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Interaction Effects of Socioeconomic Status on Emerging Literacy and Literacy Skills among  
Pre-kindergarten and Kindergarten Children: A Comparison Study

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### Abstract

Socioeconomic differences in children's reading and educational outcomes have been thoroughly documented throughout literature. Bobalik, Scarber, and Toon (2017) examined the link between socioeconomic status (SES) and classroom instruction on emerging literacy skills in pre-kindergarten children. The results supported the theory that children identified as belonging to a low socioeconomic status enter school with lower emerging literacy skills and benefit most from academic instruction; these children's literacy skills substantially increased throughout the academic year, growing closer to those of their peers who were identified with a high socioeconomic status. The aim of the present study was to expand our understanding of the interaction effects of socioeconomic status and curriculum on emerging literacy and literacy skills by continuing the research into kindergarten. This study examined whether 1) differences in groups continued to grow closer to the mean or 2) the differences in groups became greater with the introduction of reading skills in kindergarten. Children (N=33) were recruited from a private school and a public school. The children from the public school who qualified for the Federal Poverty Guidelines for free/reduced lunch were assigned as having a low socioeconomic status, and children from the private school were assigned as having a high socioeconomic status. *The Phonological Awareness Literacy Screening – K (PALS-K)* was used to measure the literacy skills in the kindergarten children. Results of the study indicated that literacy scores between the socioeconomic groups were not significantly different at the kindergarten level, however differences between the mean scores of the pre-kindergarten and kindergarten groups were found to be significant.

## Introduction

Early literacy skills provide a foundation for later literacy development and academic success. Children enter school with a wide range of oral language, phonological awareness, and print knowledge skills (Storch & Whitehurst, 2002). Butler, Marsh, Sheppard, and Sheppard (1985) noted that these differences are developed and ingrained at an early age and appear to remain on the same trajectory throughout one's lifetime. Therefore, the question becomes, "What factors foster early literacy development?"

There has been extensive research on factors that predict literacy success and the common theme has been the home literacy environment and children's experiences with books and the world around them (Hamilton, Hayiou-Thomas, Hulme, & Snowling, 2016; Strickland & Riley-Ayers, 2006). Educators can suspect that a child who does not have access to these experiences may not develop the early literacy skills needed to succeed in reading and likely fall behind their peers as they begin school.

Home literacy environment relates to literacy-based interactions and the attitudes experienced by children in the home (Hamilton et al., 2016). These interactions can be categorized as formal, those that involve direct teaching of the printed word, or informal, those where the primary focus is not the printed word (Senechal & Lefevre, 2002). Informal interactions such as shared-storybook reading provide opportunities for exposure to vocabulary and print awareness in addition to encouraging the child's interest in books (Montag, Jones, & Smith, 2015; Whitehurst, Falco, Lonigan, Fischel, Debaryshe, Valdez-Menchaca, & Caulfield, 1988). Formal interactions, such as teaching letter knowledge, do not appear to be the focus in

the majority of home environments; however, studies have shown that this type of interaction is seen more often when a child's literacy skills are slower to develop. A variety of aspects however, may affect the type of home literacy interaction and frequency of those interactions, specifically socioeconomic status (SES) and home culture.

In 2014, the National Center for Children in Poverty reported that 47 percent of children in the United States under the age of three lived in households identified as low-income (Jiang, Ekono, & Skinner, 2016). Previous studies found the effect of low SES on academic development, specifically literacy skills, significant and unyielding (Aikens & Barbarin, 2008; O'Korat, 2005). Nores and Barnett (2014) reported that children in households with incomes in the lowest 20 percent are 20 months behind children from the top 20 percent when entering kindergarten. These achievement gaps lead to increased high school dropout rates, decreased college attendance, and lower wages in adulthood (Aud, Fox, & Kewal Ramani, 2010).

The home literacy environments and experiences of lower SES groups differs greatly from those in middle to upper class groups. The effect of an array of factors may be attributed to the underdeveloped literacy skills of children identified as low-income. Parent(s) and/or caregiver(s) educational level, parent(s) involvement in education and joint reading, limited access to literacy tools (books, news-papers, computers), and less overall reading opportunities are factors that have been linked to lower literacy skills in kindergarteners (Larson, Russ, Olson, & Halfon, 2015; Neuman & Celano, 2001). Yarosz and Barnett (2001) noted that children from low-income households are typically exposed to shared storybook reading less than their middle-class peers. Students entering kindergarten experience academic failure and continue to remain behind their peers in the acquisition of vocabulary and general knowledge when basic reading skills are not established (Foster & Miller, 2007).

