EFFECT OF PRE-KINDERGARTEN EDUCATION ON LANGUAGE AS MEASURED BY THE
PRESCHOOL LANGUAGE SCALE—FOURTH EDITION

by
Ryan Y. So

An abstract
of thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science
in the Department of Communication Disorders and Social Work
University of Central Missouri

October, 2014
ABSTRACT

by

Ryan So

Socioeconomic status has a major effect on a child’s learning and development. Children of low socioeconomic status often have lower abilities than peers of higher socioeconomic status (U.S. Department of Education, 2007a; 2007b). The Head Start program was designed to reverse the negative effects of low socioeconomic status. The present study uses the Preschool Language Scale—Fourth Edition to compare the expressive and receptive language of three groups of kindergartners: those who attended a Head Start facility (HS+), qualified for Head Start but did not attend (HS-), did not qualify for Head Start due to income (NQ). One-Way ANOVAs comparing groups’ expressive and receptive language were statistically significant. Lastly correlations were run language and items from a parent survey, and maternal education, pre-kindergarten education, household income, and number of times moved before kindergarten were correlated with expressive and receptive language.
EFFECT OF PRE-KINDERGARTEN EDUCATION ON LANGUAGE AS MEASURED BY THE PRESCHOOL LANGUAGE SCALE—FOURTH EDITION

by

Ryan Y. So

A Thesis
presented in partial fulfillment
of the requirements for the degree of
Master of Science
in the Department of Communication Disorders and Social Work
University of Central Missouri

October, 2014
EFFECT OF PRE-KINDGARTEN EDUCATION ON LANGUAGE AS MEASURED BY THE
PRESCHOOL LANGUAGE SCALE—FOURTH EDITION

by

Ryan Y. So

October, 2014

APPROVED:

Thesis Chair: Dr. Nancy Montgomery
Thesis Committee Member: Dr. Robert de Jonge
Thesis Committee Member: Dr. Carlotta Kimble
Thesis Committee Member: Dr. Gregory Turner

ACCEPTED:

Chair, Department of Communication Disorders and Social Work: Ms. Jean Nuernberger

UNIVERSITY OF CENTRAL MISSOURI
WARRENSBURG, MISSOURI
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF FIGURES AND TABLES</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>vii</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER 1: NATURE AND SCOPE OF EXPERIMENT</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale</td>
<td>1</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>1</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>2</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER 2: REVIEW OF LITERATURE</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER 3: METHODOLOGY</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER 4: RESULTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER 5: DISCUSSION</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REFERENCES</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APPENDICES</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Parent Survey</td>
<td>28</td>
</tr>
<tr>
<td>B. IRB Approval</td>
<td>30</td>
</tr>
<tr>
<td>C. Parent Consent Form</td>
<td>31</td>
</tr>
<tr>
<td>D. Verbal Assent Form</td>
<td>33</td>
</tr>
</tbody>
</table>
List of Tables

Table

A. Correlations Between Language and Survey Items...........................................17
CHAPTER 1
NATURE AND SCOPE OF THE EXPERIMENT

Rationale

Children of low socioeconomic status (SES) homes face a myriad of challenges that impact learning. The US government has implemented a number of programs to assist Americans in poverty. Head Start is a program designed to improve school readiness by providing education services to low income families (Improving Head Start for School Readiness Act of 2007, 2007). The current literature indicates Head Start students experience gains in language while in Head Start although the effects fade through kindergarten and first grade (Puma et al., 2012). The current study compares the expressive and receptive language skills of low-income kindergartners who did and did not attend Head Start and also compares those groups to kindergartners who did not attend Head Start because their family income is too high. A gap exists in the literature comparing Head Start students to those of high and middle SES. Head Start’s main mission is to bridge disparity that SES might have on school readiness so it is important to compare Head Start children to those who are ineligible for the services.

Purpose of the Study

The purpose of the study is to determine: (1) if kindergartners who received Head Start services have language abilities greater than kindergartners who qualified for Head Start but did not receive Head Start services, (2) how the language abilities of children who received Head Start services compare to their high- and middle-SES peers, (3) what environmental factors have a correlation with expressive and receptive language.
Hypotheses

It is hypothesized the children who receive Head Start services have higher language skills than children who qualify for Head Start but did not receive the services. This will be indicated by higher scores on the Expressive Communication and Auditory Comprehension subtests on the Preschool Language Scale—Fourth Edition (PLS-4). It is hypothesized children who received Head Start education benefitted from the services and that those services helped combat some of the negative effects of being raised in a low SES home.

