the Mind is a program based upon Vygotsky’s mental tools and uses play as a medium to develop and enhance children’s mental tools and self-regulation skills (Bodrova & Leong, 2011).

In addition to Vygotsky, Maria Montessori was another well-known pedagogue who conducted work with self-regulation skills, prior to the term being labeled as such (Ervin et al., 2010). While both Lev Vygotsky and Maria

Montessori promoted self-regulation skills in their pedagogies, and these pedagogies are active in contemporary education; they differed in their approach to fostering the skills in the classroom (Bodrova & Leong, 2007; Lillard, 2007). Montessori advocated that self-regulation skills should be fostered in the classroom through promoting children's independence (Lillard, 2007), while Vygotsky advocated that self-regulation skills should be promoted in the classroom through the teacher scaffolding socio-dramatic play (Bodrova & Leong, 2007). In this section a brief overview of cultural historical theory has been presented to establish a framework for the examination of Vygotsky's pedagogical approach to self-regulation skills. In addition, Montessori's pedagogical contributions to the promotion of the skills in the classroom are presented next.

Dr. Maria Montessori (1870-1952) was an Italian physician best known for her pedagogical work with young children. Montessori created the classroom to suit the child, with child sized furniture and real life purposeful activities. She observed that through these real life activities (such as preparing food, sweeping and gardening) the children's self-esteem and independence flourished. Thus, one of the pillars of her pedagogy is based on fostering the young child's independence (Standing, 1998). While Montessori's work pre-dated the term "self-regulation skills", she incorporated the concept into her pedagogy using the term "inner-discipline" (Ervin et al., 2010). Montessori incorporated these facets into her pedagogy by instilling independence within the child, teaching the child to make independent decisions, and allowing the child to exercise his/her

decision making skills in the classroom. This allowed the child to engage in purposeful real-life activities, which foster self-esteem; all of these characteristics define inner-discipline (Ervin et al., 2010; Montessori, 1967; Standing, 1998). Recent research on the Montessori method has demonstrated that children attending Montessori schools demonstrate greater self-regulation skills, than children who are placed in classrooms that do not foster self-regulation skills (Ervin et al., 2010).

Vygotsky's cultural historical theory has been presented and established as a framework where children's learning and development are embedded in their social context, and two examples of pedagogical programs, the Tools of the Mind and the Montessori method, have been cited. Social context is presented as the interaction between the children and their physical classroom environment, teachers and peers. This dissertation focuses on the learning and development occurring from the interaction between the child and the teacher. The understanding of teachers' knowledge, and instruction of self-regulation skills that grounds this dissertation is founded within this framework.

### **Problem Statement**

To date there is little research on teacher knowledge of self-regulation and implementation methods designed to enhance these skills in the EEC classroom. Furthermore, there are few university based courses, and professional development courses that focus on educating teachers on the knowledge and implementation methods of self-regulation skills in the early childhood arena.

Effective and easy to implement methods designed to enhance children's self-regulation skills are in high demand because recent work has suggested the crucial importance of these skills linked with school readiness and future academic success, over and above intelligence (IQ), and content knowledge of early math and reading (Blair & Razza, 2007; McClelland, et al., 2000).

### **Purpose Statement**

The dissertation was undertaken to develop an instrument with good estimates of validity and reliability to measure teachers' knowledge and instruction of self-regulation skills in the early childhood classroom. By devising this instrument the researcher is adding to the small, but growing body, of literature on the subject of teachers' knowledge and instruction and effectively bridging the gap between the well-researched topic, and practice of self-regulation skills in the classroom. This dissertation was comprised of two phases. The purpose of the first phase was to examine the psychometric properties of the self-reporting Early Childhood Educators' Knowledge of Self-Regulation Questionnaire (ECESRQ) instrument (Willis et al., 2014). The purpose of the second phase of this study was to assess if teachers' knowledge of self-regulation skills predicted teachers' attitudes and beliefs, and if the results from the ECESRQ predict knowledge of instruction of self-regulation skills in pre-kindergarten and kindergarten classrooms. The ECESRQ was developed to (a) effectively gather data on teachers' knowledge and instruction of self-regulation skills in the early childhood classroom and, (b) demonstrate the need, based upon the assumption from the literature, to implement effective pedagogical

coursework in colleges and universities to pre-service teachers to enhance children's self-regulation skills.

At the conclusion of this dissertation, recommendations for further research are provided, including the development and implementation of pre-service teacher coursework, professional development, and follow-up professional development programs. These programs focus on pedagogical strategies that increase children's self-regulation skills in early childhood; subsequently leading to school readiness and long-term academic success.

### **Instrument**

The Early Childhood Educators' Knowledge of Self-Regulation Questionnaire (ECESRQ; Willis et al., 2014) is a self-report survey that consists of four sections. Refer to Chapter 3, and Appendix I for details surrounding the four different sections of the ECESRQ.

### **Research Questions**

Phase 1:

- 1) What are the factors of the Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire?

Phase 2:

- (a) Does teacher knowledge of self-regulation skills predict teacher attitude and beliefs, and (b) does the Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire predict teacher knowledge of instruction of self-regulatory skills?

## **Operational Definitions and Definitions of Terms**

### **Early Childhood Education (ECE)**

Early childhood refers to the education of children from the period from birth to eight years of age. However, in this study ECE will refer to the education of children ages three through eight.

### **Executive Function Skills (EF)**

Executive function skills refer to the higher cognitive processes located in the prefrontal cortex of the brain, and are best described as the ability to get something done. These brain-based skills enable us to decide what activities we need to complete and which ones we should save for later (Dawson & Guare, 2010). EF skills assist in regulating behavior by monitoring thoughts, regulating emotions, as well as focusing and keeping attention on the task at hand regardless of other surrounding tasks.

### **School-Readiness**

School-readiness refers to the ability for an early childhood student to come to school exhibiting good regulatory behavior, enabling them to be receptive of academic content distributed by the teacher (Lewit & Baker, 1995).

### **Self-Regulation Skills**

Self-regulation skills refer to a component of EF skills housed in the prefrontal cortex of the brain (Dawson & Guare, 2010). Self-regulation skills entail working memory, inhibitory control and attentional focusing. These skills refer to the balance of emotional regulation to achieve higher cognitive processes (Blair & Diamond, 2008).



## **Pedagogical Tools and Implementation**

Curriculum and instruction taught in teacher training programs enable individuals to gain the knowledge to effectively teach students content; specifically, as it relates to this study, knowledge for teachers to enhance children's self-regulation skills. Most pedagogical tools and implementation to enhance children's self-regulation skills focus on promoting children's independence and autonomy. For example: *A teacher who describes and follows through consistently with rules in the classroom can assist children in developing their self-regulatory skills* (Bodrova & Leong, 2008).

## **Pre-Service Teachers**

Teachers who are actively enrolled in a teacher-training program through a university or college, where upon completion and graduation will be eligible to take an exam to obtain a state teacher certificate.

## **Teachers**

This definition refers to teachers who are currently employed as lead or assistant teachers in early childhood programs and hold a state or comparable teacher certification.

## **Teacher Knowledge of Self-Regulation Skills**

This is one of the dependent variables being measured in the ECESRQ. Teacher knowledge of self-regulation skills refers to teachers' theoretical understanding of self-regulation skills.

### **Teacher Knowledge of Instruction of Self-Regulation Skills**

This is the other dependent variable being measured in the ECESRQ. Teacher knowledge of instruction of self-regulation skills refers to teachers' pedagogical understanding of how to enhance self-regulatory skills in the classroom.

### **Teacher Training Programs**

A program of study, typically undertaken at an accredited undergraduate college or university that involves a series of coursework to be completed. Upon completion a teaching certificate is granted.

### **Delimitations**

The study was conducted in Miami-Dade private schools. The sample of teachers was delimited to only early childhood educators in pre-kindergarten and kindergarten in these schools. This was done because students' academic abilities at the end of their kindergarten year are a strong indicator of school readiness (Blair, 2003). Self-regulation skills, though at a sensitive period of growth during these years, also continue to develop through the fifth grade (Dawson & Guare, 2010). A random sampling of schools and childcare centers was used to collect the data.

## **Summary**

This chapter introduced the topic of the dissertation, discussed the theoretical framework, the purpose and problem statement, description of instrument, introduced the research questions, provided a list of operational definitions and definitions of terms and addressed the delimitations of the study. In the subsequent chapter, the literature concerning self-regulatory skills is reviewed.

## CHAPTER II

### LITERATURE REVIEW

The study of self-regulation integrates different perspectives, constructs and disciplines, including but not limited to, aspects of temperament seen in effortful control in developmental psychology (Rothbart & Posner, 2004) and EF skills in cognitive psychology (Schunk & Zimmerman, 1997). This relates to education in the form of behavioral aspects, which address intentional attention flexibility, working memory and demonstrating inhibitory control (McClelland et al., 2007; Morrison, Ponitz & McClelland, 2010; Ponitz et al., 2008). While the debate continues regarding components and constructs of self-regulation, adequate research has demonstrated the importance of the role of the behavioral aspect of self-regulation skills in the ECE classroom in order to achieve academic success (Blair, 2003; Blair & Diamond, 2008; Bodrova & Leong, 2007; Diamond et al., 2007; Diamond & Lee, 2011). Hence, this dissertation will refer to the definition of self-regulation skills as it refers to the balance of emotional regulation to achieve higher cognitive processes (Blair, 2003; Blair & Diamond, 2008; Bodrova & Leong, 2007; Diamond et al., 2007; Diamond & Lee, 2011).

Self-regulation skills fall under the domain of social-emotional competence and allow for a child to control his/her behavior in order to be prepared to effectively learn academic content in the classroom. Self-regulation skills include three main sub-groups of working memory, inhibition control and attentional focusing (Ponitz et al., 2009). Children's behavioral difficulties in the classroom influence their ability to perform academically, and have been rated as teachers'

primary concern in the classroom (Rimm-Kaufman et al., 2001). Students who demonstrate low levels of self-regulation are at risk for poor academic achievement, behavior difficulties and even high school drop out (Ponitz et al., 2009; Rimm-Kaufman et al., 2011). In fact, strategies that focus and enhance the development of children's self-regulation skills in early childhood have been shown to be more effective in enhancing school readiness and long-term academic success, than strategies that focus exclusively on the acquisition of academic content (Blair & Diamond, 2008). However, to date there are few pedagogical practices which focus specifically on enhancing these skills in the early childhood classroom. Currently a gap exists in the ECE literature between the well-researched role of self-regulation skills in the classroom and teachers' knowledge and implementation of these skills in classroom practice.

This study intends to validate an instrument that accurately captures teachers' knowledge and instruction of self-regulation skills in early childhood. By effectively capturing teacher knowledge and instruction of these crucial skills in the classroom, suggestions can be made and further research conducted to integrate effective coursework and teacher training programs that provide the theoretical and pedagogical tools to better enhance self-regulation skills in the ECE classroom.

### **Self-Regulation in Early Childhood**

Executive Function (EF) skills are a crucial component of early development and long-term academic success for students of all ages (Meltzer, 2010). Long-term academic success not only requires the mastery of subject

content, but also requires skills such as note taking, studying, on task performance, goal setting, and time management. Without these additional skills, students may be at risk for not meeting their cognitive potential. Even children with a great deal of potential, can face significant challenges if they lack the ability to initiate a task and see it through to its completion. EF skills are so crucial to students' success; they can be seen as a primary connection between childrens' academic potential and their academic performance (Meltzer, 2010).

Self-regulation, a skill often defined under the umbrella of EF skills (Denckla, 1998; Denckla & Reader, 1993; Hayes, Gifford & Ruckstuhl, 1996), refers to the balance of emotional regulation to achieve higher cognitive processes (Blair & Diamond, 2008). The composition of self-regulation is complex. Bodrova and Leong (2008) present self-regulation as being composed of two parts, cognitive regulation and social-emotional regulation. Cognitive regulation refers to a group of skills including: (a) the ability of children to regulate their own behaviors, (b) the ability to be reflective about their thinking, (c) the ability to evaluate and strategize in order to plan ahead before actions, and (d) the ability to "remember on purpose" (e.g. sequences of numbers such as telephone and addresses; Bodrova & Leong, 2008). The second component, social-emotional self-regulation entails multiple aspects of behavior regulation. The first example is evaluating and thinking through a scenario before acting in order to resist impulsive urges (Bodrova & Leong, 2008; Dawson & Guare, 2010). This also involves the capacity to resist an urge (even if the child does not want too) because it is necessary (Bodrova & Leong, 2008). A child resisting

the urge to blurt out an answer when the teacher poses a question to another student is demonstrating social-emotional self-regulation, whereas a child in the classroom pushed in line immediately reacts by pushing back with frustration instead of “using their words,” is demonstrating limited behavioral regulation. Bodrova and Leong (2008) suggest that with social-emotional regulation, children are able to internalize societal behavioral rules and able to monitor their own actions and behaviors, and to apply these rules without being reminded.

