Differences in English Language Proficiency Growth: A Possible Indicator of Giftedness for English Learners

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Differences in English Language Proficiency Growth:

A Possible Indicator of Giftedness for English Learners

by

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of the requirements for the degree of
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The disproportionality of culturally and linguistically diverse learners in exceptional education is an ongoing issue (Bernal, 2002; Ford, 2012). One of these special populations is that of English learners (ELs), who are overrepresented in special education programs and underrepresented in gifted and talented programs (Ford, 2012). The extant literature suggests that a rapid rate of growth in English language proficiency (ELP) may be one of the characteristics used to indicate giftedness in English learners (Brulles, Castellano, & Laing, 2011; Harris, Plucker, Rapp, & Martinez, 2009). However, no previous studies have analyzed English Language proficiency (ELP) growth trajectories of gifted ELs. This study explored the growth in English language proficiency of 4,558 ELs, of which 118 were identified as gifted. Scores from the Comprehensive English Language Learning Assessment (CELLA), were used to determine the typical growth trajectories of ELs. This was done using latent growth curve modeling. The growth trajectories were then analyzed to determine if differences existed in the trajectories of ELs identified as gifted. The findings were that differences did exist in the English language proficiency growth of ELs identified as gifted, particularly in the areas of listening/speaking and writing, where gifted ELs seem to grow at a more rapid rate than their non-identified peers.
CHAPTER 1: INTRODUCTION

Statement of the Problem

One of the issues of great concern for educators and researchers in the field of gifted education is the disproportionality and disenfranchisement of culturally and linguistically diverse (CLD) students in gifted and talented education (GATE) programs (Bernal, 2002; Pereira & Gentry, 2013; Waitoller, Artiles, & Cheney, 2010). Disproportionality, in the case of CLD students, refers to the underrepresentation of these students in GATE programs. Over the past half-century, educators, policy makers and researchers have identified possible causes and potential remedies to ameliorate disproportionality; however, their attempts have not provided a permanent solution to the problem (Daniels, 1998; Harris, Rapp, Martínez, & Plucker, 2007; McBee, Shaunessy, & Matthews, 2012). With CLD populations, such as English learners (ELs), increasing in our nations’ schools, action must be taken to assure that these students have equitable opportunities and are represented in GATE programs (Pereira & Gentry, 2013).

Gifted children and English learners.

Individuals who are gifted exhibit high levels of aptitude and/or competence in one or more domains (National Association for Gifted Children [NAGC], 2010). Children identified as gifted and talented demonstrate an exceptional capacity to learn, and often do so at significantly faster rates than other children of the same age (NAGC, 2010). Programs for the gifted and talented often provide an accelerated and enriched curriculum focused on developing strengths in academic and/or creative domains. Therefore, the identification of children with gifts and talents needs to occur as soon as possible in order for them to benefit from GATE programs. Despite
efforts to change course, students from CLD groups remain underrepresented in programs for the
gifted and talented (Ford, Coleman, & Davis, 2014; Yoon & Gentry, 2009).

One of the fastest growing CLD groups, and historically underrepresented in gifted
education, is that of ELs (Brulles et al., 2011; Ford, 2012; Pereira & Gentry, 2013). Other terms
such as English language learners (ELL) (Lakin & Young, 2013), Limited English Proficient
(LEP) (Fernández, Gay, Lucky, & Gavilán, 1998), and more recently Emerging Bilinguals (EB)
(García & Kleifgen, 2010), have been used to describe the EL population (Pereira & Gentry,
2013). Regardless of the term used, ELs are children who speak a language other than English at
home and are in the process of becoming English proficient. English learners come from many
culturally, ethnically and linguistically diverse backgrounds.

Disproportionality.

Disproportionality has been a prevalent problem in the gifted education field (Bernal,
2002; Ford, 1998; Ford et al., 2014). The issue of underrepresentation of CLDs was first
acknowledged in the 1960s and 1970s in reference to Black students (Bruch, 1971; Torrance,
1969). Ernesto M. Bernal (1974) brought to notice the underrepresentation of Hispanics in
GATE programs in the mid-1970s, while Tonemah (1987) did the same for Native Americans in
the late 1980s. The interest on CLD populations and their participation in GATE programs has
existed for a long time, but the EL subgroup has only recently received attention (Bernal, 2002;
Harris et al., 2007).

Calculating disproportionality.

The U.S. Department of Education Office for Civil Rights (OCR) conducts the biennial
Civil Rights Data Collection (CRDC) survey. The CRDC includes information about student
enrollment in K-12 schools and educational services such as GATE programs. Researchers use
data from the CRDC to determine the overrepresentation and underrepresentation of various
groups in gifted programs (Ford, 1998, 2014; Yoon & Gentry, 2009). Data from the 2011-2012
CRDC survey show that CLDs make up about 50% of the total K-12 student population, while
they only represent 37% of students in GATE programs (U.S. Department of Education, Office
for Civil Rights [OCR], 2014).

Though there are several ways of calculating disproportionality, one of the most common
ways is the Relative Difference in Composition Index (RDCI) (Ford, 2014). The RDCI compares
the percent of a subgroup in the total population to that of the same population in a specific
program [1- (percentage of group in exceptional education program divided by percentage of
group in total school population)] (Ford, 1998; Ford, Harris, Tyson, & Trotman, 2002). This
index allows the comparison of disproportionality of different groups against each other (Ford,
2014). The underrepresentation of culturally and linguistically diverse students in GATE
programs calculated using the RDCI is 26%. English Learners comprise 9% of the total K-12
population, and only 2% of the students in GATE programs. According to the RDCI calculation
the underrepresentation for ELs in gifted education programs is of 78%. This is way above any
statistical chance and therefore a great concern. The RDCI is only one way to determine
disproportionality and does not provide guidance as to what would be an equitable
representation.

When looking at disproportionality, Ford (2014) suggests looking at the equity index (EI)
in order to decide if the disproportionality is beyond statistical chance. The EI is calculated in
two steps. First, the percentage of a group in the general population is multiplied by the 20%
threshold. The OCR uses the 20% threshold to determine significant disproportionality (Ford &
Trotman, 2000; Ford & Whiting, 2010). The second step takes the product found in the first step
and subtracts it from the percentage of a group in general education. The difference is the EI. The EI for ELs in gifted education programs would be 7.2%. This means that in order to achieve minimal equity ELs should represent at least 7.2% of the gifted student population. The comparison of the actual percentage of ELs in gifted programs (2%) and the EI for the group (7.2%) also shows that there is a significant difference and that ELs are greatly underrepresented in GATE programs.

**Identifying giftedness in English Learners.**

The underrepresentation of ELs has led researchers to look for causes and possible solutions. Most research has focused on the identification of gifted CLDs as a group, or specific ethnic subgroups, yet little research has focused specifically on ELs (Bernal, 2002; Harris et al., 2007). Concerns with traditional identification practices have dominated the literature on underrepresentation of ELs. Two identification practices discussed by researchers are the use of intelligence tests and teacher referrals (Ford, Grantham, & Whiting, 2008).

**Traditional identification practices.**

In the school context, intelligence quotients (IQ) are used as a primary indicator of giftedness. Verbal components of IQ tests require children to have mastery of oral, reading, and writing skills. IQ tests are particularly challenging for ELs because these assessments are often conducted in English (Harris et al., 2007). Many of the extant studies on alternative tools for gifted identification focus on the use of nonverbal assessments and their validity with CLD populations (Giessman, Gambrell, & Stebbins, 2013; Lohman, Korb, & Lakin, 2008).

Though non-verbal IQ test may be useful to identify ELs for gifted programs, the students must first be referred for testing (Bernal, 2002; Harris et al., 2007). Teachers are usually the ones who start the referral process and are instrumental in identifying potentially
gifted students. However, a teacher may find it difficult to communicate effectively with an EL due to language and cultural barriers. English learners may manifest giftedness in ways that are framed within their linguistic and cultural backgrounds (Harris et al., 2009). In cases were the teacher and the student may not be able to effectively communicate, the teacher may overlook an ELs potential for gifted referral.

The lack of teacher referrals of ELs for gifted and talented programs has also been attributed to teachers’ deficit thinking and low expectations of CLD students in general (Ford et al., 2008; Harris et al., 2009; Pereira & Gentry, 2013). Teachers’ interactions with their students should help them see the children’s strengths. Yet, if teacher expectations are low, this prevents them from providing opportunities for students to show their true capabilities. Teachers are the greatest source of referrals of students for gifted programs and it is important that they can identify strengths in EL students that are different from the norm. Teachers who have referred ELs for gifted education programs, list a rapid rate of English Language Proficiency (ELP) attainment as a characteristic of these students (Brulles et al., 2011; Harris et al., 2009).

However, there is no set ELP attainment rate to describe what constitutes a “typical” or “rapid rate” for ELs.

*Policy changes to identify more culturally and linguistically diverse students.*

Additional efforts to address the underrepresentation of CLDs in gifted programs have come from policy makers. One example is Florida’s Gifted Program Eligibility Requirements, Statute 6A-60.0319 (2010). The statute defines a gifted student as “one who has superior intellectual development and is capable of high performance.” The law also provides eligibility criteria for gifted education programs as follows: a) demonstrates a need for the program, b)
demonstrates a majority of characteristics of gifted students, and c) superior intellectual
development measured by an IQ score of at least two standard deviations above the norm.

In 1998, a “Plan B” addition was made to the original state rule. Plan B allows districts
to develop alternate ways of identifying students from underrepresented populations to increase
their enrollment in gifted education programs. In 2002, revisions made Plan B applicable
specifically to students from families with low-socioeconomic status and ELs (Matthews &
Shaunessy, 2010). In the year 2000, 0.49 percent of children identified as gifted in the state of
Florida were ELs. With the implementation of Plan B, the percentage of gifted ELs increased to
0.92 percent by 2011.

**English language proficiency.**

All ELs have one thing in common; they are working towards becoming proficient in
English as a second language. Cummins (1980) distinguished between two types of language
proficiency: Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic
Language Proficiency (CALP). Over the years, these terms have come to describe the
differences between face-to-face conversational proficiency (BICS) and the academic, cognitive
demanding aspects of language (CALP) (Collier, 1987). According to Cummins (Cummins,
1981), BICS could be acquired in about 2 years, while CALP could take anywhere from 5-7
years to master. In the context of schools, both BICS and CALP proficiencies are important.

Schools in the U.S. currently use English language proficiency (ELP) measures to
determine if ELs have reached proficiency. Starting with the previous iteration of the
Elementary and Secondary Education Act, also known as the No Child Left Behind Act (NCLB)
(2002), ELP assessments were required to measure four language domains: listening, speaking,
reading and writing. While ELs are participating in English for Speakers of Other Languages
(ESOL) or English as a Second Language (ESL) programs, they are assessed in ELP at least once a year. English Learners who achieve ELP levels equal to those of their same age peers who are not ELs can exit the ESOL and ESL programs.

In the state of Florida, the *Comprehensive English Language Learning Assessment* (CELLA) was used to measure ELP (Florida Department of Education, 2006) from 2006-2015. The CELLA test measured the four domains required by NCLB. To show ELP growth trajectories that may help educators determine a rate for ELP attainment, CELLA scores in each of the four domains, over time, can be used.