The culture of a child's home may also play a factor in the degree of literacy events a child is exposed to. Literacy activities in the home environment are diverse among families. Some children may have limited exposure to home libraries while others may have a diverse home library. Owodally (2014) reported that some families stress the importance of reading for pleasure, while others may not read at all. Literacy has been identified as a culturally bound activity that is heavily influenced by the home (Heath, 1983). Heath (1983) noted that although children from lower SES may be at risk, it may be the differences in literacy practices between the home and school environments rather than the low-income factor that influences literacy development.

Recent studies have investigated the link between SES and classroom instruction on emerging literacy skills in pre-kindergarten children (Bobalik, Toon, & Scarber, 2017). Bobalik, Toon, and Scarber (2017) found that children from high SES performed significantly better on pre-instruction tasks than children from low SES; however, children from low SES performed significantly better than their peers from high SES following literacy instruction within the classroom. These results indicate that children entering school with lower literacy skills benefit more from pre-kindergarten instruction than those entering with higher literacy skills; thus, decreasing the achievement gap. It is important that as children reach school age families and schools work together to foster a positive literacy environment.

The aim of the present study was to expand our understanding of the interaction effects of socioeconomic status (SES) on literacy skills in kindergarten children. The achievement gap between high and low SES groups was investigated to determine whether it continued to close at the kindergarten level as it did in the Bobalik, Scarber, and Toon (2017) study or whether the gap between SES groups at the kindergarten level became greater with the introduction of reading

tasks. The questions motivating this study were: (1) Is there a continued relationship between SES, curriculum, and literacy skills as measured by the *Phonological Awareness Literacy Screening (PALS-K)*? (2) Is there a greater literacy learning curve at the kindergarten level in those from high SES when compared to those from low SES? (3) Will there be an interaction effect between SES groups from pre-kindergarten to kindergarten? We expect that the decreased mean differences in emerging literacy skills between high and low SES groups that occurred in pre-kindergarten, will increase in kindergarten with the introduction of reading.

## Methods

### Participants

A total of 33 kindergarten children (20 boys and 13 girls) with a mean age of six years participated in this study. They were recruited from two schools located in East Texas, one private and one public. Twenty-four children from the private school and nine children from the public school participated. All participants were monolingual English speakers with no known developmental delay or disability and had previously attended a pre-kindergarten program. This study was approved by the Institutional Review Board (IRB) at Stephen F. Austin State University.

**Socioeconomic Status Determination.** There are many criteria that qualify an individual as low SES. For this study, children were identified as low SES if family income fell within the federal guidelines for free/reduced lunch (see table 1). All children attending the private school were considered high SES, as the school requires all families to pay a tuition and does not provide free/reduced lunches to any of its students.

Table 1

*Eligibility Guidelines Free/Reduced Lunch*

INCOME ELIGIBILITY GUIDELINES											
Effective from July 1, 2017 to June 30, 2018											
HOUSEHOLD SIZE	FEDERAL POVERTY GUIDELINES ANNUAL	REDUCED PRICE MEALS - 185 %					FREE MEALS - 130 %				
		ANNUAL	MONTHLY	TWICE PER MONTH	EVERY TWO WEEKS	WEEKLY	ANNUAL	MONTHLY	TWICE PER MONTH	EVERY TWO WEEKS	WEEKLY
<b>48 CONTIGUOUS STATES, DISTRICT OF COLUMBIA, GUAM, AND TERRITORIES</b>											
1 .....	12,060	22,311	1,860	930	859	430	15,678	1,307	654	603	302
2 .....	16,240	30,044	2,504	1,252	1,156	578	21,112	1,760	880	812	406
3 .....	20,420	37,777	3,149	1,575	1,453	727	26,546	2,213	1,107	1,021	511
4 .....	24,600	45,510	3,793	1,897	1,751	876	31,980	2,665	1,333	1,230	615
5 .....	28,780	53,243	4,437	2,219	2,048	1,024	37,414	3,118	1,559	1,439	720
6 .....	32,960	60,976	5,082	2,541	2,346	1,173	42,848	3,571	1,786	1,648	824
7 .....	37,140	68,709	5,726	2,863	2,643	1,322	48,282	4,024	2,012	1,857	929
8 .....	41,320	76,442	6,371	3,186	2,941	1,471	53,716	4,477	2,239	2,066	1,033
For each add'l family member, add	4,180	7,733	645	323	298	149	5,434	453	227	209	105

United States Department of Agriculture Food and Nutrition Service. (2017).

