

INCOME AND AFRICAN AMERICAN FATHERS' PARENTING: ASSOCIATIONS WITH
LANGUAGE DEVELOPMENT IN EARLY CHILDHOOD

by

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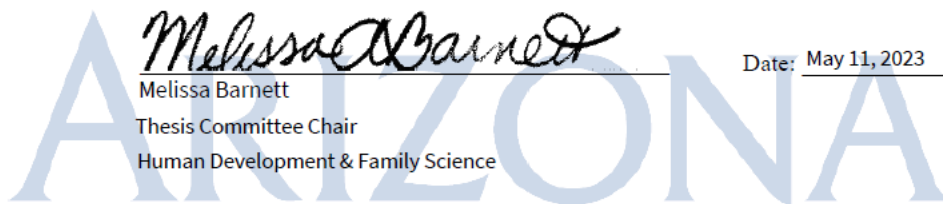
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Dedication

I dedicate this work to my family. First, thank you, Mom for your lifelong encouragement and belief in my dreams. To my sisters, Cassandra and Faith, thank you for your consistency and patience not only during graduate school, but for your lifelong sisterhood. To my brothers, Arthur and Harvey, thank you for your warmth and laughter. To my sweet husband, Matthew, thank you for your consistent belief in me and my work and for walking through graduate school with me. Thank you for believing in me when I struggle to believe in myself. I also thank God, for the prayers answered and strength given. My work is grounded in supporting and enriching Black families.

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Abstract

Poverty can have adverse effects on early childhood development, particularly language development. Language development plays an integral role in child development because communicative skills are necessary for social engagement and school success. Without strong language skills, children may struggle in other domains of development. Due to the overrepresentation of African American children living in poverty, African American children may be particularly likely to lag in their language development. However, little work has examined the protective role that low-income African American fathers may play in the language development of their children. The current study expanded the research on father engagement and links between father's income and children's language development among African American families ($n = 531$). Lower father's income at T2 was not associated with lower receptive vocabulary in children. Father's engagement in language activities and physical play were not positively associated with children's receptive vocabulary. Lastly, the relationship between income and children's receptive vocabulary was not moderated by father's engagement in language activities, nor physical play. These findings suggest that more research needs to be done to understand African American familial processes that can be protective for children who may come from low-income households.

Introduction

African Americans make up roughly 13.2% of the United States population (Creamer, 2020). Yet, African Americans are disproportionately over-represented in national averages of poverty in the United States with a poverty rate of approximately 18.8% (Creamer, 2020). Poverty can have a myriad of adverse effects on early childhood development, particularly language development (Gatlin et al., 2016; Justice et al., 2019). Language development plays an integral role in child development because communicative skills are necessary for social engagement and school success. Children without strong language skills may struggle in other domains of development such as literacy and cognitive skills (Justice et al., 2019). These challenges often impede school readiness and academic achievement in later development (Justice et al., 2019; Magnuson & Duncan, 2006). Due to the overrepresentation of African American families living in poverty, African American children may be especially likely to lag in language development (Pungello et al., 2009).

Although research has examined the effects of poverty on children's language development, few studies have examined this association using a strengths-based approach. This oversight is important as there are protective factors that may buffer the effects of poverty on children's language development among African American families. Studies have found that parental engagement can bolster children's language development (Fagan et al., 2016; Malin et al., 2014; Pancsofar & Vernon-Feagans, 2010), but little work has examined the role that fathers—particularly African American fathers—play in the language development of their children. Research has often assumed that mothers (i.e., white mothers) engage with their children (e.g., read books, tell stories, sing songs), while fathers fulfill more traditional roles (e.g., provide financially) in the home (Baker et al., 2015). But these family processes may not

be as consistent across all racial-ethnic groups. For example, African American mothers may wish to spend more time with their children, however, due to time constraints that are often associated with poverty (i.e., longer work weeks, longer household tasks), African American mothers may not have the same amount of time as their white counterparts to engage with their children (Roy et al., 2004). Despite the time constraints, African American parents, particularly fathers, do engage with their children, and this engagement has been found to strengthen children's developmental outcomes (Cabrera & Tamis-LeMonda, 2007; Leavell et al., 2012; Malin et al., 2014). In addition to language activities (e.g., book reading, singing songs), fathers engage with their children in physical play (e.g., chasing games, tossing child in air) (Leavell et al., 2012; Malin et al., 2014). Father's physical play has primarily been linked to social outcomes (StGeorge et al., 2017), but limited research has examined the direct association between father's engagement in physical play and children's language development, particularly among African American families. Moreover, research has not sufficiently examined the direct association between father's engagement in language activities and children's receptive vocabulary (the words that a child can understand through spoken or written language) among African American families. Even fewer studies have investigated the moderating role of father's engagement in both language activities and physical play in the association between income, particularly father's income, and children's receptive vocabulary.

To address these gaps in the literature, the current study will explore these processes to increase research knowledge on the implications of income on children's language development. This study can highlight what African American fathers are already doing, and may address the specific engagement practices that fathers can begin doing to strengthen their children's developmental outcomes. This study has the potential to aid African American fathers'

confidence and competency by demonstrating the beneficial role of fathering on their children's language development. This work has the potential to help economically disadvantaged fathers to understand that despite experiencing economic challenges (i.e., lower income), they can still help their children in their developmental outcomes. This study may also help others (i.e., mothers, practitioners) to acknowledge the importance of African American fathers. African American families have many strengths, and this study will potentially highlight some of these strengths, specifically fathers' engagement in play and language activities, by exploring processes through which fathers can bolster the developmental outcomes of their young children.