What Bodrova and Leong (2008) have presented of cognitive and social-emotional regulation has more recently been discussed in the early childhood literature as *cool* and *hot* regulatory components, respectively (Willoughby, Kupersmidt, Voegler-Lee & Bryant, 2011; Zelazo & Mueller, 2002). Cool regulatory tasks elicit the use of emotionally neutral cognitive “know” controls to solve problems, and can be categorized as natural, slow acting and delayed in developing (Metcalf & Mischel, 1999; Willoughby et al., 2011). Conversely, hot regulatory tasks illicit problem solving skills that are emotionally arousing or stimulate the “go” system and can be characterized as quick acting and reflexive (Metcalf & Mischel, 1999; Willoughby et al., 2011). The regulatory processes fall under the overall domain of EF skills, which are housed in the pre-frontal cortex (Willoughby et al., 2011). The cool regulatory skills engage the dorso-lateral prefrontal cortex where the hot regulatory skills engage more of the orbito-frontal cortex (Willoughby, et al., 2011). EF tasks are primarily categorized as *cool* and cognitive regulation; however, research has indicated that the *cool* and *hot* regulatory systems are distinctly different yet correlated processes

(Willoughby et al., 2011). It is difficult, if not impossible to completely isolate *cool* and *hot* regulatory components, as with any developmental factor, as tasks usually require the use of both regulatory systems in some manner; however, one system may be predominantly taxed over another depending on the nature of the task (Willoughby et al., 2011).

An example in the classroom context using the hot regulatory system would be a child waiting to use the swing on the playground. This example requires the child to suppress and manage the desire to not play with the swing and patiently wait until the other child is finished. An example of a task predominantly using the cool regulatory system can pertain to working out an arithmetic problem. As children are working through a problem on the paper that they have recently been taught by the teacher, they must hold the steps to solving the problem in their working memory, as they proceed through working out the solution on their own. A classroom example using predominantly both hot and cool regulatory systems would be if a child were pushed while waiting in line. That child must suppress the immediate impulse to push back, remember the rule from working memory “that we use our words and do not push”, and then chose to act upon the rule.

Overall, self-regulated children demonstrate the ability to delay the gratification of their instant urge because they have considered the possible consequences of their actions, evaluated alternative responses, and selected the most appropriate action. The developments of these skills take time as there are



multiple levels of self-regulation that develop from infancy into early childhood (Calkins & Fox, 2002).

Self-regulation skills emerge in the toddler years and demonstrate a rapid spurt of developmental growth in early childhood (Diamond et al., 2007; Welsh, Pennington, & Groisser, 1991). Before a child is able to internally self-regulate his/her own behavior, an adult often lends his/her regulation as an external device to assist the child's behavior in ways he/she is not yet capable (Bodrova & Leong, 2007; Dawson & Guare, 2010). *Take for example a two year old approaching the flame of a candle. As the child reaches out to touch the flame, the parent yells, "No! Stop!"* It is important to note that the child has no prior knowledge that the flame will burn and cause harm, and that at this developmental stage, the child lacks the ability to self-regulate and not touch the flame. In response to parent's external regulation, the child stops as directed. The parent has lent the child the external regulation skills in order to keep safe from injury. In the early childhood classroom, the teacher also lends regulation skills to the children in the classroom. *Maria, age five, for example, must raise her hand and wait to be called upon in order to speak in circle time. She is so excited to share a story about her weekend, she interrupts Max and begins to tell her story. Ms. Elizabeth gently lends Maria external regulation to remind her that she must raise her hand and wait to be called upon before she speaks.*

Before long, children's regulation shifts gradually from relying on external sources to independent, internal skills (Bodrova & Leong, 2007; Kochanska, Coy & Murray, 2001). This process requires the child to internalize adult rules, and

take them on as his/her own (Kochanska et al., 2001). This shift can begin to originate as early as age two when the child is able to comply with a parental demand and suppress his/her-own desired behavior. The process continues to develop through early childhood (Kochanska, 1991). Two concepts are important to note about this process. First, the development of self-regulation skills is hierarchical. In other words, the successful development of advanced self-regulatory skills, such as meta-cognition and self-reflection, are dependent upon the successful development of more basic self-regulatory skills at earlier ages (Bordova & Leong, 2007; Kochanska, 1991). Second, external contextual factors have been shown to influence the development of self-regulation. For instance, an adult providing an excess of external regulation to the child may develop a counterproductive dependence on external adult-directed regulations (Bordova & Leong, 2007). Of course, the child may develop the ability to internalize the rules; however, this excess external regulation may limit the child's ability to know when to initiate or refrain from certain behaviors independently.

### **Early Childhood Classroom Environment**

The early childhood classroom environment has changed drastically over the past few decades. Long gone are the days of the "child's-garden" of which Frederich Froebel based his holistic concept of "kindergarten" (Beatty, 1995). In Froebel's kindergarten classroom, children were encouraged to interact with the outdoors, engage in play-based activities, use manipulatives to create knowledge and improve fine motor skills, and learn concepts through song (Beatty, 1995). One long-standing contribution of Froebel's was the circle in which children

gather in the classroom, symbolizing cooperation (Dewey, 2008). Froebel recognized that the grouping of children in a circle was a symbol of “the collective nature of mankind in general” (Dewey, 2008, p. 55). Shortly after Froebel’s curriculum emerged, John Dewey opened up the Laboratory School of the University of Chicago (Beatty, 1995). Dewey’s approach differed slightly from Froebel’s; however, his focus remained on the holistic development of the child (Dewey, 2008). In the Laboratory School, “real” activities such as washing clothes, weaving, preparing food and engaging in games relating to children’s home environment were promoted. Dewey (Beatty, 1995), similar to Montessori (Montessori, 1995) proclaimed that kindergarten activities needed to be purposeful to promote inquiry, cooperation and self-efficacy within the child. In addition, the kindergarten environment focused heavily on children’s cooperation to promote individual responsibility and cooperative learning (Beatty, 1995).

The focus of contemporary kindergarten has since shifted from a cooperative holistic curriculum to a competitive environment; becoming increasingly focused on standardized test taking skills and preparation for first grade (Beatty, 1995). The current pressures placed on kindergarten students are a direct result of the current accountability movement adopted by the Department of Education, as measures of school success have become the cornerstone for evaluating future productivity of our nation’s emerging work force (Ravitch, 2010; Spring, 2010). These recent pressures placed on kindergarten teachers to prepare students for first grade, have increased the need for children to be cognitively ready at their point of entry into the school system (Lewit & Baker,

1995). As a result of this shift, research has demonstrated a number of children are subjected to alternative programs such as delayed entry, retention, and transition classes, when kindergarten children can not meet the cognitive demands of the kindergarten environment (Carlton & Winsler, 1999; Lewit & Baker, 1995).

The notion regarding increased pressures placed on kindergarten teachers to prepare students can be reviewed in detail in Lewit and Baker's (1995) research review titled *Child Indicators: School Readiness*, published in *The Future of Children*. This review outlines the current educational policy demands for increased cognitive readiness for students entering into first grade. In addition to Lewit and Baker (1995) recent research including, but not limited to, Beatty, (1995); Blair and Diamond (2008); Blair, (2003); Kilburn and Karoly, (2008); Ramey and Ramey, (2004); Rimm-Kaufman, Pianta and Cox, (2001), discuss the nature of the shift in the kindergarten environment from the holistic based approach to a focus on reading and arithmetic, in preparation for first grade. In addition the concept of *school readiness*, and the relation to National Educational Policy, adoption of the No Child Left Behind Act is discussed at length in Lewit and Baker (1995). These policies have been most recently modified in the Race to the Top Initiative. Both educational policies are reflective of what Spring (2010) refers to as the human capital ideology.

Human capital ideology defines the primary goal of education as being nation's economic growth (Spring, 2010). Human capital theory relies on the vision that schools are a business, producing skilled workers to emerge into

society prepared for paying jobs. These workers will eventually spend their money on consumer goods; thus contributing and sustaining a strong economy (Spring, 2010). This system relies heavily on the use of accountability methods and the use of high-stakes standardized tests to measure the productivity of future producing workers (Spring, 2010). The recent increased academic pressures placed on kindergarten children demonstrate evidence of the adopted human capital theory in early childhood education. These pressures are aimed to prepare children for successful performance on high stakes tests beginning in kindergarten, in order to measure their academic achievement and thus determine their future productivity (Blair, 2003; Blair & Diamond, 2008; Spring, 2010).

Because of the current pressures placed upon early academic success, recent early childhood research has effectively examined the crucial contribution and effectiveness towards academic success of cognitive and behavioral skills, such as children's self-regulation skills, and empirically demonstrated these skills to be valuable assets in the ECE classroom, above and beyond academic content (Blair & Razza, 2007). In fact, children who demonstrate self-regulation difficulties can often be identified by their teacher as a child demonstrating characteristics of behavior problems, academic outcomes falling short of their intellectual ability, and impulsive behavior, to name a few. Research has demonstrated that children and adults who have suffered even minor head-injuries display a weakness in self-regulatory skills (Dawson & Guare, 2010). Students who demonstrate characteristics of Attention Deficit Hyperactivity

Disorder (ADHD) also demonstrate a weakness in self-regulatory skills (Dawson & Guare, 2010). Borkowski and Thorpe (1994) argue that weaknesses in self-regulation skills are apparent in poor performing students because they lack the ability to utilize the strategies such as planning and on-task focus which results in lower levels of academic mastery and thus leading to school failure (Zimmerman, 1998). However, self-regulation difficulties do not merely reside in children who have experienced head injuries, display the signs of ADD/ADHD, and come from disadvantaged backgrounds they can manifest in the classroom within any child as lack of concentration, lack of understanding and impulsivity (Flook et al., 2010).

An understanding of the developmental process of self-regulation is particularly critical given the importance of self-regulation on school readiness and later academic achievement. Research has shown that children who engage in self-regulatory behaviors at a young age develop their emotional and cognitive self-regulation skills similar to how an exercised muscle grows in strength (Bodrova & Leong, 2008). Current research demonstrates that the development of self-regulation skills during the early childhood years provides a structure by which a child is able to control both their thinking and their feelings. These foundational skills, in turn, result in the exhibition of appropriate classroom behaviors, promoting school readiness, long-term academic success and the recent demands and pressures placed upon the ECE classroom environment (Blair & Diamond, 2008).

## **School Readiness**

Children entering into quality early childhood programs can be seen as an investment and research has demonstrated that quality early childhood programs save a significant amount of money in terms of future spending on later in life “catch-up” academic programs (Kilburn & Karoly, 2008). To ensure success of early childhood programs in 1989, then President W. Bush, and the state governors, established that the primary goal for America by the year 2000, would be that all children in America would start school ready to learn (Lewit & Baker, 1995). The term “school readiness” has since captured the attention of educational policy makers, politicians, academics, and teachers, and become a cornerstone of current early childhood educational reform and policy development (Edwards, 1999). However, the term has been poorly defined and the debate over definitions has resulted in ineffective guidelines for creating successful policies and reforms for entry into early childhood classrooms (Carlton & Winsler, 1999; Lewit & Baker, 1995).

What is school readiness? The traditional definition of school readiness assumes that early childhood intervention programs should be based on improving cognitive and academic outcomes (Ramey & Ramey, 1998). Advocates of this definition argue that children should come to school ready to achieve academic success, where academic success is defined as achieved through the increase of intelligence and cognitive abilities (Blair, 2003; Lewit & Baker, 1995). Recent pressures placed on kindergarten teachers to prepare students for first grade have increased the need for children to be cognitively

ready to enter into the school system. Common consequences implemented upon children who do not meet these expectations include grade retention, transition classes and delayed entry (Lewit & Baker, 1995).

The ineffectiveness of these current early childhood policies and reforms, focused on increasing cognitive readiness, have placed pressures on both teachers and students resulting in an increase in pre-kindergarten and kindergarten expulsions rates in some states (Gilliam, 2005; Gilliam & Shahrar, 2006; Rimm-Kaufmann et al., 2001). In a survey conducted by Lewit and Baker (1995), 42% of teachers reported that fewer students were ready for school now, than five years ago. These practices have caused more children to fall behind and suggest that alternative programs and reforms developing a broader approach to children's school readiness should be examined (Carlton & Winsler, 1999; Lewit & Baker, 1995).

### **Self-Regulation and School Readiness**

What is often referred to as regulatory readiness, can be defined as improving social-emotional competencies in children, promoting effective school engagement and leading to increased cognitive development and success in school (Bierman, et al, 2008). Social-emotional competencies facilitate children's ability to follow rules in the classroom, face academic challenges, relate to teachers and peers, and inhibit impulsive behavior and responses (Bierman, et al, 2008; Blair & Diamond, 2008). Social-emotional competencies can also be referred to as self-regulation skills (Blair, 2003). Clearly this indicates that early childhood programs that teach and enhance children's self-regulation skills



provide strong building blocks upon which children can develop cognitively, promote school readiness and pave the way for children to achieve long-term academic success.

An understanding of the developmental process of self-regulation is particularly critical given the importance of self-regulation on school readiness and later academic achievement. As discussed previously, research has indicated that children who engage in self-regulatory behaviors at a young age develop their emotional and cognitive self-regulation skills similar to how an exercised muscle grows in strength (Bodrova & Leong, 2008). Current research demonstrates how the foundational skills of self-regulatory behaviors provide a framework for young children, which in-turn result in the exhibition of appropriate classroom behaviors and later academic success (Blair & Diamond, 2008).

