DLLs and the development of self-regulation in early childhood

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Abstract: Current literature and research demonstrates that learning multiple languages allows for young learners to develop higher levels of executive functioning skills. Research also suggests that Dual Language Learners (DLLs) can surpass monolinguals in these executive functioning skills. Yet, there is a dearth of literature that explicitly discusses DLLs in the early childhood setting and the development of self-regulatory skills. Self-regulation skills have been linked to better indicators of academic achievement than numeracy and literacy. This research describes the differences between DLLs' behavioral and emotional regulation, which are categorized as impulse control and cognitive regulation. This analysis examines the development of cognitive regulation and impulse control in both DLLs and non-DLLs. Results from an ANOVA of a convenience sample of 63 participants, 32 DLL (English and Spanish) and 31 non-DLL (English) preschool students, were assessed using the Preschool Self-Regulation Assessment (PSRA) and several measures of oral language proficiency. Participants were drawn from a Head Start and Universal Pre-Kindergarten program located in a low SES and culturally diverse district. The result yielded a statistically significant effect, \( F(1, 61) = 8.56, p = .005; \) partial Eta squared = .123) for non-DLLs. ANOVA results suggest differences in cognitive regulation between the two groups. Implications relating to self-regulation, DLLs, culture and classroom practice, as well as policy are further discussed.

ABOUT THE AUTHORS

Ruth Guirguis is an assistant professor in the Education Department at Pace University. Her background encompasses early, elementary, and special education. Her research interest focuses on self-regulation, play, and dual language preschoolers. This article focuses on the issue of young learners entering kindergarten lacking both cognitive and impulse regulatory skills.

Current literature also supports that these current skills are imperative for later grades. Yet, not fully supported in preschools today. The field of early childhood has included self-regulation as a standard in the Common Core Pre-K standards. This was done as a continuing effort to have educators nurture these skills in early childhood and not solely emphasize on content-related teachings.

PUBLIC INTEREST STATEMENT

The development of self-regulation in young students is key in determining school readiness. This research article describes two main type of self-regulation skills, specifically, impulse regulation and cognitive regulation. It also discusses how these two types of regulation relate to language development. The current literature suggests that these skills are acquired sooner in students who are dual language learners. However, based on the data gathered in this research, dual language learners did not perform better than non-dual language learners. The results are discussed in relation to teaching and how educators can impact the development of self-regulation and language. Policies, schools, and educators who do not support the development of the native language, can impact the development of self-regulation. Vygotsky links language development to the development of executive functioning skills such as self-regulation. The article discusses several implications for educators to develop both impulse and cognitive regulation.
1. Introduction

Researchers demonstrated that students who enter kindergarten without self-regulatory skills face challenges with peer rejection and experience lower levels of academic achievement (Denham et al., 2012; Miller & Almon, 2009; Tominey & McClelland, 2011; Wanless, McClelland, Tominey, & Acock, 2011). This is attributed to the decrease in self-regulatory skills preschool children develop early in life, specifically, the ability to regulate impulses and cognition (Bodrova & Leong, 2007; Martinez-Pons, 2002; Miller & Almon, 2009). Regulatory skills are important because they are directly related to academic achievement and are indicators of school readiness and future success. These skills require guidance in developing and applying them for problem solving in the classroom and outside (Whitebread, Coltman, Jameson, & Lander, 2009). Over time, “the developmental increases reflect advances in an underlying cognitive ability to represent complex rule structures such as those contained in response inhibition” (Blair & Razza, 2007, p. 652). Therefore, these skills play an important role in preschool classrooms and in subsequent years of schooling. Many early childhood program staff are concerned with adequately teaching these skills. The direction of early childhood programs has shifted from social play-based programs to a more academically based type of curricula; this affected the fostering of these imperative skills during early childhood.

Early childhood curricula in many states is being replaced by curricula that prepares young learners to be college and career ready. This influence is a result of current educational policies such as the Common Core State Standards, that trickled down and impacted the early childhood education curricula. Consequences arise due to this current educational trend and affect the development self-regulation; especially, as research suggest, those students considered to be at risk, such as Dual Language Learners (DLLs). DLLs are students under the age of five learning more than one language (Castro, Garcia, & Markos, 2013).

DLLs are at a greater disadvantage than non-DLLs, as they face academic challenges due to some language barriers. Unlike, the monolingual student, DLLs develop two or more languages that are constantly active in the brain. An English Language Learner (ELL) typically develops their native language and builds upon that language to acquire a second language. With DLLs, that foundation has not been established. Thus, language acquisition for them is developed equally in the languages being learned. There is no dominant language for the DLL student. According to the Vygotskian framework, regulatory development is aligned with young learner’s language abilities. Greater language proficiency allows for greater gains in regulatory skills. Luchtel, Hughes, Luze, Bruna, and Peterson (2010) indicated it is of particular importance for the DLL population to address regulatory aspects of development through a social approach that supports oral and language development.

