

Variations in SES, Home Environment, and Childcare on Child Language Abilities

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Abstract

The present study investigated the relationship between SES, home environment, and amount of childcare on the language of 3, 4, and 5 year old children. This study also developed a parental report measure of the home environment. Results confirm the positive relationship between language and SES. Findings on the positive relationship between language and home environment, as measured with the new Home Environment Questionnaire (HEQ), are consistent with previous research using exhaustive observational and interview measures. Furthermore, results show that hours per week of childcare are not related to language after controlling for SES and home environment. This study is significant in that it confirms the validity of the new HEQ which offers greater utility in measuring home environment than other more rigorous measures.

Variations in SES, Home Environment, and Childcare on Child Language Abilities

Early language development has a profound effect on children's cognitive achievement prior to school entry and throughout their school years (Bradley & Corwyn, 2002; Downer & Pianta, 2006; Geoffroy, Côté, Borge, Larouche, Séguin, & Rutter, 2007; Melhuish, Phan, Sylva, Sammons, Siraj-Blanchford, & Taggart, 2008; Peisner-Feinberg et al., 2001). High early language abilities are related to higher literacy and numeracy achievement at 5 and 7 years of age (Melhuish et al., 2008), higher verbal comprehension and processing at age 7 (Downer & Pianta), and higher mathematical and attention skills at age 8 (Peisner-Feinberg et al.). Furthermore, early academic achievement leads to more positive long-term outcomes including successful completion of high school and higher rates of employment in early adulthood (Downer & Pianta; Rodriguez et al., 2009). Although children's early language abilities have lasting effects, the time period when those effects are established may be quite limited. It is estimated that children's academic trajectories are largely determined by the second or third grade and are more difficult to change thereafter (Peisner-Feinberg et al.). As a result, it is essential to understand the ways in which children's early language development is shaped, to identify factors that put children at risk for lower achievement, and to identify children whose development is at risk.

One area of development that has widely been shown to relate to early language abilities is socioeconomic status (SES; Bornstein, Haynes, & Painter, 1998; Bradley & Corwyn, 2002; Fewell & Deutscher, 2004; Hoff-Ginsberg, 1998; Roberts, Bornstein, Slater, & Barrett, 1999). SES is a complex set of components including parental education and income among other factors. The ways in which SES affects children's development are equally complex. According to Hoff-Ginsberg, mother's amount of speech production, vocabulary used, and topic of

conversation with her child varied according to SES. Results showed that high-SES mothers produced more speech, had richer vocabularies, continued children's topics more, gave fewer directives, and asked more questions than mid-SES mothers. As a result of this rich language environment, children from high-SES families have higher language than children from mid-SES families. Findings such as those by Hoff-Ginsberg demonstrate that children's language development is sensitive to his or her specific language experiences.

Additional research on the influence of SES on children's language found that maternal SES and knowledge of child development (a measure of maternal education) correlated with language comprehension and vocabulary in 1 to 4 year old children (Bornstein, Haynes, & Painter, 1998). SES was found to be indirectly predictive of child vocabulary competence, whereby SES contributes to maternal vocabulary, which in turn influences children's vocabulary. Investigations of SES consistently demonstrate that higher levels of maternal education predict higher language outcomes in children (Bradley & Corwyn, 2002; Geoffroy et al., 2007; Rodriguez et al., 2009; Terrisse, Roberts, Palacio-Quintin, & MacDonald, 1998). These findings reiterate those by Hoff-Ginsberg (1998) that there is a complex interaction between SES and children's language development.

Not only does SES predict language, SES has also been found to predict factors in the home environment such as frequency of reading to children, participation in cultural activities, and church attendance (Bradley & Corwyn, 2002). Bradley and Corwyn reported that the effect of SES on language is in part due to differences in home environment such that low-SES parents are less likely to buy reading and learning materials for their children, to take their children to educational and cultural events, or to monitor their children's amount of television viewing. Home environment has also been found to be more highly predictive of children's academic

achievement than measures of SES such as parental education and income (Melhuish et al., 2008). In fact, investigations of the home environment using exhaustive observational and interview measures have found consistent results relating the level of stimulation in the home environment to children's academic achievement (Melhuish et al., 2008; National Institute of Child Health and Human Development Early Child Care Research Network [NICHD], 2000; Terrisse et al., 1998).