Theoretical Foundation

To examine how fathers' income and fathers' engagement are linked to children's language development among an economically disadvantaged sample of African American families, I utilized Bronfenbrenner's process-person-context-time (PPCT) model. The foundation of Bronfenbrenner's PPCT model comes from adaptations of his previous models (i.e., ecological, bioecological). Bronfenbrenner's previous models suggest that a child's development is affected by their environment (Bronfenbrenner & Morris, 2007). The models conceptualize the environment as consisting of five interactive ecological levels ranging from most proximal to most distal (Pancsofar, 2020). The first, or most proximal layer of this ecology is the microsystem, the level in which the child directly engages in face-to-face interactions with others (e.g., parents, friends, school, neighbors). The mesosystem is the next layer, which examines the relationship between two or more microsystems (e.g., parents and school, parents and peers). The exosystem is the next layer, which includes settings that do not involve the child directly (e.g., parent's workplace), but may affect someone in the child's microsystem (e.g., parent). The macrosystem is the layer that is most distal or farthest from the child. This layer encompasses

attitudes and ideologies of one's culture (e.g., cultural values, history). Finally, the chronosystem includes the element of time (e.g., physical play at age 3 versus age 11), and how time or timing impacts the child during their life span (Bronfenbrenner & Morris, 2007). These distinct layers of the ecology determine how children interact with their environment, and how the environment interacts with the child.

Although Bronfenbrenner's previous models have contributed to family and developmental science research, Bronfenbrenner's PPCT model helps explain how the bioecological model is applied. The PPCT model accounts for how proximal processes, person characteristics, context, and time collectively and simultaneously shape individual outcomes (Bronfenbrenner & Morris, 2007; Navarro et al., 2022). Proximal processes are mutual interactions that occur between a developing individual and people, objects, or symbols that are most adjacent in the child's environment (Bronfenbrenner & Morris, 2007; Navarro et al., 2022). These processes (i.e., father engagement with child), should be taking place frequently and consistently over time. Personal characteristics (i.e., the age of the child, parent's gender) are factors that impact proximal process. These personal characteristics are important as they inform the unique interactions that occur between the child and their environment. Context draws from Bronfenbrenner's ecological levels (i.e., microsystem, mesosystem, exosystem, macrosystem) to address the ways that interactions across the ecology inform experiences. For example, African American children are learning the most from their proximal processes at the microsystem level (i.e., parents). However, a parent's work circumstances at the exosystem level may impede on the time that a parent has to engage with their child. Finally, the PPCT model includes the concept of time. While this study is not longitudinal and cannot show the implications of proximal processes over time, it still captures transitions (i.e., couples entering parenthood, early

childhood) that are uniquely impacted by time. Bronfenbrenner's bioecological model and the PPCT model informed the aims of the current study.

Relationship Between Poverty and Language Development

Prior literature suggests that children raised in low-income households may fall behind in their language development and may be more likely to experience language impairments (Cabrera et al., 2004; Malin et al., 2014; Pancsofar et al., 2010; Tamis-LeMonda et al., 2004). For example, some studies have shown that low-income parents may not read to their children as frequently as their more affluent counterparts (Malin et al., 2014). Other research has found that on average, children who come from economically disadvantaged households tend to hear less language (Hart & Risley, 1995). Although some children raised in lower-income households may have less exposure to language, these findings are not consistent across the literature (Miller & Sperry, 2012; Sperry et al., 2019). Some research posits that racial, cultural, and class bias may perpetuate stereotypes that suggest that children who come from economically disadvantaged households hear fewer words than their more affluent counterparts (Miller & Sperry, 2012; Sperry et al., 2019). Nonetheless, it is apparent that children's language development may in some way be impacted by income.

To understand the factors that contribute to the language disparities among children from lower income families compared to children from higher income families, particularly among African American children, it may be beneficial to refer to Bronfenbrenner's bioecological model and the PPCT model. There are systems of oppression (e.g., racism, intergenerational trauma, discrimination) at the macrosystem level that can funnel down into the microsystem and impact family processes and undermine the well-being of African American families (Harrell, 2000; Harrell et al., 2011). These systems of oppression provide context that might shape

proximal processes between fathers and their children. Further, systems of oppression may offer context for the ways in which personal characteristics (i.e., race, ethnicity) may inform the ways in which African American fathers interact with their environment, and how their environment interacts with them. These systems of oppression inform the way that poverty affects African American families and how poverty can influence language development among African American children. Poverty often determines neighborhood quality, and the access that families have to quality services (e.g., childcare, schools, libraries), especially for families of color (Chetty et al., 2018; Coley et al., 2018; Roy et al., 2004). An additional disadvantage of poverty is lack of time (Roy et al., 2004). Due to limited resources (e.g., access to transportation), basic tasks such as work, grocery shopping, or laundry can take families living in poverty several additional hours compared to their more affluent peers (Roy et al., 2004). This lack of time hinders the amount of time that parents have to spend with their children engaging in play or language activities (Roy et al., 2004). As research suggests, children acquire language skills through exposure to language (Baker, 2013; Hart & Risley, 1995; Sénéchal & LeFevre, 2002), but many children living in poverty may not have the same opportunity to engage with their parents compared to their more affluent peers (Fernald et al., 2013; Hoff, 2003; Pancsofar, 2020). These contextual constraints may impede parenting behavior, which can impact children's development.

Fathers and Language Development

Parents play an integral role in the development of their children. Research that examines father engagement strongly suggests that positive father engagement benefits children cognitively, socially, and emotionally (Amodia-Bisakowska et al., 2020). Historically, a disproportionate amount of research has examined the effects of mother engagement on child

outcomes (Jarrett et al., 2015; Sénéchal & LeFevre, 2002), with less research examining the role of fathers. However, there has been an increasing shift, and within the past decade, researchers have been seeking to understand the unique role of fathers on child outcomes (Amodia-Bisakowska et al., 2020). This is particularly important, as some researchers have found that fathers influence the language development of their children in ways that are unique from mothers (Malin et al., 2014; Pancsofar, 2020; Pancsofar & Vernon-Feagans, 2010). Although father engagement has been examined in studies on young children's language development, many of these studies have focused on language activities (i.e., reading books, singing songs). Fathers engage with their children in a variety of ways that can be positive and beneficial to children's outcomes (Cabrera & Tamis-LeMonda, 2007). Thus, it would be beneficial if research were to examine the effects of diverse types of father engagement (i.e., language activities *and* physical play) on children's language development.