**Design**

A correlational design with a between-subjects variable of SES level (high v. low) was employed. The independent variable was the SES of the participants and the dependent variable was the participants' literacy skills as measured by the *Phonological Awareness Literacy Screening for Kindergarten (PALS-K)*.

**Materials and Procedure**

*The Phonological Awareness Literacy Screening for Kindergarten (PALS-K)* (University of Virginia, 2010) was used to assess literacy skills. This is a comprehensive, criterion-referenced assessment of young children's foundational literacy skills that are predictive of future reading success (PALS, 2010). This assessment accurately classified the risk status of more than 90% of children screened in Kindergarten and 86% of those in first grade based on individual scores derived from the PALS-PreK administered two years earlier (Invernizzi, Landrum, Teichman, & Townswend, 2010). *PALS-K* assesses the following literacy fundamentals: rhyme awareness, beginning sound awareness, alphabet knowledge, letter sounds, spelling, concept of word, and word recognition in isolation. A summative benchmark score is obtained for each subtest. Students who do not meet the benchmark are in need of additional literacy intervention.



A parental consent form and questionnaire were sent to the parents or guardians of each kindergarten student at both schools. Only children with parental consent were selected to participate in the study. The *PALS-K* (2010) was administered according to assessment guidelines in the spring semester of the school year by graduate students specifically trained to administer the assessment and unfamiliar with the purpose of the study. Each test protocol was assigned a random number. The investigators maintained a master list with the following information: student protocol number, student name, student school, free/reduced lunch, and whether the child attended a pre-kindergarten program. Participants were individually assessed in a quiet, well-lit room to provide an optimal testing environment. Prior to administration, the clinician asked for the child's verbal agreement to begin the assessment process. The clinician provided instructions for the participant and demonstrated practice questions at the beginning of each section. After completion of the assessment the child was offered a sticker for their participation.

Following the administration of all participants, investigators scored the protocols. Information from the master list was not linked to the protocols until all scores were calculated. To increase inter-rater reliability, each assessment was scored individually by the three investigators. An average score for each SES group was obtained by calculating the overall mean of the total raw scores. The IBM Statistical Package for the Social Sciences (SPSS) software was used to analyze data collected. A parametric independent samples t-test was computed to identify the level of significance of mean raw literacy scores between SES groups. The alpha value was set at .05, indicating a 5% chance of obtaining a Type 1 Error.

## Results

The purpose of this study was to determine the interaction of SES on literacy skills in kindergarten children. An independent samples t-test was conducted to compare low SES with high SES on literacy scores in kindergarten students. Participants who belonged to the low SES group ( $M = 87.88$ ,  $SD = 8.5$   $N = 8$ ) reflected lower literacy scores than those participants who belonged to a high SES group ( $M = 90.37$ ,  $SD = 11.715$   $N = 19$ ); however literacy scores between SES groups was not significantly different at the kindergarten level,  $t(25) = .542$   $p = .592$ , 95% CI[-6.976, 11.963].

An independent samples t-test was calculated to determine the difference between mean literacy scores across SES groups from pre-kindergarten participants obtained in a previous study conducted by Bobalik, Scarber, and Toon (2017) to the current kindergarten participants. The difference between the mean literacy scores of the pre-kindergarten and kindergarten groups was significant,  $t(25) = -5.260$ ,  $p < .001$ , 95% CI[-22.80, -1.15]. Figure 1 shows the mean literacy scores between groups across grade levels.