Language is a key factor in the ability to self-regulate and it leads to internalization of thoughts and processing (Day & Smith, 2013; Ursache, Blair, & Raver, 2012). Hence, the relationship between language and self-regulation specifically in DLLs becomes key when developing curricula and policy implementations (Castro et al., 2013). Vygotsky suggested that the more language children develop and are able to express thoughts and feelings verbally, the better they become at internalizing their words into thoughts. These thoughts then lead to internal regulation of impulses and the ability to focus on academics without losing focus while learning new concepts. For DLLs, language is acquired through social and playful interactions that support both languages. Language is not taught through lessons or visual aids in the classroom. Rather it is fostered through structured or free play. Young learners must learn to control impulses to play and communicate their needs in a context that is of great interest to them. The relationship and interactions that languages have create some advantages in overall development, particularly, with regard to executive functions (Blair & Razza, 2007; Bronson, 2000; McClelland et al., 2007; Ursache et al., 2012).
Yet, there is a paucity of research that examines the relationship between DLLs and cognitive regulation within the early childhood sector. The purpose of this research was to support the current research on the development of self-regulation skills for DLLs within the area of early childhood. The following research question was examined: Does being an early childhood DLL or non-DLL have a direct effect on the development of self-regulation?

1.1. Theoretical framework
This research was based on the Vygotskian framework. This framework suggests that the construction of knowledge is mediated by the social and cultural interactions of the preschool child. Spivak and Howes (2011) suggested that pro-social behaviors are associated with cognitive maturation, specifically, language. Spivak and Howes also stated that the ability to listen and communicate are learned in all social settings. In the preschool setting, programs that include a social component address students’ behavioral, emotional and academic achievement (Arnold, Kupersmidt, Voegler-Lee, & Marshall, 2012). In general, preschool children who lack social skills may be at risk for developing problems in self-control, emotional control, and being ready to transition into a school setting (Arslan, Durmuşoğlu-Saltali, & Yılmaz, 2011; Ziv, 2013). As there is a direct link between social competence, regulation, and expressive language in preschool children (Ziv, 2013).

1.1.1. Language
In the Vygotskian framework, language learning is an important indicator of knowledge and overall development (Brown & White, 2010). Vygotsky (1978) described private speech as speech, which “originates from the social world of the child in children’s interactions with others...which function in part to guide and regulate children’s attention and behavior” (Winsler, Fernyhough, & Montero, 2009, p. 4). It is “children’s private, or self-directed, speech as the primary means for transferring regulation of behavior from others to self and as the fundamental tool for self-guidance and self-direction” (Elias & Berk, 2002, p. 218). Day and Smith (2013) explained that private speech plays a distinct role in the development of self-regulatory skills. Thus, language proficiency in DLLs can allow for greater abilities in inhibitory control, executive functions, and self-regulation (Castro et al., 2013; McClelland et al., 2007; Winsler et al., 2009). According to Winsler et al. (2009) there is a relationship between the more proficient a child becomes at language acquisition and self-efficacy. This relationship is of concern because DLLs can develop regulatory skills at a slower rate than monolingual proficient preschoolers (Wanless et al., 2011).

Vygotsky stressed the significant role of “inner speech and verbal self-instructions in self-control and voluntary action” (Gruber & Goschke, 2004, p. 112). The central component of advanced preparation involves the retrieval of a verbal task or goal representation from working memory. Self-regulation begins when children control their behavior through private speech that assimilated prompts, demands and explanations from adults (Elias & Berk, 2002). Elias and Berk (2002) described how children use “language to control such complex cognitive processes as attention, memory, planning, and self-reflection ... eventually private speech is internalized as inner verbal thought” (p. 218). Words that are internalized by the child become mental tools that are then manipulated to regulate behavior (Bodrova & Leong, 2007; Vygotsky, 1978). Thus, having DLLs begin to use their native language, as they develop a second language, to achieve this level of internalization is important.

1.1.2. Impulse and cognitive regulation
Vygotsky discusses self-regulation as part of language development in a young learner. Vitaro, Brengden, Larose, and Tremblay (2005) found that children in preschool who enter elementary school with disruptive behavioral and emotional problems are at risk for dropping out of school. Teaching children how to regulate their impulses is crucial to the development of cognitive regulation. Cognitive regulation refers to the capacity to do something because it is needed and to the ability to anticipate consequences to actions. Cognitive regulation is also the ability to consider more appropriate and alternative forms of actions (Bodrova & Leong, 2008).
In preschool, teachers expect children to regulate their emotions and their behavior according to what is considered proper in the classroom setting (Bronson, 2000). Impulse control is the ability to “delay, defer, and accept substitutions without becoming aggressive or disorganized by frustration” (Bronson, 2000, p. 71).