In one study on home environment, it was demonstrated that children's literacy achievement varied according to the quality of the home environment, as measured with the Home Learning Environment interview (Melhuish et al., 2008). It was shown that children with more stimulating home environments were more likely to be overachievers in preschool whereas children with less stimulating home environments were likely to be underachievers. Additional findings show that children's verbal comprehension at 3 years of age can be predicted by their home environment, as measured with the Home Observation for Measurement of the Environment (NICHD, 2000). These researchers found that children who had more stimulating home environments also had higher language abilities. The advantages of a more stimulating home environment are not limited to language, however. Findings across at least four domains of development (psychomotor, social, language, and cognitive) also demonstrate clear advantages for children with more stimulating home environments (Terrisse et al., 1998).

Clearly, home environment has important effects on children's cognitive development (Bradley, Corwyn, Burchinal, McAdoo, & García Coll, 2001; Melhuish et al., 2008; NICHD, 2000; Terrisse et al., 1998). Furthermore, researchers propose a cyclical interaction between home environment and cognitive development whereby children from more stimulating home environments elicit more stimulation in the childcare environment which further enhances the

stimulation they elicit in the home (NICHD). For example, it has been found that after controlling for home environment, childcare center attendance was no longer a significant predictor of children's language abilities (Melhuish et al., 2008). Research regarding the specific aspects of childcare that benefit language is far less clear than findings regarding the influence of SES and home environment. For example, studies on the effects of childcare disagree as to whether quantity of nonmaternal childcare affects language most, or if type of care is the primary influence.

In one study on quantity of care, it was found that children from low-SES families benefited from full-time nonmaternal childcare (Geoffroy et al., 2007). Results indicated that low-SES children who received 25 or more hours per week of nonmaternal childcare had higher receptive language than low-SES children who received fewer than 25 hours per week. Additionally, it has been demonstrated that children who received between 10 and 32 hours per week of nonmaternal care also received higher quality parenting and had higher receptive language compared to children who received less than 10 hours or those who received more than 32 hours per week (Adi-Japha & Klein, 2009). Results of these studies indicate that there may be an 'optimum' quantity of care, and that the optimum amount of care may vary based on SES or other parental factors.

Studies on quantity of care, however, have several limitations. One such limitation has to do with the way different researchers define maternal and nonmaternal care. Nonmaternal care is broadly defined as routine care a child receives by someone other than his or her mother. However, there is a lack of consensus in the research as to what quantity of care constitutes nonmaternal care. For example, NICHD (2000) does not consider that a child has received nonmaternal care from a childcare center if the child spends less than 10 hours per week in the

childcare center. This definition of nonmaternal care is problematic for two reasons. First, studies differ in the minimum number of hours of care used to define nonmaternal care. Nonmaternal care has been defined as 1 or more hours per week (Geoffroy et al., 2007), 10 or more hours per week (Adi-Japha & Klein, 2009; NICHD, 2000), and 25 or more hours per week of routine care (Melhuish, Lloyd, Martin, & Mooney, 1990). The second problem with the NICHD definition of nonmaternal care is that researchers are making the assumption that nonmaternal childcare of less than 10 hours per week has no effect on children's development, yet there is a lack of evidence in the literature to substantiate that claim. In fact, it has been shown that care provided by childcare centers is quite different from other types of childcare in that childcare centers are licensed facilities that offer age appropriate learning activities and interactions with same age peers (Crosby, Gennetian, & Huston, 2005). Childcare homes and relative care on the other hand, provide care in an individual's residence which may or may not include other children or structured learning activities and are most likely unlicensed (Crosby et al., 2005).