Father Engagement in Language Activities and Young Children's Language Development

Research suggests that mother and father engagement in reading, singing songs, and telling stories with their young children benefits children's language development (Baker et al., 2015; Hoff, 2003). Mothers and fathers who engage with their children in language activities are helping their children acquire language skills. Additionally, mothers and fathers both use the same number of words with their children and have similar mean lengths of utterances (Baker, 2013). But mothers' and fathers' language activities are independently associated with children's cognitive development (Baker, 2013), suggesting that there may be distinct differences between mothers and fathers that likely impact children's language. While literature has overwhelmingly looked at mother's engagement in language activities on children's language learning, it is

imperative that researchers specifically look at the effects of father's language activities on children's language development.

Reading to children enhances children's language, literacy, and cognitive development (Duursma & Pan, 2011; Mol & Bus, 2011). In an ethnically diverse and low-income study that examined the effects of maternal and paternal book reading on children's early language development, shared book reading by both parents was a significant predictor of children's language development, in addition to other developmental skills (Duursma & Pan, 2011). While the study found that mothers reported reading to their 24-month-old children more than fathers, the study found that 28% of the residential fathers did report reading daily or weekly to their children, compared to 16% for non-residential fathers (Duursma & Pan, 2011). These findings highlight that despite economic challenges, some low-income fathers engage with their children in language activities (i.e., book reading practices) that contribute to children's language development (Duursma & Pan, 2011). While language activities have been found to bolster children's language development, fathers are engaging with their children in other ways that may also strengthen children's language development. Less research has examined the effects of father's engagement in physical play on children's language development.

Father Engagement in Physical Play and Young Children's Language Development

Although mothers engage in more overall play with their children (Cabrera et al., 2017b; Fuertes et al., 2016), when fathers do engage with their children, it is mainly through more playful interactions than mothers (Brown et al., 2011). Not only are fathers more likely to engage in more physical play (e.g., chasing, tumble play), but they are also more likely to initiate physical play compared to mothers (Amodia-Bidakowska et al., 2020). Even as studies have shown that the majority of fathers engage with their children through physical play (Amodia-

Bidakowska et al., 2020, Paquette et al., 2003; Stgeorge et al., 2021), research has not explicitly examined father engagement through physical play from fathers that come from disadvantaged backgrounds.

While some research has looked at the association between father-child physical play on social and emotional outcomes (Amodia-Bidakowska et al., 2020; Stgeorge, et al., 2021), less research has looked at the benefits of fathers' engagement in physical play on children's language development. One longitudinal study found that the quantity and quality of time that fathers spend engaging in physical play with their children is linked to children's cognitive and language development (Roggman et al., 2004). A study by Cabrera and colleagues (2017a) explores the associations between maternal and paternal playfulness during toddlerhood and receptive vocabulary and emotional regulation. While there was no significant difference in maternal and paternal playfulness, results did show that there was a positive longitudinal association between father's playfulness and children's prekindergarten receptive vocabulary (Cabrera et al., 2017a). The researchers found that father's playfulness was positively linked to children's emotional regulation (Cabrera et al., 2017a). The research also highlighted that father's income and education were linked to their playfulness with their children. Particularly, low-income fathers were less likely to engage in play with their children.

Despite the discrimination that is sustained at the macrosystem (e.g., mass incarceration, economic disparities, redlining) (Harrell, 2000), African American fathers, particularly new fathers, consistently strive to engage with their young children in ways that promote positive developmental outcomes such as receptive vocabulary skills (Cabrera & Tamis-LeMonda, 2007). These systems of racial stratification at the macrosystem funnel into other levels of the ecology, but African American fathers' parenting behaviors may be a protective factor that can buffer the

effects of lower income on children's language development. Proximal processes between fathers and their children can contribute to the language development of children in ways that are unique from mothers. Thus, research can draw from this knowledge to consider the ways in which this proximal process can be a protective factor for children impacted by lower income. Poverty may negatively impact this crucial time in which children are strengthening their language skills (i.e., receptive vocabulary); however, father engagement (i.e., physical play, language activities) can act as a buffer for children coming from low-income households.

Current Study

The current study expands the research on father engagement and links between father's income and children's language development among African American families. In line with previous work that has examined language development, the current study operationalizes language development as receptive vocabulary skills among preschool-aged African American children. Receptive vocabulary, the words that a child can understand through spoken or written language, is a frequently used measure to assess a child's language development (Baker et al., 2015; Cabrera et al., 2017a; Malin et al., 2014). Guided by the bioecological theory and the process-person-context-time (PPCT) model, the study has the following hypotheses:

- 1) Lower father income will be associated with lower receptive vocabulary in children.
- 2a) Father's engagement in language activities will be positively associated with children's receptive vocabulary.
- 2b) Father's engagement in physical play will be positively associated with children's receptive vocabulary.

3a) The relationship between income and children's receptive vocabulary will be moderated by father's engagement in language activities. Specifically, the association between lower income and child's receptive vocabulary will be weakened when there are high levels of father engagement in language activities.

3b) The relationship between income and children's receptive vocabulary will be moderated by father's engagement in physical play. Specifically, the association between lower income and child's receptive vocabulary will be weakened when there are high levels of father engagement in physical play.

Method

The current study used data from Building Strong Families (BSF). The sample consisted of romantically involved unmarried couples. Couples were recruited from communities in the United States. Couples needed to be either expecting a child together or have a baby that was born within the past three months. This was originally an intervention study. The couples were randomly assigned to a treatment group or a control group. The treatment group received education on ways to strengthen couples' relationship skills (Wood et al., 2012). The intervention did not influence any of the variables considered in the present study (Wood et al., 2012). Thus, the control group and the treatment group were combined. Responses were collected from mothers and fathers at three time points: baseline, which was when the child was born or no more than 3 months old (T1), 15 months after baseline (T2), and 36 months post-intervention (T3).