Murray and Kochanska (2002) suggested that lower levels of self-regulation skills are correlated with the frequency of maladaptive behaviors and problematic temperaments in early childhood. In a longitudinal study, they explored the development and structure of self-regulation at different stages ranging from toddlerhood to early school age. As part of a four-year study, Murray and Kochanska assessed the following: (a) the ability to delay children’s impulses using snack and toys; (b) fine or gross motor movement through finger movements as well as walking slowly on a line set on the floor; and (c) stopping ongoing responses from children into relaying alternate responses through commands given by play puppets, asking for different responses and behaviors from children (Murray & Kochanska, 2002).

Similarly, Smith-Donald, Raver, Hayes, and Richardson (2007) measured impulse self-regulation skills using the Preschool Self-Regulation Assessment (PSRA). The PSRA is a battery of self-regulatory tasks adapted from Murray and Kochanska’s (2002) effortful control tasks and executive control tasks. For the executive control tasks, the PSRA also includes an adapted task from the Diamond and Taylor’s (1996) tapping test. Diamond and Taylor administered a tapping task that required the child to remember two rules; when the researcher taps once, the subject is to tap twice and vice versa. The researchers concluded that the test required the children (from 3.5 to 7 year olds) to remember two rules and required the ability to inhibit response tendencies. Diamond and Taylor implied that these abilities improved between 3 and 7 years of age, which correlates to changes in the frontal cortex. Smith-Donald et al. (2007) concluded that there were correlations between self-regulation skills and social competence, behavior problems, and early academic skills based on their measures. They used the PSRA and an assessor report based on children’s emotions, attention, and behavior during evaluations to evaluate self-regulation.

Impulse control in preschool children enables them to consciously comply with adult directions and instructions and modify their behavior (Bronson, 2000). When a child can comply with directions and instructions, the opportunity to focus and perform better in a school setting is more likely. Impulse control is associated with self-control in classrooms, which is associated with levels of school readiness (Blair, 2002).

Denham et al. (2012) observed the emotional knowledge, emotional and social behaviors, social problem-solving, and self-regulation of 275 preschool children and what affects children’s motivation to learn, participate in the classroom, and other measures of academic success. They defined emotional regulation as follows: (a) the ability to control one’s emotions in productive ways; (b) being aware of feelings of proper and acceptable forms of emotion within varying situations; and (c) the ability to modify emotions (Denham et al., 2012). Nadeem, Maslak, Chacko, and Hoagwood (2010) defined emotional regulation as the “ability and disposition to use and integrate social-emotional knowledge, regulatory abilities, empathy, perspective taking, and social skills in a seamless manner that is appropriate for the child within a given social context” (p. 767).

The ability to control one’s impulse state is a crucial developing component for the preschool child. Cole, Dennis, Smith-Simon, and Cohen (2009) suggested that between the third and fourth year of a child’s life, there are major developments of social and emotional understandings. Cole et al. described this component as the socio-emotional competence and adjustment, which develop during the preschool years. Cole et al. emphasized the importance of teaching children to emotionally regulate through specific strategies that will reduce the level of distraction, and will teach students to verbalize problems, instead of crying or displaying disruptive behavior. Greater language abilities allow children to understand, modify, and cope with emotions (Cole et al., 2009). The ability to
regulate emotions effectively is linked to language skills (Cole et al., 2009). Day and Smith (2013) stated that private speech in children can help with emotional regulation.

### 1.2. Growing dual language learner population

The number of students with limited language proficiencies has been steadily increasing (U.S. Census Bureau, 2015). According to the U.S. Census Bureau (2015), it is estimated that one in every four students in low SES school districts has limited English language abilities. Concurrent to this finding, the United States Census Bureau reported that 21% of the population speaks a language other than English at home. The growth of the bilingual population raises the issue of how to address children’s linguistic and socialization needs of children. Early childhood programs have the capacity to promote development in DLLs through sociocultural contexts (Castro et al., 2013; Luchtel et al., 2010).

### 1.3. How does language affect the development of self-regulation in DLLs?

Acquiring self-regulation skills becomes even more of a challenge for children who are DLLs (McClelland et al., 2007; Wanless et al., 2011). Wanless et al. (2011) attributes lower self-regulation in DLLs due to a language barrier. Students with limited language proficiencies may not have the opportunity to take full advantage of the rich learning experiences in the classrooms (Wanless et al., 2011). Nor, learn how to express thoughts, needs, or wants.