It is hypothesized the children who received Head Start services before attending kindergarten will have language skills below the children of high and middle SES. These children are not eligible for Head Start services because their family income is too high. Although the Head Start program is designed to eliminate the SES gap, a Head Start education alone will not be able to change domestic challenges that children of high and middle SES do not face.

Finally, it is hypothesized that maternal education, type of pre-kindergarten education, household income, parent’s marital status, and the number of times the child moved before kindergarten will be correlated with the children’s language skills. Many of these factors contribute to SES, and it is anticipated those differences will be correlated with language skills.

Definition of Terms

Language. Language is defined as a shared, rule-governed coding system to communicate concepts of otherwise meaningless symbols (Owens, 2012). All subjects in this study are native speakers language, English. Language is examined in two domains: expressive and receptive. Expressive language is the ability to share language with others. Receptive language is the ability understand language. The study quantifies language using the Preschool
Language Scale—Fourth Edition. Reed (2005) states expressive and receptive language are both distinct skills that are not always in sync with each other. Research by Pungello, Iheoma, Iruka, Dotterer, Mills-Koonce, and Reznick (2009) uncovered that SES affected expressive language development, while it did not affect receptive language development. This study examines expressive and receptive language separately versus language as a whole since the two are distinct skills that can be measured separately and since previous research has shown that SES can affect on and not the other.

Socioeconomic Status. For the purposes of this paper, SES will be defined using the description of SES American Psychological Association’s (APA) Report of the APA Task Force on Socioeconomic Status (2007). SES is a widely used term to describe the well-being of individuals or groups. Many different fields have studied SES and factor different components into determining SES, but the APA uses education, income and occupation to define SES. Education is singled out as the most important factor of SES since it often dictates the amount of income and type of education. The APA does not recommend a dollar amount to separate SES group. For this study, children of low SES will be considered those whose family income is below the poverty line, which makes them eligible for Head Start services. Children above the poverty line will be considered of high and middle-SES. Occupation, as defined by APA, is difficult to measure, but is factored into SES because employment brings increased social networking and self-satisfaction.

School Readiness. School readiness is defined as the preparedness for kindergarten of a preschool student based on a combination of cognitive, social, and emotional skills, as outlined in the Improving Head Start for School Readiness Act of 2007 (Head Start Act, 2007). Telegdy (1974) found a relationship between SES and school readiness in kindergartners. The research
uncovered that kindergartners of low SES score significantly lower on school readiness measures compared to those of middle SES. Head Start’s main goal is to increase school readiness in children of low SES by improving cognitive, social, and emotional development through direct education with the children and parental education.
CHAPTER 2
REVIEW OF LITERATURE

Language Development and Socioeconomic Status

Current research suggests SES plays a role in the language development of children and has an impact on children throughout their schooling. The U.S. Department of Education (2007a; 2007b) report children of low SES have lower cognitive abilities compared to their mid-SES peers, and the trend continues beyond kindergarten. More specifically, language development is greatly affected because of SES. Roseberry-McKibbin (2013) states that poverty does not cause low language skill children but there is a relationship between low SES and low language abilities. This can be explained because the amount and quality of language each child is exposed to in their home is variable. However, various aspects of poverty such as hunger, limited access to services, unsafe living conditions, and low levels of parental education are also associated with low language skills (Roseberry-McKibbin, 2013). Worried about survival, low SES families are less concerned with academic and linguistic development.

Children of low SES are at risk for developing language slower than their high and middle SES peers. Pungello et al. (2009) found that children of low SES developed expressive language slower than children from higher SES families. West, Denton, and Germino-Hausken (2000) determined that children of families who received public assistance and children of mothers with low education levels performed lower on language and early literacy measures. All other variables equal, Hart and Risley (1995) studied what home factors separated children’s language abilities between high, middle, and low SES. They discovered caregivers of high and middle SES talked more to their children compared to caregivers of low SES. This is likely due to the amount of time high and middle SES parent spend with their children at home. They estimated that children of low SES would have to listen to the same amount of language as their middle...
Effect of Pre-Kindergarten Education

SES peers for 40 hours a week in a preschool setting for the amount vocabulary exposure comparable their middle SES peers. While unrealistic, this shows the gravity of SES and its potential impact on language development.

**Factors Influencing Language Development**

Each child develops language differently and a multitude of factors determine how children develop language, including their home environment and educational experiences. Maternal education, race/ethnicity, age, and home literacy education all impact language and vocabulary skills (Pungello et al., 2009; Hammer, Farkas, & Maczuga, 2010; Paul & Norbury, 2012) so one can see how variable language development can be beyond just household income.