Self-regulation skills provide significant support for early learning in the classroom. In general, academic learning requires that children are able to efficiently shift their attention. Consider the case of Nicolas. *Nicolas, age 5, is a brilliant child. He has achieved reading fluency at an early age, understands concepts presented to him with ease, and is both inquisitive and curious. Although he seems like an ideal student, he can never get anything done! Nicolas is constantly distracted by the need to sharpen his pencil, go to the bathroom, read a book, talk to his friends, begin another task, and any other detail in his surroundings.* His lack of behavioral self-regulation results in increased frustration for his teacher and will likely affect their ongoing interactions. In this scenario, cognitively, Nicolas's inability to focus and remain

on task was interfering with his ability to meet his academic potential. Another example can be applied to reading, where a child must focus on the word *cat* when it appears under a picture of a dog. A child must overcome the desire to pay more attention to the picture and instead focus on the word (Bialystok & Martin 2003). In fact, research shows that children's self-regulation behaviors in the early years predict their school achievement in reading and mathematics better than their IQ scores, illustrating how self-regulation skills aid children's ability to perform in the classroom (Blair, 2003; Blair & Razza, 2007)

In contrast, poor self-regulatory skills may be a critical component of school readiness lacking for many children. In 2006, expulsion rates for prekindergarten children in some states were 1 out of every 40 children enrolled (Blair & Diamond, 2008). A child, who is identified with high levels of emotional reactivity and participating in an environment that does not foster self-regulation, is at high risk for academic school failure (Blair & Diamond, 2008).

Rimm-Kaufmann, Pianta and Cox (2001), interviewed a national sample of kindergarten teachers and found that 50% or more of the children were perceived as experiencing behavioral difficulties that limited their ability to perform academically in the classroom. In fact, children's difficulty with following directions is rated as teachers' primary concern (Blair, 2003; Rimm-Kaufman et al., 2001). Although a few of the children were identified with poor academic skills, such as not knowing their letters and numbers at school entry, the majority were identified with difficulties pertaining to self-regulation skills (Blair & Diamond, 2008). This included the inability to follow directions, control attention,

being sensitive to other's feelings and communicate wants effectively (Blair & Diamond, 2008). Consider the case of Nicolas above, which demonstrates self-regulation difficulties. If he was placed into a more traditional program, advocating retention and delayed entry, he would perhaps be held back a year to repeat his kindergarten year because he is at risk for poor academic performance. Research has proven retention to be counter-productive to student's academic success as it negatively effects their concept of self, does not affect their growth rate in a positive manner, are more likely to be subject to other specialty programs, and forecasted to achieve less progress compared to others (Silberglitt, Appleton, Burns & Jimerson, 2006). Conversely, Blair and Diamond (2008) found that strategies which focus on and enhance on the development of children's self-regulation skills in early childhood prove to be more effective in enhancing school readiness and future academic success, than strategies that focus exclusively on the acquisition of academic content.

### **Pedagogical Practices to Enhance Self-Regulation Skills in Early Childhood**

Given the significant role of early childhood education programs on the development of school readiness, and the capacity for these programs to assist and promote the development of children's self-regulation skills, pedagogical plans designed to effectively implement practices that promote self-regulation in early childhood are in significant demand (National Institute for Early Educational Research (NIEER), 2006). Current implementations include the well established, yet sparsely researched, Montessori method and the more recent, Tools of the Mind (Bodrova & Leong, 2007), which is showing extremely

promising results (Barnett et al., 2008; Diamond et al., 2007). However, to date these are the only established empirically tested pedagogical programs that actively teach self-regulation skills in early childhood (Bodrova & Leong, 2008; Ervin et al., 2010).

While Dr. Maria Montessori pre-dated the term self-regulation skills, she incorporated the concept into her pedagogy using the term “inner-discipline” (Ervin et al., 2010). One of the goals of the Montessori method is to instill independence, autonomy, self-direction and self-efficacy within children from the early age of three years (Ervin et al., 2010). Observers in a Montessori classroom are often quite startled to watch children ages 3-6 in the same classroom working independently and efficiently on tasks at hand, being aware of their task at hand, and putting away their exercises when complete back on the shelf. In a three-year study conducted from 2003-2007, the difference in levels of self-regulation skills between Montessori and non-Montessori classrooms was examined where a total of 256 kindergartens, first and second grade students participated. The study grouped 127 children in Montessori classrooms and 129 children in non-Montessori classrooms; the study spanned over five schools. Overall the average of the five schools consisted of a 36% free/reduced lunch population (Ervin et al., 2010). The researchers examined if a difference in levels of self-regulation skills in children between Montessori and non-Montessori classroom existed. Using a rating scale containing 18 items, devised by the researchers, nine out of the 18 items proved statistically significant, including the ability to develop internal standards of performance and needing less supervision

to resolve conflict (Ervin et al. 2010). This data suggests positive results in rating Montessori children in self-regulation skills and subsequent academic performance by fostering inner-discipline, independence, autonomy, self-discipline, and self-efficacy in the Montessori method (Ervin et al., 2010; Standing, 1998).

Alternatively, a more recent program titled, The Tools of the Mind Program (Tools), has been developed to directly address the current argument in research stating that self-regulation skills are crucial for academic success (Blair, 2003). Tools, based on a Vygotskian approach to early childhood education, is currently implemented in 15,000 pre-kindergarten classrooms and 3,000 kindergarten classrooms in the United States (Denver, 2011). The cost of the program is affordable and commonly integrated into Head Start programs and other public schools across the nation (Denver, 2011). In order for a school to adopt the Tools program there must be a certain number of classrooms dedicated to the pre-kindergarten and kindergarten level (Denver, 2011). Experts certified in the Tools program then spend a two-year period working alongside the school and the teachers to facilitate the program (Denver, 2011).

One way self-regulation skills are taught in the Tools program are through socio-dramatic make believe play (Bodrova & Leong, 2007). Tools incorporate both scaffolding and Zones of Proximal Development (ZPD), mentioned previously in Chapter 1, in their approach to teaching children self-regulation skills. Vygotsky believed that through mature make believe socio-dramatic play; student's academic and self-regulation skills were positively developed (Bodrova

& Leong, 2007). In make believe play children are regulated by others, and they regulate themselves by the parameters of the “role” in which they are playing, prohibiting them from impulsive actions which might be out of character. Teachers can scaffold the make believe play in the classroom bridging the children between different ZPD by offering different scenario ideas to act out, help children plan their play, providing props, monitoring the progress of the play and assisting the children where they need help (Bodrova & Leong, 2007). For children to prohibit their impulsive actions, and stay within the parameters of the role they are playing, they must be aware and mindful of the characteristics the role and scenario entail. If a child was to mindlessly play the role of a daddy, and the scenario given by the teacher entailed the daddy to stay at home with the children (perhaps an uncommon role of a daddy), the child will need to be mindful that he is playing the role of a daddy at home, not follow what routine might dictate, for the daddy to be away at work. The scenarios scaffold by the teachers can enhance the children’s awareness of their role and lead to what can be defined as more advanced play (Bodrova & Leong, 2007). The theoretical premise behind Tools lays in the concept that through socio-dramatic play, children take on certain roles (e.g., a sister in the game of house) and their actions and impulses are governed by the role they have adopted. The children learn to self-regulate their emotional behaviors through following the rules of the adopted roles and thus learn to progress away from the instinctual reactive emotional behaviors, characteristic of many children and can gain more responsibility for their behaviors (Bordova & Leong, 2007). Socio-dramatic play

promotes the shifting of external self-regulation to developing internal self-regulatory skills (Bordova & Leong, 2007).

It is important to note that these pedagogical programs enhance the development of self-regulatory skills in early childhood, so that children can then later apply the skills to other abstract academic contexts involving problem solving skills (Bodrova & Leong, 2008; Dawson & Guare, 2010; Ervin et al. 2010). Academic requirements of standardized tests do not themselves improve self-regulatory skills, yet heavily require the use of these skills to solve problems and to achieve high performance results (Dawson & Guare, 2010). Given the current educational climate, with increased pressures on performance based tests, additional early childhood programs and pre-service teacher training programs that focus on the development of self-regulatory skills are in need of development (Diamond & Lee, 2011).

### **Teacher Knowledge and Instruction of Self-Regulation Skills**

Current teacher knowledge of self-regulation skills, as well as classroom instruction on how to enhance self-regulation skills is examined as a deficit in this section. Using key words such as, teaching self-regulation, academic self-regulation, teacher knowledge of self-regulation, teaching self-regulation techniques, instruction of self-regulation techniques, self-directed learning and teaching self-directed learning a paucity of literature emerged to answer the question adequately of what is currently general teacher knowledge of instructing self-regulation in early childhood, and what teacher training program models exist to instruct self-regulation. Most research conducted has been related to the

importance of self-regulation skills being developed in early childhood and their contribution towards positive school behavior, school readiness, and academic success (Blair, 2003; Blair & Razza, 2008).

Early and Winton (2001) conducted a nationally distributed survey on early childhood teacher preparation at 2- and 4-year institutions of higher education (IHE). Four hundred thirty-eight chairs/directors of IHEs who participated in the study answered questions that addressed faculty characteristics, course and practica requirements, and comparisons between ECE programs (Early & Winton, 2001). Pertaining to course and practica requirements it was found that pre-service teachers participating in an Associate's degree program were required exposure to coursework pertaining to infant/toddler care; while pre-service teachers participating in a Bachelor's degree program were required more exposure to coursework pertaining to content areas for preschool settings such as cultural and linguistic diversity (43.2% of program requiring entire course or more), children with disabilities (60.6% of program requiring entire course or more), and working with families (57.3 % of program requiring entire course or more; Early & Winton, 2001). The conclusion of this study demonstrates the importance ECE programs place upon cultural diversity, working with disabilities and other program requirements, none of which include social emotional or self-regulation skills.

In most college courses, self-regulation skills are addressed briefly under the context of classroom management in reference to behaviorist approaches to classroom management techniques. Behaviorist approaches are typically used to



address difficult behavior in the classroom and focus on the teacher fostering external motivation (Simonsen et al., 2008). Evidence-based classroom management practices techniques based in the behaviorist model employ token reward systems with children for exhibiting good behavior (Simonsen et al., 2008). One example of a token reward system in a classroom would be if children “earn” stickers on their chart for sitting still and following directions. Moreover, in the text, *Models of Teaching* by Joyce, Weil and Calhoun (2009), commonly used in graduate courses, not one model addresses the instruction of self-regulation skills. However, the models across the board incorporate concepts such as meta-cognition, scaffolding and ZPD (Joyce et al., 2009). Both texts offer variations and supporting evidence that self-direction, self-directed learners, inner-control and model behavior are crucial to the learning process; however neither text delineates how to instruct in the process of developing self-regulation skills (Dreikurs et al., 1998; Joyce et al., 2009). Furthermore, programmes such as Conscious Discipline, focus on promoting children’s social emotional skills in the classroom and offer contributions to components of self-regulation skills such as self-reflection, decision making, and self-management (Baily & Rain, 2014). However, programmes such as Conscious Discipline are not offered as university based courses (Baily & Rain, 2014).

Yet, most teachers can easily identify characteristics of children who exhibit poor self-regulatory skills (Willis et al., 2014). For example, a teacher can identify children who demonstrate heightened self-regulation skills by discussing characteristics such as focus, lack of focus, on task behavior, emotional control,

following directions and a child's ability to use their words. This demonstrates that the enhancement of self-regulation skills are clearly a necessity in the early childhood environment. Thus, given the small amount of literature, research and teacher training program models available on teaching self-regulation skills in the classroom, and research citing teacher's preference for children to learn what has been described as self-regulatory behaviors prior to learning academic content (Blair, 2003), there resides a need for an easy to use method to employ in early childhood classrooms to enhance children's self-regulation skills. Furthermore, there is a need for a teacher-training program that addresses effective theoretical and pedagogical tools to enable teachers to be more equipped to foster these skills within the structure of a method in the early childhood classroom.

### **Summary**

This chapter began by revisiting the purpose of this dissertation, which is to establish validity in the ECESRQ as means for effectively ascertaining early childhood teachers' knowledge and instruction of self-regulation skills in the classroom, to further demonstrate the lack of knowledge and instruction concerning these crucial skills. Furthermore, to bring forth the argument that effective pre-service teacher training programs are in need of incorporating theoretical and pedagogical knowledge of self-regulation skills into their coursework. This chapter details an extensive review of the literature of self-regulation skills in early childhood, the development of these skills, the early childhood environment, the concept of school readiness, how school readiness

and self-regulation are related, pedagogical programs designed to enhance self-regulation skills in early childhood and finally teacher knowledge of and instruction of self-regulation skills. Through this thorough literature review the importance of self-regulatory skills in early childhood has been established, as establishing their importance in promoting school readiness and long term academic success. In addition, the paucity of scientific research on the development of pedagogical programs to enhance self-regulation skills is discussed as well as teacher knowledge and successful instruction of these skills in the classroom. In the subsequent chapter the research methods and design will be discussed.