Recently, with the discussion of self-regulatory skills being perceived as an indicator of school readiness (Diamond, Barnett, Thomas, & Munro, 2007; Lin, Lawrence, & Gorrell, 2003), few programs and schools have tried to look at either short-term strategies or indirect strategies through curricula. Rimm-Kaufman and Wanless (2012) stated that preschool programs should strive to center on instructional techniques, such as individualized classroom instruction that can be incorporated either as a primary or secondary means of self-regulatory skills. Rimm-Kaufman and Wanless (2012) specifically propose that teacher connections with students, as well as lesson management, and organization of activities in the classroom have great impacts on social and self-regulation gains. Incorporating teacher–student connections can support the rate at which regulatory skills develop in DLLs (Rimm-Kaufman & Wanless, 2012). Once again, a factor that is not always incorporated in settings where there is a larger diverse student population. These settings are not limited to just student and teacher, but also involves developing a relationship with the families in their native language. Chang et al. (2007) extracted data from two larger studies consisting of preschool children who spoke Spanish or English. The study focused on describing the language interaction of Spanish speaking children to observe the influences they had on social and cognitive development. From their findings, Chang et al. suggested that DLL programs should try to have the teacher integrate the home language in the classroom setting. Children who had teachers speak to them in their home language not only received more individualized attention, but formed a bond with the teacher which influenced their behavior in the classroom. Consequently, it also positively impacted the students’ ability to interact better with their peers. Language, when embedded into curricula in preschool programs, can serve as an approach to help DLLs improve self-regulation at a critical development stage. Soderman and Oshio (2008) also suggested that the task of acquiring a second language can be challenging when support systems are not in place. Based on their findings, as language skills in preschool children increase, the ability to competently socialize and executively function also increases (Soderman & Oshio, 2008). The concern is that while the entering early childhood population is more diversified, our higher education programs and some educators lack the preparation needed to meet the needs of DLLs. Culturally, linguistically, self-regulation knowledge is needed to lesson plan around these aspects.

### 2. Methods

To determine if there is a direct association between DLLs and self-regulatory skills, preschool students were tested using the PSRA assessment. The Institutional Review Board (IRB) approved this study. Parental permission slips were distributed and collected from two preschool setting. Both preschools were located in the same diverse, low SES school districts in the State of New York.
2.1. Participants
Sixty-three participants that ranged between the ages of 4.0 and 4.9 year olds. Of the sample, 32 students were classified as DLL (Spanish and English), and 31 were English-speaking students only. There were 38 male students and 25 female students. Once the sample of participants was collected language surveys from parents required by the State and language acquisition surveys from teachers were examined. From the two parent and teacher surveys, students categorized as DLL students or non-DLLs. When DLL classification was determined, students were tested either in English or Spanish with all assessments.

2.2. Instrumentation
In addition to the language surveys, students were given an oral language assessment. Based on these language survey and oral proficiency assessment, language preference was determined. After language determination, participants were then given a self-regulatory assessment in either English or Spanish. Assessments were chosen based on the validity and reliability coefficient, the development appropriateness in early childhood, and whether the assessment was offered in both English and Spanish. For the self-regulation assessment, both impulse control and cognitive regulation were assessed. In early childhood, there are a limited amount of self-regulatory assessment. Another widely used assessment in early childhood is the Head, Shoulder, Knees and Toes assessment. However, this assessment has not been translated into Spanish.

2.3. Language survey
The language survey was taken from Tabors and Snow (1994) framework. The framework suggests that there are five levels of language. This five stage developmental survey (see Appendix A) explicitly described each of the five language stages as: (a) Stage 1—home language use (b) Stage 2—nonverbal; child communicates with gestures and actions (c) Stage 3—telegraphic and formulaic speech; child communicates using one or two words or short phrases (d) Stage 4—productive language; child understands most of what is being said in the classroom, he/she speaks in longer phrases and complete sentences. There are frequent word errors and finally (e) Stage 5—fluent English user; child speaks English in most social and learning contexts (see Appendix A). Language at this stage is still challenging in content areas.

2.4. Pre-IPT oral assessment
The Pre-Idea Proficiency Test (Pre-IPT) is a nationally normed oral language proficiency assessment in English and Spanish. This assessment evaluated students' oral speaking proficiency. Raw scores were converted to categories: Non-Limited, or Fluent/Competent as per instructions. The results from the Pre-IPT tests were used to assess young DLLs' proficiency in English and Spanish (Ballad & Tighe, 2010).

The Pre-IPT–Oral English and Spanish Tests were intended for 3–5 years old students. Pre-IPT was designed along story lines that provided opportunities for contextualized oral interaction between the examiner and student. Each test was conducted with the help of a large storyboard and a set of story pieces, which were like paper dolls that were placed on the storyboard in various places as the test proceeded. The test questions were related to the story and the characters. The student needed to identify objects, actions, characteristics, as well as physically move the story pieces on the board. There were some questions that encouraged the student to talk about their own experiences, and/or preferences related to the theme being discussed. The students were tested individually in either English or Spanish. The Spanish test version was not a translation of the English version but rather a different test all together (Ballad & Tighe, 2010).