West and colleagues (2000) completed a longitudinal cohort study on a nationally representative sample of approximately 22,000 kindergartners. Their research analyzed the skills, knowledge, and experiences of kindergartners and the factors that affected those areas. One of the areas they investigated was cognitive skills and knowledge, which included language and literacy skills. They found that girls performed better than boys in terms of reading skills. Maternal education also played a large part in their cognition and knowledge. Overall, increased performance on cognition and knowledge assessments was related to an increase in maternal education. They also found children from two-parent homes performed better on reading proficiency.

Wood, Halfon, Scarlata, Newacheck, and Nessim (1993) studied the relationship between the number of times families relocated and its effect on child development. Univariate analyses indicated a relationship between developmental delays, including learning disabilities, and moving. Accounting for covariates, they did not find a link between developmental delays and relocation; however, children who moved frequently were at a greater risk of repeating a grade.
Children with low SES were more likely to repeat grades and were also more likely to relocate more frequently. Frequent moving is connected to inconsistency and interruptions in relationships for children. Instability in the home is frequently associated with children from low SES home and this instability may contribute to the lower language skills of children from low SES homes.

**Pre-Kindergarten Education**

Education prior to public schooling greatly impacts language development and a child’s future success in school. Magnuson, Meyers, Ruhm, and Waldfogel (2004) studied how a preschool education affects children on math and reading assessments. They found the children who attended a center or school-based program before kindergarten performed better on those assessments; this trend was also seen when the children were assessed during their kindergarten and first grade years. In addition to benefits in math and reading, language is also likely to benefit from attending a preschool program. The Institute of Child Health and Human Development (NICHD, 2006) completed a prospective longitudinal study on child care in the US and its effects on intellectual and language development, among other factors. The study examined approximately 1,000 children from infancy through about the age of four-and-a-half. Researchers examined the quality, quantity, and type of child care experiences and how those variables affected development. The study concluded that those children who attended a center-based program exhibited better language abilities and pre-kindergarten skills than those who had less center-based exposure. Children who attended higher quality childcare developed language more effectively; however, the amount of time spent in childcare appeared to have no effect on language development.
Barlow (2012) reported kindergarten teachers seeing larger gains from children who received a pre-kindergarten education versus those who did at the end of their kindergarten school year. Preschool programs give children multiple advantages over children who do not attend a center or school-based program. The authors found that lower SES groups saw the largest effects after attending a preschool program. While preschool programs cannot control home environment, the benefits of a preschool program outweigh not attending a program, especially for children of low SES. Like variability in home environment, quality of center-based and home-based pre-kindergarten programs is variable.

**Head Start**

The Head Start program began in 1965 to help combat the negative effects low SES has on preschool-age children. The program provides preschool instruction as well as parental education to low income families (Puma et al., 2012). School readiness is often used as a measure of success for preschool programs, and the Head Start Act (2007) uses school readiness as its main goal. After all, the purpose of pre-kindergarten programs is to equip children with the necessary skill to be successful in public school. Selman (2005) found a significant correlation between SES and school readiness. She also found a preschool education improves school readiness. Children of low SES are at a disadvantage when they reach public education. Since children who attend a preschool program are more prepared for school, all children, especially those of low SES should be a part of some type of preschool education. McWayne, Cheung, Wright, and Hahs-Vaughn (2012) found the transition from pre-kindergarten to kindergarten has lasting effects on students well into the elementary school years. Ultimately, factors specific to each child (maternal education, parenting style) and preschool environment (teacher education,
adult-to-child ratio) proved the biggest predictors of kindergarten success (McWayne et. al, 2012).

Puma et al. (2012) completed a congressionally-mandated report to study the impact of Head Start. The study measured the impact of Head Start on a nationally-representative sample of 5,000 3- and 4 year olds from their arrival into Head Start through first grade. The study compared Head Start students against a control group who were financially eligible for the Head Start program but, instead, attended a variety of early childhood experiences or no early childhood experience. The study determined Head Start students scored moderately higher on measures of language versus students who were eligible for the services but did not receive the Head Start services, but the effects were not maintained through kindergarten and first grade. Overall, the researchers determined Head Start students significantly outperformed their like-SES peers on all other measures of preschool experience.

Most of the Head Start programs were considered high quality and prioritized language and literacy development but the quality of each center varied based on instruction for students and training of staff. Although quality varied from center to center, the children who received Head Start services performed significantly better on measures of cognitive, social-emotional, health and parenting outcomes (Puma et al., 2012). Resnick and Zill (1999) studied the quality of Head Start programs and concluded the quality of Head Start classrooms are better than the quality of most center-based programs, based on scores of standardized observational scales. They did find, however, the quality of Head Start programs varied based on the community.