Considering that childcare by providers such as grandparents and childcare homes do not offer the same kinds of learning experiences as childcare centers (Crosby, Gennetian, & Huston, 2005), and that the majority of children being cared for outside the home attend childcare centers (Peisner-Feinberg et al., 2001), the present study will specifically investigate the effects of childcare center attendance on children's language abilities. Furthermore, due to the differences between childcare center care and other types of care, it is possible that even a few hours of routine care in a childcare center have an effect on children's development. As a result, the present study will include all hours of childcare center attendance rather than arbitrarily

establishing a minimum number of hours as previous research has done (Adi-Japha & Klein, 2009; Melhuish et al., 1990; NICHD, 2000).

In addition to varying definitions of nonmaternal care and differing considerations of provider type, there are also discrepancies in whether researchers control for the effects of SES and the home environment. Despite inconsistencies in controlling for the influence of SES and the home environment, the impacts on children's development are well established (Bradley, et al., 2001; Melhuish et al.; Terrisse et al., 1998). In fact, it has been found that differences in language abilities among children attending childcare centers are due to differences in the home environment rather than differences in the childcare environment (Melhuish et al., 2008). However, not all childcare researchers control for home environment. One study on childcare found a positive relationship between childcare center attendance and children's language (NICHD, 2000); however, researchers in that study controlled for SES but not for home environment. The present study controls for SES and home environment to determine whether the hours of care provided in the childcare center affects children's language beyond the effects of SES and home environment.

Results of studies on childcare, while somewhat inconsistent, demonstrate that there is a relationship between nonmaternal childcare and language. Therefore, it is important to not only continue investigating these relationships but also to find new methods of investigation and analysis. The present study seeks to clarify the influence that childcare center care has on children's language and to also understand the patterns of childcare that children are experiencing. In order to accomplish these aims, this study investigated childcare in a way that has not been done previously in childcare research. This study differed from previous research in three distinct ways. First, whereas previous research has defined nonmaternal care as routine

care that exceeds an arbitrary minimum number of hours (e.g., 10 hours per week), the present study will consider even one hour of childcare center attendance in analyzing the effects of childcare center attendance on language. Secondly, although previous research has combined different types of care to investigate the effects of quantity of care, the present study will focus specifically on the effects of childcare center attendance on language. Last, whereas investigations on the effects of childcare centers have inconsistently controlled for SES and home environment, the present study will control for both.

In addition to better understanding the impact childcare center attendance has on language development, the current study also offers the opportunity to investigate whether home environment can be measured through use of a parental report survey rather than more exhaustive observational or interview methods. Although observation of the home environment and structured interviews with parents have found clear results indicating the positive relationship between home environment and language (Bradley et al., 2001; Melhuish et al., 2008; NICHD, 2000; Terrisse, Roberts, Palacio-Quintin, & MacDonald, 1998), these measures are time consuming and difficult for participants as well as researchers. The Home Environment Questionnaire (HEQ) is designed so that it can be mailed to the parents' homes, completed at their convenience, and returned to the researcher by mail. The increased flexibility of the HEQ compared to other measures could enable researchers to gather information from parents who otherwise may not have time to participate in an observational or interview study. Furthermore, the HEQ could be used in research beyond the scope of language development. Observational and interview measures have shown that home environment also relates to other developmental domains, such as psychomotor, social, and cognitive development (Terrisse et al., 1998).

The present study is significant in that it investigates quantity of childcare center attendance in a way that has not been utilized in previous research, and because it utilizes a new Home Environment Questionnaire (HEQ). There are two primary objectives of this study: 1) to replicate findings of previous research on SES and home environment using the new HEQ measure, and 2) to determine if number of childcare center hours influence children's language after controlling for SES and home environment. This study seeks to clarify the discrepant findings in previous research on childcare by investigating whether hours of childcare center attendance predict children's language when all hours of attendance are included and when SES and home environment are controlled. Most importantly, it is hypothesized that the relationship between SES, home environment, and children's language that has been found in previous research using observational or interview measures will be replicated using the new HEQ.