**Purpose and Significance of the Study**

The intent of this study was to explore English language proficiency development in ELs. The first step in this exploratory study was to determine a typical ELP growth trajectory and then determine if ELs who had been identified as gifted had a significantly different growth trajectory than their non-identified peers. The ELP scores over time were used to create growth trajectories. This is significant because data on student ELP are collected by school districts for placing, monitoring, and exiting students from English as a Second Language (ESOL) programs. English language proficiency scores may provide another tool for educators to use for other purposes such as gifted identification. A new indicator may result in an increased number of referrals of ELs for gifted programs, therefore reducing the current disproportionality. This study looks at differences in English proficiency growth trajectories to provide a greater understanding of the second language acquisition of gifted and non-gifted ELs.

**Definition of Terms**

*Comprehensive English Language Learning Assessment (CELLA):* CELLA was the English language proficiency test used in the State of Florida from 2006 to 2015, to measure the
growth of ELs in mastering the English skills needed to succeed in school (Florida Department of Education, 2006). The CELLA tests four domains: listening, speaking, reading and writing.

Disproportionality: The overrepresentation, or underrepresentation, of a particular group in an exceptional education program, relative to the presence of the same group in the overall student population (National Education Association, 2007). Disproportionality is calculated by using the formula $1 - \left(\frac{\text{percentage of group in exceptional education program}}{\text{percentage of group in total school population}}\right)$ (Ford, 2014; Ford & Whiting, 2010).

Gifted: According to the Florida State Rule 6A – 6.03019, a gifted individual is one who has superior intellectual development and is capable of high performance. The same rule stipulates that the criteria for eligibility to receive gifted education services in the state are as follows:

A) 1. Demonstrates a need for the program,  
   2. Demonstrates a majority of characteristics of gifted students, and  
   3. Superior intellectual development measured by an IQ score of at least two standard deviations above the norm.

B) A student from an underrepresented group (defined as limited English proficient or from a low socioeconomic status family) and meets the criteria specified in an approved school district plan for increasing the participation of under-represented groups in programs for gifted students.

English Learner (or Limited English Proficient): The No Child Left Behind Act defined ELs as:
Students who are (a) age 3 through 21; (b) enrolled or preparing to enroll in an elementary or secondary school; (c) not born in the United States or whose native language is not English; (d) a Native America, Alaskan Native, or a native resident of the outlying areas; (e) from an environment where a language other than English has had a significant impact on an individual’s level of English language proficiency; (f) migratory and comes from an environment where English is not the dominant language; and (g) has difficulties in speaking, reading, writing, or understanding the English language that may deny the individual the ability to meet the state’s proficient level of achievement and the ability to successfully achieve in classrooms where English is the language of instruction, or to participate fully in society. (NCLB, 2002)

For the purpose of this study, the definition used for ELs is from the Florida State Rule 6A-6.0901:

A student whose home language is one other than English as determined by a home language survey and whose English aural comprehension, speaking, reading, or writing proficiency is below the average English proficiency level of English speaking students of the same age and grade.

*English Language Proficiency:* The current Florida State Rule 6A-6.0903, states that “English proficiency shall be determined by assessing the student utilizing the statewide English Language Proficiency Assessment and Florida Standards Assessment in English Language Arts (FSA in ELA) or Florida Standards Alternate Assessment (FSAA), or by ELL Committee determination” (Florida Department of State, 2016)

The current study uses data from 2006 to 2015. At the time the statewide English Language proficiency assessment used was the Comprehensive English Language
Learning Assessment (CELLA) and the standards assessment used was the Florida Comprehensive Achievement Assessment (FCAT) in Reading.

*Socio-economic status:* student's eligibility for free or reduced-price lunch

**Research Questions**

This study explored the English language proficiency (ELP) growth trajectories of ELs in an attempt to answer the following questions:

1) What are the typical ELP growth trajectories for gifted and non-gifted ELs during the elementary grades (1st – 5th)?
   a) How are the typical ELP growth trajectories, as measured by CELLA total scale scores, different for gifted and non-gifted ELs?
   b) How are the ELP growth trajectories for listening, reading, and writing skills different for gifted and non-gifted ELs in grades 1-5?

2) Do ELP growth trajectories of ELs differ by:
   a) gender?
   b) disability?
   c) age of entrance into the U.S.?
   d) home language?
   e) ethnicity?
   f) socio-economic status (free/reduce lunch status)?

This study explored English language growth trajectories between gifted and non-gifted EL populations. Due to individual learner differences in gender, exceptionalities, age of entrance into the U.S., home language, ethnicity, and socioeconomic status, differences amongst these groups may also exist (Cummins, 1991; Robinson, 2001).
Overview of Method

The primary goal of this study was to explore the development of English language proficiency in ELs and determine whether differences exist among different groups, primarily gifted and non-gifted learners. The study was a secondary analysis of existing data taken from large Southeastern school district’s database. Data on students’ English language development and demographic information was gathered.

The participants for this study were approximately 7,000 active and former ELs enrolled in 5th grade in the selected school district during the 2014 – 2015 school year. This group of students, and grade levels, were selected because most decisions to place students in exceptional education programs usually occur during the elementary grades (Matthews & Kirsch, 2011). This sample included the largest possible population of current and former ELs identified with exceptionalities, including gifted, during elementary school.

To explore the English proficiency growth trajectories of ELs, Latent Growth Curve Model (LGCM) analysis was used. Latent Growth Curve Model is a longitudinal statistical analysis that permits the examination of an individual’s change over time, and the variability in an individual’s change when compared to the larger group (Preacher, Wichman, MacCallum, & Briggs, 2008). The strengths of LGCM include: a) allowance for time varying covariates, b) missing data, and c) assessment times that vary (Burchinal, Nelson, & Poe, 2006).

Latent Growth Curve Models have been used in studying reading achievement (Beecher, 2012), literacy performance of ELs (Gutiérrez & Vanderwood, 2013), and child behavior (DiStefano & Kamphaus, 2008). For this study, data from a school district with a large EL population was used. The data included scores on English proficiency tests given at multiple times to create individual students’ English growth trajectories. Due to the nature of the data
collected, LGCM was an appropriate method to analyze the data set since each student may have had different assessment times as well as missing data.

**Organization of the Remaining Chapters**

In the next chapters specifics of the research conducted are provided. A review of current literature pertaining to elements important to the study is presented in Chapter 2. The review of the literature begins with a discussion on ELs and their underrepresentation in GATE programs. Information on the current efforts to provide equitable opportunity for CLD students to be identified, placed and retained in GATE programs are discussed. A description of second language acquisition (SLA) theories and a discussion on the relationship among intelligence and SLA are presented. Finally, a case for using English Language Proficiency Growth as an indicator of giftedness for ELs is offered.

Methods for the current study are provided in Chapter 3, along with information about the context of the study and the nature of data collected. Explanations of how data was examined and analyzed are discussed. Chapter 4 discusses the results of the analysis. Finally, Chapter 5 includes a discussion of the conclusions of the study, its limitations and suggestions for future research.
CHAPTER 2: REVIEW OF THE LITERATURE

Children who are gifted have unique educational needs met by special programs for the gifted and talented. Educators have the responsibility to ensure that each child receives an appropriate education that meets his or her individual educational needs. Appropriate services cannot be offered if a student’s needs are not identified. Therefore, it is important that the problem of underrepresentation of certain CLD groups, such as ELs, in GATE programs be resolved.

English Learners

The EL population is the fastest growing student population in the United States (Office of English Language Acquisition, 2011; Wolf, Herman, & Dietel, 2010). According to the National Center for Educational Statistics (NCES) (2014), an estimated 4.4 million ELs participated in ESOL programs in the 2011-2012 school year. This number is expected to continue to increase. The current U.S. Department of Education policy, the Elementary and Secondary Education Act (ESEA), in its most recent reauthorization (Every Student Succeeds Act (ESSA), 2016) defines ELs as:

Individuals who are (a) age 3 through 21; (b) enrolled or preparing to enroll in an elementary or secondary school; (c) not born in the United States or whose native language is not English; (d) a Native America, Alaskan Native, or a native resident of the outlying areas; (e) from an environment where a language other than English has had a significant impact on an individual’s level of English language proficiency; (f) migratory and comes from an environment where English is not the dominant language; and (g) has
difficulties in speaking, reading, writing, or understanding the English language that may deny the individual the ability to meet the State’s academic standards and the ability to successfully achieve in classrooms where English is the language of instruction, or to participate fully in society. (ESEA, 2016)

The description provided by the ESSA of ELs presents an extremely diverse population. English Learners come from many different racial, ethnic, cultural and linguistic backgrounds. According to the U.S. Census Bureau there are over 300 languages other than English spoken in the United States (Ryan, 2013). The most prevalent language spoken by ELs is Spanish, followed by Chinese, Vietnamese, Arabic, and Hmong (Office of English Language Acquisition, 2015). The fact that within one group there is so much diversity presents a major challenge for educators and policy makers.

Each state in the U.S. sets requirements for ESL program eligibility and is responsible for setting English Language standards and creating or selecting English Proficiency assessments that would assess those standards. In the State of Florida, the Requirements for Identification, Eligibility, and Programmatic Assessments of English Language Learners, F.A.C. 6A-6.0901 (Florida Department of State, 2013), explains the conditions children registering in schools need to meet in order to be identified as ELs. When parents register a child at a Florida school for the first time, they must fill out a home language survey. The home language survey includes three questions: a) is a language other than English used in the home? b) did the student have a first language other than English? and c) does the student most frequently speak a language other than English? An affirmative response to any of these three questions requires that a child’s English language proficiency be assessed to determine if ESOL or ESL services are needed.
In Florida, the Comprehensive English Language Learning Assessment (CELLA) was used to determine the English language proficiency of EL’s from 2006-2015. The CELLA assessed four areas: listening, speaking, reading and writing (Florida Department of Education, 2006). The results of the CELLA determined a child’s placement in an ESOL or ESL program. These programs exist to assist ELs in developing their English language skills and achieving proficiency.

**Underrepresentation of culturally and linguistically diverse students in Gifted Programs.**

Disproportionality is the overrepresentation, or underrepresentation, of a particular group in an exceptional education program, relative to the presence of the same group in the overall student population (NEA, 2007). The disproportionate representation of culturally and linguistically diverse (CLD) groups in GATE programs has been one of the most troubling and persistent concerns in the gifted education field (Bernal, 2002; Erwin & Worrell, 2012). Historically, students from Black, Hispanic, and Native American backgrounds have been underrepresented in programs for gifted and talented students, while Whites and Asians have been overrepresented (Ford et al., 2008; Yoon & Gentry, 2009).

Disproportionality is measured in various ways, but the most common is to compare the percent of a subgroup in the total population to that of the same subgroup in the population of a specific program using the Relative Difference in Composition Index (RDCI) (Ford, 2014). Another measure used to determine disproportionality is the Equity Index (EI), which is used to determine what percentage of representation is needed in order to attain minimal equity.

The most recent data from the Civil Rights Data Collection survey shows that the underrepresentation and overrepresentation trends continue (CRDC, 2014). In the 2011-2012
school year, Whites and Asians comprised 70% of the student population in gifted and talented programs, while only comprising 55% of the overall population. Blacks and Hispanics represented only 26% of the GATE population, while making up 40% of the total school population. The following table summarizes the current disproportionality in GATE programs based on the CRDC survey.