**Summary**

Children of low SES are at risk for lower language and cognitive abilities compared to their middle and high SES peers. A lack of resources creates many challenges for low SES
families. Head Start is a program designed to provide services to families of low SES, educational and otherwise. Head Start has shown to have a positive effect on the children who receive its services.
CHAPTER 3
METHODS

Participants

Study participants included 69 kindergarten students, all who were monolingual native-English speakers and had no diagnosis of a developmental disability. Participants came from a largely rural community and were recruited via a letter of invitation to participate sent through the children’s kindergarten classroom teacher, with permission from the school district’s superintendent. If a parental consent form was received, the child fit the above criteria, and the child gave assent for participation in the study, they were included in the study. All participants were Anglo-European American except for one African American participant.

The students were divided into three groups: students who received services from a Head Start facility (HS+), students who were financially eligible to receive services from Head Start but did not receive services (HS-), and students who could not qualify for Head Start because their family’s income was too high (NQ). There were 7 subjects in the HS+ group, 13 subjects in the HS-, and 49 subjects in the NQ group. The children who did not attend a HS facility reported a variety of pre-kindergarten experiences including but not limited to the following: preschool, daycare, or at-home care.

Materials

Preschool Language Scale—Fourth Edition. The PLS-4 is a standardized test for language skills in children ages birth to 6 years, 11 months. The assessment consists of two subtests: Auditory Comprehension and Expressive Communication. The Auditory Comprehension portion measures receptive language (how much a child understands), and the Expressive Communication section measures expressive language (how well a child communicates information). The two subtests can be combined to get the child’s total language
score, but, for this study, Expressive Communication and Auditory Comprehension standard scores were analyzed separately (Zimmerman, Steiner, & Pond, 2002).

Based on a review of literature on the PLS-4, the researcher determined that the test would be an appropriate measure of expressive and receptive language for the subjects in the study. Zimmerman, Steiner, & Pond (2002), the creators of the PLS-4, extensively evaluated the reliability and validity of the assessment. They found test-retest reliability coefficients varied between .82 and .95 for both subtests. Inter-rater reliability for the test showed a 99% agreement. The high inter-rater reliability for the PLS-4 was a key factor in choosing this test because this study has more than one judge. The assessment’s content was vetted through an extensive literature review and a survey sent to consumers of the assessment. Clinical validity was measured finding sensitivity and specificity on a sample of 150 people. Sensitivity was .80 and .77 for Auditory Comprehension and Expressive Communication, respectively. Those figures represent the percentages of children correctly identified with a language disorder. Specificity for Auditory Comprehension and Expressive language was .92 and .84, respectively. Those figures represent the percentages of children with typically developing language who were identified as not having a language disorder. Measure of sensitivity and specificity are important for this study because assessments will be administered to kindergartners who are developing language typically and atypically. Several studies have complimented the PLS-4 on its excellent validity and reliability (Qi & Marley, 2011; Sidarta, Tulaar, Amendi, & Suryanto, 2008; Zimmerman & Castilleja, 2005). The reliability and validity of the PLS-4 made the assessment an ideal tool to measure the language skills of the participants in this study.

The PLS-4 was used with permission of Pearson. Each clinician administered the entire PLS-4 to one child at a time. Clinicians were randomly assigned which children they would
administer the test to and were unaware of background information on the children they were testing. Testing took place in the child’s school building in areas with minimal distractions.

**Parent Survey.** The researcher created a parent survey, which was designed to gather information about the children’s domestic environment and pre-kindergarten education. The survey questions were crafted using suggestions from Barlow (2010) who suggested writing effective survey questions by formulating questions that are concise, easily comprehensible to the general public, offer clear choices that will satisfy all populations in the study, and avoid leading to particular responses. Before the surveys were distributed to subjects’ parents/guardians, several individuals including parents and child development specialists were asked to review to review the survey and give feedback on the survey’s content.

The survey’s content included questions regarding child’s mother’s age, marital status of parents, race/ethnicity, maternal education, child’s pre-kindergarten education, number of times the family has moved since the child was born and household income. Questions about the child’s first language and presence of a medically diagnosed developmental disability were used as qualifiers for the study. Additional questions were presented on the survey but were not used in the study, as they did not pertain to the study’s focus. See Appendix A for the survey’s content. Correlations were run with some of the survey information and used to explore the third hypothesis of the study.