Method

Participants

Participants were recruited through several local childcare centers. Parents of 104 children between 3 and 5 years of age signed and returned a combined consent form for him or herself and his or her child. Of the 104 parents who signed the combined consent form, 18 parents failed to return the parental questionnaire. Of the 104 children who were given permission to participate, 8 children declined assent to participate, and 11 children requested to stop participating prior to completion of the language assessment. The data is therefore based on 70 parent and child participant pairs who both completed the study. The sample consists of 65 adult females, 5 adult males, 37 female children, and 33 male children. Parents' mean age was 33.75 years ($SD = 7.87$), and there were 17 three year olds, 33 four year olds, and 20 five year old children. Additional demographic information can be found in Table 1.

Materials

Socioeconomic status and family demographics were measured using a parental report questionnaire which consisted of open and closed response questions. There were two SES items of interest (parent's education and income) that have been shown in previous research to relate to home environment, childcare, and children's language (see Table 2 for SES information).

In order to investigate the level of stimulation children receive from their home environment, the new Home Environment Questionnaire (HEQ) was developed for use in this study. The HEQ combined several questions from previously tested observational and interview measures of home environment and included items from the Early Childhood Home Observation for Measurement of the Environment (National Longitudinal Survey of Youth, 2006) and the Home Learning Environment interview (Melhuish, et al., 2008). Items for the HEQ were selected based on item relationship in previous research to children's development and were modified to be used in a parental report format. The HEQ is comprised of 17 variables across several aspects of home environment including items such as number of siblings and frequency of attending cultural events (see Appendix for HEQ items and response options). The HEQ was developed in order to allow parents to answer the survey independently and return the form to the researcher by mail. As a result of the greater convenience, there was the potential to include more participants in the present study than could be measured through observation or interview methods.

Frequencies and types of routine childcare were also measured through parental report and included amount of weekly attendance in a childcare center and all other types of childcare. Additional types of childcare included care provided by grandparents, childcare homes, and religious-based childcare (see Table 3 for a complete list of childcare providers). Parents were

given a list of 19 different types of childcare providers and were asked to indicate next to each provider the number of hours the participating child spent per week in the care of that provider. The list was provided in order to include types of routine care that parents may not initially consider, such as care at a gym or weekly religious education. Routine childcare was assessed for daytime hours during a participant's 'typical' 7 day week because it cannot be assumed that parental employment and the need for childcare are limited to 5 day work weeks. The primary goal of the childcare questionnaire was to determine the number of hours and types of childcare children were experiencing.

Children's language abilities were measured using the Peabody Picture Vocabulary Test-Fourth Edition (PPVT-4; Pearson Education Inc., 2007) which has been approved for use with children from 2 years 6 months of age and up. The PPVT-4 contains 228 test items across 20 broad categories of content (e.g., vegetables, tools, and activities) and parts of speech (e.g., nouns, verbs, and attributes). Test items consist of four color illustrations per page which is displayed on an easel as a word is read to the participant. Participants are asked to indicate which of the four illustrations corresponds best with the word that was read to them. The test is divided into sets with each set containing 19 items. The PPVT-4 is administered starting at a floor item based on the participant's age in years and continues until the participant reaches a ceiling item. Ceiling items are determined when the participant gives 8 wrong responses in a set. All 19 items in the participant's last set must be completely administered even if he or she gets the first 8 items incorrect.

Scores from the PPVT-4 are obtained by subtracting the number of items the participant answered incorrectly from the total number of items he or she was administered. The resulting raw score is then standardized according to the participant's age using value tables in the PPVT-

4 manual. The primary use of the PPVT-4 is to measure receptive vocabulary and provides researchers with age-based percentile scores for each participant. The PPVT-4 utilized test results from 4,000 individuals to develop normative percentile scores, which have been found to correspond with the current U.S. population regarding sex, race/ethnicity, geographic region, SES, and clinical diagnosis or special-education placement (Pearson Education Inc.). After completing the PPVT-4, a percentile score for each child in the current study was calculated based on the normative sample.

Design and Procedure

Once the combined consent forms were returned to the primary investigator, questionnaires were mailed to parents' homes. Parents were mailed a single set of questionnaires including demographics, SES, HEQ, and childcare questions. Parents were asked to return questionnaires in an enclosed pre-paid envelope. At the childcare center, each child who had parental permission to participate was asked individually by the researcher if he or she wanted to 'play a game.' If the child assented, the PPVT-4 was administered starting with two training items to ensure that he or she understood the assessment procedure. Training items and test items consisted of the child being read a word and at the same time being shown a page on an easel that contained four color illustrations. The child was asked to point to the illustration that best corresponded with the word that was provided. Assessments took 10 to 15 minutes per child and at conclusion of the assessment, the child received a small toy for his or her participation.