Table 1

Disproportionality in U.S. GATE programs 2011-2012 by Race/Ethnicity

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>% in Schools offering GATE Programs</th>
<th>% in GATE Programs</th>
<th>% of Disproportionality</th>
<th>Equity Index (EI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>50</td>
<td>60</td>
<td>O = 20</td>
<td>40%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>25</td>
<td>17</td>
<td>U = 32</td>
<td>20%</td>
</tr>
<tr>
<td>Black</td>
<td>15</td>
<td>9</td>
<td>U = 40</td>
<td>12%</td>
</tr>
<tr>
<td>Native Hawaiian / Pacific Islander</td>
<td>0.4</td>
<td>0.4</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Asian</td>
<td>5</td>
<td>10</td>
<td>O = 100</td>
<td>4%</td>
</tr>
<tr>
<td>American Indian / Alaska Native</td>
<td>1</td>
<td>1</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Multi-Racial</td>
<td>3</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: O = Overrepresentation, U = Underrepresentation

Another group underrepresented in GATE programs is that of English Learners (ELs). English Learners are unique in that they represent much diversity within the group as they include different races, ethnicities, languages, and dialects. Students who speak a language other than English at home make up 21% of the K-12 population (U.S. Department of Education, 2014). Children who are ELs comprise 9% of the total K-12 school population and 2% of the students in GATE programs. English learners are underrepresented in gifted programs by 78%. According to the equity index, in order to achieve minimal equity, ELs must comprise at least 7.2% of the students gifted student population.
Identifying Gifted English Learners

Current gifted identification practices include IQ tests, achievement results, and observable characteristics (Brulles et al., 2011; Harris et al., 2007). Questions have been raised as to the reliability and validity of the current identification methods, specifically IQ tests and their implications for ELs (Harris et al., 2007). Despite the recognition that giftedness may involve other factors, IQ test scores continue to be the predominant choice in determining giftedness (Harris et al., 2007; Matthews & Kirsch, 2011).

IQ tests and nonverbal measures of giftedness.

Among the procedures used to identify gifted learners in schools, the principal determinant of eligibility continues to be the IQ score of an intelligence test (Harris et al., 2007). Several considerations must be made when assessing the cognitive development of ELs, one of them being the child’s cultural background (Gonzalez, 2006). Another consideration is that verbal IQ tests require mastery of the English language in oral, reading and writing domains. By requiring mastery of the English language, verbal IQ tests would be inappropriate for use with ELs who are still developing their English proficiency. Using intelligence tests in the student’s native language or a nonverbal measure may be better methods to use with ELs (Harris et al., 2007).

Gonzalez (2006) used the Qualitative Use of English and Spanish Tasks (QUEST) instrument to assess cognitive processes in monolingual and bilingual children from ages 4.5 to 6.5. The QUEST includes both verbal and non-verbal tasks. The low-SES, bilingual children scored comparable to the middle-to-high SES monolingual children. These results demonstrate
that the nonverbal tasks may provide an “appropriate and fair” way for all children to demonstrate their cognitive abilities.

In a pilot study by Pierce et al. (2006), a larger percentage of minority students were identified by using a cutoff score of 90th percentile or above, on the Ravens Colored Progressive Matrices (RCPM), a nonverbal ability test. The researchers used what they call a “sift-down model” for identification. They used four criteria, which included test scores, TerraNova Comprehensive Test of Basic Skills scores, RCPM scores, and the Adams-Pierce Checklists filled out by teachers and parents. The scores on the Ravens Colored Progressive Matrices and the checklists placed 26 students in the program that would have been overlooked with the use of the other criterion only.

Although the use of non-verbal tests seemed promising, the most recent studies discussing non-verbal ability tests and aptitude testing suggests that non-verbal tests are not as effective in identifying more ELs for gifted programs as previously thought (Lakin & Lohman, 2011; Lohman et al., 2008; Matthews & Kirsch, 2011). Lohman et al. (2008) compared the RCPM to two other common nonverbal assessments the Naglieri Nonverbal Ability Test (NNAT), and the Cognitive Abilities Test (CogAT) Nonverbal Battery. Their findings showed that none of the three nonverbal tests predicted achievement for ELs very well. Another study by Matthews and Kirsch (2011) determined similarly, that the use of non-verbal measures did not yield results that were more equitable for linguistically diverse gifted learners. In conclusion, nonverbal measures of ability alone do not help to solve the problem of disproportionality in the identification of gifted ELs.
Policy efforts: the case of Florida.

Apart from using different measures to identify gifted students from underrepresented groups, policy makers have also attempted to resolve the issue of underrepresentation. In Florida, a person who is gifted is defined as someone who “has superior intellectual development and is capable of high performance” (Florida Department of State, 2002). In order to be eligible to receive gifted education services the student must demonstrate that: a) there is a need for a special program, b) shows a majority of characteristics of the gifted, and c) superior intellectual development as measured by two standard deviations above the mean in a standardized intelligence test (Florida Department of State, 2010). These requirements were amended by the legislature to include what is locally commonly known in Florida as “Plan B.”

Florida’s Plan B allows school districts to develop a plan to increase the participation of students from underrepresented groups in gifted programs, specifically ELs and students from families with low socio-economic status. Some district plans use a matrix system where students receive points for IQ scores, achievement scores, gifted characteristics, and creativity. According to data from the CRDC, the percentage of ELs identified as gifted in the State of Florida has only increased by 0.43% from 2000 to 2011.

Teacher referrals.

In Florida, the first requirement in order to be eligible for a gifted program is the demonstration of “a need for a special program.” Teachers have the responsibility to determine “the need” of a student to participate in a gifted program, and to nominate said student for testing (Harris et al., 2009). Therefore, it is crucial that teachers are aware of how giftedness may manifest itself in ELs.
For many years, advocates and researchers have attributed underrepresentation of CLD students in GATE programs to teachers’ “deficit thinking” (De Wet & Gubbins, 2011). Teachers may have negative assumptions about CLD students. The negative assumptions of teachers lead to low expectations that make them focus on students’ weaknesses rather than their strengths (De Wet & Gubbins, 2011; Ford et al., 2008; Harris et al., 2009). In the case of ELs, it may lead teachers to believe that since they are not English proficient they should not be referred for gifted services.

However, ELs are being identified more now than they were in the past (Brulles et al., 2011). One of the characteristics often mentioned by teachers as a characteristic of gifted ELs is a rapid rate of English acquisition (Brulles et al., 2011; Harris et al., 2009). However, the notion of a rapid rate is rather subjective. In the literature on second language acquisition, there is no set rate that would define a “rapid rate” of English language acquisition for ELs. The possibility that looking at an ELs English language development using proficiency scores, may assist teachers by having them determine a “rapid” rate based on how long it takes a student to achieve proficiency. A “rate” determined by proficiency scores would present an objective depiction of a student’s development in learning a new language.

**Second Language Acquisition**

Learning a second language and becoming bilingual is a complex process completed over a long period of time (Collier, 1987). The learning of a new language depends on many factors including age, first language proficiency, motivation, social and psychological factors, and socioeconomic status (Barac & Bialystok, 2011; Bialystok, 2001; Grassi & Bulmahn-Barker, 2010). To understand how an individual develops, and becomes proficient in a second language, theories on second language acquisition (SLA) must be examined.
Second language acquisition theories.

The idea that a second language is acquired in a predictable manner comes from Krashen’s (1983) natural order hypothesis. The natural order hypothesis suggests that there are certain aspects of the English language, such as grammar, that follow a particular pattern. The idea of a predictable pattern has led many school systems to create charts that depict distinct stages of SLA (Grassi & Bulmahn-Barker, 2010). These stages have provided a guide for educators to determine at what acquisition and proficiency level an EL may be. The stages of second language acquisition are preproduction, early production, speech emergence, and fluency, which are divided into intermediate and advanced levels. The characteristics and sample student behaviors for each stage of second language acquisition are presented in Table 2.

Table 2

<table>
<thead>
<tr>
<th>Stage</th>
<th>Characteristics</th>
<th>Sample Student Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preproduction</td>
<td>- 10 hours to 6 months of exposure</td>
<td>- “Silent Period”</td>
</tr>
<tr>
<td></td>
<td>- Language Skill: listening (receptive level)</td>
<td>- Points or provides nonverbal response</td>
</tr>
<tr>
<td></td>
<td>- BICS development</td>
<td>- Responds to commands</td>
</tr>
<tr>
<td>Early Production</td>
<td>- 3 – 12 months</td>
<td>- One-word responses</td>
</tr>
<tr>
<td></td>
<td>- Language Skill: continued listening</td>
<td>- Short utterances</td>
</tr>
<tr>
<td></td>
<td>- BICS development</td>
<td></td>
</tr>
<tr>
<td>Speech Emergence</td>
<td>- 1 – 3 years</td>
<td>- Participates in small group activities</td>
</tr>
<tr>
<td></td>
<td>- Student speaks in phrases and short sentences</td>
<td>- Demonstrates comprehension in a variety of ways</td>
</tr>
<tr>
<td></td>
<td>- BICS development</td>
<td></td>
</tr>
<tr>
<td>Intermediate Fluency</td>
<td>- 3 – 5 years</td>
<td>- Participates in reading and writing activities to acquire new information</td>
</tr>
</tbody>
</table>
Table 2 (Continued)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Characteristics</th>
<th>Sample Student Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Fluency</td>
<td>- 5 years and beyond</td>
<td>- needs support in acquiring academic language</td>
</tr>
<tr>
<td></td>
<td>- Student can converse on almost any</td>
<td>- requires advanced-level grammatical and writing</td>
</tr>
<tr>
<td></td>
<td>topic</td>
<td>instruction</td>
</tr>
<tr>
<td></td>
<td>- CALP development</td>
<td></td>
</tr>
</tbody>
</table>

Sources: (Grassi & Bulmahn-Barker, 2010; Nutta, 2003)

Through the idea of being able to pinpoint a particular level of acquisition is attractive to educators, researchers have found the SLA is much more complex (Grassi & Bulmahn-Barker, 2010). The complexity of SLA is evident in Cummins’ hypothesis that first and second language acquisition are interdependent (Cummins, 1979, 1991). A person’s proficiency in his or her native language will affect SLA.

**Timelines to English language proficiency.**

Cummins (1980) noted that there are two distinct types of language proficiency: Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP). The BICS refers to face-to-face, conversational, oral language proficiency which is acquired in 2 – 5 years (Cummins, 1981; Hakuta, Goto-Butler, & Witt, 2000). Meanwhile, it takes in 5 – 7 years to master and become proficient in CALP, which refers to the more cognitive demanding aspects of language (Collier, 1987; Cummins, 1981). Both BICS and CALP are necessary for academic success.

The timelines of SLA tell us that oral language is acquired first. An examination of the data from a California school district, by Hakuta (2011), indicated that it took 80% of ELs 7 years to reach proficiency. In Hakuta’s study, he used data from the California English Language Development Test (CELDT), which assesses English proficiency in the four areas of
reading, writing, listening, and speaking. Due to the nature of the test, the proficiency that was being determined was that of CALP.