**Procedures**

Five graduate students majoring in Communication Disorders were trained by a certified speech-language pathologist to administer the PLS-4. Additional information about the kindergarteners was obtained through the survey created by the researcher. Before any data was collected, the researcher received consent from the children’s parents to test the children. The
researcher received verbal assent from the children before each test was administered. For the administration of the PLS-4, the judges determined the basal and ceiling items for each child for both subtests. The head researcher then calculated the raw and standard scores for all judges based on the identified basals and ceilings.

**Judge Reliability.**

A certified speech-language pathologist trained the graduate clinicians on the administration of the PLS-4 using the Examiner’s Manual. In addition, prior to testing the subjects, each judge administered the PLS-4 to two individuals not otherwise participating in the study. Individuals represented the approximate age level of the study’s subject. Both individuals’ responses to all items were video recorded. Video recordings were made above and below each individual’s basal and ceiling to prevent judges from being cued on the participants’ basal and ceiling item numbers. Judges verbally administered assessment and the individual’s video responses were played for each test item for the judges to score. Intraclass correlations were run to examine agreement of judges’ scores from these individuals. The intraclass correlation between all raters was 78% agreement. Interrater reliability at and above 70% agreement is generally considered satisfactory for research (Stemler, 2004).

**Statistical Analysis.**

IBM SPSS Statistics 19 software was used for statistical analyses. Separate One-Way ANOVAs were run comparing the mean expressive and receptive language scores of the three study groups (HS+, HS-, NQ). Contrasts were ran comparing each group to determine statistical significant between two groups.

The Pearson r was used to find correlations between expressive and receptive language and nominal data from the Parent Survey. Spearman’s rho was run to find correlations between
expressive and receptive language and ordinal data from the Parent Survey. Correlations will help determine what environmental factors affected the language scores on the PLS-4. All significance levels were measured at .05 using a one-tailed test.
CHAPTER 4
RESULTS

A one-way between subjects ANOVA indicated a statistically significant difference among the three study groups (HS-, HS+, NQ) for expressive language, $F(2, 66) = 7.02, p = .002$. A contrast ran between HS- and NQ indicated a significant difference, $t(66) = -3.68, p < .001$. A contrast ran between HS- and HS+ indicated no significant difference, $t(66) = -1.32, p = .191$. A contrast ran between HS+ and NQ indicated no significant difference, $t(66) = -1.130, p = .197$.

A one-way between subjects ANOVA indicated statistically significant difference among the three study groups (HS-, HS+, NQ) for receptive language, $F(2, 66) = 3.99, p = .023$. A contrast ran between HS- and NQ indicated a significant difference, $t(66) = -2.76, p = .007$. A contrast ran between HS- and HS+ indicated no significant difference, $t(66) = -.955, p = .343$. A contrast ran between HS+ and NQ indicated no significant difference, $t(66) = -1.03, p = .309$.

Correlations were calculated between expressive and receptive language and factors that influence language development. It was hypothesized that marital status, maternal education, type of pre-kindergarten education, household income, number of times moved before kindergarten, and gender were all correlated with expressive and receptive language scores. It was also hypothesized that household income and number of times moved before kindergarten would be correlated. Table A summarizes Pearson r correlations ran between expressive and receptive language and item from the Parent Survey.
Table A

*Correlations Between Language and Survey Items*

<table>
<thead>
<tr>
<th></th>
<th>Expressive</th>
<th>Receptive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>r</em></td>
<td><em>p</em></td>
</tr>
<tr>
<td>Maternal Education</td>
<td>-.37</td>
<td>.001</td>
</tr>
<tr>
<td>Pre-Kindergarten Education*</td>
<td>.34</td>
<td>.002</td>
</tr>
<tr>
<td>Household Income</td>
<td>.44</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Number of Times Moved</td>
<td>-.33</td>
<td>.003</td>
</tr>
<tr>
<td>Household Size</td>
<td>.15</td>
<td>.119</td>
</tr>
<tr>
<td>Marital Status</td>
<td>-.56</td>
<td>.323</td>
</tr>
<tr>
<td>Gender</td>
<td>.01</td>
<td>.47</td>
</tr>
<tr>
<td>Househol d Income and Number of Times Moved</td>
<td>-.39</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

The Pearson r was computed between household size and expressive language. The correlation was not statistically significant, *r*(68) = .15, *p* = .119. The Pearson r was computed between marital status and expressive language. The correlation was not significant, *r*(69) = -.56, *p* = .323. Spearman’s rho was computed between maternal education and expressive language. The correlation was statistically significant, *r* s(69) = -.37, *p* = .001. The Pearson r was computed between pre-kindergarten education and expressive language. The correlation was statistically significant, *r*(69) = .34, *p* = .002. The Pearson r was computed between household income and expressive language. The correlation was statistically significant, *r*(69) = .44, *p* < .001. The Pearson r was computed between the number of times the children moved before kindergarten and expressive language. The correlation was statistically significant, *r*(69) = -.33, *p* = .003. The Pearson r was computed between gender and expressive language. The correlation was not statistically significant, *r*(69) = .01, *p* = .47.