## CHAPTER III

### RESEARCH DESIGN AND METHODOLOGY

One of the most recent research areas of inquiry in early childhood education is the study of children's self-regulatory skills (Zelazo & Lyons, 2012). Research in this area (e.g., Blair, 2003; Blair & Diamond, 2008; Blair & Razza, 2007; Bodrova & Leong, 2007, 2008; Borkowski & Thrope, 1994; Calkins & Fox, 2002; Dawson & Guare, 2010; Denckla, 1998; Diamond & Lee, 2011; Diamond et al. 2007; Kochanska et al. 2001; McClelland & Cameron, 2012; McClelland et al. 2007; Morrison et al. 2010; Ponitz et al., 2009; Rimm-Kaufman, Pianta, & Cox, 2001) indicates that the development of these skills in early childhood is crucial to long term academic success, appropriate development of social-emotional skills, and promoting school readiness.

Because of these findings, pedagogical programs that enhance these skills are in high demand, along with demand for teachers with knowledge of and ability to implement effective instruction of these skills in these early childhood classrooms. However, to date there are only a handful of pedagogical programs that focus on contributing to the development of these skills. This study is comprised of two phases where the purpose of the first phase was to examine the psychometric properties of the self-reporting Early Childhood Educators' Knowledge of Self-Regulation Questionnaire (ECESRQ) instrument (Willis et al., 2014) and the purpose of the second phase was to analyze if (a) teachers' knowledge predicted teachers' attitudes and beliefs, and (b) if ECESRQ scores

predicted teacher knowledge of instruction of self-regulation skills. This survey was designed to identify teachers' knowledge about self-regulation and their knowledge of instruction of self-regulation skills in the classroom.

### **Research Questions**

Phase 1:

1. What are the factors of the Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire?

Phase 2:

- a) Does teacher knowledge of self-regulation skills predict teachers' attitudes and beliefs?
- b) Do the results of the Early Childhood Educators Knowledge of Self-Regulation Skills Questionnaire predict teacher knowledge of instruction of self-regulation skills?

### **Sample**

A purposeful sample was recruited for this study. After obtaining IRB approval surveys were sent to a total of 201 schools in Miami-Dade County private schools for teachers who were teaching pre-kindergarten and kindergarten, resulting in a total of 199 completed surveys collected. Research indicates that the field of early childhood is a gendered profession where approximately only one percent of ECE are men (Williams, 2012). The sample collected was indicative of this statistic (see Table 2), demonstrating that the

sample was representative of the ECE population. Pre-kindergarten and kindergarten teachers were selected for this study, as research suggests that there is a surge in development of self-regulatory skills during this early childhood period (Bodrova & Leong, 2008). Further, research substantiates that increased pressures have been placed on kindergarten students in preparation for first grade and school readiness, resulting in a high demand for self-regulation skills at this age (Lewit & Baker, 1995; McClelland et al., 2009; Rimm-Kaufmann, Pianta, & Cox, 2002).

The survey was distributed in two forms: (a) English and Spanish versions of the survey were placed on the FIU Qualtrics website. Qualtrics provides an anonymous link to the survey, which can be distributed, and (b) paper and pencil surveys. Potential participants were approached to participate via two means (a) through emailing directors of individual schools found on local early childhood organization websites ( $n=197$  schools), and (b) contacting department heads of local early childhood organizations ( $n=4$  schools). Schools that did not respond to the email were visited in person by the researcher and paper and pencil surveys were distributed ( $n=13$  schools).

A total of 214 schools were contacted. In the first approach, websites including the Early Learning Coalition, Department of Children and Families, Childcare Centers in the United States, and the Children's Trust, were used to identify a list of schools, centers and preschools in the Greater Miami area. All schools on the lists available on the website were contacted via email. The initial

email sent out to the directors of the schools contained an informational letter and a link to the survey. The informational letter asked the directors to participate in the research study by emailing the link to their teachers (Appendix B). A follow-up email and letter reminding the director of the research project was sent two weeks thereafter (Appendix C). Finally a third email was sent out asking the director for a convenient appointment time for the researcher to visit the school with iPads, so the teachers could quickly and conveniently fill out the survey on-site (Appendix D). Two schools were visited as a result of the third email, and teachers completed the surveys on iPads brought to the school by the researcher.

A total of 122 surveys were collected as a result of using the first approach. Using the second approach, the research contacted leaders of local chapters of early childhood accreditation programs. The researcher discussed the research project with the leaders, inquiring about contacts for school directors and about professional days so the surveys could be distributed at schools and to teachers who were not responsive to the first approach. From the second approach, surveys were collected from four schools, one school chose to distribute the survey link via email to the teachers, the other three schools were visited by the researcher and the teachers filled out the survey using iPads. A total of 79 surveys were collected using the second approach. Using the third approach, 13 schools were visited and a total of 62 surveys were collected. A total sample of 263 surveys were collected. A total of 79 pencil and paper

surveys were collected and 184 surveys were collected electronically. Of the 263 surveys, 87 were excluded from the final data set as a result of missing data, leaving 176 surveys to be analyzed.

### **Description of Instrument**

The Early Childhood Educators' Knowledge of Self Regulation Questionnaire (ECESRQ; See Appendix A) was developed to assess teachers' knowledge and instruction of self-regulation skills in the early childhood classroom. The survey was designed for either lead or assistant teachers who are currently working in an early childhood classroom. Early childhood can be defined as ages 0-8 years. This was a self-report survey of 41 questions. The survey was translated by a bilingual specialist from English to Spanish and back translated from Spanish to English to ensure translation accuracy, and making it usable with both English and Spanish speaking populations. (Bliss & Vinay, 2004).

The survey consisted of four sections. The first section, titled, *Personal Information*, is designed to collect basic demographic data. This section asked eight questions concerning,

- age,
- gender
- classroom position
- race/ethnicity
- highest degree/certification obtained



- how often the teacher attends professional development training
- how many years the teacher has been teaching
- what age child the teacher currently teaches
- how many children are in the teacher's class.

The second section titled, *Education and Training*, was designed to identify

- background knowledge of teachers' education
- education on self-regulation skills
- perspectives on students' abilities

Through eight self-reporting questions. This section asked questions such as:

*On a scale of 1 (not at all) to 5 (extremely) please rank the following skills and behaviors you feel are important to success in your classroom:*

- *Identifying letter names*
- *Pencil grasp*
- *Following directions*
- *Socialization with peers*
- *Understanding numerical values*
- *Not interrupting*

In addition, this section also asks questions such as: *Are you familiar with the term "self-regulation" and Have you ever had any training/professional development on techniques that enhance children's self-regulation in your classroom?* These questions are coded in a 0/1 for No/Yes and ask further questions of the teacher if they responded yes to any of the above.

The third section, titled *Vignettes*, detailed four scenarios with five choices for answers. The answers were scored dichotomously where one of the answers was the correct answer. The correct answer was based upon the literature detailing appropriate instruction of self-regulation skills in the classroom (Bodrova & Leong, 2007). The purpose of this section was to identify teacher's reported instruction of self-regulation skills through scenarios that take place in the classroom. The directions for the Vignette section are as follows:

*For each of the following, indicate what course of action, if any, you would take.*

One example of the vignettes is the following:

*"Manny , 5, is large for his age. This morning was typical. As Manny walked into the classroom he turned around too fast, and knocked all of the puzzles off the shelf."*

*In this instance, I would (select one):*

*Acknowledge to Manny that you knew it was a mistake and that it is "okay", ask Manny in a soft voice to please clean up the puzzles he knocked off the shelf, offer to assist helping him if he has difficulty putting the puzzles back.*

*Guide Manny and assist him in picking up the mess he created; discuss with him what he could have done to prevent this accident from happening, follow up with Manny often on this discussion.*

*Tell Manny he will miss recess because he can't control himself and makes messes.*

\_\_\_ *Review with Manny the path he took in the classroom and create a technique with Manny that assists him in walking slowly and avoiding obstacles in the classroom. Practice the technique often.*

\_\_\_ *I would not take any action.*

The fourth section titled, *Attitudes and Personal Beliefs*, included 20 Likert style questions and statements identifying teachers' attitudes and personal beliefs in the classroom. The Likert scale included selections of strongly agree, agree, disagree and strongly disagree. Examples of the questions and statements include: *Sometimes I react strongly to repeated demonstrations of poor behavior from a student* and *I am often times interrupted while teaching a lesson to address behavior.*

### **Pilot Study**

A pilot study was conducted using the ECESRQ prior to collecting dissertation data (Willis et al., 2014). The sample consisted of 115 teachers. The respondents included 106 women (92%) and 5 men (4%) and 4 respondents who did not identify their sex. Participants were recruited from preschool and kindergarten schools in an ethnically diverse urban community. The schools were selected from a contact list from a local public university, making this a convenience sample. Fifty-four schools and child care centers participated in the research.

Exploratory factor analysis using principal components extraction with a varimax rotation was performed using SPSS 21.0 on the 20 Likert-style items of section four. Section four was intended to measure teacher knowledge of self-

regulation skills. Cronbach's alpha was obtained for each factor to establish internal consistency reliability. A Pearson correlation was then performed to determine if a significant relationship existed between the factors identified and the reported implementation of pedagogical tools to enhance self-regulation in the classroom, identified in the vignette section of the survey.

Of the sample, 63% reported that they were unfamiliar with the term "self-regulation." Eighty-eight percent of the sample reported that they had not received any training or professional development courses on self-regulation skills or techniques that enhance self-regulation skills. However, 96% of the sample reported that they felt that their children had an innate desire to learn.

From the responses to the 20 Likert-style statements from the ECESRQ, 49% reported that they spent the majority of their classroom time teaching and working on appropriate behaviors. The majority (53.9%) of teachers responded that they use behavior modification techniques often in the classroom. Fifty-four percent of teachers reported that their students need to be externally motivated, 51% of teachers reported that students have difficulty finishing a task they have just begun, 53% reported that students have difficulty initiating a task on their own, 56% of teachers strongly agreed that children needed to be directed by an adult in the classroom, and 46% of teachers reported that they are often times interrupted while teaching to address poor behavior. In general, teachers reported that behavior was a high priority in the classroom and that they were aware of factors contributing to children's self-regulatory skills (without using the

identifying term of “self-regulation”), and typically used behavior modification techniques to address behavior in the classroom.

In the factor analysis using a principal components extraction and a varimax rotation, three factors were extracted and labeled as: (1) Teachers’ Attitudes and Beliefs , (2) Classroom Management and (3) Child Behavior (See Table 1 below). Thirty-six percent of the variance of all the variables (20 statements from the ECESRQ) was explained by the three factors. Cronbach’s alpha was reported as a moderate score for factor 1 (.614), factor 2 (.559) and factor 3 (.602), suggesting that the survey demonstrated moderate estimates of internal consistency. A Pearson correlation was used to identify if a relationship between the each of three factors individually and the vignette section of the survey existed. Significance was only found ( $p < .05$ ) between factor 1, teachers’ attitudes and beliefs, and the vignettes ( $r = .227, p < .05$ ). No significant correlations were found between the vignettes and the other two factors, classroom management and child behavior.

Table 1  
*Factor Loadings for Principal Components and Varimax Rotation of Pilot Study*

Item	Factor loading		
	Factor 1 <i>Teacher Attitude and Beliefs</i>	Factor 2 <i>Classroom Management</i>	Factor 3 <i>Child Behavior</i>
I often notice a few of my students have difficulty initiating a task on their own, and need my guidance often. (Item 9)	<b>.758</b>	.002	-.013
I often notice that a few of my students have difficulty finishing a task they have just begun. (Item 7)	<b>.722</b>	-.123	.018
I see a gap in what my students might be able to achieve and their actual achievement. (Item 8)	<b>.649</b>	-.021	.188
I often feel significantly stressed as a result of my job as a teacher. (Item 20)	<b>.536</b>	.035	.045
I am often times interrupted while teaching a lesson to address behavior (Item 19).	<b>.536</b>	.035	.045
Sometimes I react strongly to repeated demonstrations of poor behavior from a student (Item 5).	<b>.519</b>	.239	.004
I see that some of my children are very smart and have a great deal of potential, but I am concerned they will not do well because they have difficulty focusing (Item 15).	<b>.460</b>	.268	.081
I find activities for my students to work on in groups (Item 13).	-.040	<b>.604</b>	.101
I spend a majority of my time in the classroom teaching and working on appropriate behaviors. (Item 6)	.191	<b>.595</b>	-.124
I would prefer to spend more time on teaching academic content in my classroom as opposed to behavior management (Item 17)	.177	<b>.587</b>	-.206
I feel most of my students need to be externally motivated (Item 6).	.269	<b>.527</b>	.149

Table 1 (continued)  
*Factor Loadings for Principal Components and Varimax Rotation of Pilot Study*

Item	Factor loading		
	Factor 1 <i>Teacher Attitude and Beliefs</i>	Factor 2 <i>Classroom Management</i>	Factor 3 <i>Child Behavior</i>
I believe that children need to be directed by an adult in the classroom (Item 1).	-.208	<b>.430</b>	.004
I use behavior modification techniques often in my classroom (Item 4).	.217	<b>.311</b>	-.066
I feel it is more important to teach early childhood students social-emotional content than academic content (Item 14).	.034	-.280	<b>.708</b>
I would prefer to spend more time in my classroom teaching my children social skills. (Item 12)	-.192	-.085	<b>.690</b>
I feel the majority of difficulty I experience as a teacher arises from controlling behavior problems in my classroom (Item 10).	.254	.002	<b>.579</b>
It takes a while for a few of my students, when they are upset, to calm themselves down (Item 18).	.248	.086	<b>.471</b>
I spend a majority of my time in the classroom teaching and working on appropriate behaviors (Item 3).	-.001	.250	<b>.422</b>

The vignette section of the survey was designed to capture hypothetical scenarios that require the selection of reported instruction of pedagogical tools to address self-regulatory behavior. Each vignette had a correct answer among the five answer choices. The scores of the four vignette sections were compressed

into one continuous variable to perform the correlation (possible score range of 0 to 4).