Genesee, Lindholm-Leary, Saunders, and Christian (2005), in a review of studies on ELs, stated that there is a positive relationship between English oral proficiency and reading achievement. This holds true for children in grades 1-9. The relation between oral proficiency and literacy seem to strengthen across grades and studies have shown they triple from grades 2-5. Current research shows that ELs typically require 3 to 5 years to achieve advanced proficiency. The progress from a beginning to middle level of proficiency is relatively rapid, but from middle to upper proficiency, it is slower.

**Second language acquisition and intelligence.**

The variations in the acquisition of a second language may be explained by individual differences in resource availability and cognitive abilities (Paradis, Genesee, & Crago, 2011; Robinson, 2001). Robinson’s (2001) Aptitude Complex and Ability Differentiation Theoretical Framework expounds on these differences. His framework revolves around four hypotheses (see Table 3). These hypotheses suggest that differing cognitive abilities will result in differences in SLA. This means that the SLA of children with various exceptionalities may look different from that of others.

Table 3

*Aptitude Complex / Ability Differentiation Theoretical Framework*

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aptitude Complex Hypothesis</td>
<td>Abilities have their effects on learning in specific combinations, and that these complexes of abilities promote second language acquisition</td>
</tr>
<tr>
<td>Ability Differentiation Hypothesis</td>
<td>Some learners have very differentiated strengths in abilities and that instruction needs to match their ability profiles</td>
</tr>
</tbody>
</table>
Table 3 (Continued)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamental Difference Hypothesis</td>
<td>Adult second language learning is different from foreign language acquisition</td>
</tr>
<tr>
<td>Fundamental Similarity Hypothesis</td>
<td>Adult (not child) learning under any condition of exposure draws on abilities implicated in explicitly processing input, and ‘noticing’ features of it</td>
</tr>
</tbody>
</table>

(Robinson, 2001)

Considering that the main tool used to identify children who are gifted is the use of IQ tests, what are the links between IQ and SLA? Throughout the literature, it is suggested that general intelligence is correlated to language proficiency, and children who score high on intelligence tests, tend to score high on reading and writing assessments (Paradis et al., 2011). Genesee (1976) studied the correlation of IQ and second language acquisition of native English speakers learning French as a second language. The researcher found that IQ correlated with student performance on second language reading and language usage tests. However, he found no correlation between IQ and listening and interpersonal communication skills. The findings of this study applied to students of all grade levels in different types of second language programs.

Other researchers have investigated the relationship between intelligence and second language proficiency. In a study of the relationship among intelligence and second language proficiency (SLP) and aptitude, Sasaki (1993) found that 42% of the variation in second language proficiency attainment could be accounted for by intelligence. In a more recent study, Pishghadam and Khajavy (2013) found that 30% of variance in foreign language achievement was due to intelligence and metacognition. Researchers have also examined relationships between working memory (WM), executive function, and SLA.
Other factors that may influence second language acquisition.

There are other factors that may influence second language development: gender, home language, ethnicity, and socioeconomic status. Previous researchers have documented gender differences in language development. On average, females tend to outperform males in verbal tasks, speaking and writing (Payne & Lynn, 2011; van der Slik, van Hout, & Schepens, 2015). Thus, gender differences may also exist in the attainment of proficiency in a second language.

With over 300 languages other than English spoken in the United States, home language may also affect the process of learning English as a Second Language (Ryan, 2013). After all, it is known that if major differences exist among a first and second language, this can affect the child’s rate of second language development (Paradis, Genesee, & Crago, 2011). Studies have also shown that socioeconomic status combined with home language use have a significant effect on vocabulary comprehension in a second language (Deanda et al. 2016; Prevo et al., 2015).

English Language Proficiency as a Possible Indicator of Giftedness

A better way to identify talent in all groups is to assess its best indicators for all children, and compare student scores to those of other students who have had roughly similar opportunities to develop or acquire the abilities measured (Lakin & Lohman, 2011). In the case of ELs, this would mean looking at differences in their English language proficiency (ELP) development. A correlation between intelligence and language proficiency is found in students who are learning a second language (Paradis et al., 2011). Therefore, if gifted children have high intelligence then they will become proficient in a second language to the extent that their cognitive abilities allow. Individual differences affect second language acquisition and their trajectories towards proficiency. Children who are gifted have cognitive abilities that may allow them to acquire a second language at a faster rate than their same age peers. Therefore,
differences in rate of language acquisition, or the rate of ELP development, may in fact be an indicator of giftedness for ELs.

The issue now lies in defining parameters as to what rate of second language acquisition, or ELP development, signifies giftedness. The timelines provided by researchers are a guide to how long it takes ELs to reach proficiency levels, but they provide little information as to what these trajectories may look like. How rate of language proficiency acquisition should be measured also must be defined. Should it be based on oral language, written language, and use of grammar or vocabulary? There are many dimensions to language acquisition and being able to measure these different features and their growth will help us better define rate of ELP attainment. This study addresses gaps in the literature as to what growth trajectories in English proficiency look like and if any differences are present based on individual differences of ELs.

**Latent Growth Curve Models**

Latent growth curve modeling (LGCM or LGM) is a statistical method widely used to analyze change in behavioral and social sciences (Bishop, Geiser, & Cole, 2014). Growth curve models have historically been used to examine longitudinal data for repeated measure for some outcome variable (Preacher et al., 2008). These models can be imbedded in other theoretical models because they are an application of confirmatory factor analysis (CFA) which in turn is a special case of structural equation modeling (SEM).

Growth curve models have several advantages to traditional methods for studying change such as repeated measures of variance (ANOVA), ANCOVA and multilevel modeling (DiStefano & Kamphaus, 2008; Preacher et al., 2008). Unlike the previously mentioned methods a non-linear growth pattern can be tested for adequacy of fit to determine how well the model represents the data. LGM also allows researchers to examine within-person and between-
person changes over time since it measures growth and change throughout, not just at the end. By providing means for growth rates and intercepts at the group-level, LGM allows for the comparison of growth and development across multiple groups. Another advantage of LGM is that it allows for the imputation of missing data points which helps to adequately represent non-normal data and allows for non-linear growth patterns to emerge (Beecher, 2012; Curran, Obediat, & Losardo, 2010).

Latent growth curve models do have some limitations (Duncan, Duncan, & Strycker, 2006). LGM models are usually done with SEM programs that have the assumption of multinormally distributed variables and the need for large samples. LGM is based on the premise that change is related to the passage of time, therefore establishing time metric and time-centering parameters are of special importance for this analysis (Duncan et al., 2006). If change is not systematically related to time then other statistical analyses, such as repeated measures regression, would be more appropriate.

Latent growth curve modeling is appropriate for this study because it will allow for the exploration of English Language growth trajectories across different groups. Data from the CELLA will provide a basis for the growth trajectories which will help determine growth rates in ELP for different groups.
CHAPTER 3: METHODS

Overview

The goal for this study was to explore the English language development of different groups of English learners and determine whether differences exist in their English Language Proficiency (ELP) growth. The study was a secondary data analysis of existing data taken from one of the largest school districts in the U.S., known for serving a large EL population in Florida. Data on students’ English language development and demographic information was requested and obtained from the school district.

The data requested was for students ELs that attended district schools during the 2014 – 2015 school year. During that particular school year, the school district served a total of 356,902 students from Kindergarten to 12th grade. The demographic breakup of the district during that year was 7.47% White, 22.43% Black, 68.32% Hispanic, and 1.75% of other ethnic groups. The other ethnic groups included learners who are identified as American Indian, Asian and Multiracial. During the same school year, there were 69,349 students served in the district’s English for Speakers of Other Languages (ESOL) programs. Tables 4 and 5 provide the district’s total demographic membership information and English Learner totals for grades Pre-Kinder to 12th Grade.
Table 4

*District PK-12 Demographics for 2014-2015*

<table>
<thead>
<tr>
<th>Ethnicity / Race</th>
<th>Student Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>26,649</td>
</tr>
<tr>
<td>Black</td>
<td>80,066</td>
</tr>
<tr>
<td>Hispanic</td>
<td>243,850</td>
</tr>
<tr>
<td>Other (Includes American Indian, Asian and Multiracial categories)</td>
<td>6,337</td>
</tr>
<tr>
<td>Total</td>
<td>356,902</td>
</tr>
</tbody>
</table>

(Florida Department of Education, 2015)

Table 5

*District English Learners Currently in ESOL Programs - Demographics for 2014 – 2015*

<table>
<thead>
<tr>
<th>Ethnicity / Race</th>
<th>Student Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>1,747</td>
</tr>
<tr>
<td>Black</td>
<td>5,432</td>
</tr>
<tr>
<td>Hispanic</td>
<td>61,400</td>
</tr>
<tr>
<td>Asian</td>
<td>635</td>
</tr>
<tr>
<td>Other (Includes Native Hawaiian, Pacific Islander, American Indian and Multiracial categories)</td>
<td>135</td>
</tr>
<tr>
<td>Total</td>
<td>69,349</td>
</tr>
</tbody>
</table>

(Florida Department of Education, 2015)

**Participants**

The data provided by the school district included information on 6,940 ELs, who attended 5\textsuperscript{th} grade during the 2014 – 2015 school year. The retrospective data included English proficiency scores from the years 2008 – 2015. This group of students, and grade level, were
selected because placement decisions for exceptional student education programs tend to occur while students are in the elementary grades (Matthews & Kirsch, 2011; Samson & Lesaux, 2009).

The group of participants selected were in school while the district participated in the implementation of the Comprehensive English Language Learning Assessment (CELLA) for English language proficiency. The CELLA was first administered in the district during the 2005 – 2006 as part of a pilot study. The 2006 – 2007 school year was the first year that the CELLA was fully implemented throughout the district. In 2010, some of the scores were revised and the online CELLA was implemented for students entering the school district.

**Data Collection**

The data for this study was provided by the school district from their existing database. Information on demographics, academics and English language proficiency scores were requested. Table 6 shows the data that was provided by the school district for each student participating in the study.