The Pearson r was computed between household size and receptive language. The correlation was not statistically significant, *r*(68) = .18, *p* = .071. The Pearson r was computed between marital status and receptive language. The correlation was not statistically significant,
$r(69) = .04, p = .388$. Spearman’s rho was computed between maternal education and receptive language. The correlation was statistically significant, $r_s(69) = .24, p = .023$. The Pearson $r$ was computed between pre-kindergarten education and receptive language. The correlation was statistically significant, $r(69) = .37, p = .001$. The Pearson $r$ was computed between household income and receptive language. The correlation was statistically significant, $r(69) = .42, p < .001$. The Pearson $r$ was computed between the number of times the children moved before kindergarten and receptive language. The correlation was statistically significant, $r(69) = -.27, p = .012$. The Pearson $r$ was computed between gender and receptive language. The correlation was not statistically significant, $r(69) = .14, p = .133$.

The Pearson $r$ was computed between household income and number of times moved. The correlation was statistically significant, $r(69) = -.39, p < .001$. 

CHAPTER 5
DISCUSSION

The purpose of this study was to determine: (1) If children who receive Head Start services have greater language abilities than their peers of similar SES at the onset of kindergarten, (2) how the language abilities of children who received Head Start services compare to their high- and middle-SES peers, (3) what environmental factors have a correlation with expressive and receptive language.

Question 1

Do kindergartners who received Head Start services have better language skills than those who were eligible for Head Start services but did not receive the services? Contrasts ran between HS+ and HS- groups showed no statistically significant difference between the standard scores of the groups, indicating their scores were similar. This result is likely due to the small sample size of the HS+ group. The findings do not coincide with the current literature, which shows the language abilities of Head Start children were significantly better than those who were eligible for Head Start services but did not receive them (Puma, 2012).

Question 2

The language abilities of HS+ were compared to the NQ group to determine if Head Start services made up for possible language deficits caused by low SES. Contrasts showed no statistical significance between HS+ and NQ groups. The expressive and receptive language scores of children who attended Head Start are statistically similar to their high and middle SES peers. This finding does not agree with the work of Hart and Risley (1995), who found the language of low SES children continued to develop behind their high SES peers, even when given identical an educational experience. This study’s findings were likely not statistically significant due to the small size of the HS+ group.
Effect of Pre-Kindergarten Education

Question 3

Responses from the parent survey were ran as correlations with the expressive and receptive scores from the PLS-4. The factors correlated with expressive and receptive language include: maternal education, type of education before kindergarten, household income, and number of times moved before kindergarten. The researcher hypothesized that parents’ marital status would also be correlated with expressive and receptive language skills but no correlations were found in this study. Many of the factors correlated with expressive and receptive language are associated with this study’s definition of SES. Maternal education and household income, for example, are correlated with expressive and receptive language and both correspond with the education and income part of SES. The correlations suggest that low maternal education and household income are both associated with low expressive and receptive language abilities.

Correlations between expressive and receptive language and maternal education, pre-kindergarten education, household income and number of times moved before kindergarten coincide with current literature (Pungello et al., 2009; Hammer, Farkas, & Maczuga, 2010; Paul & Norbury, 2012; NICHD, 2006; Wood et al., 1993). As discussed earlier, SES is a complex ideology with a multitude of factors. The correlations seen in this study not only correspond with the literature but also identify risk factors within low SES that might raise concerns in a child’s environment. It is impossible to control every aspect of a child’s environment, but programs can evolve to address factors correlated with language.

A correlation was found between household income and the number of times moved before kindergarten. As seen in previous research, relocation was an indicator of household instability and frequent relocation has a negative effect on language (Wood et al., 1993). A negative correlation was found in this study between household income and number of times
moved indicating that the lower the household income, the greater the number of times families moved before their child entered kindergarten. Conversely, higher household income was correlated with less relocation. The correlation corresponds with likely instability seen in low SES homes. With frequent relocation, the children are less likely to have a routine and consistent exposure to language. Some families of low SES are concerned with survival needs such as food and shelter and have less time to spend with their children reducing language exposure. These findings coincide with Wood et al. (1993) indicating lower language levels in children whose family relocates frequently.