Sample

Given the aims of the current study, the sample only included families who met three criteria: (1) the father must be African American, (2) the child must have a PPVT score, and (3) the father must have seen the child within the past month. Before the removing of participants based on these criteria, the BSF sample had $N = 5105$ families with fathers and children. After restricting the sample to African American fathers, the sample decreased to $n = 3043$ fathers. Both residential and non-residential fathers were included in the sample, as non-residential fathers were still likely to engage with their children (Wood et al., 2012). After restricting the sample to children with a PPVT score, the sample decreased to $n = 1086$ fathers. After restricting the sample to fathers who have seen their child in the past month, the sample decreased to $n = 845$ fathers. However, due to missing data on the independent variable (i.e., income at T2) and covariates, the sample was further reduced to $n = 531$. Please see Table 1 for sample descriptives.

Missing Data

After limiting the data subset to those who met the criteria for the current study ($n = 845$), I sought to understand why there were missing values in the remaining measures and whether the missing data patterns were non-ignorable and represented systematic patterns of missingness that may have influence on the results. Identifying the cause for missing data can be beneficial as it helps identify whether participants without responses were different from those who completed the survey. High rates of missingness were found in variables related to fathers' reports for income, particularly at T2 (28%). Even higher rates of missing data were found in mother's reports of income at T3 (85%) and father's reports of income at T3 (85%). Therefore, income at T3 was excluded from the current study. However, rates of missing data for income at T1 were

(4%) for mother's income and (5%) for father's income. Rates of missing data were investigated in mothers' reports of child's gender (6%), father's report of other kids in the home (.1%), mother's reports of other kids in the home (.1%), father's education at T1 (.7%), mother's education at T1 (.7%), and mother's report of language activities at T3 (.3%). Listwise deletion was performed to account for missing values. Listwise deletion was used because main variables (i.e., father's income at T2) had high rates of missing data. Listwise deletion removed all cases without a value. Listwise deletion can be a helpful tool to account for missing data if extensive investigation measures have been taken to explore potential patterns that may account for missing data.

Logistic regression analyses were run to determine whether missingness on father's income at T2 was predicted by the dependent variable (i.e., children's receptive vocabulary), the moderators (i.e., physical play, language activities), as well as all covariates. Results demonstrated that only mother's income at T1 significantly predicted missing values in father's report of income at T2. The independent variable (i.e., father's income at T2) and moderators (i.e., language activities, physical play) were then grand-mean centered in preparation for regression analyses.

Procedures

In the current study, information about income and parental engagement was self-reported by mothers and fathers. Income was assessed at T1 and T2, and father engagement was reported by fathers at T3. Children were administered a Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 2007) which assessed their receptive vocabulary skills during home visits at T3.

Measures

Income (T1 and T2). At T1, fathers reported on income by responding to the following question: In the last 12 months, what were your total earnings from all your jobs before taxes and deductions? Please do not include earnings from anyone else. Responses ranged from 0= None, 1= \$1-4,999, 2 = \$5,000-\$9,999, 3 = \$10,000-\$14,999, 4 = \$15,000-\$19,999, 5 = \$20,000-\$24,999, 6 = \$25,000-\$34,999, to 7 = \$35,000 or above. Participants could also select “Don’t Know”, select “Refused”, or do a logical skip to the survey question (e.g., if unemployed). Father’s income at T1 was a covariate in the current study. At T2, fathers reported on income by responding to one question: Total earnings during last month worked, before taxes and other deductions including tips/commissions/overtime. Participants reported their monthly earnings with numeric dollar values. Participants could also select, “Refused”, select “Don’t Know”, or do a logical skip to the survey question (e.g., if unemployed). Income at T2 is the independent variable in the current study. To easily compare income at T1 to income at T2, income at T2 was multiplied by 12 to create an annual value. The values were then categorized into the same categories used to measure income at T1.

Language activities (T3). Fathers and mothers reported on the frequency of their engagement with their child in four language activities. The items included: read or look at books with child, sing songs with child, tell stories to child, and play with games or toys with child. Possible responses ranged from more than once a day to not at all. Scores were reverse coded so higher engagement in language activities corresponded to a higher value: 6 = more than once a day, 5 = about once a day, 4 = a few times a week, 3= a few times a month, 2=rarely, 1= not at all. The mean of the four items was compiled to compute the scale score. Cronbach’s alpha for these items is ($\alpha = 0.83$), which indicates a high degree of internal consistency.

Physical play (T3). Fathers reported on the frequency of their engagement with their child in five physical play activities. These items were not asked of mothers. The items included: roll a ball, toss a ball, or play games with a ball with child; take child for a ride on your shoulders or back; playfully turn child upside down or toss (she or him) up in the air; play chasing games with child; and play outside in the yard, a park, or a playground with child. Scores were reverse coded so higher engagement in physical play corresponded to a higher value: 6 = more than once a day, 5 = about once a day, 4 = a few times a week, 3 = a few times a month, 2 = rarely, 1 = not at all. The mean of the items was computed. Cronbach's alpha for these items is ($\alpha = 0.83$) which, indicates a high degree of internal consistency.

Receptive Vocabulary (T3). Language Development was assessed using the Peabody Picture Vocabulary Test 4 (PPVT-4). Children were shown a series of spoken words. The words got progressively more challenging, and children were asked to select an image that corresponded with the specific word's meaning. The test is complete when the child is unable to select the target word with its corresponding image. Standardized age-referenced scores were used with a distribution mean of 100 and a standard deviation of 15 (Dunn & Dunn, 2007; Ward & Lee, 2020).

Covariates. Control variables that could influence children's receptive vocabulary were included in all analyses. Some covariates were collected at T1. These included: child's sex (1 = boy, 2 = girl), mothers' and fathers' education (0 = none, 1 = high school diploma, 2 = GED or high school equivalency certificate, 3 = other), and mother's and father's reports of income (total earnings in the past 12 months as described above). The following covariates were collected at T3: father's residential status with child (1 = none of the time, 2 = some of the time, 3 = most of

the time, 4= all the time), mother's engagement in language activities, and the number of children (i.e., biological, not biological) living with the mother and father.

Analytic Strategy

Prior to testing hypotheses, I examined bivariate correlations among the main study variables in the analytic sample. This was done to test whether there were significant bivariate associations between the variables and covariates. Examining bivariate correlations also allowed me to test the direction of these associations (i.e., positive, negative) before running the models. Please see Table 2.