The results of this pilot study demonstrated the lack of knowledge teachers possess regarding knowledge of children's self-regulation skills and their limited knowledge of instruction to enhance these skills in the early childhood classroom.

More than half of the teachers surveyed reported that they were not familiar with the term "self-regulation" and more than two-thirds of the teachers reported that they had never received any training or professional development courses on the topic of self-regulation and/or techniques to enhance these skills in the early childhood classroom.

### **Data Analysis**

The first phase of data analysis used exploratory factor analysis (EFA) to determine the construct validity and internal consistency reliability of the knowledge of teaching self-regulation portion of the ECESRQ and other techniques to establish the validity and reliability of the other sections of the instrument. The second phase of the study employed linear regression and multiple linear regression analysis.

### **Phase One**

In order to answer the question in the first phase of this dissertation, *what are the factors of the Early Childhood Educator's Knowledge of Self-Regulation Skills Questionnaire?* EFA was used to assist in establishing good estimates of



construct validity using the *Attitudes and Personal Beliefs* scale of the ECESRQ. It is recommended that at least 5-10 subjects per item be collected as an adequate sample size to conduct EFA (Bryant & Yarnold, 1995). There were 174 respondents to the instrument. This sample was more than sufficient to meet the criterion for a 14-item scale.

This study used a principal component analysis extraction and a varimax rotation in order to extract the factors that that were as independent and interpretable as possible. SPSS 21 was used to compute the analysis. The first factor extracted accounts for the greatest proportion of the variance, the second for the next most variance and this pattern continues (Kerlinger & Lee, 2000). Test items that have a high loading on a factor or correlate with each factor (factor loadings) should group together in clusters if viewed on a graph. The clusters of items account for as much variance as possible when analyzed with a varimax rotation. The amount of variance are expressed as Eigen values (Tabachnick & Fidel, 2007). The purpose of rotation used in factor analysis is to more closely place the clusters of items together so they may be independent of the other factors. The determination of the importance of the factors is ascertained through the proportion of the variance of the instrument scores that is accounted for by each factor after rotation (Tabachnick & Fidel, 2007).

Internal consistency reliability refers to whether the items in each factor of the survey are measuring the same underlying construct (Newman & Newman, 2006). Estimates of reliability in section four of the ECESRQ, *Personal Attitudes*

*and Beliefs*, examine whether the survey is measuring each factor consistently. For example, good estimates of internal consistency would assume that if a subject scored well on the first item in factor one, he or she should do well on all of the other items on factor one. The factor measures a construct and internal consistency analyzes the correlation between a given item in the factor and all of the other items in the factor. This is referred to as item to group correlation. Estimates of reliability can be found through the use of Cronbach's Alpha analysis. This analysis measures the internal consistency of the factors; essentially to what degree the items on the factors are measuring the same theme throughout the factor. Poor estimates of reliability can lead to inadequate analysis of the data and be a threat to construct validity, demonstrating that the factor is not pure and does not measure the same construct through and through, or similarly stated, there is not a significant item to group of item correlation (Tabachnick & Fidel, 2007). Using Cronbach's Alpha measuring from 0-1, a score of .70 or higher represents a high degree of estimate of internal consistency. If the score falls below .70, items on the factor can be re-evaluated to achieve a higher score; subsequently establishing increased estimates of internal reliability and increased construct validity.

To examine the psychometric properties of other sections, the ECESRQ, estimates of validity were calculated in other ways. Different sections of the ECESRQ require different types of estimates of validity. Section three, titled

*Vignettes*, requires good estimates of content validity and section four, titled *Attitudes and Personal Beliefs*, requires good estimates of construct validity.

The third section, titled *Vignettes*, requires good estimates of content validity to be useful in the first and second phases of the study. Estimates of the content validity of the ECESRQ can be obtained by demonstrating that the objectives from the *Vignette* section in the ECESRQ parallel the literature on the topic. Content validity is established through a correspondence between the objectives retrieved from the literature and the test items in section three. The objective of section three is to evaluate reported expression of teacher knowledge of instruction of self-regulatory skills in the classroom versus instruction from teachers who either have no knowledge, little knowledge of self-regulatory skills or have knowledge of self-regulatory skills yet lack the effective pedagogical tools needed to implement the skills effectively in the classroom. There are four items in section three that mimic classroom scenarios where teacher knowledge and pedagogical implementation of self-regulatory skills are required (Appendix A). One example of pedagogical tools or pedagogical implementation to enhance self-regulatory skills in the classroom would be for the teacher to assign the students jobs within the classroom. Pedagogical tools and implementation of self-regulation skills focus on instilling independence and autonomy within the child. Each of the four scenarios has five answer choices. The answer choices correspond to the literature and contain one correct answer choice. By evaluating the answers selected by the subjects on section three of

the ECESRQ, their reported knowledge and instruction of self-regulatory skills can be assessed. This will allow the researcher to examine whether teachers may be consistently failing to implement pedagogical tools that promote self-regulation in the early childhood classroom, despite having the knowledge of how to implement the skills.

## **Phase Two**

In order to answer the research questions in phase two, (a) *Does teacher knowledge predict teachers' attitudes and beliefs, and* (b) *do the results of the ECESRQ predict knowledge of instruction of self-regulation skills?* Three simple stepwise linear regression and one multiple regression equations were analyzed for this phase. Three stepwise linear regression equations used the three factors found ( $F_1, F_2, F_3$ ) as the dependent variables and the second equation used knowledge of instruction ( $V$ ) as the dependent variable. Knowledge, for the first question, ( $K$ ) was operationally defined as the participant's response to the question, "Are you familiar with Self-Regulation Skills"? For the second question, the four vignette answers were compressed into one continuous variable with a combined total score of zero to four as in the pilot study, this score represented the knowledge of instruction ( $V$ ). The compressed variable was analyzed using a multiple regression equation between the factors ( $F_1, F_2, F_3$ ) found from section IV of the survey and two demographic variables, professional development ( $PD$ ) and age ( $A$ ). Tabachnick and Fidell (2007) stated regression analysis is a statistical technique that allows for the researcher

to examine the relationship between one dependent variable and several independent variables. Regression can also refer to a correlation or relationship between the dependent and independent variables, it is important to note that this analysis reveals relationships and does not produce causal results (Tabachnick & Fidell, 2007). The first goal in regression analysis is to determine how strong the relationship is between the dependent and independent variables (Tabachnick & Fidell, 2007). These questions can be answered through examining the squared multiple correlation of the independent variable(s) and the dependent variable ( $R^2$ ).  $R^2$  is the proportion of the sum of squares for regression over the total sums of squares for the dependent variable, or the correlation between the independent variables and the dependent variable, where  $Y$  represents the predicted dependent variable (Tabachnick & Fidell, 2007). In this analysis the dependent variables analyzed were teachers' attitudes and beliefs and knowledge of teaching self-regulation. The independent variables in the equation to answer the first question, to predict teacher attitudes and beliefs were teacher knowledge ( $K$ ), professional development ( $PD$ ) and the teacher's age ( $A$ ). To answer the second question, the independent variables were the three factors ( $F_1, F_2, F_3$ ), the level of teacher professional development ( $PD$ ) and the teacher's age ( $A$ ). The dependent variable was teacher knowledge of instruction of self-regulation ( $V$ ). Thus, the equations that answer the questions of phase two are as follows:

$$F_1=b_1K+b_2A+b_3PD+a$$

$$F_2=b_1K+b_2A+b_3PD+a$$

$$F_3=b_1K+b_2A+b_3PD+a$$

$$V= b_1F_1+b_2F_2+b_3F_3+b_4PD+b_5A+a$$

Where  $K$  is the value of knowledge,  $V$  is the predicted value of knowledge of instruction,  $b_k$  represents the coefficients,  $F_k$  represents each of the factors,  $PD$  represents professional development,  $A$  represents teacher age, and  $a$  represents the constant.

### **Summary**

This chapter discussed the study's research methods, design and statistical analysis. Research questions were stated. Statistical analysis to examine the psychometric properties of the ECESRQ were presented for the study using analysis to establish estimates of content validity for section three of the ECESRQ, EFA to measure construct validity of section four and Cronbach's Alpha to establish internal consistency. These analyses assisted in addressing the question from phase one of the study. Simple stepwise linear regression and multiple linear regression analysis were used to answer the questions from phase two of the study. The next chapter will present and discuss the results of this study.

## CHAPTER IV

### RESULTS

Table 2 presents the demographic data for the sample of participants from whom data was obtained. The number of participants responding to each of the demographic questions differs due to rates of response on each of the items of the survey.

#### Phase One

In order to answer Research Question 1 (*What are the factors of the Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire?*), an EFA was carried out on 14 statements obtained from the pilot study using a principal components extraction and a varimax rotation (Tabachnick & Fidel, 2007). This section of the ECESRQ, asked participants to respond to 14 statements and questions related to their attitudes and beliefs about various issues related to self-regulation. It is important to note that six of the original 20 items in this section were eliminated to enhance internal reliability, leaving a total of 14 items to be analyzed. Figure 1 summarizes the participants' responses to the 14 statements of the ECESRQ.

Table 2  
*Demographic Characteristics of the Sample*

Characteristic	<i>n</i>	Percent
Gender		
Men	1	0.5
Women	194	99.5
Ethnicity/Race		
Hispanic/Latino	166	83
White Caucasian	13	7
Black/African American	12	6
Asian	0	0
Other	6	3
Non reporting	1	0.5
Primary Language		
English	56	28
Spanish	115	58
Creole	3	2
Portuguese	2	1
Other	0	0
Non reporting	23	12
Education		
Bachelor's Degree	71	36
Graduate Degree	18	9
Child Development Associates Degree	57	29
High School Diploma	11	6
Currently in school	42	21
Teaching Position		
Lead Teacher	138	70
Assistant Teacher	59	30
Non identified	2	1
Ages Taught Currently		
2-3 years	53	27
4-5 years	125	63
6-7 years	11	6
8-9 years	2	1
Professional Development		
More than twice a year	87	44
Twice a year	23	45
Once a year	50	25
Never	11	6



Strongly Agree	Agree	Disagree	Strongly Disagree
<i>1. I believe that children need to be directed by an adult in the classroom.</i>			
51.5	36.2	8.5	3.5
<i>2. I spend the majority of my time in the classroom teaching and working on appropriate behaviors.</i>			
24.1	37.2	30.2	6
<i>3. I feel most of my students need to be externally motivated.</i>			
17.6	37.2	30.2	7
<i>4. I often notice that a few of my students have difficulty finishing a task they have just begun.</i>			
9.5	42.7	37.2	8
<i>5. I see a gap in what my students might be able to achieve and their actual achievement.</i>			
9.5	40.7	36.7	9.5
<i>6. I often notice a few of my students having difficulty initiating a task on their own, and need my guidance often.</i>			
8.5	48.2	33.7	8.5
<i>7. I feel the majority of difficulty I experience as a teacher arises from controlling problems in classroom behavior.</i>			
11.1	44.7	37.2	5
<i>8. I encourage my students to gain the ability to start tasks by themselves.</i>			
.5	2.5	40.7	55.8
<i>9. I would prefer to spend more time in my classroom teaching my children social skills.</i>			
3	33.7	40.2	18.6
<i>10. I find activities for my students to work on in groups.</i>			
2	5.5	57.8	33.7
<i>11. I feel it is more important to teach early childhood students social-emotional content than academic content.</i>			
5	24.6	39.7	27.6
<i>12. I feel most of my students have the ability to motivate themselves, without my guidance.</i>			
4	31.7	45.7	13.6
<i>13. I am often times interrupted while I am teaching a lesson to address behavior.</i>			
11.1	44.7	37.2	5
<i>14. I often feel significantly stressed as a result of my job as a teacher.</i>			
7	29.1	1.7	21.1

Figure 1. Percentages of responses to 14 statements of the ECESRQ (N=176)

A three-factor structure was obtained based on a scree plot of the eigenvalues of originally obtained factors (see Table 3). Using Cronbach's Alpha analysis, I measured the internal consistency of the factors; essentially identifying the degree to which the items, that loaded onto the individual factors, were measuring the same construct. Items identified from the analysis at .70 or above suggest strong internal reliability. In the factor analysis, three factors were extracted and named (1) potential of children's behavior in the classroom, (2) beliefs and attitudes of external motivation, (3) beliefs and attitudes of internal motivation. Loadings of variables on factors are shown in Table 3. The variables are grouped by size of loading to facilitate interpretation. Each factor identified in the ECESRQ depicts an underlying construct that is independent of the others.