**Summary and Conclusions**

The present study examined the relationship between pre-kindergarten educational experiences, SES, and expressive and receptive language skills. The presence of the Head Start program showed no statistical improvement in language compared to their peers who were eligible for the program but did not attend. The language abilities of children who attended Head Start were also not statistically different than their high and middle SES peers. The small sample size of the HS+ group likely impacted the statistical significance in this study.

Correlations between expressive and receptive language and the survey items are on target with trends in the literature. Maternal education, type of pre-kindergarten education, household income, and number of times moved before kindergarten were all correlated with expressive and receptive language. Since a multitude of factors contribute to SES, knowing which factors correlate with language will assist in identifying what combinations of those factors puts children at greatest risk for language abilities lower than their peers.
Limitations

The primary limitation of the study exists due to the absence of a robust sample size, which affected generalizability and statistical significance. Parents of high- and mid-SES gave consent in higher numbers than low-SES parents. This affected the number of participants in each group greatly. The small sample size for HS+ group likely affected the outcome of the One-Way ANOVA and contrasts. Future research should attempt robust and equal group sizes between all groups.

Testing of the children was attempted to be as early in the school year as possible to limit the effect of the kindergarten academic experience on the language skills of participants. Because of this, the researcher found it necessary to train five clinicians so that testing could be completed in a timely manner, before the children had been in kindergarten too long. Judge reliability would likely improve with a decreased number of judges. The testing occurred approximately one and a half months into the children’s school year. Future research should test the students as soon as the children start kindergarten, or even before school year starts.

The only instrument used to study expressive and receptive language was the PLS-4. A greater battery of assessments including other tests and language samples would provide a more comprehensive view of the children’s language. Future research should carefully consider content of assessments and a battery of assessments to measure expressive and receptive language.

Implications

Future research should continue target comparisons between all three groups from this study with greater number of subjects in HS+ and HS- groups. The majority of current literature compares HS+ and HS- children, but it will be important to compare the abilities of children who
attend Head Start with their high and middle SES peers. After all, the goal of Head Start is to eliminate barriers caused by low SES. Continued comparisons of all three groups will be important in justifying future funding of the Head Start program.

Many of the correlations from this study are consistent with the literature and validate continued factors influencing language development. While SES is a complex concept, knowing the factors impacting language development provide red flags to identify which individuals might have language deficits and can help shape programs designed to combat aspects of low SES and its negative effect on language.
References


*Report of the APA Task Force on Socioeconomic Status.* Washington, DC:

American Psychological Association.

Barlow, C.G. (2012). *Pre-kindergarten education: Is there a relationship between pre-
kindergarten participation and student achievement?* (Doctoral dissertation). Retrieved from Dissertations and theses. (3514662)


*Language, Speech, and Hearing Services in the Schools, 41*, 70-83.


APPENDIX A
PARENT SURVEY

Parent Survey

Your Child’s Sex (Circle One): M / F  Your Child’s Date of Birth: 

Mother’s Age: 

Describe your marital status (Check One):

____ Single  ____ Married  ____ Divorced  ____ Other, Describe______________________________

Your race/ethnicity (Check One):

____ White  ____ African American  ____ Asian/Pacific Islander  ____ Latino

____ Other: Describe:__________________________________________________________

Mother’s Education (Check One):

____ Did not complete high school
____ High School Diploma/GED Earned
____ Some College
____ Associate’s Degree/Professional Certificate
____ Bachelor’s Degree
____ Beyond Bachelor’s Degree
____ Other, Describe:________________________________________________________

Does your child have a medically diagnosed development disability (Circle One): Y / N

Is your child enrolled in kindergarten for the 2013-2014 school year? (Circle One): Y / N

Which best describes the type of education your child received before attending kindergarten (Check One)?

____ No education  ____ Home education  ____ Head Start education

____ Daycare education  ____ Preschool education

How many years did your child receive the service mentioned above? _____ years

How many days per week did your child receive the service mentioned above? _____ days

What is your family’s household income (Check One)?

____ $0-$9,000  ____ $10,000-$19,000  ____ $20,000-$29,000  ____ $30,000-$39,000

____ $40,000-$49,000  ____ $50,000-$59,000  ____ $60,000-$69,000  ____ $70,000-$79,000

____ $80,000-$89,000  ____ $90,000-$95,000  ____ $100,000+
How many children are in your household?

Before starting kindergarten, did you feel your child was ready to attend kindergarten? Why or why not?

Describe the reading experiences your child had before kindergarten (at school/home).