**Table 6**

*Data Provide by the School District*

<table>
<thead>
<tr>
<th>Data Category</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifiable Information</td>
<td>Study ID, Date of Birth</td>
</tr>
<tr>
<td>Demographics</td>
<td>Gender, Ethnicity, Home Language, Free/Reduced Lunch Status (SES), Exceptionality, Entry into United States</td>
</tr>
<tr>
<td>Academic Information</td>
<td>Grade Levels (for each year of data)</td>
</tr>
<tr>
<td></td>
<td>Placement date into Gifted program (if applicable)</td>
</tr>
<tr>
<td>ESOL /English Proficiency</td>
<td>Comprehensive English Language Learning Assessment (CELLA), Total scale scores and sub scores (Listening/ Speaking*, Reading, and Writing) for each school year the student was in the ESOL Program. (<em>Listening and Speaking subtests are shown as one combined score)</em></td>
</tr>
</tbody>
</table>
**Measures**

Table 7

*CELLA Levels and Test Administration*

<table>
<thead>
<tr>
<th>CELLA Levels</th>
<th>Grades</th>
<th>Functional Levels (Reading/Writing)</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level A</td>
<td>K – 2</td>
<td>Initial literacy skills</td>
<td>One-to-One Section administered individually for grades K-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Listening, Reading, and Writing sections may be administered in small groups (individual administration is recommended for Kindergarten)</td>
</tr>
<tr>
<td>Level B</td>
<td>3 – 5</td>
<td>Application of literacy skills towards development of new knowledge</td>
<td>Listening, Reading, and Writing, sections are administered in group settings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Speaking section is individually administered</td>
</tr>
<tr>
<td>Level C</td>
<td>6 – 8</td>
<td>Advanced applications of literacy skills towards development of new knowledge</td>
<td>Listening, Reading, and Writing, sections are administered in group settings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Speaking section is individually administered</td>
</tr>
<tr>
<td>Level D</td>
<td>9 – 12</td>
<td>Literacy skills necessary for success in higher education or the workforce</td>
<td>Listening, Reading, and Writing, sections are administered in group settings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Speaking section is individually administered</td>
</tr>
</tbody>
</table>

(Rebarber et al., 2007, p. 71)

The Comprehensive English Language Learning Assessment (CELLA) is an English language proficiency test used to measure the growth of ELs in mastering the English skills.
needed to succeed in school (Florida Department of Education, 2006). The CELLA tests four domains: listening, speaking, reading and writing. The CELLA provides sub-scores for listening/speaking (combined as one score), reading, and writing. A composite Total Scale Score is also provided. English Learners often demonstrate a wide range of English proficiency levels and a disparity often exist between grade level and functional level (Rebarber et al., 2007). To address this issue, the CELLA’s reading and writing subtests are organized into four levels: A, B, C, and D.

The CELLA is administered individually or in small or large groups depending on a student’s grade level and/or the level of the test being administered. Though the test come in four levels and each level corresponds to specific grades, students may be tested using their grade level and any lower levels if needed. The CELLA is vertically scaled, which allows for comparison of performance on one level of the test to performance on another level by domain (Rebarber et al., 2007).

The CELLA was developed by a partnership of the non-profit organization Accountability Works (AW) and the Educational Testing Service (ETS) (Rebarber et al., 2007). This partnership consulted ESL standards and teachers to align the test content to expectations of language acquisition and using rigorous test development procedures to ensure the validity of the test. Items were evaluated in terms of bias and factor analysis was used to analyze the four domains of the test for factor structure. High correlations among the four domains were observed.

The reliability of the CELLA was estimated using Cronbach’s alpha for listening and reading sections. Internal consistency ranged from .76 to .95 (Porter & Vega, 2007). The validity was determined through the review and approval of the states’ proficiency standards and
test blueprints. Expert review of the CELLA was conducted to ensure that all items matched the proficiency benchmarks.

**Data Preparation and Analysis**

Once the data was received from the district, it was organized and analyzed using the IBM SPSS 24.0 software. The variables for ethnicity, home language, socio-economic status and exceptionalities were recoded, and dummy variables created. For ethnicity, Multicultural and Native Americans were recoded into a variable labeled “other” due to their low numbers. There were over 70 home languages represented in the sample. However, most of the sample had identified Spanish (88%) or Haitian-Creole (8%) as their home language. The other four percent were recoded into the “Other-Language” category. For socioeconomic status, students receiving free and reduced lunch were recoded as one group. Finally, the exceptionalities category was separated into three dummy variables: gifted, ESE, and no exceptionality.

The original data set provided English Proficiency scores from 2008 to 2015. This included scores for students that repeated grades. Data for students who repeated a grade level were excluded from the final data set as other factors that were not being examined may have contributed to their scores. Also, due to score revisions and the implementation of the online CELLA in 2010, scores before 2010 were also removed. This left a final data set that included CELLA scores from grades 1 to 5.

To explore the English proficiency growth trajectories of ELs, growth curve modeling was used. Data from the CELLA was organized into waves based on testing dates and grade levels. According to Singer and Willett (2003), three or more waves of data are an important feature of change and the data set provided 5 waves of data with grade levels used as the time metric. Growth curve modeling allows for missing data, however for the sake of obtaining the
most accurate growth curves, cases with only one data point or less were excluded. Missing data was dealt with by using maximum likelihood estimates as it is assumed that data is missing at random.

**Descriptive analysis.**

Using IBM SPSS 24.0 descriptive statistical analyses including means, standard deviations were calculated for each wave of CELLA scores. Means and standard deviations for the CELLA were calculated for sub-groups of ELs determined by gender, home language, exceptionalities, age of entry to the U.S. and socio-economic status. Covariance and correlation matrices for the variables were produced using the same software.

**Growth Curve Modeling.**

The purpose of the study was to explore the English proficiency growth trajectories of ELs identified as gifted and their non-identified peers. To achieve this purpose, latent growth curve model (LGM) analysis was conducted for CELLA scores using Mplus Version 8.0 software. CELLA data is longitudinal in nature, and though students may start at different levels and reach proficiency at different times, LGM develops individual growth curves that will allow us to estimate growth trajectories for ELP. Latent growth curves include an intercept which represents the initial level of the outcome measure (CELLA scores), and a slope which represents the rate of change. Both the intercept and slope are latent factors which will indicate a pattern of growth. This pattern may be linear or quadratic.

To begin, an unconditional model was used to examine the growth of ELP and determine the mean slopes and intercepts and variability around the means. This model allows for linear growth. An unconditional quadratic model was developed to allow for non-linear growth. Time invariant variables, such as gender, SES, home language and exceptionalities, were used as
predictors to develop conditional models. All models were tested for model fit using fit indices including chi-square, comparative-fit indices (CFI), and root mean square error of approximation (RMSEA). Linear and quadratic unconditional models and conditional models were created for each of the CELLA sub-scores: listening/speaking, reading, and writing skills.

**Ethical Considerations and Diversity Issues**

This study is a secondary analysis of data previously-collected by the district, which presents minimal risk to the participants. There is no need for direct contact with participants and therefore presents no direct risk. An extra effort was made to request data with no direct identifiable information to further protect participants from any harm.

Though no direct contact with the population was required, efforts were made to consider the diversity of the sample during analysis. Special attention was given to home language, ethnicity, and exceptionalities during the analysis and reporting phases.
CHAPTER 4: RESULTS

Descriptive Statistics

The demographics of the final sample (N=4,558) are provided in Table 8. The sample included 54.19% males and 45.81% females. Most students were of Hispanic ethnicity (88.24%) followed by Black (8.18%), White (2.48%) and other (1.10%). The sample was also largely comprised of students receiving free or reduced lunch (82.25%). Only 2.56% of the EL’s were identified as gifted, while 9.06% where identified as students with disabilities.

Table 8

Demographics of Final Sample

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL SAMPLE</strong></td>
<td>4,558</td>
<td></td>
</tr>
<tr>
<td><strong>GENDER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MALES</td>
<td>2,470</td>
<td>54.19%</td>
</tr>
<tr>
<td>FEMALES</td>
<td>2,088</td>
<td>45.81%</td>
</tr>
<tr>
<td><strong>ETHNICITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WHITE</td>
<td>113</td>
<td>2.48%</td>
</tr>
<tr>
<td>BLACK</td>
<td>373</td>
<td>8.18%</td>
</tr>
<tr>
<td>HISPANIC</td>
<td>4022</td>
<td>88.24%</td>
</tr>
<tr>
<td>OTHER</td>
<td>50</td>
<td>1.10%</td>
</tr>
<tr>
<td><strong>HOME LANGUAGE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPANISH</td>
<td>4,024</td>
<td>88.28%</td>
</tr>
<tr>
<td>HAITIAN / CREOLE</td>
<td>353</td>
<td>7.74%</td>
</tr>
<tr>
<td>OTHER</td>
<td>181</td>
<td>3.97%</td>
</tr>
<tr>
<td><strong>SES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FREE / REDUCED LUNCH</td>
<td>3,749</td>
<td>82.25%</td>
</tr>
<tr>
<td><strong>EXCEPTIONALITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESE</td>
<td>413</td>
<td>9.06%</td>
</tr>
<tr>
<td>GIFTED</td>
<td>118</td>
<td>2.59%</td>
</tr>
</tbody>
</table>
Means and standard deviations were calculated for the five waves of data for each of the CELLA Tests (See Tables 9-12). Means for sub-groups were also calculated to create comparison graphs of the predictor variables (See Figures 2-11).

Table 9

**Descriptive Statistics for Outcomes for Total Sample: Total Scale Scores**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min.</th>
<th>Max.</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1*</td>
<td>2985</td>
<td>1355</td>
<td>2187</td>
<td>1958.80</td>
<td>98.851</td>
<td>-1.952</td>
<td>6.425</td>
</tr>
<tr>
<td>Grade 2*</td>
<td>3250</td>
<td>1515</td>
<td>2212</td>
<td>2043.11</td>
<td>79.378</td>
<td>-2.525</td>
<td>9.906</td>
</tr>
<tr>
<td>Grade 3**</td>
<td>3839</td>
<td>1725</td>
<td>2365</td>
<td>2113.55</td>
<td>87.581</td>
<td>-1.460</td>
<td>3.208</td>
</tr>
<tr>
<td>Grade 4**</td>
<td>4301</td>
<td>1725</td>
<td>2410</td>
<td>2157.26</td>
<td>98.815</td>
<td>-1.370</td>
<td>2.679</td>
</tr>
<tr>
<td>Grade 5**</td>
<td>3394</td>
<td>1745</td>
<td>2411</td>
<td>2204.67</td>
<td>77.432</td>
<td>-1.006</td>
<td>2.852</td>
</tr>
</tbody>
</table>

* K-2 CELLA Total Scale Score cut off scores: Min. = 1355 and Max. = 2330
** 3-5 CELLA Total Scale Score cut off scores: Min. = 1725 and Max. = 2440

Table 10

**Descriptive Statistics for Outcomes of Total Sample: Listening Scale Scores**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min.</th>
<th>Max.</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1*</td>
<td>2985</td>
<td>495</td>
<td>755</td>
<td>666.51</td>
<td>33.003</td>
<td>-1.385</td>
<td>5.390</td>
</tr>
<tr>
<td>Grade 2*</td>
<td>3250</td>
<td>495</td>
<td>755</td>
<td>684.91</td>
<td>33.550</td>
<td>-0.873</td>
<td>3.718</td>
</tr>
<tr>
<td>Grade 3**</td>
<td>3839</td>
<td>560</td>
<td>805</td>
<td>707.55</td>
<td>35.581</td>
<td>-1.042</td>
<td>2.960</td>
</tr>
<tr>
<td>Grade 4**</td>
<td>4301</td>
<td>560</td>
<td>805</td>
<td>715.89</td>
<td>38.847</td>
<td>-0.838</td>
<td>2.156</td>
</tr>
<tr>
<td>Grade 5**</td>
<td>3394</td>
<td>560</td>
<td>805</td>
<td>734.95</td>
<td>31.484</td>
<td>-0.196</td>
<td>0.931</td>
</tr>
</tbody>
</table>

* K-2 CELLA Listening/Speaking Scale Score cut off scores: Min. = 495 and Max. = 755
** 3-5 CELLA Listening/Speaking Scale Score cut off scores: Min. = 560 and Max. = 805
Table 11