Results

There were two objectives of the present study: 1) to replicate findings of previous research on SES, home environment, and children's language using the new HEQ measure, and

2) to determine if quantity of hours of care specifically in childcare centers influenced children's language. First, SES score was calculated by standardizing parents' income and education to have a mean of zero and a standard deviation of 1. Standardized scores were then added together to create an SES composite score ranging from -4.04 to 2.93. Next, a home environment score was also calculated by standardizing the 17 items from the Home Environment Questionnaire and adding the standardized scores to create the HEQ composite score. Prior to standardizing the HEQ variables, it was necessary to reverse code several items due to the expected direction of relationship to language based on previous research. Due to standardization, one item, children's books owned, was eliminated from the HEQ composite score because all parents responded with the same answer making the standardized value null. The HEQ scores of the remaining 16 items ranged from -13.52 to 16.81.

It was expected that the current study would further validate the relationship between home environment, SES, and language. Results of this study, which measured home environment using the newly developed HEQ, were expected to replicate findings in previous research on home environment which used observational and interview methods. As expected, a regression analysis indicated that SES was predictive of language ($r^2 = .09, p < .01$), such that children from higher SES families scored higher on the PPVT-4. SES was also found to be predictive of home environment, as measured on the new HEQ ($r^2 = .09, p < .01$), such that children from a higher SES also had a more stimulating home environment. Confirming previous findings, a regression analysis demonstrated that home environment was also predictive of PPVT-4 percentile score ($r^2 = .17, p < .001$), in that children whose families reported a higher HEQ score had higher language. A final analysis on home environment found that HEQ score was still predictive of PPVT-4 percentile score after controlling for SES ($r^2 = .20, p < .01$). The

final analysis indicates that home environment, as measured on the HEQ, influences children's language above and beyond the impact of SES. This finding is important in that it replicates existing research using lengthy observational and interview methods of assessing home environment.

In order to determine specifically whether childcare center hours affected children's language, childcare hours from 19 different types of providers were collected. It was expected that childcare center care would be among the most frequent type of care since all children in the study were recruited through local childcare centers. Not surprisingly, the most frequent type of care, as expressed in hours per week, was provided by children's mothers ($M = 20.66$, $SD = 21.48$). The second most frequent provider was childcare centers ($M = 15.53$, $SD = 12.24$), third were children's fathers ($M = 12.84$, $SD = 15.97$), and fourth were children's grandparents ($M = 3.96$, $SD = 8.34$). Children received a total average of 25.55 ($SD = 16.97$) nonparental care hours per week and were cared for by an average of 2 providers in addition to their parents.

The present study was interested in investigating the particular effects of childcare center care on children's language abilities. All hours of childcare center attendance were included in the investigation and responses ranged from 2 – 45 hours per week. A regression analysis demonstrated that childcare center hours were predictive of language as measured with the PPVT-4 ($r^2 = .06$, $p < .05$). The relationship between hours and language was negative such that more hours of care corresponded with lower PPVT-4 percentile scores ($\beta = -.14$). However, after controlling for SES and home environment (as measured with the HEQ) a hierarchical regression of childcare center hours showed that hours no longer predicted PPVT-4 percentile score ($r^2 = .21$, $p = .23$).

Discussion

The present study investigated two primary questions: Do hours of childcare center attendance predict children's language? And, can the relationship between SES, home environment, and language be measured through the use of a parental report survey? Regarding the first research question, the present study demonstrated that hours of childcare center attendance do not predict language after controlling for SES and home environment. This is significant because there were three major discrepancies in previous research that the present study sought to clarify. Previous studies differed in the number of hours used to define nonmaternal care, in whether specific types of care were considered, and whether parental factors such as SES and home environment were controlled. The present study addressed these discrepancies by including all hours of childcare center attendance, by investigating specifically whether care provided by a childcare center influences children's language abilities, and by controlling for both SES and home environment.