Knowledge of these constructs increases interpretability of the scores of the instrument. It is important to note that six of the original twenty items in this section were eliminated to enhance internal consistency reliability, leaving a total of 14 items to be analyzed. Cronbach's alpha was reported as high for factor 1 (.718), and moderate for factor 2 (.552) and factor 3 (.529), suggesting that the survey demonstrated high to moderate estimates of internal consistency.

Table 3  
*Factor Loadings for Principal Components and Varimax Rotation*

Item	Factor loading		
	Factor 1 <i>Child Behavior</i>	Factor 2 <i>External Motivation</i>	Factor 3 <i>Internal Motivation</i>
I am often times interrupted while teaching a lesson to address behavior (Item 18).	<b>.763</b>	-.094	-.126
I feel the majority of difficulty I experience as a teacher arises from controlling behavior problems in my classroom. (Item 10)	<b>.690</b>	.041	.083
I often notice that a few of my students have difficulty finishing a task they have just begun. (Item 9)	<b>.613</b>	.345	.005
I see a gap in what my students might be able to achieve and their actual achievement.	<b>.594</b>	.466	.127
I often feel significantly stressed as a result of my job as a teacher. (Item 20)	<b>.590</b>	.049	-.061
I often notice that a few of my students have difficulty finishing a task they have just begun. (Item 7)	.310	<b>.676</b>	-.049
I believe that children need to be directed by an adult in the classroom. (Item 1)	.165	<b>.645</b>	-.001
I spend a majority of my time in the classroom teaching and working on appropriate behaviors. (Item 6)	.191	<b>.595</b>	-.124
I spend a majority of my time in the classroom teaching and working on appropriate behaviors (Item 3).	.069	<b>.466</b>	-.311
I would prefer to spend more time in my classroom teaching children social skills (Item 12)	-.262	-.197	<b>.736</b>
I find activities for my students to work on in groups. (Item 13)	.140	-.431	<b>.610</b>
I feel it is more important to teach early childhood students social-emotional content than academic content (Item 14)	-.430	.024	<b>.545</b>
I feel most of my students have the ability to motivate themselves, without my guidance. (Item 18)	.026	.356	<b>.539</b>
I encourage my students to gain the ability to start tasks by themselves. (Item 3)	.172	-.130	<b>.520</b>

It is important to note that the factors found in this dissertation study of the 20 Likert style items differ from the factors found in the pilot study of the ECESRQ (Willis et al., 2014). There are two plausible issues in the studies that could account for the different factors found. The first difference between the pilot and the dissertation study is the number of items analyzed. In the pilot study a total of 20 items were analyzed in the Likert style section of the ECESRQ; in the dissertation study a total of 14 items were analyzed in the Likert style section. Six items were eliminated in the dissertation study to enhance internal reliability; this was not the case for the pilot study. Therefore, one plausible reason for the difference in the two studies could be because the total number of items analyzed in the EFA was different. Secondly, the three factors found in the pilot study indicated contributing variables to the overall construct of teacher knowledge and instruction of self-regulation skills in the classroom. Specifically, the three factors found in the pilot study closely parallel the three constructs found in the literature on teacher knowledge and teacher education (Munby et al., 2011). The factors found in the dissertation data indicate contributing variables to the self-regulation literature. Where the three factors found in the dissertation data closely parallel contributing constructs to the concept of self-regulation skills. This finding is discussed in detail in Chapter 5 of this dissertation.

## Phase Two

In order to answer the research questions in phase 2, (a) *Does teacher knowledge predict teachers' attitude and beliefs, and (b) do the results of the Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire predict knowledge of instruction of self-regulation skills?* Simple linear regression and multiple regression analysis were conducted to predict if teachers' knowledge predicts teachers' attitudes and beliefs, and if the ECESRQ predicted knowledge of instruction, by using the factor scores from section IV, above and beyond the demographic variables of professional development and teacher age. Knowledge was operationally defined by answering the question, "Are you familiar with the term self-regulation skills" and knowledge of instruction was operationally defined as the answers to the vignette section III, compressed into one variable.

For the first three equations, a stepwise linear regression was performed. Entering the variables of professional development and teacher age into the first block and knowledge into the second block as independent variables, where each of the three factors served as a dependent variable in each equation (see Tables 4, 5 and 6). It was found that knowledge did not significantly predict teacher attitudes and beliefs (represented by the three factors), above and beyond professional development training for any of the three regression equations.

Table 4  
*Knowledge as a Predictor of Teachers' Attitudes and Beliefs- Factor 1*

Variable	Factor 1		
	Model 1 <i>B</i>	<i>B</i>	95% CI
Constant	13.595*	13.414*	[11.046, 15.782]
Professional Development	-.058	-.085	[-.570, .401]
Teacher's Age	-.022	-.022	[-.063, .019]
Knowledge		.362	[-.631, .1355]
<i>R</i> <sup>2</sup>	.007	.010	
<i>F</i>	.603	.573	
$\Delta R^2$		.003	
$\Delta F$		.518	

\**p* < .001

Table 5  
*Knowledge as a Predictor of Teachers' Attitudes and Beliefs- Factor 2*

Variable	Factor 2		
	Model 1 <i>B</i>	<i>B</i>	95% CI
Constant	7.319*	7.110 *	[5.363, 8.858]
Professional Development	.257	.006	[-.132, .585]
Teacher's Age	.005	.226	[-.025, .037]
Knowledge		.416	[-.316, .1149]
<i>R</i> <sup>2</sup>	.013	.020	
<i>F</i>	1.087	1.145	
$\Delta R^2$		.007	
$\Delta F$		1.259	

\**p* < .001

Table 6  
*Knowledge as a Predictor of Teachers' Attitudes and Beliefs- Factor 3*

Variable	Factor 3		
	Model 1 <i>B</i>	Model 2	
		<i>B</i>	95% CI
Constant	14.803*	14.550*	[12.513, 16.588]
Professional Development	-.057	-.095	[-.513, .323]
Teacher's Age	.007	.008	[-.028, .043]
Knowledge		.505	[-.349, 1.359]
<i>R</i> <sup>2</sup>	.001	.009	
<i>F</i>	.110	.527	
$\Delta R^2$		.008	
$\Delta F$		1.362	

\**p* < .001

Significance was not found in the second regression equation using factor 2 as the dependent variable (see Table 5). Significance was also not found in the third regression equation using factor 3 as the dependent variable (see Table 6).

In the second equation, predicting knowledge of instruction, the following multiple regression equation was used  $V=b_1F1+b_2F2+b_3F3+b_4PD+b_5A+a$ . The variables, professional development (*PD*) and age (*A*) were entered first into Model 1. Both age (*A*) and factor 2 were significant in predicting knowledge of instruction (see Table 7) accounting for 7% of the variance in the model.

Table 7  
*Predictors of Knowledge of Instruction of Self-Regulation Skills*

Variable	Knowledge of Instruction of Self-Regulation		
	Model 1 <i>B</i>	<i>B</i>	95% CI
Constant	1.659**	.406	[-.545, 1.357]
Professional Development	.121	.098	[-.111, .308]
Teacher's Age	-.012*	-.012*	[-.021, -.002]
Factor 1		.033	[-.005, .072]
Factor 2		.052*	[.001, .103]
Factor 3		.029	[-.011, .069]
<i>R</i> <sup>2</sup>	.040	.067	
<i>F</i>	3.616*	4.098**	
$\Delta R^2$		.067	
$\Delta F$		4.284**	

\**p* < .05. \*\**p* < .01

The vignette section was designed to capture reported teacher knowledge of instruction of self-regulation skills in the classroom. The percentage and number of correct responses to the vignette section are reported in Table 8, where most notably the participants scored highest (74% correct, *n*=147) on the fourth vignette response and lowest (3% correct, *n*=6) on the second vignette response. (Table 8). The vignettes were scored in a dichotomous manner, with one correct answer choice (elected from five choices), where teachers selected an answer based upon the given scenarios. It is important to note that teacher responses are self reported, and not necessarily based on what they do or have done in the classroom.



Table 8

*Responses to Vignette Section*

Vignette Responses	Percent (Number of) Correct Responses	Total Number of Responses
1	53(105)	199
2	3(6)	199
3	7(13)	199
4	74(174)	199
Total	34(271)	796

**Summary**

This chapter presented the results to the statistical analysis of the Validation Study of the ECESRQ. Results for the first research question, *What are the factors of the Early Childhood Educators' Knowledge of Self-Regulation Questionnaire?* and the second research questions, *Does teacher knowledge predict teachers' attitude and beliefs, and (b) do the results of the Early Childhood Educators Knowledge of Self-Regulation Questionnaire predict knowledge of instruction of self-regulation skills?* were presented. The next chapter will present and discuss the conclusions of the results of this study.

## CHAPTER V

### DISCUSSION

The current study was designed in two phases. The purpose of the first phase was to examine the psychometric properties of the self-reporting ECESRQ instrument. The purpose of the second phase of the study was to assess if (a) teachers' knowledge of self-regulation skills predicted teachers' attitude and beliefs, and (b) if the results from the ECESRQ predict knowledge of instruction of self-regulation skills in pre-kindergarten and kindergarten classrooms. In order to answer the research question in phase one of the study (*What are the factors of the Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire?*), three factors were identified in the ECESRQ, (factor 1), potential of children's behavior, (factor 2), internal control and (factor 3) external control. The three factors identified indicate contributing variables to the overall construct of self-regulation literature and validation of the ECESRQ.

While the construct of self-regulation is complex (Bodrova & Leong, 2008; Kochanska et al., 2001; McClelland & Cameron, 2012; McClelland et al., 2007; McClelland et al., 2000; Rothbart & Posner, 2005; Willoughby et al., 2011), researchers generally agree that the hierarchical development of these skills follow a path where the child's regulation shifts gradually from relying on external sources to relying on independent, internal skills. Furthermore, before a young child is able to internalize his/her behavior, the adult often lends regulation as an external device, until the child is able to take self-regulatory skills on as his/her

own (Kochanska et al., 2011). The three factors extracted (1) children's behavior (2) internal control and (3) external control, are similar in nature to the development of self-regulation skills and provide construct validity to the ECESRQ (Cronbach & Meehl, 1955; Kerlinger & Lee, 2000). Results indicate Cronbach's Alpha was high for factor 1 (Child Behavior; .718), and moderate for factors 2 (External Motivation; .552) and 3 (Internal Motivation; .529), suggesting that the survey demonstrated high to moderate estimates of internal consistency.

The first factor, children's behavior, addresses teachers' attitudes and beliefs of how children currently behave in their classroom (Blair, 2003). The second factor, external control, addresses teachers' attitudes and beliefs about children's development of self-regulation skills in their classroom, specifically how teachers use and implement external control in the classroom (Kochanska et al., 2001). Finally, the third factor, internal control, addresses teachers' attitudes and beliefs on children's development of self-regulation skills in the classroom, as it relates to what teachers believe children are capable of and represents what they might want to promote (Kochanska et al., 2001).

Furthermore, the first factor, children's behavior, indicates teachers' attitudes and beliefs about the potential of child behavior in the classroom. This factor parallels the self-regulation literature in so far that research indicates the majority of teachers' time in the classroom is spent on monitoring behavior (Blair, 2003; Rimm-Kaufman, Pianta and Cox, 2001). Items in this factor included: *I am often times interrupted while teaching a lesson to address a behavior* (18), and *I*

*see a gap in what my students might be able to achieve and their actual achievement (8).* Rimm-Kaufman, Pianta and Cox( 2001) found that teachers reported spending a majority of their time in the classroom working on behavior over and above academics. The results parallel this study's finding illustrating that teachers (61.3%) report that the majority of their time is spent on teaching and working on appropriate behaviors in the classroom.

Additionally, in this study, teachers correctly identified the self-regulatory aspects of behavior, namely task initiation, difficulty sustaining attention and impulse control, as important characteristics of school readiness. They were able to identify these skills without knowledge of the term. This suggests that teachers identify good behavior in their classroom as elements of classroom control and behavior management, not in terms of self-regulatory skills. This speaks to how teachers address behavior in the classroom. A teacher who is un-familiar with self-regulation skills sees behavior in terms of the behavior itself and perhaps implements behavior management techniques to address the behavior; where a teacher who is familiar with children's self-regulation skills can assess children's behavior based on their level of self-regulation skills and can implement appropriate pedagogical tools to enhance these skills where necessary. The latter being the more desired scenario. One example of appropriate pedagogical tools to enhance self-regulation skills is to allow children autonomy within the classroom, by perhaps allowing students the ability to go to the restroom independently. Teachers who focus on self-regulatory skills allow

children to learn to internally manage their own behavior, whereas typical behavior management techniques focus on the teacher externally managing the behavior (Kochanska, 1991). Ninety-seven percent of teachers in this study reported that they believed that children held an innate desire to learn, indicating overall that teachers believe that children possess the ability to succeed; however, a majority (87.7%) of this study's teachers strongly agreed that children need to be directed by an adult in the classroom. This indicates that teachers believe that the children in their classroom possess the ability to internally manage their behavior, but still report believing in the external means of managing behavior. This discrepancy between teachers' attitudes and beliefs and reported classroom management implementation indicates that the teachers who participated in the study believe children are capable of self-driven success, yet what they practice in the classroom encourages external over internal control within the students.