The Pre-IPT–Oral Tests assessed proficiency in four domains of oral language: vocabulary, grammar, comprehension, and verbal expression. The items were grouped into levels then answers were scored as correct or incorrect as each item is administered. At the end of each level, the examiner tallied the number of errors at that level and compared this to a scoring rule that indicated to the examiner whether to stop testing or continue on to the next level. Students advanced through the
test levels until the test was completed or until they stopped. Students were then assigned and categorized into one of the following five score levels: A, B, C, D, or E (Ballad & Tighe, 2010). These levels determined the child’s language level. The levels will then be assigned corresponding numbers: $A = 1$, $B = 2$, $C = 3$, $D = 4$, and $E = 5$.

2.4.1. Reliability
The consistency of a measurement technique was established when correlation coefficients was .80 or higher (Marczyk, DeMatteo, & Festinger, 2005). According to Ballad and Tighe (2010) evidence of internal reliability for the Pre-IPT Oral was .99. The test-retest reliability was reported as .77. Split-half reliability was lower than .79 for part 1 and for part 2 it was reported as .51. The overall scale reliability for both parts was .65.

2.4.2. Validity
Validity referred to how well a test measured what it was purported to measure. Lexicon, syntax, phonology, morphology, comprehension and oral expression are the factors that are being measured through the Pre-IPT. Criterion validity here was the relationship between the Pre-IPT scores and teacher’s rating of language proficiency. The criterion validity was reported to be between .62 and .67 (Ballad & Tighe, 2010).

2.5. Preschool self-regulation assessment
The PSRA is a battery of self-regulatory tasks that were adapted from Murray and Kochanska’s (2002) rigorous control tasks and executive control tasks. PSRA is a one-on-one direct assessment measure that was developed to evaluate self-regulatory skills in preschool students. Smith-Donald et al. (2007) measured behavioral and emotional self-regulation skills replicating the tasks scripted under the PSRA. Smith-Donald et al. (2007) used the seven tasks for their analysis. Similarly, Rimm-Kaufman, Curby, Grimm, Nathanson, and Brock (2009) used the PSRA to measure self-regulation. However, Rimm-Kaufman et al. only used four tasks from the full battery of tasks to conduct research. They specifically focused on the balance beam, pencil tap, toy sort and gift wrap tasks. The tasks developed by Chicago School Readiness Project are: (a) balance beam task, (b) pencil tap, (c) tower task/tower clean up, (e) toy wrap/toy wait, (g) tongue task, (h) toy sorting, and (i) snack delay task (Raver et al., 2011).

2.6. Reliability
According to Rimm-Kaufman et al. (2009), reliability was established by conducting the tasks with 10 children, as well as weekly videotaping of assessments. The researchers also reported that the inter-coder reliability was .99.

2.7. Validity
Smith-Donald et al. (2007) reported that a factor analysis was employed to determine the concurrent validity of the PSRA and previously validated measures. There were high positive associations between attention, positive emotion, compliance/executive control and impulse control. The correlation between the assessor report and attention/impulse control was .62. The correlation between compliance/executive control was correlated to teacher report of student’s social competence was .53.

The examiner obtained permission from the authors of the PSRA measures to administer selected tasks as in previous studies. Dr Cybele Raver granted permission to use selected tasks and not full battery in March 2013. The task selected were categorized as either impulse control tasks or cognitive regulation task.

3. Results
Prior to conducting the analysis with all participants ($n = 63$) descriptives, skewness, kurtosis, and outliers were assessed for the variables used in this study. Based on the labeling rule, 20 cases fell outside the determined range. As a result of high variability, no outliers were identified. Due to the
To examine the research question, a one-way analysis of variance (ANOVA) was conducted to determine statistically significant differences in the dependent variable by independent variable, specifically, self-regulation and being a DLL or non-DLL (see Table 1). A one-way ANOVA is an appropriate statistical analysis when the purpose of research is to assess if mean differences exist on one continuous dependent variable by an independent variable with two or more discrete groups.

The dependent variable in this analysis were both impulse and cognitive control, and the discrete groups were the independent variable (DLL and non-DLL groups). Homogeneity of variance assumes that both groups have equal error variances and was assessed using Levene’s test for the equality of error variances, \( F(1, 61) = 3.25, p = .077 \). The t-test was two-tailed with the probability of rejecting the null hypothesis set at \( p < .05 \). This ensures a 95% certainty that the differences did not occur by chance. The independent between-groups ANOVA yielded a statistically significant effect, \( F(1, 61) = 8.56, p = .005 \); partial Eta squared = .123). Thus, the null hypothesis of no differences between the means was rejected, and 12.3% of the variance was accounted for based on group membership. The effects support that with regard to self-regulation, there is a difference in these learned skills based on whether early childhood students are classified as DLL or non-DLL (see Figure 1).