Descriptive Statistics for Outcomes of Total Sample: Reading Scale Scores

<table>
<thead>
<tr>
<th>Grade</th>
<th>N</th>
<th>Min.</th>
<th>Max.</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1*</td>
<td>2985</td>
<td>345</td>
<td>790</td>
<td>630.58</td>
<td>55.459</td>
<td>-2.016</td>
<td>7.011</td>
</tr>
<tr>
<td>Grade 2*</td>
<td>3250</td>
<td>345</td>
<td>800</td>
<td>676.33</td>
<td>43.055</td>
<td>-2.565</td>
<td>12.870</td>
</tr>
<tr>
<td>Grade 3**</td>
<td>3839</td>
<td>590</td>
<td>810</td>
<td>706.13</td>
<td>34.516</td>
<td>-1.273</td>
<td>2.880</td>
</tr>
<tr>
<td>Grade 4**</td>
<td>4301</td>
<td>590</td>
<td>810</td>
<td>723.99</td>
<td>38.261</td>
<td>-1.149</td>
<td>2.780</td>
</tr>
<tr>
<td>Grade 5**</td>
<td>3394</td>
<td>590</td>
<td>810</td>
<td>741.34</td>
<td>33.784</td>
<td>-0.552</td>
<td>2.715</td>
</tr>
</tbody>
</table>

* K-2 CELLA Reading Scale Score cut off scores: Min. = 345 and Max. = 800
** 3-5 CELLA Reading Scale Score cut off scores: Min. = 590 and Max. = 810

Table 12

Descriptive Statistics for Outcomes of Total Sample: Writing Scale Scores

<table>
<thead>
<tr>
<th>Grade</th>
<th>N</th>
<th>Min.</th>
<th>Max.</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1*</td>
<td>2985</td>
<td>515</td>
<td>730</td>
<td>661.71</td>
<td>27.617</td>
<td>-1.295</td>
<td>5.317</td>
</tr>
<tr>
<td>Grade 2*</td>
<td>3250</td>
<td>515</td>
<td>743</td>
<td>681.87</td>
<td>20.488</td>
<td>-1.177</td>
<td>6.072</td>
</tr>
<tr>
<td>Grade 3**</td>
<td>3839</td>
<td>575</td>
<td>825</td>
<td>699.87</td>
<td>28.972</td>
<td>-1.271</td>
<td>3.740</td>
</tr>
<tr>
<td>Grade 4**</td>
<td>4301</td>
<td>575</td>
<td>825</td>
<td>717.38</td>
<td>33.548</td>
<td>-1.022</td>
<td>2.923</td>
</tr>
<tr>
<td>Grade 5**</td>
<td>3394</td>
<td>575</td>
<td>825</td>
<td>728.38</td>
<td>27.685</td>
<td>-0.416</td>
<td>3.372</td>
</tr>
</tbody>
</table>

* K-2 CELLA Writing Scale Score cut off scores: Min. = 515 and Max. = 775
** 3-5 CELLA Writing Scale Score cut off scores: Min. = 570 and Max. = 825

Growth Curve Models and Typical Growth Trajectories

Growth curve models were produced using the Mplus 8.0 software. First, unconditional linear models were tested for each of the CELLA test scores. The model was tested with good fit indices: (AIC), Comparative Fit Index (CFI), Tucker Lewis Index of (TLI), and Root Mean
Square Error of Approximation (RMSEA) with its 90% Confidence Interval (CI). A model is considered to have a good fit if it contains the following ranges: CFI > 0.95, the TLI > 0.95, the RMSEA < 0.05. A model is considered to have an acceptable fit if the CFI < 0.90, the TLI > 0.90, and the RMSEA < 0.08.

The unconditional linear model had poor goodness of fit values (Tables 13 - 16). An unconditional quadratic model was then tested, which had better goodness of fit values, but not good enough. Conditional models were then created for each of the time invariant variables, using these as predictors (See Figure 1 and Tables 13 - 16). These variables were gender, ethnicity, language, socio-economic status, ESE, gifted, and age of entry. The LGMs with the best fit were the conditional quadratic models that included all variables as predictors. A diagram of the final model used with each of the CELLA scores is provided in Figure 1.

![Diagram](image)

Figure 1: Diagram of Final Conditional Quadratic LGCM
The conditional quadratic model for the CELLA total scale scores showed a good fit with Comparative Fit Index (CFI) of 0.985, a Tucker Lewis Index of (TLI) 0.965 and Root Mean Square Error of Approximation (RMSEA) of 0.035 with a 90% Confidence Interval (CI) between 0.031 - 0.040. The models for the listening scale scores (CFI = 0.972, TLI = 0.935, RMSEA = 0.039, CI = 0.035 - 0.044) and the reading scale scores (CFI = 0.984, TLI = 0.963, RMSEA = 0.029, CI = 0.024 - 0.033) also show good fit. The model for the writing scale scores had an acceptable fit (CFI=0.951, RMSEA= 0.039, CI = 0.035 - 0.044).

Table 13

Model Fit for Models Tested: CELLA Scores

<table>
<thead>
<tr>
<th>Description</th>
<th>(X^2)</th>
<th>df</th>
<th>AIC</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>CI (90)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Scale Scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unconditional – Linear</td>
<td>1405.51</td>
<td>10</td>
<td>40117.98</td>
<td>0.809</td>
<td>0.809</td>
<td>0.175</td>
<td>0.167-0.183</td>
</tr>
<tr>
<td>Unconditional – Quadratic</td>
<td>182.38</td>
<td>6</td>
<td>38902.85</td>
<td>0.976</td>
<td>0.960</td>
<td>0.080</td>
<td>0.071-0.091</td>
</tr>
<tr>
<td>Conditional – Quadratic with All Predictors</td>
<td>210.50</td>
<td>32</td>
<td>34407.33</td>
<td>0.985</td>
<td>0.965</td>
<td>0.035</td>
<td>0.031-0.040</td>
</tr>
<tr>
<td><strong>Listening Scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unconditional – Linear</td>
<td>528.82</td>
<td>10</td>
<td>9155.91</td>
<td>0.876</td>
<td>0.879</td>
<td>0.107</td>
<td>0.099-0.115</td>
</tr>
<tr>
<td>Unconditional – Quadratic</td>
<td>214.66</td>
<td>6</td>
<td>8849.75</td>
<td>0.950</td>
<td>0.917</td>
<td>0.087</td>
<td>0.078-0.098</td>
</tr>
<tr>
<td>Conditional – Quadratic with All Predictors</td>
<td>255.02</td>
<td>32</td>
<td>5034.18</td>
<td>0.972</td>
<td>0.935</td>
<td>0.039</td>
<td>0.035-0.044</td>
</tr>
<tr>
<td><strong>Reading Scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unconditional – Linear</td>
<td>1109.43</td>
<td>10</td>
<td>13979.95</td>
<td>0.769</td>
<td>0.769</td>
<td>0.155</td>
<td>0.148-0.163</td>
</tr>
<tr>
<td>Unconditional – Quadratic</td>
<td>91.67</td>
<td>6</td>
<td>12970.18</td>
<td>0.982</td>
<td>0.970</td>
<td>0.056</td>
<td>0.046-0.066</td>
</tr>
<tr>
<td>Conditional – Quadratic with All Predictors</td>
<td>150.73</td>
<td>32</td>
<td>10303.39</td>
<td>0.984</td>
<td>0.963</td>
<td>0.029</td>
<td>0.024-0.033</td>
</tr>
<tr>
<td><strong>Writing Scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unconditional – Linear</td>
<td>652.58</td>
<td>10</td>
<td>-27.82</td>
<td>0.883</td>
<td>0.883</td>
<td>0.119</td>
<td>0.111-0.127</td>
</tr>
<tr>
<td>Unconditional – Quadratic</td>
<td>334.46</td>
<td>6</td>
<td>-337.95</td>
<td>0.940</td>
<td>0.900</td>
<td>0.110</td>
<td>0.100-0.120</td>
</tr>
<tr>
<td>Conditional – Quadratic with All Predictors</td>
<td>458.07</td>
<td>32</td>
<td>-3372.51</td>
<td>0.951</td>
<td>0.885</td>
<td>0.054</td>
<td>0.050-0.058</td>
</tr>
</tbody>
</table>
The means and residual variances for the intercepts, linear and quadratic parameters for the quadratic – conditional model are presented in Table 14.

Table 14

*Estimated Growth Parameters Means and Variances: Quadratic - Conditional Model*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Means (S.E.)</th>
<th>Residual Variance (S.E.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total (n =4558)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>1824.957 (22.094)</td>
<td>8034.314 (386.018)</td>
</tr>
<tr>
<td>Linear</td>
<td>198.520 (15.732)</td>
<td>2748.106 (221.191)</td>
</tr>
<tr>
<td>Quadratic</td>
<td>-21.527 (3.007)</td>
<td>92.496 (10.122)</td>
</tr>
<tr>
<td><strong>Listening (n =4558)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>632.157 (7.435)</td>
<td>807.933 (48.050)</td>
</tr>
<tr>
<td>Linear</td>
<td>45.105 (5.799)</td>
<td>250.529 (35.463)</td>
</tr>
<tr>
<td>Quadratic</td>
<td>-3.782 (1.230)</td>
<td>9.866 (1.785)</td>
</tr>
<tr>
<td><strong>Reading (n =4558)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>579.147 (11.513)</td>
<td>1413.762 (107.475)</td>
</tr>
<tr>
<td>Linear</td>
<td>87.187 (8.435)</td>
<td>482.045 (64.191)</td>
</tr>
<tr>
<td>Quadratic</td>
<td>-10.005 (1.604)</td>
<td>17.345 (2.705)</td>
</tr>
<tr>
<td><strong>Writing (n =4558)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>632.647 (5.945)</td>
<td>430.552 (25.413)</td>
</tr>
<tr>
<td>Linear</td>
<td>48.196 (4.960)</td>
<td>168.880 (23.437)</td>
</tr>
<tr>
<td>Quadratic</td>
<td>-4.440 (1.024)</td>
<td>6.802 (1.156)</td>
</tr>
</tbody>
</table>

As part of the analysis, regression coefficients for each of the predictor variables were calculated. The regression coefficients show the relationships between the outcome intercept, linear and quadratic slopes and the predictor variables in the conditional model. Table 15 shows these relationships for the CELLA total score model. Tables 16 thru 18 provide the information for each of the subtests.
Table 15