Analyses to Test Hypotheses

Linear regression models were computed in RStudio to test the hypotheses. One model was used to test H1. The model examined the association between father's income at T2 and children's receptive vocabulary. The model included father's income at T2, in addition to all covariates: mother and father's education, mother and fathers' income at T1, mother and father's reports of other kids in the home at T3, father's residential status at T3, child's sex, and mother's engagement in language activities at T3. H2a was tested in a model that examined the direct association between father's engagement in language activities and children's receptive vocabulary. H2b was then tested in a model that examined the association between father's engagement in physical play and children's receptive vocabulary. H3a was tested in a model that explored the moderating role of father's engagement in language activities. H3b was then tested by examining the moderating role of father's engagement in physical play. Models were tested individually to avoid multicollinearity between the two moderators (i.e., physical play, language activities). Covariates included: mother's and father's education, mother's and father's income at T1, mother's and father's reports of other kids in the home at T3, father's residential status at T3,

child's sex, and mother's engagement in language activities at T3. Models 1 and 2 were identical, aside from the main effects, as well as the different interaction terms that tested interactions between language activities and physical play.

Results

Frequencies were examined to explore the number and the percentage of mothers and fathers who engaged in each language activity and the percentage of fathers who engaged in each physical play activity with their children. The degree of engagement for both language activities and physical play ranged from, 6 = more than once a day, 5 = about once a day, 4 = a few times a week, 3 = a few times a month, 2 = rarely, 1 = not at all (Table 2).

Frequencies demonstrated that most fathers are engaging in language activities with their children a few times a week or more. Specifically, seventy-seven percent of fathers reported reading books with their child a few times a week or more. Seventy-eight percent of fathers sing songs with their child a few times a week or more. Seventy-one percent of fathers tell stories to their child a few times a week or more. Finally, ninety percent of fathers play games or play with toys with their child a few times a week or more.

Frequencies were also calculated to demonstrate father's engagement in physical play. Results showed that eighty-six percent of fathers roll a ball, toss a ball, or play games with a ball with their child a few times a week or more. Seventy-six percent of fathers take their child for a ride on their shoulders or back a few times a week or more. Fifty-six percent of fathers playfully turn their child upside down or toss their child up in the air a few times a week or more. Eighty-two percent of fathers play chasing games with their child a few times a week or more. Lastly,

seventy-four percent of fathers play outside in the yard, park, or a playground with their child a few times a week or more.

Table 2 shows bivariate correlations among the main study variables. Father's engagement in physical play was significantly positively associated with father's engagement in language activities $r = .66, p < .01$. Children's receptive vocabulary was significantly positively associated with father's income at T2 $r = .10, p < .05$. Covariates were also included in correlation tests. Father's income at T1 was significantly positively associated with father's income at T2 $r = .35, p < .01$. Father's income at T1 was significantly positively associated with father's engagement in language activities $r = .10, p < .05$. Father's income at T1 was significantly positively associated with children's receptive vocabulary $r = .13, p < .01$. Father's education at T1 was significantly positively associated with father's income at T2 $r = .16, p < .01$. Father's residential status with their child was significantly positively associated with father's engagement in language activities $r = 0.38, p < .01$, and physical play $r = .32, p < .01$. Also, father's report of having other kids in the home was significantly positively associated with father's engagement in physical play $r = .12, p < .01$.

Income and Receptive Vocabulary

To test whether lower father income was associated with lower receptive vocabulary in children (H1), regression analyses were run. The model included father's income at T2 with all covariates $R^2 = .02, F(10, 520) = 2.13, p < .05$. The model explained about 2% of the variance in children's receptive vocabulary. Results indicated that father's income at T2 was not associated with children's receptive vocabulary. However, the covariate, father's income at T1 ($\beta = 0.10, t(519) = 2.13, p < .05$) was significantly positively associated with children's receptive vocabulary.

Engagement in Language Activities

Regression analyses were run to examine whether father's engagement in language activities was independently positively associated with children's receptive vocabulary. Results indicated that father's engagement in language activities was not associated with children's receptive vocabulary. However, father's income at T1 was positively associated with children's receptive vocabulary ($\beta = 0.10$, $t(518) = 1.94$, $p < .05$).

Regression analyses were performed to test the moderating role of father's engagement in language activities in the association between father's income at T2 and children's receptive vocabulary (H3a). In line with recommendations (Aiken & West, 1991), father's income at T2 was centered and then multiplied by language activities, which was also centered, to create the interaction term between the two variables. As seen in Table 4, Model 1, father's engagement in language activities was not statistically significantly associated with children's receptive vocabulary, nor did father's engagement in language activities moderate the association between father's income and children's receptive vocabulary. The variables in the current model explained 2% of variance in children's receptive vocabulary $R^2 = 0.02$, $F(12, 518) = 1.78$ $p < .05$.

Engagement in Physical Play

In order to examine whether father's engagement in physical play was independently positively associated with children's receptive vocabulary (H2b), a regression analysis was conducted. The model included father's income at T2, father's engagement in physical play, and all covariates $R^2 = .02$, $F(11, 519) = 2.03$ $p < .05$. Results showed that father's engagement in physical play was not statistically associated with children's receptive vocabulary. However, results suggest that father's income at T1 was positively associated with children's receptive

vocabulary ($\beta = 0.10$, $t(518) = 2.03$, $p < .05$). Additionally, father's residential status with the child was positively associated with children's receptive vocabulary ($\beta = 0.11$, $t(518) = 2.03$, $p < .05$).

Regression analyses were performed to test the moderating role of father's engagement in physical play in the association between father's income and children's receptive vocabulary (H3b). Father's income at T2 was centered and then multiplied by physical play to create an interaction term between the two variables (Table 4, Model 2). Results indicated that father's engagement in physical play was not statistically significantly associated with children's receptive vocabulary, nor did father's engagement in physical play moderate the association between father's income and children's receptive vocabulary. However, like Model 1, father's income at T1 did significantly predict children's receptive vocabulary ($\beta = 0.10$, $t(517) = 1.98$, $p < .05$). Father's residential status with their child also significantly predicted children's receptive vocabulary ($\beta = 0.11$, $t(517) = 2.04$, $p < .05$). The variables in the current model explained 2% of the variance in children's receptive vocabulary $R^2 = 0.02$, $F(12, 518) = 1.98$ $p < .05$.