4. Discussion
The results suggest that while the ability to speak more than one language should support the development of self-regulation in students who attend preschool, there is a larger external factor that needs to be examined. That is, how much of the native language are educators prepared to support in classroom practices? Students who are developing a second language, and are not allowed to or encouraged to speak in their native language, experience a delay in language acquisition. The delay
is observed in both academic and social language. Therefore, the ability to develop both social and academic language, as well as the ability to code switch to develop cognitive regulation is crucial. Cummins (1984) expresses the need for educators to encourage the native language both at school and home. Cummins (2000) proposes a model where educators expose students to a continuum of both underdemanding to cognitively demanding task to develop both types of language proficiencies.

The opportunity for DLLs to socialize can positively impact self-regulation and academic achievement (Luchtel et al., 2010; Oades-Sese, Esquivel, Kaliski, & Maniatis, 2011; Wanless et al., 2011). Students’ native language allows for increased proficiencies in English, academic achievement, and social skills (Oades-Sese et al., 2011). Lack of communication and expression, as well as lack of understanding of verbal direction, instruction, or classroom talk, can lead to negative socio-emotional development for young children. These results suggest that focusing on the development of language, whether in English or Spanish, and self-regulation in the early years are closely associated (Oades-Sese et al., 2011).

Focusing on language development, child–teacher interactions, and classroom quality supports positive social development of the DLL preschool student (Luchtel et al., 2010). It is important to focus on child and teacher interactions to ensure children understand the cultural context they are developing in. Furthermore, teachers should maintain and encourage a positive social environment among DLLs and support the relationships with all their peers and teachers in the classroom.

4.1. DLLs and teacher practices
Luchtel et al. (2010) specifically suggested some important applications that need to be put into practice by educators in early childhood. First, they suggested the facilitation of active engagement. Educators need to be fully aware that the DLL student may be compliant and not misbehave, but that does not constitute learning or understanding. Secondly, teachers should strive to communicate and establish a bond with the DLL student. The bond is a factor in teachers’ ability to modify inappropriate classroom behaviors. Lastly, routines, structured activities and expectations help build academic skills. These determining factors are all part of students’ ability to self-regulate.

Providing a positive environment during preschool years is a way to offer DLLs the opportunity to show gains in cognitive development. Specifically, Cannon, Jacknowitz, and Karoly (2012) suggested that providing a linguistically oriented program for preschool DLLs can promote academic readiness. Studies support the gains that can come from a play-based curriculum for preschool children over academic ones (Miller & Almon, 2009; Roskos, Christie, Widman, & Holding, 2010; Vukelich & Christie, 2009). However, no known program or curriculum exists that targets the development of higher order thinking skills, such as self-regulation, explicitly for DLLs in preschools. DLLs need a focused and tailored program to help them develop emotionally, behaviorally and eventually cognitively. Developing self-regulatory skills through a social context becomes not only a challenge for DLLs, but for all developing preschoolers as they must learn to interact in a group with rules and expected behaviors. Neu (2013) described how in smaller and focused settings, DLLs “were more likely to take a risk with oral language” (p. 217).

4.2. Parental involvement and socialization
With respect to the DLL population, socialization is a critical component in their overall development. DLLs are not only learning language but are also learning to be a part of a different cultural group (Castro et al., 2013). Integration of DLLs into social settings reduces risks for social and language problems (Chang et al., 2007). Socialization also allows for language development as it takes at least 3–7 years for DLLs to develop English language proficiency in school settings (Chang et al., 2007). Castro et al. (2013) and Luchtel et al. (2010) revealed that socialization can further the development of executive functioning skills in DLLs. Chang et al. (2007) proposed that the bonds and interactions established through socialization can facilitate changes in self-confidence and identity. Social interactions can ultimately increase opportunities for more academic learning in preschool children (Castro et al., 2013; Chang et al., 2007).
4.2.1. Understanding the Latino culture

Traditionally, Latino families educated their children through social stories and are very much involved in the overall development and holistic upbringing of their children (McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004). Education in the Latino culture is not limited to academics but rather embeds the development of social skills, self-regulation, compliance, respect, and patience. While each culture is unique and has its own heritage, the aforementioned aspects of parental involvement in education are characteristics many Latino cultures share. Specifically, the multifaceted ways of engagement in education the Latino culture participates as described by McWayne et al. (2004).

There are four key forms of parental involvement that are enacted by members of the Latino culture. The first is based on learning about social interactions, academic knowledge, and the child’s culture. The second dimension is the encouragement and involvement of other family members in the child’s life. The third is future orientation and the significance of education to the child. Finally, the last being a school base participation which is the traditional observable form of engagement educators assess. As stated, engagement, can be executed in four different forms. However, with many minority families such as Latino families, the challenge with engagement is that schools can only observe the traditional form of parent participation. A form that is measurable and observable, and can mislead an educator in determining the engagement level of some parents. This last dimension of participation is difficult for parents who have a language barrier, work multiple jobs, or lack child care for other siblings (McWayne et al., 2013). These factors limit parents’ ability to participate in the child’s education. Hence, educators need to of self-regulation is culturally appropriate and evidence-based.