First, the current study differs from previous research in that all hours of childcare center attendance were included. This is significant because existing research on the effects of childcare hours is not yet clear enough to determine that one particular amount of care does influence children's development whereas another amount of care does not. Studies that have arbitrarily established that a child should experience at least 10 hours per week of a particular type of care before that care is included in analysis are making the assumption that nonmaternal childcare of less than 10 hours per week has no effect on children's development (NICHD, 2000). However, there is a lack of evidence in the literature to substantiate that assumption. Although hours of care were not found to be predictive of children's language after controlling for SES and home environment, the present study is significant in that all childcare center hours

were included, and by doing so, this study contributes to the literature by clarifying the relationship between childcare and language development.

Secondly, whereas some studies have combined all hours of care provided by many types of providers in order to analyze the effects of total quantity of care (Adi-Japha & Klein, 2009; Geoffroy et al., 2007), the present study is significant in that the focus was specifically on the affects of childcare center attendance on language abilities. Research that has included multiple types of providers in a single measure of hours of care has likely underestimated the influence of childcare center care (Melhuish et al., 2008). Childcare centers engage children in age appropriate activities with same age peers, whereas childcare homes or care provided by relatives is less structured and less likely to be licensed (Crosby et al., 2005). Results of the present study demonstrate that, after controlling for SES and home environment, childcare center attendance does not predict children's language. This is significant because these findings contribute to the understanding of the influence of childcare center attendance on children's language abilities by investigating specifically childcare center attendance rather than the cumulative effects of multiple types of care providers.

Lastly, some studies investigating the effects of childcare have controlled for SES but failed to control for home environment (Adi-Japha & Klein, 2009; Geoffroy et al., 2007; Peisner-Feinberg et al., 2001), whereas the present study controlled for both. Research suggests that there is likely a cyclical interaction between the home and childcare environments such that children with more stimulating home environments elicit more stimulation in the childcare environment (NICHD, 2000). As a result, studies on childcare which do not control for home environment fail to account for those effects on children's childcare experiences. After clearly defining hours and type of care, the current study demonstrated that the number of hours a child

attends a childcare center does not have an effect on language once SES and home environment are controlled. Findings also demonstrate that home environment is a better predictor of children's language abilities than SES and hours of childcare center attendance.

In addition to clarifying findings on childcare, the present study also sought to determine whether the Home Environment Questionnaire (HEQ) could confirm results of previous research on the home environment using rigorous observational and interview measures. Results of the HEQ confirmed findings of previous research that home environment is predictive of language abilities in children (Bradley & Corwyn, 2002; Bradley et al., 2001; Melhuish et al., 2008). Most importantly, the HEQ also replicated findings that home environment is a better predictor of children's language than SES (Melhuish et al., 2008). Furthermore, results indicate that after controlling for home environment and SES, childcare center attendance is not predictive of language.

The present study also demonstrated that the new HEQ is a useful tool for researchers investigating home environment. The HEQ can be mailed to parent's homes without the need for exhaustive observations or interviews. Not only will the HEQ benefit parents in that they do not have to make appointments with researchers around their busy schedules, there are also benefits to researchers in time savings as well. Additionally, the HEQ could be utilized as a tool for intervention programs, such as Head Start, that seek to improve children's cognitive abilities and prepare them for school. The HEQ could be used to identify less stimulating home environments that may be contributing to children's risk for lower language abilities. Once identified as a low stimulating home environment, suggestions could be made to improve the learning stimulation children are receiving, such as suggestions for outings, recommendations for increased reading to the child, or advice on TV monitoring. Furthermore, the HEQ could be

used as a follow-up measure after intervention suggestions have been made to assess improvements to the home environment.

The HEQ could also be used as a means of assessing home environment in longitudinal studies by asking participants to complete several HEQs over time to measure changes in the home environment, or asking them to complete an HEQ after having previously completed observation or interview measures. Although the present study is correlational and therefore cannot determine that the home environment causes differences in children's language abilities, the HEQ could also be used in conjunction with experimental methods in order to investigate relationships between home environment and causal factors affecting language development. Differences in language development could be due to genetics, child temperament, or quality of individual childcare centers, and the HEQ could be used in studies investigating those relationships.