Discussion

Drawing from prior research, children who come from lower income households tend to lag in their language development compared to their more affluent peers (Justice et al., 2019). This raises concern for African American children, as there tends to be an overrepresentation of African American families living in poverty (Pungello et al., 2009). The current study investigated whether lower income among African American fathers was linked to children's receptive vocabulary and whether father's engagement in language activities and physical play were independently associated with children's receptive vocabulary (H2a and H2b), and whether

father's engagement in language activities and physical play moderated the association between father's income and children's receptive vocabulary (H3a and H3b). Hypotheses were not supported. However, the current study points to future directions that explore the ways in which African American family processes may influence children's developmental outcomes.

Independent Associations Between Father's Income and Receptive Vocabulary

Fathers' income at T2 was associated with children's receptive vocabulary at the bivariate level. However, when the model tested the associations between father's income at T2 and children's receptive vocabulary with all covariates, results were not significant. When the model included covariates, there was a statistically significant association between father's income at T1 (near the child's birth) and children's receptive vocabulary. One contributing factor for statistically significant associations between children's receptive vocabulary at age 3 and father's income at T1 only could be the impact of time. Drawing from Bronfenbrenner's PPCT model, the timing in which an individual experiences a transition (i.e., transition to parenthood, financial transition) may impact a child's development. The transition to parenthood can be a financial burden (Nomaguchi & Milkie, 2020). Thus, as new fathers adjust to parenthood and the additional expenses that are associated with parenthood, fathers may find it necessary to spend less time in the home and more time working to meet household demands. This allocation of time may reduce the degree to which fathers engage with their children very early in life, potentially impacting a child's exposure to language, which may then hinder a child's language development.

There was a statistically significant association between father's residential status and children's receptive vocabulary. This finding supports research that suggests that father's residential status may play a unique role in children's development (Cabrera et al., 2004; Castillo

et al., 2011). Residential fathers may have more time in the day to engage with their children because they do not have the same barriers as non-residential fathers such as travel, costs, and time (Castillo et al., 2011). Residential status may bolster children's developmental outcomes (i.e., language development) because fathers in the home may lead to greater engagement and opportunities for language-based interactions. Additionally, residential status may provide more opportunities for mothers to engage in activities with their children that can foster learning and positive child outcomes (Fagan & Palkovitz, 2011). For example, if both parents are in the home, they may work together (e.g., combine financial resources, complete household tasks) to accomplish household responsibilities and needs, giving mothers more time to engage with their children and bolster children's developmental outcomes.

Fathers' Engagement and Children's Receptive Vocabulary

Father's engagement in language activities and physical play were not predictive of children's receptive vocabulary. Neither did language activities nor physical play moderate the association between father's income and children's receptive vocabulary. Perhaps rather than exclusively measuring the quantity in which fathers engage in language activities and physical play with their children, future research should also examine the quality of father's engagement in language activities and physical play. For example, literature that has examined the role of language activities in children's developmental outcomes by identifying specific practices that can be used to strengthen language activities (e.g., shared book reading), not just the frequency of the activity (Mol & Bus, 2011). Malin and colleagues (2014) examined the association between low-income minority parents' quality of reading interactions and children's interest in book reading and children's receptive vocabulary. Both mothers and fathers frequently engaged in book reading with their children, but this study found that the *quality* of engagement mattered

more than the quantity (Malin et al., 2014). Malin and colleagues operationalize quality in the context of caregiver book reading as strategies that enhance reading time, such as engaging in talk (i.e., metalingual talk, dialogic reading) that surpass the text of the book (Malin et al., 2014).

A meta-analysis on the role of father's engagement in physical play on child's development (StGeorge & Freeman, 2017) examined the associations between child behavior (i.e., aggression, social competence, emotional skills, self-regulation) and quantity (i.e., frequency, duration) and quality of father-child physical play. Quantity was conceptualized using frequency and duration, and quality was conceptualized using four categories: initiations, directives, responses, and global quality (StGeorge & Freeman, 2017). The results found that social competence, emotional skills, and self-regulation were positively associated with the quantity as well as the quality of father-child physical play. Thus, future research should investigate both quantity and quality of father's engagement in language activities and physical play to identify whether these parental practices affect children's receptive vocabulary.

Given the findings in the current study, it is important to recognize that the models did not explain much of the variability in language development. The association between father's income and children's receptive vocabulary when moderated by father's engagement in language activities had an adjusted R^2 value of 0.04. The association between father's income and children's receptive vocabulary when moderated by father's engagement in physical play had an adjusted R^2 value of 0.04. These adjusted R^2 values indicate that the models only accounted for 4% of the variability in children's receptive vocabulary, which although statistically significant, indicates that the vast majority of individual variability in children's receptive vocabulary scores was accounted for by variables not included in this study. I presume that the adjusted R^2 values were low due to the way that key constructs were measured. For example, father's income did

not account for other sources of income (e.g., public assistance programs, financial support from kin or fictive kin). Had the measure for income been different, perhaps income would have accounted for more of the variance in the model.

Further, the measures of father engagement in the current study focused on quantity, rather than examining quality. As discussed above, this approach is problematic because it fails to recognize that frequency may not equate to quality. Measures that explored not just quantity, but also quality, may have increased how much my predictor variables explained individual differences in children's receptive vocabulary.

In addition to methodological challenges, perhaps the inclusion of additional variables in my models may have contributed to more robust results. For example, the BSF dataset did not account for factors that other studies have accounted for when examining children's receptive vocabulary, such as childcare experiences (Burchinal et al., 2000), or additional conversation partners (Hoff, 2010). These variables may have increased how much my predictor variables explained individual differences in children's receptive vocabulary.