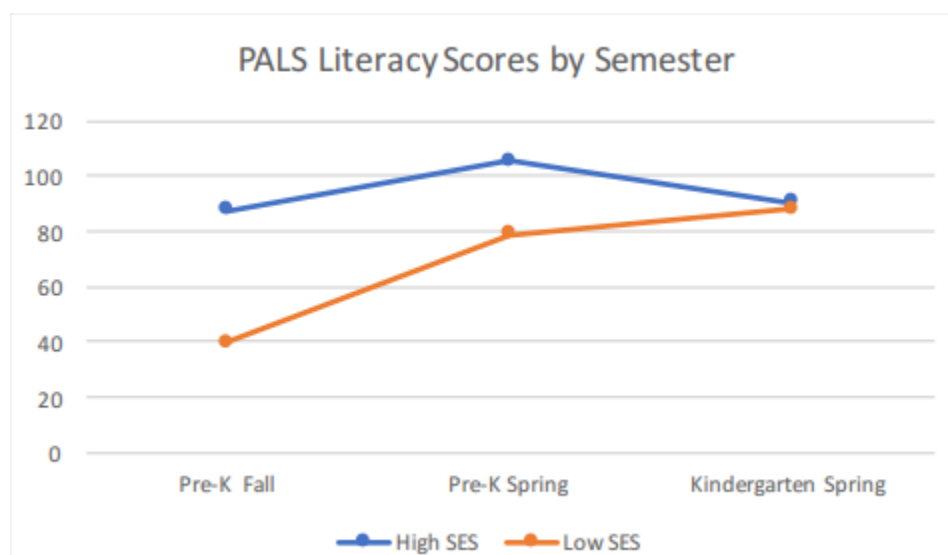


Figure 1. Literacy Scores for SES groups

## Discussion

This study aimed to evaluate the achievement gap in literacy skills between SES groups across pre-kindergarten and kindergarten children and to investigate the learning curve in literacy instruction among SES groups in kindergarten. It has long been assumed that socioeconomic status can be a valid predictor of literacy skills. The common belief is that children from lower SES backgrounds will have lower literacy skills when compared to children from a higher SES background. However, results of this study revealed literacy scores derived from the PALS-K were not significantly different between high and low SES groups at the kindergarten level. Participants from both high and low SES groups showed improvement in literacy skills between pre-kindergarten and kindergarten, but those belonging to the low SES group showed significant improvement in literacy skills. While the scores of the low SES group did not reach the level of the high SES group, the gap between the means continued to close in kindergarten, as seen in Figure 1. It was predicted that this achievement gap in literacy skills may grow larger in kindergarten due to the introduction of reading and rigorous curriculum; however, these results imply that the introduction of reading in kindergarten instruction appears to continue fostering literacy skills in both groups of children further closing the achievement gap. These findings illustrate that SES is not necessarily the determining factor in projected development of literacy skills. The previous study by Bobalik, Scarber, and Toon, (2017) revealed that pre-kindergarten children belonging to the low SES group had significantly lower literacy scores when compared to the high SES group. Yet, after one school year in pre-kindergarten children from the low SES background showed significant gains in literacy skills. The current study no longer shows a discrepancy in the difference in mean literacy scores between SES groups at the kindergarten level. While extensive research has supported the theory that children from low SES groups do not have the emergent literacy skills as their peers belonging to a high SES groups, society

cannot conclude that this trend will continue once the children enter school according to results of the current study.

While SES may be one factor on development of emergent literacy skills in children, it is not solely responsible. The home literacy environment was also noted in previous literature as a possible predictor of reading success in children (Hamilton et al., 2016). While SES may impact the number of literacy resources available to families, it does not necessarily control the degree and/or frequency to which literacy activities are presented to children within the home. Children may belong to a family of high SES who do not view literacy as important as other areas; therefore, the children are not exposed to literacy tools and activities as others from families who view literacy as an important skill. It is important for those involved with young children (educators, clinicians, etc.) to not only understand how SES may influence emergent literacy development, but how home literacy culture may impact overall development. Results of this study demonstrate a need for enhancement of early literacy skills in children who are considered to be of a low SES bracket, as they display potential to benefit from increased exposure to literacy instruction. Ensuring that home literacy environments have access to literacy resources and activities during the early development years may improve emergent literacy skills prior to entering an educational setting. Future research should explore the correlation between SES, home literacy culture, and emergent literacy skills in children.

Despite careful design and preparation of this study, there are limitations to the findings that may be accounted for through future research. The participants of this study were not the same students from the comparison study (Bobalik, Scarber, & Toon, 2017); therefore, such results may not be reflective of those from a sample that was followed from pre-kindergarten through kindergarten. In addition, the sample is limited to children in kindergarten from only two

schools and the number of participants in each SES group differed in size, limiting the reliability of the results. Further studies should be conducted incorporating a longitudinal design, following the same group of participants from pre-kindergarten through kindergarten. In addition, a larger sample size with equal groups consisting of children from a variety of regions will provide more reliable results. Future studies exploring SES, home literacy culture, and literacy skills may provide more insight into the correlation these variables have on one another. This understanding can assist school administrators, educators, and clinicians in the early detection and intervention of emergent literacy skills.

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