Regression Coefficients Representing the Relationships between the Outcomes of the Intercepts, Linear Slopes, and Quadratic and the Predictors (CELLA Total Scale Score)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Intercept</th>
<th>SE</th>
<th>p</th>
<th>Linear Slope</th>
<th>SE</th>
<th>p</th>
<th>Quadratic</th>
<th>SE</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males (1=M, 0=F)</td>
<td>0.124</td>
<td>3.586</td>
<td>.972</td>
<td>-0.647</td>
<td>2.580</td>
<td>.802</td>
<td>-0.346</td>
<td>0.517</td>
<td>.503</td>
</tr>
<tr>
<td>Ethnicity (Other = 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>28.021</td>
<td>22.000</td>
<td>.203</td>
<td>-22.328</td>
<td>15.635</td>
<td>.153</td>
<td>2.675</td>
<td>3.072</td>
<td>.384</td>
</tr>
<tr>
<td>Hispanic</td>
<td>18.667</td>
<td>23.927</td>
<td>.435</td>
<td>-5.666</td>
<td>17.176</td>
<td>.741</td>
<td>0.267</td>
<td>3.344</td>
<td>.936</td>
</tr>
<tr>
<td>Home Language (Other = 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>19.266</td>
<td>14.904</td>
<td>.196</td>
<td>-20.514</td>
<td>10.822</td>
<td>.058</td>
<td>3.075</td>
<td>2.166</td>
<td>.156</td>
</tr>
<tr>
<td>Haitian / Creole</td>
<td>3.519</td>
<td>19.784</td>
<td>.859</td>
<td>-6.288</td>
<td>14.125</td>
<td>.656</td>
<td>0.424</td>
<td>2.767</td>
<td>.878</td>
</tr>
<tr>
<td>Exceptionality (No Exceptionality = 0)</td>
<td>48.043</td>
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Table 16

Regression Coefficients Representing the Relationships between the Outcomes of the Intercepts, Linear Slopes, and Quadratic and the Predictors (CELLA Listening/Speaking Scale Score)

<table>
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<th>Predictor</th>
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<th>Linear Slope</th>
<th>SE</th>
<th>p</th>
<th>Quadratic</th>
<th>SE</th>
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<td>.182</td>
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<td>.455</td>
<td>0.057</td>
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<td>.791</td>
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<td>0.573</td>
<td>6.546</td>
<td>.930</td>
<td>-0.536</td>
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<td>.967</td>
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<tr>
<td>Gifted (1=Gifted, 0=Non-Gifted)</td>
<td>11.665</td>
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<td>&lt;.01</td>
<td>6.564</td>
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<td>SES (1=Free/Reduced Lunch, 0 =No)</td>
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<td>3 – 4 years old</td>
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<td>&lt;.001</td>
<td>16.444</td>
<td>1.991</td>
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Table 17

Regression Coefficients Representing the Relationships between the Outcomes of the Intercepts, Linear Slopes, and Quadratic and the Predictors (CELLA Reading Scale Scores)

<table>
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<th>Predictor</th>
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<th>Linear Slope</th>
<th>SE</th>
<th>p</th>
<th>Quadratic</th>
<th>SE</th>
<th>p</th>
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<tr>
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<td>1.382</td>
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<td>.279</td>
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<tr>
<td>Hispanic</td>
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<td>12.470</td>
<td>.106</td>
<td>-10.292</td>
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<td>.264</td>
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<td>.593</td>
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<tr>
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<td>-3.281</td>
<td>5.813</td>
<td>.572</td>
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<td>.705</td>
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<td>.852</td>
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<tr>
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<td>&lt;.01</td>
<td>10.516</td>
<td>1.971</td>
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Table 18

*Regression Coefficients Representing the Relationships between the Outcomes of the Intercepts, Linear Slopes, and Quadratic and the Predictors (CELLA Writing Scale Scores)*

<table>
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<th>Predictor</th>
<th>Intercept</th>
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<th>Linear Slope</th>
<th>SE</th>
<th>p</th>
<th>Quadratic</th>
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<th>p</th>
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<tr>
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<tr>
<td>White</td>
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<td>6.686</td>
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<td>5.601</td>
<td>.496</td>
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<td>6.415</td>
<td>.709</td>
<td>-1.311</td>
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<td>&lt;.05</td>
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<tr>
<td>3 – 4 years old</td>
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<td>9.678</td>
<td>.148</td>
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<td>1.483</td>
<td>&lt;.001</td>
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Research Question #1 – Typical ELP Growth Trajectories: Gifted v. Non-Gifted

The primary research question of this study is: what are the typical ELP growth trajectories for gifted and non-gifted ELs during the elementary grades? In order to find the answer to this question growth curve models of ELP growth trajectories for ELs were created for each CELLA test score. The conditional model allowed for the analysis of giftedness as a predictor variable while controlling for other variables (See Tables 15-18).

Total Scale Scores.

The conditional growth model for the CELLA total scale scores showed that the intercept (48, \( p < .001 \)) and linear slope (19.7, \( p < .05 \)) were significantly higher for students identified as gifted. The quadratic slope (-2.6, \( p = .166 \)), however, was not significantly higher. This means that the initial scores for gifted students were higher than the rest of the students and that gifted ELs have a greater rate of growth, therefore learning English at an apparent faster rate.

Listening Scale Scores.

The growth curve model for the Listening /Speaking scale scores showed that children identified as gifted had significantly higher intercept (11.7, \( p < .01 \)) and linear slope (6.6, \( p < .05 \)), while a non-significant quadratic slope (-0.9, \( p = .263 \)). Gifted students seem to also have starting scores higher than their non-identified peers in the listening/speaking domains. Their rate of growth also seems to be faster in this area.

Reading.

The CELLA Reading Scale Score starting scores are also higher for students identified as gifted from 1st to 5th grades. In the growth model, the intercept (31.1, \( p < .001 \)) was significantly higher, while the linear slope (-0.2, \( p = .971 \)) and quadratic slope (0.1, \( p = .923 \)) were not
significant. This means that gifted ELs have a similar rate of growth than their non-gifted peers in the reading domain.

**Writing.**

The conditional growth model for CELLA writing scale scores showed that the intercept (8.1, \(p < .01\)) and linear slope (7.4, \(p < .01\)) were significantly higher for students identified as gifted. However, the quadratic slope (-0.006, \(p = .379\)) was insignificant.

Overall, students identified as gifted tend to start at higher levels in each of the language domains tested by the CELLA. They also have significantly higher slopes, or rates of ELP acquisition, in the listening/speaking and writing subtests, and hence higher total scale scores.

**Research Question #2 – Differences in ELP trajectories: Other Predictors**

The second research question asked if ELP growth trajectories of ELs differ by other predictors: gender, disabilities, age of entrance into U.S., home language, ethnicity and socioeconomic status. As with gifted, these variables were included in the conditional models to determine if any significant differences existed (See Tables 15-18).

**Gender.**

In the final LGMs, males had slightly higher intercepts for the total (0.1, \(p = .972\)), reading (0.9, \(p = .642\)), and writing (0.3, \(p = .750\)) scale scores and a lower intercept for the listening (-1.6, \(p = .182\)) scale score than females. Males had lower linear slopes for the total (-0.6, \(p = .802\)) and writing (-1.8, \(p < .05\)) scale scores but had higher slopes for the listening (0.7, \(p = .455\)) and reading (0.8, \(p = .555\)) scores. The quadratic slopes were slightly lower for males in the total (-0.3, \(p = .503\)), reading (-0.3, \(p = .279\)), and writing (-0.2, \(p = .376\)) scale scores and a slightly higher quadratic slope for the listening (0.1, \(p = .791\)) scale score. The only significant
difference between males and females was the linear slope for the writing scale scores (-1.8, \( p < .05 \)), where males had a lower linear slope.

**Students with Disabilities.**

Due to the small numbers in each disability category, all students with disabilities, regardless of their exceptionality, were grouped together. Overall, the intercepts for students with disabilities were significantly lower than those without (Total: -30.8, \( p < .001 \); Listening: -6.8, \( p < .001 \); Reading: -19.6, \( p < .001 \); Writing: -7.5, \( p < .001 \)). However, the slope, or rate of ELP, was only significantly lower for the CELLA Listening Scale Scores (-3.9, \( p < .05 \)). There were no significant differences in the quadratic slopes across the LGMs for the CELLA tests.

**Age of Entrance to the U.S.**

When it comes to age of entry to the U.S., the ELP growth trajectories of those entering the U.S. before the age of 6, were similar. When compared to students who were born in the U.S., or who came to the U.S. before the age of 2, children who entered the U.S. between the ages of 3 and 6 had higher intercepts (See Tables 15-18). English learners arriving to the U.S. at the ages of 7-8, the intercepts were lower, meaning that they started with lower scores. However, the linear slopes were higher, meaning that they learn at a faster rate. The linear slopes were significant for all age groups in the total, listening/speaking and reading growth curves. The only values found to be insignificant were: a) for 7-8-year old’s - the linear slope for writing and the quadratic slopes for total and listening/speaking scores, and b) for 9 years and up – the intercepts in listening and reading, and the linear slope in writing.

**Home Language.**

The LGM model did not identify significant differences in intercepts and slopes, except in the areas of listening/speaking and writing, where Spanish speakers had significantly lower
linear slopes (See Tables 16 and 18). This means Spanish speakers had lower growth rates than students who spoke other languages at home.

**Ethnicity.**

Ethnicity did not have significance in either intercepts, linear slopes, or quadratic slopes. The only exception was with the CELLA reading, where Whites had a significantly higher starting point, or intercept (31.1, \( p < .05 \)) than those in the “other” ethnicity group.

**Socioeconomic Status.**

Low SES was a significant predictor of intercepts across all four CELLA tests (Total: -22.6, \( p < .001 \); Listening: -7.0, \( p < .001 \); Reading: -9.1, \( p < .001 \); Writing: -0.43, \( p < .01 \)). However, linear slopes (Total: -2.1, \( p = .554 \); Listening: -0.8, \( p = .544 \); Reading: -1.4, \( p = .468 \); Writing: -0.7, \( p = .538 \)) and quadratic slopes (Total: 0.7, \( p = .339 \); Listening: 0.2, \( p = .424 \); Reading: 0.5, \( p = .192 \); Writing: 0.0, \( p = .974 \)) were not significant.
CHAPTER 5: DISCUSSION

English Language Proficiency – Differences in Growth Trajectories for Gifted ELs

This study explored the English language proficiency development of English Learners using their English Language proficiency scores from 1st to 5th grade. With respect to the first research question of the study, LGMs were used to determine if ELs who have been identified as gifted have significantly different growth trajectories than their non-identified peers. The LGM showed that students identified as gifted started with higher scores in all CELLA tests. Students identified as gifted also had steeper linear slopes in CELLA total, listening/speaking and writing scores. This suggests that ELs who are gifted develop more rapidly than their non-gifted peers in the areas of listening/speaking and writing.

In second language acquisition theory, the first type of language proficiency that is acquired is Basic Interpersonal Communicative Skills (BICS) (Cummins, 1980). It requires listening and speaking skills, which are the first to be developed based on the stages of language acquisition (Grassi & Bulmahn-Barker, 2010; Nutta, 2003) (See Table 2). The results that gifted EL’s develop these skills at a more rapid rate suggest that these learners may reach proficiency in listening and speaking before their non-gifted peers. This means they would be able to communicate verbally, in English, with their teachers earlier than others. This may be why educators have often mentioned a rapid growth in English language development as an indicator of giftedness (Brulles et al., 2011; Harris et al., 2009).

It is known that children who score high on intelligence tests also score high on reading and writing assessments (Paradis et al., 2011). The results of the current study show that gifted
EL’s have higher starting scores in both the reading and the writing CELLA tests. The fact that they score high from the beginning in these areas may also be an indicator of giftedness. Though in reading skills gifted EL’s seem to develop at the same rate as their peers, a more rapid rate of writing development was evident.