Further, the betas in my models represented small effect sizes (Durlak, 2009). Drawing from Cohen's classifications for effect sizes, values of 0.20 have a small effect size, values of 0.50 have a medium effect size, and values at or above 0.80 have a large effect size (Durlak, 2009). Standardized beta values indicate that for every one-unit increase in the standard deviation in father's income at T2, there is an associated increase in children's receptive vocabulary by the Beta value. Therefore, in the model examining the association between father's income and children's receptive vocabulary when moderated by father's engagement in language activities, the beta coefficient for father's income at T1 is ($\beta = .10$). This indicates that

for every one-unit increase in father's income at T1, children's receptive vocabulary is likely to increase by ($\beta = .10$). For example, children whose fathers earned \$5,000-\$9,999 annually had a receptive vocabulary score that was .10 higher than children whose fathers earned \$1-\$4,999. This .10 increase may not be very meaningful considering the possible PPVT score ranges from 34 to 134 in the current sample.

Study Limitations and Strengths

As with all studies, the current study has limitations. The first limitation is that the predictor variable (father's income at T2) had high rates of missing data. High rates of missing data are a limitation because missing data may reduce the statistical power, which may impact the ability to detect weak associations between my predictor variables and my dependent variable. There are a variety of factors that may have contributed to high rates of missing data in my income variables. Participants in the current sample had earnings that fell below national averages of poverty in the United States, which may have contributed to them feeling uncomfortable disclosing their income. In addition, participants may not have known what their monthly or annual earnings were. Individuals who experience job instability may not be able to report their annual earnings because their earnings vary from week to week.

Another limitation in the current study is that there was little variance in father's income. Variance examines how much the sample deviates from the mean. The majority of the fathers in the sample earned low wages. Had the sample been representative of all African American fathers' income (i.e., low-income fathers, high-income fathers, middle-income fathers), perhaps father's income would have played a greater role in children's receptive vocabulary. The associations between father's income and children's receptive vocabulary when moderated by

father's engagement in language activities and physical play may have also been stronger had there been more variance in father's income.

Another limitation in the independent variable is that income was not measured similarly across timepoints. Income at T1 was measured annually, whereas income at T2 was measured monthly, but was then converted to be an annual measure. This is a methodological limitation because there is variability in the way that income was measured across time points. These inconsistencies make it challenging to compare income at T1 and T2.

Income at T1 was significantly associated with children's receptive vocabulary in both models. However, father's income at T2 was not significantly associated with children's receptive vocabulary. This may have been due to timing. Perhaps having more income at T1 allowed fathers to provide more resources which may have set the foundation for language learning. Or these findings may have been the result of differences in the measurement for father's income across time points. Nonetheless, these results may indicate that perhaps the way in which father's income at T1 was measured compared to T2 may have contributed to different results.

Another point to consider about the current study is that the correlations between father's income at T1 and father's income at T2 were $r = .35, p < .01$. Perhaps there was not a stronger correlation between father's income at T1 and T2 because of recall bias. Recall bias can occur if a participant is unable to accurately report on a past event (i.e., lag). This is a limitation because participants were asked to report on their income within the past 12 months at one timepoint and past month at another timepoint. It is possible that participants may not be able to remember

what their income was over an extended period of time, particularly if their earnings vary, or if they do not have a fixed salary.

A final limitation in father's income at T1 and T2 is that the measures did not account for public assistance programs (e.g., SNAP, TANF). Supplemental Nutrition Assistance Program (SNAP) is a program that helps low-income individuals and families purchase groceries (Falk et al., 2014). Temporary Assistance for Needy Families (TANF) is a program that offers financial assistance to low-income families with children (Falk et al., 2014). The aim of these programs is to temporarily support low-income individuals and families so they can eventually support their families and meet their basic needs (Falk et al., 2014). Failing to account for public assistance programs is a limitation of the measure because it underestimates income or the external resources that a family may have access to. Another limitation in the current study is the way in which father's engagement was measured. Father's engagement in language activities and physical play were father-reported, which may have contributed to biases in these measures. Research suggests that there may be discrepancies between self-report and observations due to different perspectives and systematic biases in the data (Zaslow et al., 2006). Further, research suggests that observations are more predictive of child development outcomes as opposed to self-reports (Zaslow et al., 2006).

Although the current study has several limitations, the study also has strengths. First, this study explicitly looks at African American families, particularly fathers, a population that has historically been underrepresented in social science research. This study can add to the growing research that examines family processes among minoritized communities. Second, this study uses a strengths-based approach to address African American family processes. Research tends to portray African American samples using a deficit lens, but this study intentionally draws on

the strengths of the African American community. While father engagement did not moderate the association between father's income and children's receptive vocabulary, results demonstrated that low-income African American fathers are engaged in their young children's lives (see Table 3). This knowledge can help reframe the narrative on fathers and demonstrate that African American fathers are present in their children's lives. Another strength in the current study was the exploration of father's engagement in both language activities and physical play. Research tends to exclusively focus on one form of engagement. But the current study explored the role of African American father's engagement in both language activities and physical play. Another strength of the study was its sample size, and the fact that the participants came from a national sample. Even after restricting the sample to African American fathers, children with a PPVT score, and fathers who have seen their child in the past month, the study still had a large sample size ($n = 531$). A large sample size is a strength because it increases power and allows the researcher to identify potentially small but meaningful associations between the predictor variables and the dependent variable.

Future Directions

This study addresses the implications of father's income on children's receptive vocabulary. The hypotheses were not supported, nonetheless, the current study was informative. The association between father's income at T2 and children's receptive vocabulary was not statistically significant. However, father's income at T1 was consistently significantly positively associated with children's receptive vocabulary. This may be a call for early childhood researchers to explore what factors are particularly salient during a father's transition to parenthood that contributes to a significant association between father's income at early stages of a child's development and children's receptive vocabulary. Future studies should examine

changes in children's receptive vocabulary over time. Early childhood is a period in which children are learning and developing skills at exponential rates (Berk, 2013). Therefore, it would be beneficial for future research to look at changes in children's receptive vocabulary across early childhood. Drawing from the PPCT model, having multiple time points would allow researchers to assess changes in children's receptive vocabulary over time. Doing so would enable researchers to identify the ways in which proximal processes between African American parents and their children are impacting children's language development. This longitudinal approach would allow researchers to assess the moderating role of father's engagement in language activities and physical play in the association between father's income and children's receptive vocabulary at multiple time-points.