Was English the first language your child learned (Check One)?  _____Yes  _____No

Are any other languages spoken in your home (Check One)?  _____Yes  _____No

Has your family moved since your kindergartner was born (Check One)?  _____Yes  _____No
If yes, how many times?  _____times
9/11/2013

Ryan So
rso21350@ucmo.edu

Dear Ryan So,

Your research project, 'The Language Skills of Kindergarten- Age Children Who Received Head Start Services Versus Those Who Did Not', was approved by the Human Subjects Review Committee on 9/11/2013. Your informed consent is also approved until 9/11/2014.

Please note that you are required to notify the committee in writing of any changes in your research project and that you may not implement changes without prior approval of the committee. You must also notify the committee in writing of any change in the nature or the status of the risks of participating in this research project.

Should any adverse events occur in the course of your research (such as harm to a research participant), you must notify the committee in writing immediately. In the case of any adverse event, you are required to stop the research immediately unless stopping the research would cause more harm to the participants than continuing with it.

At the conclusion of your project, you will need to submit a completed Project Status Form to this office. You must also submit the Project Status Form if you wish to continue your research project beyond its initial expiration date.

If you have any questions, please feel free to contact me at the number above.

Sincerely,

Janice Putnam Ph.D., RN
Associate Dean of The Graduate School
putnam@ucmo.edu
APPENDIX C
CONSENT FORM

Identification of Researchers: This research is being done by Ryan So, a graduate student in the Communication Disorders Program at University of Central Missouri.

Purpose of the Study: The purpose of this study is to find out how kindergarteners’ pre-kindergarten education experience affected their language skills.

Request for Participation: We are inviting you and your child to participate in a study about the language abilities of children who are enrolled in kindergarten. It is up to you whether you would like to participate. If you decide not to participate, you will not be penalized in any way. You can also decide to stop at any time without penalty. If you do not wish to answer any of the questions, you may simply skip them. You may withdraw your data at the end of the study. If you wish to do this, please tell us before you turn in your materials. Once you turn in the materials, we will not know which survey or test is yours.

Exclusions: Your child must be enrolled in kindergarten for Fall 2013. Your child must exclusively speak English and have no medical diagnosis of a developmental disability.

Description of Research Method: Parents/guardians will complete consent forms and the children will verbally assent to participating in the study. This study involves you completing a short survey. The surveys will ask you about your age, gender, annual income, marital status, education, your child’s education experiences, and other factors that influence language skills. The study also involves your child completing a comprehensive language assessment. The language assessment in this study, unlike the short language screenings all kindergartners take, will provide us with valuable information that compares your child’s language skills to his or her peers. This study will take approximately 30-45 minutes to finish.

Privacy: All of the information we collect will be kept confidential. We will not record your name or any information that could be used to identify you.

Explanation of Risks: The risks associated with participating in this study are similar to the risks of everyday life. No physical harm is anticipated due to the nature of the tasks being performed (i.e., talking, sitting, filling out a survey). The students will miss approximately 30-45 minutes of class while participating. To prevent the consent form and questionnaire from getting lost when you send them back, they will be returned in the sealed envelope we provided for you with the researcher’s name on the envelope.

Explanation of Benefits: You and your child will benefit from participating in this study by getting firsthand experience in language development research. Some of the questions from the survey might get you thinking about language and literacy experiences your child has at home and at school. You can also receive a free evaluation of your child’s language by participating.

Sharing Information: Our assessment helps determine how close your child’s language skills are to his or her peers. The researcher has permission to share the assessment results with you, the parent/guardian and the child’s classroom teacher.
Questions: If you have any questions about this study, please contact my advisor Dr. Nancy Montgomery. She can be reached at nmontgomery@ucmo.edu or at (660) 543-8816. If you have any questions about your rights as a research participant, please contact the Human Subjects Protection Program at (660) 543-4621.

If you would like to participate, please sign a copy of this letter and return it to me. The other copy is for you to keep.

I have read this letter and agree for me and my child to participate.

Parent/Guardian Signature: ____________________________

Parent/Guardian Name Printed: ____________________________

Name of Child: ____________________________

Date: ____________________________
Verbal Assent Form

My name is Ryan. I am trying to learn about how you talk. I’d like you to help me.

You can help me by looking at some pictures and toys with me.

By helping me out today, you will look at some cool pictures and have fun talking with me.

Your parents and teacher know you’re helping me out, but no one else has to know. If you don’t want help or don’t want to help later, no one will be mad or upset with you.

Do you want to help me?

__________________________  ________________________
Signature of Witness      Date

__________________________
Printed Name of Witness

__________________________
Printed Name of Parent/Guardian

__________________________  ________________________
Signature of Researcher     Date