As a new measure of the home environment, results of the HEQ need to be replicated for test-retest reliability, analyzed for internal consistency, and investigated for predictive validity in domains beyond language. Future research could involve investigating the predictive validity of the HEQ with children of other ages and administering the HEQ in other areas of study such as psychomotor, behavioral, social, and cognitive development. Furthermore, because the HEQ can be mailed directly to participants, it could be used in any field where the home environment is of interest and the geography of the study region makes participants difficult or expensive to access for observation or interview.

Despite confirming previous results and clarifying the effects of childcare center hours on language, there are several limitations to the present study. The study sample was small and therefore lacked variability in some areas. For example, the sample was primarily made up of

moderate and high income families. This may have been due to the large percentage of married couples in the study sample and that household income was assessed rather than individual income of the parent completing the survey. Results showed that 68.1% of parents who completed the study were employed at least part time and 80% were married. This would indicate that the majority of the participants were likely from dual income families which would result in higher household incomes compared to single parent homes. Although consistent with previous research, results of the HEQ may differ if the sample population were comprised of more single parent or lower income families. Additionally, results of the current study may be limited regarding the effects of childcare center attendance due to the SES of the study participants. Although previous research has shown a positive relationship between childcare center attendance and language abilities (Adi-Japha & Klein, 2009; NICHD, 2000), other studies have shown that children from high-SES families do not benefit from childcare center attendance (Crosby et al., 2005). Findings of the present study confirm the negative relationship between high-SES and childcare center attendance on language abilities prior to SES and home environment being controlled.

Additional limitations to the present study involve the questionnaire format. For example, this study may be limited by the abbreviated variety of questions included in the analysis. One of the benefits of observation measures is that the physical environment can be objectively observed by trained researchers. Because the HEQ is mailed to parents, some factors of the home environment cannot be assessed, such as the safety of the physical structure, which clearly contributes to the quality of a child's environment. Additionally, as with any questionnaire, there is the possibility that parents' responses are biased. However, parents' responses could also be biased when participating in an interview, or the home environment

could have been prepared in a way that is not typical to daily life prior to researchers arriving for an observation. It is unlikely that parents' responded in ways that would skew results, however, because they were unaware of the intent of the questionnaire.

Despite limitations, the present study is significant in that it expands the understanding of the effects of home environment and childcare on language. Considering that children are spending increasing amounts of time in the care of individuals other than their mothers (Fergusson et al., 2007; Lombardi, 1993; NICHD, 2000), and that an estimated three quarters of children in nonparental care attend childcare centers (Peisner-Feinberg et al., 2001), it is vital to understand the immediate impacts childcare has on language development as well as long term educational outcomes. Most importantly, this study has developed a new brief measure of the home environment, the Home Environment Questionnaire, which replicates findings of more rigorous observational and interview measures. In addition to further validating findings of previous research on home environment, the HEQ offers researchers an additional tool in studying the ways in which home environment affects children's development. This study is significant in that it contributes to the literature by clarifying that childcare center attendance is far less important for language development than SES and home environment.

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Appendix

HEQ Items and Response Options

1. *How many sisters/brothers, step-sisters/step-brothers, or half-sisters/half-brothers does your child have? (write number of siblings)

_____ number of siblings

2. In the past year, how often has your child attended religious services (including Church, Sunday School, Synagogue, or other religious classes)? (check one)

_____ About once a week
_____ At least once a month
_____ A few times a year
_____ Never

3. About how often do you (or someone else) read stories to your child? (check one)

_____ Never
_____ Several times a year
_____ Several times a month
_____ Once a week
_____ At least 3 times a week
_____ Everyday
_____ Multiple times a day

4. **About how many children's books does your child have of his/her own? (check one)