The findings suggest that teachers should look at the development of ELs in English listening/speaking and writing domains when considering these students for gifted referrals. These domains are observed and assessed in the classroom by teachers every day. English language proficiency assessments are available to teachers and all ELs are required to take them once a year until they reach proficiency. Therefore, ELP tests are a readily accessible tool that can be useful to assist educators in identifying ELs with gifts and talents.

**Other Factors - Differences in Growth Trajectories**

The second research question of this study focuses on differences in the ELP trajectories of ELs based on several factors: gender, disabilities, age of entry to the U.S., home language, ethnicity, socio-economic status. Based on the LGM’s, most of the variables were not shown to be significant in the ELP growth.

In the case of gender, the only significant difference between males and females was the linear slope for the writing scale scores. Males had a lower linear slope than females in the development of writing skills. This is expected as females tend to outperform males in language tasks (Payne & Lynn 2011; Van der Slik et al., 2015). What was unexpected was that there was no significant gender difference present in the other language proficiency skills.

Another factor that was examined was the ELP of students with disabilities (SWD). It is important to note that in the data all SWD’s were grouped as one due to the small numbers, however, most of the sample were identified as students with learning disabilities. The starting
points of SWDs where significantly lower than those without disabilities in each of the four CELLA tests. This is probably expected as differing cognitive abilities result in differences in second language acquisition (Robinson, 2001). However, the rate of ELP was only significantly lower for the CELLA Listening/Speaking Scale Scores. This may mean that students with disabilities may have lower scores throughout, but their trajectories are similar except in the listening/speaking domains where they have lower rates of mastery attainment. As previously mentioned, these skills are the first to be developed in a second language (Cummins, 1980; Grassi & Bulmahn-Barker, 2010; Nutta, 2003). The same way that a rapid rate of listening and speaking can help identify students who are gifted, a slower rate may be an indicator of a disability.

Another factor that was examined was age of entry to the United States. Depending on the age at which a child learns the second language, the second language development will be more or less similar to the development of the first language (DeValenzuela & Nicolai, 2004). The trajectories of those entering before the age of 6, were very similar, though those entering after the age of 7 started lower as one may expect. However, those starting at the age of 7 or later, had higher linear slopes which show they develop English proficiency at a faster rate. This may be due to children at these ages being able to transfer their knowledge about their first language to the new one.

Home language and ethnicity did not seem to have a significant influence on ELP growth trajectories. However, it was noted that students identified as white had higher initial scale scores, though their rate of development was not significantly different from those of other ethnicities. For home languages, Spanish speakers had significantly lower slopes in listening/speaking and writing.
The last variable that was studied was socioeconomic status. Other studies have determined that socio-economic status has a significant effect on second language vocabulary comprehension (Deanda et al., 2016; Prevo et al., 2015). In this study, SES was significant across CELLA tests when it came to the starting points as the intercepts of the scores for ELs with low socio-economic status were significant. However, the trajectories / rates of ELP seem to be similar for students with low and high socioeconomic status. This means that ELs with low SES are at a disadvantage because they enter with less developed language skills.

**Limitations**

This study had several limitations which are important to note. The study was a secondary analysis of existing data which means that the researcher was limited to the use of available data. Though LGC does allow for missing data, the amount of data missing may be an issue. The study explored the growth of English Proficiency during the elementary school years of one cohort of students: EL students who attended 5th grade in the district’s schools during the 2014-2015 school year. The study was limited to retroactive data provided for a group of students rather than data collected longitudinally on a specific group. This means that students who were ELs in 2010 but not in 2015 were not necessarily included in the sample. The same applies to students who may have exited the ESOL program more than two years prior to the 2014-2015 school year.

Another challenge is that once the students exited the E.S.O.L. program there was no more data for that student. In some cases, the ELs might have reached a proficient score early and hence no further data gathered. This may have caused a leveling off, or ceiling effect of the ELP trajectories and one of the reasons the regression coefficients of most predictors for
quadratic slopes were not significant. Though the model fit indices showed that the conditional model had the best fit, this may limit the generalization of the results of this study.

Another challenge presented by this data set is that it only included the primary exceptionality for students in ESE. This is a problem because children with dual exceptionalities, which may affect the learner’s growth in English proficiency, would not be identified as such. Moreover, there may be students who are not identified, or are in the process of identification for exceptional education programs that are not identified as such in the data set.

Other information that was not available in the data set could have added to the research. For example, the schools and types of programs (ESOL, Curriculum Content in the Home Language (CCHL), Dual Language, etc.) that students participated in were not provided. Also, there was no way to determine prior schooling or academic achievement in the child’s home language. This information could have provided a more complete picture of the ELs. The population of this study was largely Hispanic and who spoke Spanish at home (See Table 8). The small numbers of other ethnicities and home languages do not allow for the findings to be generalized to all ELs. Therefore, the results may not be generalized to students of all ethnicities and home languages.

**Implications for Future Research**

Further studies using ELP test scores of ELs should be considered as they are the predominant tools used by educators to make decisions about ELs. The CELLA assessment is no longer being used, but similar ELP assessments that test the same language domains continue to be used by schools. It would benefit educators for similar research to be done with these new ELP measures as there are some that are currently used in more than one state and with more diverse populations.
Other language data including academic scores from state assessments could also be incorporated as they are currently used as part of gifted referral procedures. Future researchers should consider selecting a cohort and following them in their ELP growth throughout their schooling. This could be anywhere from Pre-School to College and would provide further insight into second language acquisition at different ages and levels.

Another variable that can be further investigated is the children’s home language proficiency. For this purpose, information on the children’s proficiency in their home language should be collected and analyzed. This may inform how home language may influence English language acquisition. Future studies should consider samples with larger numbers of participants with varying home languages.

Future research of ELP could also provide more information in identifying exceptionalities in ELs. Further investigations could include the ELP development of students with disabilities. In this case, the different exceptionalities should be considered as possible variables. Based on this study, listening and speaking domains where significant for both SWD and gifted ELs. Both fields would benefit from further research on how ELs develop in these areas.

**Implications for Practice and Teacher Professional Development**

To identify talent in ELs, they should be compared to other ELs. Those in the best position to do this are the teachers who work with them daily. Therefore, educators need to provide opportunities for ELs to show what they can do. The findings of this study suggest that in order to identify talent in ELs, teachers should consider their English language development in multiple domains, specifically in listening, speaking and writing.
Most of the standardized and classroom assessments given to students focus on decoding and reading comprehension. Teachers would need to make sure they provide ample opportunities for ELs to express themselves, both orally and in written form, in order to compare their progress in these areas which seem to be key to identifying talent in ELs.

Teachers are often the ones who make the decision to refer students for exceptional education programs. Apart from teacher training in how to teach ELs, there should also be training on how to identify talent in this population. If teachers are provided with guidance as to what to look for and how to create opportunities for ELs to show their talents, they would be more likely to refer students to get tested for possible gifted identification.

**Conclusion**

The present study found that, in this sample of ELs, gifted students do seem to have a faster rate of ELP growth than their non-gifted peers. This was specifically evident in the listening/speaking and writing domains of the CELLA test. Though further studies need to be made with more diverse samples of ELs, this study provides a starting point and provides educators with the option of using English Proficiency tests in another way. This is readily available tool, that when combined with others, can assist in identifying ELs who may be gifted.
REFERENCES


doi:10.1080/02783190209554134


gifted education: Understanding our most able students from diverse backgrounds. (pp. 305-313). Waco, TX, US: Prufrock Press.


doi:10.1017/S1366728914000820


Special instructional programs for students who are gifted, 6A-6.03019 C.F.R. (2002).


APPENDICES
Appendix A: Correlations Between CELLA Listening, Reading, and Writing Subtests

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<tr>
<th>Grade</th>
<th>Listening</th>
<th>Reading</th>
<th>Writing</th>
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<tbody>
<tr>
<td>Grade 1 (n =2985)</td>
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<td></td>
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<tr>
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<tr>
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<td>3. Writing</td>
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<td>Grade 3 (n =3839)</td>
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</tr>
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<td></td>
</tr>
<tr>
<td>2. Reading</td>
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</tr>
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<td>3. Writing</td>
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<tr>
<td>3. Writing</td>
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<td>Grade 5 (n =2985)</td>
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All correlations are significant at the 0.01 level (2-tailed).
Correlations for Individual CELLA Subtests Grades1-5
Appendix B: Correlations for Individual CELLA Subtests: Listening, Reading, and Writing

<table>
<thead>
<tr>
<th>Test</th>
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Reading

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<th>4th Grade</th>
<th>5th Grade</th>
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Writing

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All correlations are significant at the 0.01 level (2-tailed).
Appendix C: Initial IRB Approval Letter

7/15/2016

Myriam Lindo
Teaching and Learning
4202 E. Fowler Ave., EDU 105
Tampa, FL 33620

RE: Expedited Approval for Initial Review
IRB#: Pro00025379
Title: Differences in English Language Proficiency Growth: A Possible Indicator of Giftedness for English Learners
Study Approval Period: 7/14/2016 to 7/14/2017

Dear Ms. Lindo:

On 7/14/2016, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents contained within, including those outlined below.

Approved Item(s):
Protocol Document(s):
Protocol

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(5) Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis).

Research Involving Children as Subjects (45 CFR §46.404)
Per CFR 45 Part 46, Subpart D, this research involving children was approved under the minimal risk category 45 CFR 46.404: Research not involving greater than minimal risk.
Your study qualifies for a waiver of the requirements for the informed consent process for this retrospective chart review as outlined in the federal regulations at 45CFR46.116 (d) which states that an IRB may approve a consent procedure which does not include, or which alters, some or all of the elements of informed consent, or waive the requirements to obtain informed consent provided the IRB finds and documents that (1) the research involves no more than minimal risk to the subjects; (2) the waiver or alteration will not adversely affect the rights and welfare of the subjects; (3) the research could not practicably be carried out without the waiver or alteration; and (4) whenever appropriate, the subjects will be provided with additional pertinent information after participation.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval via an amendment. Additionally, all unanticipated problems must be reported to the USF IRB within five (5) calendar days.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

[V. Jorgensen, M.D.]

E. Verena Jorgensen, M.D., Chairperson
USF Institutional Review Board
7/9/2017

Myriam Lindo
USF Teaching and Learning
4202 E. Fowler Ave., EDU-105
Tampa, FL 33620

RE: Expedited Approval for Continuing Review
IRB#: CR1_Pro00025379
Title: Differences in English Language Proficiency Growth: A Possible Indicator of Giftedness for English Learners

Study Approval Period: 7/14/2017 to 7/14/2018

Dear Ms. Lindo:

On 7/7/2017, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents contained within including those outlined below.

Approved Item(s):
Protocol Document(s):

Protocol

The IRB determined that your study qualified for expedited review based on federal expedited category number(s):

(5) Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for non-research purposes (such as medical treatment or diagnosis).

Per CFR 45 Part 46, Subpart D, this research involving children continues to be approved under the minimal risk category 45 CFR 46.404: Research not involving greater than minimal risk.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with USF HRPP policies and procedures and as approved by the USF IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment. Additionally, all unanticipated problems must be reported to the USF IRB within five (5) calendar days.
We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

[Signature]

John Schinka, Ph.D., Chairperson
USF Institutional Review Board