In order to examine the second phase of the study, simple stepwise linear regression and multiple regression analysis were conducted to predict (a) does teacher knowledge predict teachers' attitudes and beliefs, *and* (b) does the Early Childhood Educators' Knowledge of Self-Regulation Skills Questionnaire predict knowledge of instruction of self-regulation skills, above and beyond the demographic variables of professional development and age. Teacher knowledge scores did not predict teachers' attitudes and beliefs. Significance was found in the second equation asking if the ECESRQ predicted knowledge of instruction, however only factor 2 contributed to the prediction with a very low

effect size ( $R^2 = .067$ ), suggesting that the ECESRQ is a weak predictor of current teacher knowledge of instruction on self-regulation skills. If the amount of variance of the ECESRQ score had been larger, these results would have provided construct validity to the measure. Interestingly, with these findings teachers who identified with using external motivators in the attitudes and beliefs section (factor 2) reported the correct answer on the vignette section that promote internal motivation techniques in the classroom. While this finding only accounted for less than 7% of the variance, it perhaps speaks to the discrepancy that teachers feel between what they do and what they think they should do in the classroom. The results from the pilot study (Willis et al., 2014) suggest a similar, yet slightly different conclusion; where teachers believed in promoting internal motivation in the classroom, yet reported to implement external motivation techniques, and this dissertation findings indicate that teachers believe in promoting external motivation in the classroom, yet reported to implement internal motivation techniques. This suggests that overall teachers are conflicted between what they believe, and what they actually do in the classroom. More research is necessary to understand why teachers might not implement their beliefs in the classroom.

Moreover, as a whole, 66% ( $n=132$ ) of the participants reported that they were familiar with the term “self-regulation” skills, and an additional 58% reported having received training or professional development courses on self-regulation techniques that enhance self-regulation skills in the early childhood classroom.

However, only one-third of the participants, 34% ( $n=271$ ), responded correctly to the vignettes (See Table 8). This suggests that even if they were familiar with the term, or had attended professional development courses on self-regulation skills, they were not able to identify correct pedagogical tools to enhance the skills in a classroom setting.

Furthermore, 97% ( $n=193$ ) of the sample reported that they felt their children possessed an innate desire to learn, suggesting that the majority of teachers believed their children were capable of internal motivation. The data indicate that when teachers are faced with classroom management decisions they choose to implement external methods of control, which could be seen as both quicker and easier, in order to gain immediate control of the classroom and to move onto academic content effectively. The findings of the current study suggest that they are less likely to take time to facilitate and enhance the development of internal methods of control through pedagogical tools. This approach may be perceived as taking time away from academic content and delaying the desired outcome of classroom management by an unspecified amount of time. While implementing external control methods are effective in the short term, research suggests, they do not lead children to independently develop internal mechanisms of control (Bodrova & Leong, 2007; 2008). Although promoting internal methods of control may take a longer time to achieve, it is likely that if achieved they would perhaps contribute more purposefully and effectively to children's successful independence, classroom

management, academic outcomes and school readiness (Bodrova & Leong, 2007; 2008; Bodrova, Leong, & Akhutina, 2011). Additionally, the teachers might not understand in-depth the knowledge surrounding the concept of self-regulation skills. From the results found, this suggests that methods of classroom management that focus on teachers promoting and enhancing children's internal control in the classroom would be more parallel to what teachers' have reported of their students' capabilities. Classroom management techniques that focus more on promoting internal control, and enhancing self-regulatory skills, would perhaps be more beneficial to both teachers' beliefs and overall children's' outcomes in the classroom. For example, allowing children to create their own questions on a quiz or a test would promote internal motivation, given that the research indicates that teachers believe children possess an innate desire to learn. More research is needed to devise coursework for pre-service teachers. Currently, there is limited information about how best to educate teachers on internally promoting classroom management techniques that improve children's behavior in the classroom, specifically teaching teachers to identify behavior in the classroom in terms of self-regulatory skills. Greater research would be useful in updating curriculum modifications to increase the quality and effectiveness of ECE teacher training programs.

Fifty-six percent of teachers report that the majority of the difficulty they experience as a teacher arises from controlling behavior in the classroom, supporting the fact that overall teachers need assistance in classroom



management techniques. Furthermore, the techniques they are using (external) are not offering long-term outcomes, because teachers are continuously addressing difficult behavior. Pedagogical techniques that enhance a child's internal control are in accordance to the child's development and ability and take time for the child to internalize (Kochanska, 1991). However, once the child internalizes his/her regulatory capability they master the ability to control his/her behavior, which means less intervention from the teacher. Specifically, before the child is able to internalize his/her behavior, the adult lends his/her regulation to assist the child in regulating his/her behavior. It is through this consistent and pedagogically appropriate interchange between the adult and the child, that the child eventually is able to take the regulatory skills on as his/her own (Kochanska et al., 2001). More research is needed to ascertain the extent to which teachers use self-regulatory practices in combination with other approaches.

The results of this study demonstrate that knowledge of instruction can be determined using the ECESRQ, and provide weak construct validity to the ECESRQ, however, the method the teachers are employing in the classroom, versus what is being reported is unknown. While teachers might indicate that they are indeed familiar with the term, "self-regulation", they (a) might not possess the proper pedagogical tools to enhance these skills in the classroom and/or (b) more often than not employ external motivation techniques in their classrooms. These results suggest, in reference to classroom management, that perhaps teachers are conflicted about what they believe they should be doing in

the classroom, and what they reportedly do in the classroom; because (a) they believe in the concept of self-regulation skills and internal motivation but are (b) unfamiliar and not properly trained about appropriate pedagogical techniques to enhance in children. These attitudes and beliefs could perhaps lead teachers to a negative perception of the usefulness of enhancing self-regulation skills in the classroom. In addition, as presented in detail in the subsequent sections, of the three factors identified, most notably teachers reported spending much of their time working on classroom management and children's behavior. Yet teachers also reported identifying aspects of self-regulation skills, without knowledge of the term, "self-regulation" suggesting, that management techniques teachers employ in the classroom might not parallel their reported beliefs of children's capabilities.

As previously discussed, there was no association between any demographic information, except for education level, and age group teachers taught at time of the survey, to reported teacher knowledge of self-regulation skills. This is of particular interest in terms of teacher preparation, whereas new teachers might have been educated on the topic of self-regulation skills, and teachers with many years of experience might have received professional development teaching to the topic. Yet whether either group received follow up in regards to their knowledge of instruction of self-regulation in the classroom remains unknown. More than half (54%,  $n=107$ ) of the teachers in this study reported that they had not received any training or professional development

courses on the topic of self-regulation skills and/or techniques to enhance these skills in the early childhood classroom. This could suggest that although teachers might have been educated on self-regulation skills and understand what they are, they are not comfortable employing the pedagogical tools to enhance these skills in the classroom, or they simply employ other classroom management techniques.

This finding speaks to the importance of a teacher preparation programs that provide follow up support to in-service teachers on how to appropriately employ pedagogical tools to enhance these skills in the classroom and to improve overall teacher perceptions of the usefulness of using these tools in the classroom. For example, one program that has received notable attention in the research on self-regulation skills is the Tools of the Mind Program (Bodrova & Leong, 2008). This well-researched program requires a two-year commitment from the early childhood teachers, where the first year involves theoretical and pedagogical training on self-regulation skills, and the second year involves a monitored follow up of the pedagogical tools that are being used in the classroom appropriately (Bodrova & Leong, 2008). Another notable and researched teacher training program, The Incredible Years Teacher Program (IYT) focuses on improving teacher classroom management strategies, promoting children's pro-social behavior and school readiness as well as reducing classroom aggression (Fergusson, Horwood, & Stanley, 2013). Moreover, IYT provides six 1 day workshops spread out over the span of six months, with a one day refresher

course offered three months following (Fergusson et al., 2013). Teacher training programs, such as those mentioned above, that offer consistent professional development support and follow-up on how to effectively enhance self-regulation skills in the classroom could offer an element of support to teachers who are conflicted between what they believe children are capable of and management techniques they employ in the classroom.

### **Limitations**

The sample of participants, although diverse in ethnicity, age, experience and educational background were all from the same urban core, thus limiting generalizability of the findings. Abrahams, Casey, and Daro (1992) indicated teachers' attitudes and beliefs show differences among different geographical locations. Therefore the results of this study are most generalizable to other teachers in highly ethnically diverse urban cores.

In addition, the data collection used a combination of electronic survey and pencil and paper drop off surveys. Data on the number of Spanish and English version responses of this study were unable to be collected. The Spanish version of this study was not validated separately from the English version. Therefore, it is unknown who took what survey and to how this contributed to the factor structure of the ECESRQ, where perhaps the English and Spanish surveys have different factor structures. Therefore, this study was linguistically accommodating, but allows for limited generalizability of this study. Furthermore, the validity and reliability of the instrument, as researched in this

study, is unsure because the Spanish survey was not validated separately from the English survey. The differences in the data collection between electronic and paper and pencil could have been a disadvantage to those more familiar with paper and pencil over electronic form and visa-versa. The exact number of teachers who were presented with the survey was unknown. Therefore, an exact rate of return was not able to be calculated. Eighty-seven surveys were omitted from the analysis because of missing data. The missing data spanned across both the electronic and paper and pencil surveys. Additionally the surveys dropped off and picked up at the child care centers, could present a disadvantage and inconsistency to the settings, times and circumstances under which the questionnaires were completed. Individual school information such as type of childcare or preschool (i.e. ,Voluntary Pre-Kindergarten, Head Start Program, Montessori Program, etc.) was not collected but could be collected in future field tests of the measure. In addition the combined 3% of participants who reported both Creole and Portuguese as their primary language could have been at a disadvantage because the survey was offered in only English and Spanish languages.

### **Recommendations**

Further efforts are recommended on the following (a) revisions of coursework intended to teach teachers to identify behavior in terms of self-regulatory skills in their classroom in order to promote children's internal regulation, (b) development of professional development programs and

workshops that support and provide follow-up to teachers on how to effectively enhance self-regulation skills in the classroom, (c) to ascertain the extent to which teachers use self-regulatory practices in combination with other approaches in the ECE classroom and (d) to conduct further analysis on the factor structures this dissertation study. For instance, using confirmatory factor analysis to examine the stability of this factor structure; a process that can add to the confidence of the construct validity of the instrument.

Suggestions and ideas for creating revisions to coursework and professional development programs, include teaching pre-service teachers both theoretical knowledge of self-regulatory skills coupled with pedagogical and practical content of these skills. Practical content could include a classroom management component focusing on how to enhance children's internal control mechanisms. Perhaps the courses could be divided as such and could be complementary in nature creating a solid foundation of the subject. One important component of these courses would be to include a follow-up program of similar nature to support the teachers in using their newly acquired content and tools, as well as to provide a community for teachers to have their questions answered about specific situations that might arise in the classrooms. Ultimately however, more research in this field is necessary to create this new training.

Two follow-up studies are suggested as recommendations in this dissertation. The first study, as noted above, would be to ascertain the extent to which teachers use self-regulatory practices in combination with other

approaches in the ECE classroom. For example, do teachers use a combination of techniques that promote external control and internal control in the classroom? At what point in the school year do teachers shift their management techniques to promoting internal control? How do teachers assess their children's development of independence and internal control? Questions such as these could be analyzed using direct observation techniques, and/or additional survey research.

### **Conclusion**

To conclude this dissertation study, the purpose of this study was to determine validity of the ECESRQ by answering the research question in the first phase of the study, *What are the factors of the Early Childhood Educators' Knowledge of Self-Regulation Questionnaire?* Three factors, of moderate reliability, were identified using EFA that were found to be most relative to the current literature on self-regulation skills, demonstrating construct validity to the ECESRQ. The second phase of the study, comprised of two questions, asked whether (a) *teacher knowledge of self-regulation skills predicted teachers' attitudes and beliefs, and (b), if the ECESRQ score predicted knowledge of instruction.* Using simple stepwise linear regression analysis it was found that none of the factors found in the ECESRQ predicted knowledge. However, using multiple regression analysis knowledge of instruction of self-regulation skills was found to be predicted by the ECESRQ score. These results suggest that the ECESRQ is an effective measure to capture data on current teacher knowledge

of instruction on self-regulation skills and provides the measure with construct validity. Furthermore, the data analyzed suggests that while teachers believe that children can be internally motivated, they more often than not employ external management techniques in the classrooms (such as behavior modification practices), simply stated, teachers do not always do what they think they should do in the classroom. This finding suggests that future research is necessary in effectively implementing teacher training programs or consistent professional development programs with follow-up programs, to guide teachers to more effectively manage their classroom according to their beliefs; ultimately, enhancing children's self-regulation skills in the classroom.



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## Appendix A

### Early Childhood Educators' Self Regulation Questionnaire

Developed By: Elizabeth Anne Willis

All questions contained in this questionnaire are strictly confidential and will be used for research purposes only.