_____ 10 or more books
_____ 3 to 9 books
_____ 1 or 2 books
_____ None

5. About how many educational games or toys, like Leapfrog, does your child have? (check one)

_____None
 _____One
 _____Two
 _____Three
 _____Four or more

6. About how many magazines does your family get regularly? (check one)

_____None
 _____One
 _____Two
 _____Three
 _____Four or more

7. Does your child have the use of a CD player, tape deck, tape recorder, or record player at home (including one shared with a brother or sister)? (circle one)

YES NO

8. About how many children's CDs, tapes, or records does your child have of his/her own? (check one)

_____10 or more CDs, tapes, or records
 _____3 to 9 CDs, tapes, or records
 _____1 or 2 CDs, tapes, or records
 _____None

9. Do you (or someone else) help your child learn numbers at home? (circle one)

YES NO

10. Do you (or someone else) help your child learn the alphabet at home? (circle one)

YES NO

11. Do you (or someone else) help your child learn colors at home? (circle one)

YES NO

12. Do you (or someone else) help your child learn shapes and sizes at home? (circle one)

YES NO

13. How often do you or another family member get a chance to take your child on any kind of outing; like shopping, to the park, a picnic, drive-in, and so on? (check one)

- _____ A few times a year or less
 _____ About once a month
 _____ About two or three times a month
 _____ Several times a week
 _____ About once a day

14. How often have you or another family member taken or arranged to take your child to any type of museum like children's, scientific, art, historical, or another kind of museum within the past year? (check one)

- _____ Never
 _____ Once or twice
 _____ Several times
 _____ About once a month
 _____ About once a week or more often

15. How often have you or another family member taken or arranged to take your child to any type of cultural event like a community festival, art exhibit, historical reenactment, or another kind of cultural event within the past year? (check one)

- _____ Never
 _____ Once or twice
 _____ Several times
 _____ About once a month
 _____ About once a week or more often

16. *How much time does your child spend watching television either at home or outside of your home (for example with a babysitter) on a normal weekday?
(write number of hours)

_____TV hours each weekday

- *How much time does your child spend watching television either at home or outside of your home (for example with a relative) on a normal Saturday or Sunday?
(write number of hours)

_____TV hours on weekend

17. *Sometimes kids mind pretty well and sometimes they don't. About how many times, if any, have you spanked your child in the past week? (write number of times)

_____times

Note: TV hours on item 16 were summed; * indicates items were reverse scored; ** indicates item that was eliminated from analysis

Table 1

Demographic Information of Parents and Children

	%	M	SD
Parents			
Age		33.75	7.87
Gender			
Females	92.9		
Males	7.1		
Race/Ethnicity			
White	92.9		
Other	2.9		
Asian	1.4		
Black	1.4		
Hispanic	1.4		
Marital Status			
Married	80.0		
Never married	7.1		
Divorced	8.6		
Widowed	4.3		
Children			
Age		4.04	0.73
3 years	24.3		
4 years	47.1		
5 years	28.6		
Gender			
Females	52.9		
Males	47.1		
Race/Ethnicity			
White	84.3		
Other	5.7		
Hispanic	4.3		
Multi-racial	2.9		
Asian	1.4		
Black	1.4		

Table 2

Parental SES Indicators

	%
Income (in thousands)	
Under 20	12.9
20 to 40	15.7
40 to 60	11.4
60 to 80	20.0
80 to 100	11.4
Over 100	28.6
Education (highest level achieved)	
Some HS	2.9
HS diploma	5.7
Some college	20.0
Associates	12.9
Bachelors	31.4
Masters	22.9
Doctorate	4.3

Table 3

Means and Standard Deviations for Hours of Care by Type of Provider

<u>Care provider</u>	<u>Hours per week</u>	
	<u>M</u>	<u>SD</u>
Mother	20.66	21.48
Childcare center	15.53	12.24
Father	12.84	15.97
Grandparent	3.97	8.36
Childcare home	2.09	7.01
Paid babysitter	1.71	6.03
Multiple parents present	1.56	6.80
Sibling	1.09	8.44
Parent's partner	.83	6.93
Religious education	.36	.76
Aunt/uncle	.34	1.49
Gym childcare	.26	1.09
Stepfather	.23	1.91
Friend	.20	1.25
Other	.20	1.22