4.2.2. Policies

Current educational policies, such as CCSS and Race to the Top, do not allow educators to focus on cognitive control skills in preschools, which serve as indicators of school success (Arslan et al., 2011; Denham et al., 2012). Race to the Top is a competitive grant that required more rigorous learning standards to be implemented and greater accountability on multiple levels. These common core standards primarily focus on constructional and academic types of activities in classrooms. Thus, under this policy, the developmental needs of the DLL population are not met (Castro et al., 2013). The statistically significant results can be utilized to provide evidence for educators to question current curricula, encourage a new direction, and perhaps influence educational policies to focus on meeting the social needs of DLL students (Luchtel et al., 2010).

These results can contribute to a new set of policies that can replace the traditional didactic curricula and policies currently in place that do not embrace cultural differences, oral learning styles traditionally favored by many young learners or Latino decent, or culturally appropriate means of parental engagement. Castro et al. (2013) and Luchtel et al. (2010) stated that by not having policies and curricula that reflect the needs of DLLs, their needs are disregarded. DLLs need the opportunity to develop in a social context where executive functions such as self-regulation skills are developed (Castro et al., 2013; Luchtel et al., 2010; Oades-Sese et al., 2011).

5. Limitations

The current study had several limitations. First, the public school setting was chosen because LIU/Post had a school partnership with the district. Thus, this was a sample of convenience. Additionally, the sample size was a small sample size and could have limited the results. Although similar studies have conducted small analyses between self-regulation and academics (Garner & Waajid, 2012; Smith-Donald et al., 2007; Wanless et al., 2011), these studies have not looked at dual language learners in early childhood. Culture is another key factor that although not analyzed or focus of this study, is a factor that can influence the results.

6. Conclusion

With current educational policies focusing on standardized testing as a measure of academic development, earlier grades introduce academics earlier on (Alexander, 2010); not allowing for focus on skills such as self-regulation that foster academic developments (Arslan et al., 2011; Blair, 2002;
Denham et al., 2012; McClelland et al., 2007). This study ends with a discussion based upon findings relating to regulatory skills and academics in preschool students.

Specifically, this study examined impulse and cognitive regulation between language in DLLs in preschool students. The results between self-regulation, and language in DLLs were examined. This study intended to reveal that skills such as self-regulation, which are not taught in school but are needed in schools, have associations with academics. Overall, findings of this study support the notion that self-regulation is tied to language as reported by statistically significant results. Implications have been described that could help look at the vast and recently discussed issue of self-regulation and overall preschool development.

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References
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Appendix A

CUESTIONARIO SOBRE EL IDIOMA QUE SE HABLA EN EL HOGAR
("Home Language Questionnaire, HLQ") – Spanish

Estimado Padre/Madre o Guardián:
Para poder ofrecer a su hijo(a) la mejor educación posible, necesitamos determinar cuán efectivamente él o ella entiende, habla, lee y escribe el idioma inglés. Su ayuda será apreciada si contesta estas preguntas.

Gracias.

| PARA SER COMPLETADO POR EL PERSONAL ESCOLAR (TO BE COMPLETED BY SCHOOL PERSONNEL) |
| DISTRITO (District) | DEFINIR O DECIR CLARAMENTE (Please print or type clearly) |
| ESCUELA (School) | GRADO (Grade) |
| NOMBRE DEL ESTUDIANTE (Student Name) |
| FECHA DE NACIMIENTO (Date Of Birth) | Mes (Month) | Día (Day) | Año (Year) |
| NÚMERO DE IDENTIFICACIÓN DEL ESTUDIANTE (Student Identification Number) |
| LUGAR NATURAL O ASCENDENCIA (Country Of Birth/Ancestry) |
| NÚMERO DE AÑOS MATRICULADO EN ESCUELAS FUERA DE LOS E.U. (Number of years enrolled in school outside the U.S.) |
| NOMBRE/POSICIÓN DEL PERSONAL ESCOLAR QUE LLENO ESTA SECCIÓN (Name/Position School Person Completing This Section) |
| DETERMINACIÓN: (Determination) | ☐ Posiblemente LEP (Possibly LEP) | ☐ Dominante en inglés (English Proficient) |

(✔ Marque las casillas que aplican)

1. ¿Qué idioma(s) se habla en el hogar o residencia del estudiante?
   - ☐ Inglés
   - ☐ Español
   - ☐ Otro
   (Especifique cuál)