<b>I: Personal Information</b>			
Please check one that best describes your position: Lead teacher _____ Assistant teacher _____			
<b>Teacher ID:</b>	<b>Date:</b>	<b>Age:</b>	<b>Gender:</b> M F
<b>Race/Ethnicity:</b>  <input type="checkbox"/> American Indian or Alaskan Native <input type="checkbox"/> Asian <input type="checkbox"/> Black or African American (not of Hispanic origin) <input type="checkbox"/> Hispanic or Latino <input type="checkbox"/> White or Caucasian (not of Hispanic origin) <input type="checkbox"/> Other		<b>Highest Degree/Certification Obtained:</b>  <input type="checkbox"/> High School Diploma/GED <input type="checkbox"/> Child Development Associate (CDA) <input type="checkbox"/> Associate of Arts (AA)/Associate of Science (AS) <input type="checkbox"/> Bachelor's (BA/BS) <input type="checkbox"/> Graduate Degree (MA/MS/EdD/PhD) Are you currently going to school to obtain any of the above? <input type="checkbox"/> YES <input type="checkbox"/> NO	
<b>Were you born in the United States?</b>  <input type="checkbox"/> YES <input type="checkbox"/> NO		<b>What is your primary language?</b>  <input type="checkbox"/> Portuguese <input type="checkbox"/> Spanish <input type="checkbox"/> English <input type="checkbox"/> Creole <input type="checkbox"/> Other	
<b>What age group do you currently teach (Check all that apply):</b> <input type="checkbox"/> 2-3 year olds <input type="checkbox"/> 3-4 year olds <input type="checkbox"/> 4-5 year olds <input type="checkbox"/> 5-6 year olds			
<b>How many children are in your current class?</b> _____			
<b>II. Education and Training</b>			
<b>In general, do you observe that your students have a natural desire, curiosity and drive to learn what you are teaching?</b>  <input type="checkbox"/> Yes <input type="checkbox"/> No			

**On a scale of 1 (not at all important to success in my classroom) to 5 (extremely important to success in my classroom) please rank ALL of the following skills and behaviors you feel are important to success in your classroom:**

\_\_\_ **Identifying** letter names

\_\_\_ Pencil grasp

\_\_\_ Following directions

\_\_\_ Socialization with peers

\_\_\_ Understanding numerical values

\_\_\_ Not interrupting

**How many years have you been a teacher in early childhood education?**

\_\_\_\_\_ Years

**How often do you attend professional development training associated with your school?**

\_\_\_ Never/Rarely    \_\_\_ Once a year    \_\_\_ Twice a year    \_\_\_ More than twice a year

**Are you familiar with the term "Self-Regulation"?**

\_\_\_ Yes    \_\_\_ No

If Yes, please provide a brief definition of the term:

**Have you ever had any training/professional development on techniques that enhance children's self-regulation in your classroom?**

\_\_\_ Yes    \_\_\_ No

**If yes, approximately how many hours of training? \_\_\_\_\_**

**If yes, what was the name of the training?**

\_\_\_\_\_

**If yes, do you feel your training adequately addressed how to teach self-regulation in your classroom?**

\_\_\_ Yes \_\_\_ No

**How helpful has the training been on a scale from 1 to 4 (1 being least helpful to 4 being most helpful)?**

**III. Vignettes** *For each of the following, indicate what course of action, if any, you would take.*

- 1. Susan, 7, always forgets to put her name on her paper. She cannot remember, no matter how many times you remind her.**

In this instance, I would (select one):

\_\_\_ Tell her you will begin to throw away her completed worksheets if she doesn't put her name on them; and she will have to complete them again.

\_\_\_ Ask her how she can remember to put her name on her papers.

\_\_\_ Put her best friend, Claire, in charge of reminding Susan to put her name on her paper.

\_\_\_ Teach Susan how to put on her "editor's eyes" after she has completed a worksheet, to remind herself to check her work before turning it in. She can take the "glasses" off when she is done editing.

- 2. Alexa, 6, is a tattler She has just come up to you for the fifth time in one hour to tell you that Jose is taking more than one cracker at the snack table.**

In this instance, I would (select one):

\_\_\_ Raise my voice and send her in time out, because five tattler tales is just too much for me to handle in one hour.

\_\_\_ Gently acknowledge her and state that she is tattlering, and ask her to please stop.

\_\_\_ Actively ignore Alexa.

\_\_\_ Make a model out of her, stop the class and address tattlering with

everyone and tell them it is not allowed in your classroom.  
\_\_\_ Look at her and say, "Yes, that is the rule."

3. **Ty, 8, is working on a word problem in class. The problem reads, "A student brought 9 cupcakes to school to share, however in the car 3 were crushed and had to be thrown away, now there are only 6 left. How many cupcakes did the student start out with?" Although Ty's teacher has shown the class how to use addition to solve a similar problem, Ty is focused on the word, "away" in the problem and trying to use subtraction.**

In this instance, I would (select one):

- \_\_\_ Remind Ty to check his thinking, check in his mind what was just reviewed in class.
- \_\_\_ Sit with Ty and review the concept again, work through the problem with him and teach him how to draw the pictures of the events.
- \_\_\_ Wait until tomorrow to review the concept again with the entire class. Maybe Ty will remember the concept after a night of rest and a second time it is presented.
- \_\_\_ Allow Ty to make the mistake on his paper.

4. **Maria, 7, has left her desk for a moment to sharpen her pencil. Upon her return she sees that Sophia has taken the glue and scissors off of her desk to use for herself. Maria quickly returns to her desk and abruptly grabs the glue and scissors from Sophia's hands. Sophia begins to cry.**

In this instance, I would (select one):

- \_\_\_ Not do anything and let Sophia cry; she shouldn't have taken the items anyway.
- \_\_\_ Put both children in time out because they cannot share, and subsequently talk to them about sharing, make a classroom lesson on sharing for the next day.
- \_\_\_ Discuss with Maria how to use her words instead of her hands, and ask her to apologize to Sophia.
- \_\_\_ Discuss with both Maria and Sophia why we use our words; and how to know the right time when they should use their words.

<b>IV. Attitudes and Personal beliefs (Please check ONE box which applies)</b>				
<b>Question/Statement</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
1. I believe that children need to be directed by an adult in the classroom.				
2. I am worried about getting through all of the academic content required of me to teach in the school year.				
3. I spend a majority of my time in the classroom teaching and working on appropriate behaviors.				
4. I use behavior modification techniques often in my classroom.				
5. Sometimes I react strongly to repeated demonstrations of poor behavior from a student.				
6. I feel most of my students need to be externally motivated.				
7. I often notice that a few of my students have difficulty finishing a task they have just begun.				
8. I see a gap in what my students might be able to achieve and their actual achievement.				
9. I often notice a few of my students have difficulty initiating a task on their own, and need my guidance.				
10. I feel the majority of difficulty I experience as a teacher arises from controlling behavior problems in my classroom.				

11. I encourage my students to gain the ability to start tasks by themselves.				
12. I would prefer to spend more time in my classroom teaching my children social skills.				
13. I find activities for my students to work on in groups.				
14. I feel it is more important to teach early childhood students social-emotional content than academic content.				
15. I see that some of my children are very smart and have a great deal of potential, but I am concerned they will not do well because they have difficulty focusing.				
16. I feel most of my students have the ability to motivate themselves, without my guidance.				
17. I would prefer to spend more time on teaching academic content in my classroom as opposed to behavior management.				
18. It takes a while for a few of my students, when they are upset, to calm themselves down.				
19. I am often times interrupted while teaching a lesson to address behavior.				
20. I often feel significantly stressed as a result of my job as a teacher.				

## Appendix B



Dear Director,

My name is Elizabeth Willis and I am currently a PhD student at FIU. I am working on collecting data for my dissertation in the field of Early Childhood Education. The purpose of my dissertation is to study if and how current teacher education programs prepare teachers to understand children's self-regulation skills.

I am looking to gather **300 surveys of both pre-kindergarten and kindergarten lead and assistant teachers** in the Miami-Dade area. The survey will take approximately 10 minutes and can be found by clicking the link below. The survey is available in both English and Spanish versions.

Unfortunately, I do not have any incentives to offer. However, after being a veteran preschool teacher for 10 years, and now going into research, it has become more apparent to me that teachers need a voice. I am hoping that through this research I can assist teachers to voice their knowledge and beliefs on education.

If you have any questions please do not hesitate to contact me. This is a time sensitive matter so I would appreciate the surveys being completed in the week that you receive this email. Again it will not take more than 10 minutes of your time.

Thank you very much,

Elizabeth Willis

[https://fiu.qualtrics.com/SE/?SID=SV\\_4U594VzBLZFExQ9](https://fiu.qualtrics.com/SE/?SID=SV_4U594VzBLZFExQ9)

## Appendix C



Dear Director,

I am writing to follow up on the survey I sent to you last week. Were you able to email the survey to your pre-kindergarten and kindergarten teachers? I really appreciate your efforts in assisting me to collect the data needed to help give teachers a voice in early childhood education.

I have attached the link again to the survey. It is available in both English and Spanish versions and is for both **pre-kindergarten and kindergarten lead and assistant teachers** (if you, as the director, are a pre-kindergarten or kindergarten teacher you qualify to complete the survey as well). I am looking to collect over 300 surveys for this research project from childcare centers throughout Miami-Dade County.

I know we all are very busy and sometimes it is very easy to just delete this message but I am urging you to help me in this very important research project. The survey is brief (only four pages) and can be completed on a smart phone very easily. Perhaps you did forward this message to your teachers but they forgot to click on the link. That is why I am sending it to you again today, to ask that you take the time to re-send it to your teachers and perhaps mention it to them in the next staff meeting.

If you have any questions please do not hesitate to ask. From one teacher to another I greatly appreciate your assistance in this matter in helping me collect over 300 surveys of Miami-Dade early childhood teachers!

Sincerely,

Elizabeth Willis

[https://fiu.qualtrics.com/SE/?SID=SV\\_4U594VzBLZFEExQ9](https://fiu.qualtrics.com/SE/?SID=SV_4U594VzBLZFEExQ9)



## Appendix D



Dear Director,

Happy New Year! I would like to re-introduce myself. My name is Elizabeth Willis and I am a Ph.D. student at Florida International University. For my dissertation I am collecting important data on **pre-kindergarten and kindergarten lead and assistant teachers** in Miami-Dade County.

Why participate? The survey that I am asking teachers to complete is approximately 10 minutes long and asks questions on teacher's experiences and interactions in their classroom. This is an opportunity to give teachers a voice and to allow their input to benefit young children.

To date I have collected **66** out of **300** surveys. **My goal is to collect 300 surveys by the end of our 2013-2014 school year.** *I need your help!*

Up until now I have been sending emails with the survey link to all schools and centers. However, my return rate is very low. I would like to offer to personally come to visit your location, during a convenient time, to assist in your teachers participating in this exciting research. Perhaps during a lunch break or a staff meeting, I would be able to attend your school and bring the electronic surveys for the teachers to complete.

I would greatly appreciate your participation in this effort and remind you that participation only takes 10 minutes of your teachers' day to make an impact on young children's lives.

I look forward to hearing from you soon regarding this exciting participation opportunity in collecting 300 surveys of Miami-Dade early childhood teachers! If you have any questions please do not hesitate to contact me. I have also included the survey link below, if you want to pass the survey on again to your teachers via email.

Sincerely,

Elizabeth Willis

[https://fiu.qualtrics.com/SE/?SID=SV\\_4U594VzBLZFEQ9](https://fiu.qualtrics.com/SE/?SID=SV_4U594VzBLZFEQ9)

VITA

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## PUBLICATIONS AND PRESENTATIONS

Willis, E. & Dinehart, L. (2013). Contemplative practices in early childhood: Implications for self-regulation skills and school readiness. *Early Childhood Development and Care* 184(4), 487-499.

Willis, E. Dinehart, L. & Bliss, L. (2014) Teachers don't always do what they think should: A preliminary validation of the Early Childhood Educators Knowledge of Self-Regulation Questionnaire. *Journal of Early Childhood Teacher Education* 35, 168-184.

Willis, E. (2015). An Empathetic Beginning in Education: Exploring the prospects of Self-Regulation Skills on Pro-Social Behavior in the Early Childhood. *Early Childhood Development and Care*. DOI: [10.1080/03004430.2015.1045422](https://doi.org/10.1080/03004430.2015.1045422)

Willis, E. & Mathews, S. (In Preparation). The Golden Rule: Social justice education in early childhood education. *Education, Citizenship and Social Justice*.

Willis, E. (October, 2014). *An Empathetic Beginning in Education: Exploring the prospects of Self-Regulation Skills on Pro-Social Behavior in the Early Childhood Environment*. Poster presented at the International Symposia for Contemplative Studies, Boston, MA.

Dinehart, L. & Willis, E. (August, 2014). *Fine motor skill is associated with inhibitory control in preschool children: A pilot study*. Poster presented at the Annual Conference of the American Psychological Association, Washington, D.C.

Willis, E., Dinehart, L. & Bliss, L. (April, 2013). *A preliminary validation of the Early Childhood Educators Knowledge of Self-Regulation Skills Questionnaire*. Poster presented at the Society of Research and Child Development Biennial Meeting, Seattle, WA.

Willis, E. (April, 2012). *Bridging the gap between scientific research and classroom practices: Mindfulness based practices in early childhood education to improve self-regulation skills*. Poster presented at the International Symposia for Contemplative Studies, Denver, CO.