2. ¿En qué idioma(s) se le habla al estudiante la mayor parte del tiempo en el hogar o residencia?
   - ☐ Inglés
   - ☐ Español
   - ☐ Otro
   (Especifique cuál)

3. ¿Qué idioma(s) entiende el estudiante?
   - ☐ Inglés
   - ☐ Español
   - ☐ Otro
   (Especifique cuál)

4. ¿Qué idioma(s) habla el estudiante?
   - ☐ Inglés
   - ☐ Español
   - ☐ Otro
   (Especifique cuál)

5. ¿En qué idioma(s) lee el estudiante?
   - ☐ Inglés
   - ☐ Español
   - ☐ Otro
   - ☐ No lee
   (Quién lee)

6. ¿En qué idioma(s) escribe el estudiante?
   - ☐ Inglés
   - ☐ Español
   - ☐ Otro
   - ☐ No escribe
   (Quién escribe)

7. ¿En su opinión, qué tan bien el estudiante entiende, habla, lee y escribe inglés?

<table>
<thead>
<tr>
<th>Muy bien</th>
<th>Un poco</th>
<th>Nada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entiende Inglés</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Habla Inglés</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Lee Inglés</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Escribe Inglés</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Firma del Padre/Madre/Guardián/Otro
(Signature of Parent/Guardian/Other)

Mes (Month) | Día (Day) | Año (Year)
**KEKSYONÈ SOU LANG KI PALE LAKAY ELÈV LA**

Home Language Questionnaire (HLQ) - Haitian Creole

---

**Se supurrye lokal la ki dwe komplete sekyon sa a**

TO BE COMPLETED BY SCHOOL PERSONNEL

<table>
<thead>
<tr>
<th>DISTRIK ESKOLE (Diocese)</th>
<th>(LANPAP DUKLE KLEMAN (Place sorta langble)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NON LEKOL LA (School)</td>
<td>NIVO KLAS LA(Eulate)</td>
</tr>
<tr>
<td>NON ELEV LA (Student name)</td>
<td></td>
</tr>
<tr>
<td>DAT LI FÈT(Date of birth)</td>
<td>MWA(Month)</td>
</tr>
<tr>
<td>JOU (Day)</td>
<td>ANE(year)</td>
</tr>
<tr>
<td>NUMERO IDENTITE ELEV LA(Student I.D. number)</td>
<td></td>
</tr>
<tr>
<td>PEYI KOTE LI FÈT(Country of birth/security)</td>
<td></td>
</tr>
<tr>
<td>KONBYEN AINI LI PAZAN NON YON LEKOL AN DEYO ETAZINDI (Number of years enrolled in school outside of the U.S.)</td>
<td></td>
</tr>
<tr>
<td>NON AK POSESYON ANP YAYE K AFANPLI SEKSYON SA A (Name/position of school personnel completing this section)</td>
<td></td>
</tr>
<tr>
<td>DETEMINASYON(Determination)</td>
<td>ELEV LA PALE ANGELE(Possible LEP)</td>
</tr>
<tr>
<td>ELEV LA PALE ANGELE BYEN(English proficient)</td>
<td></td>
</tr>
</tbody>
</table>

---

(Fè yon tchek (✔️) nan ti kare ki gen reposi ou wle bay li)

1. Ki lang yo pale lakay élèv la?  / Angle  / Kreyòl  / Yon lôt lang
   
2. Ki lang yo pale pi souvan ak élèv
   la lakay li?  / Angle  / Kreyòl  / Yon lôt lang
   
3. Ki lang élèv la konprann?  / Angle  / Kreyòl  / Yon lôt lang
   
4. Ki lang élèv la pale?  / Angle  / Kreyòl  / Yon lôt lang
   
5. Ki lang élèv la li?  / Angle  / Kreyòl  / Yon lôt lang
   
6. Ki lang élèv la ekrì?  / Angle  / Kreyòl  / Yon lôt lang
   
7. Nan opunyò pa ou, endèke pi ba a kijan élèv la konprann, pale, li ak ekrì lang Angle a?

Tèt byen  Yon ti kras  Pa dityou

Kôprann lang Angle a

Pa lang Angle a

Li lang Angle a

Ekli lang Angle a

---

Siyani Paraz oubyen moun ki responsab timoun nan

(Signature of Parent or Guardian)

MWA(month):  JOU(Day):  ANE(year):

HEQ -01/00

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Sequential second language acquisition

**STAGE 1**—Home language use—Child uses only Spanish.

**STAGE 2**—Nonverbal—Child communicates with gestures and actions.

**STAGE 3**—Telegraphic and Formulaic Speech—Child communicates using one or two words.

**STAGE 4**—Productive Language—Child understands most of what is said in classroom. He/She speaks in longer phrases and complete sentences. There are frequent word errors.

**STAGE 5**—Fluent English User—Child speaks English in most social and learning contexts. Language in content areas is still challenging.