Similarly, future research should look at the role of father's engagement in language activities and physical play over time. Doing this would reveal the long-term implications of father engagement on children's receptive vocabulary. Finally, future studies should assess not only the quantity of parental engagement, but also the quality. While quantity helps researchers understand to what degree something is happening (i.e., reading books, playing outside), quality may be a helpful factor as well. Future studies should seek to understand the quantity and the quality of parental engagement with their children to better understand which practices are most effective in bolstering children's language development. Doing so may inform parents of the ways in which they can practice higher quality engagement practices. These findings suggest that more research needs to be done to understand African American familial processes that can be protective for children who may come from disadvantaged backgrounds.

Tables and Figures

Table 1

Descriptive Statistics of Analytic Sample

Variable	<i>n</i>	<i>%</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Fathers Income (T1)						
None	46	9				
\$1-\$4,999	117	22				
\$5,000-\$9,999	84	16				
\$10,000-\$14,999	98	18				
\$15,000-\$19,999	64	12				
\$20,000-\$24,999	49	9				
\$25,000-\$34,999	46	9				
\$35,000 or above	27	5				
Mothers Income (T1)						
None	66	12				
\$1-\$4,999	196	37				
\$5,000-\$9,999	120	23				
\$10,000-\$14,999	66	12				
\$15,000-\$19,999	39	7				
\$20,000-\$24,999	23	4				
\$25,000-\$34,999	12	2				
\$35,000 or above	9	2				
Fathers Income (T2)						
None	125	24				
\$1-\$4,999	20	4				
\$5,000-\$9,999	56	11				
\$10,000-\$14,999	96	18				
\$15,000-\$19,999	76	14				
\$20,000-\$24,999	43	8				
\$25,000-\$34,999	69	13				
\$35,000 or above	46	9				
Fathers Education						
None	159	30				
High school diploma	276	52				
GED or high school equivalency certificate	67	13				
Other	29	5				
Mothers Education						
None	164	31				
High school diploma	285	54				
GED or high school equivalency certificate	46	9				
Other	36	7				

Table 1*Continued*

Variable	<i>n</i>	%	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Number of Other Children - Mothers						
0	3	<1				
1	127	24				
2	189	36				
3	102	19				
4	52	10				
5	37	7				
6	14	3				
7	5	1				
9+	2	<1				
Number of Other Children - Fathers						
0	91	17				
1	106	20				
2	155	29				
3	85	16				
4	49	9				
5	23	4				
6	15	3				
7	5	<1				
9+	2	<1				
Fathers Living with Child						
All of the time	282	53				
Most of the time	82	15				
Some of the time	100	19				
None of the time	67	13				
Child's Sex						
Male	272	51				
Female	259	49				
Children Receptive Vocabulary			87.93	14.14	34	134

Table 2*Means, Standard Deviations, and Bivariate Correlations of Study Variables (N= 531)*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Income (F) (T2)	3.15	2.32												
2. Language activities (F)	4.37	1.07	.02											
3. Physical play (F)	4.24	1.07	-.05	.66**										
4. Receptive vocabulary	87.93	14.14	.10*	.03	-.03									
5. Income (F) (T1)	2.91	1.98	.35**	.10*	-.00	.13**								
6. Income (M) (T1)	1.96	1.57	.14**	-.02	-.06	.05	.21**							
7. Education (F)	0.94	0.80	.16**	.01	-.02	.08	.24**	.07						
8. Education (M)	0.91	0.81	.07	-.08	-.05	.03	.08	.15**	.15**					
9. Language activities (M)	4.99	0.75	.01	-.00	-.01	.01	-.01	.03	-.05	-.02				
10. Live with child (F)	3.09	1.10	.08	.38**	.32**	.06	.09*	.09*	-.03	-.01	-.02			
11. Other kids (F)	2.12	1.63	-.03	.05	.12**	-.08	.02	.00	-.10*	-.08	.01	.44**		
12. Other kids (M)	2.53	1.45	-.02	.02	.04	-.08	-.01	-.02	-.00	-.05	.01	.13**	.55**	
13. Child sex (M)	1.49	0.50	.03	.00	-.13**	.02	.03	-.04	-.02	.01	.04	.05	.06	.05

Note. *M* and *SD* are used to represent mean and standard deviation, respectively. *M*= mother's report, *F*= father's report. Child sex 1= male, 2= female. T1= baseline, T2= 15 months after baseline, and T3= 36 months post-intervention * indicates $p < .05$. ** indicates $p < .01$

Table 3*Frequency Distribution of Parental Engagement in Language Activities and Physical Play*

Items	Father		Mother	
	<i>n</i>	%	<i>n</i>	%
Read or look at books with child				
Not at all	17	3	1	<1
Rarely	39	8	9	2
A few times a month	62	12	26	5
A few times a week	209	39	154	29
About once a day	107	20	164	31
More than once a day	97	18	177	33
Sing songs with child				
Not at all	22	4	0	0
Rarely	46	9	5	1
A few times a month	46	9	20	4
A few times a week	172	32	148	28
About once a day	100	19	112	21
More than once a day	145	27	246	46
Tell stories to child				
Not at all	30	6	8	2
Rarely	64	12	23	4
A few times a month	59	11	52	10
A few times a week	202	38	157	30
About once a day	95	18	150	28
More than once a day	81	15	141	27
Play with games or toys with child				
Not at all	6	1	0	0
Rarely	13	2	2	<1
A few times a month	37	7	13	2
A few times a week	125	24	69	13
About once a day	111	21	121	23
More than once a day	239	45	326	61

Table 3*Continued*

Items	Father	
	<i>n</i>	%
Roll a ball, toss a ball, or play games with a ball with child		
Not at all	7	1
Rarely	25	5
A few times a month	38	7
A few times a week	176	33
About once a day	92	17
More than once a day	193	36
Take child for ride on your shoulders or back		
Not at all	20	4
Rarely	50	9
A few times a month	60	11
A few times a week	186	35
About once a day	74	14
More than once a day	141	27
Playfully turn child upside down or toss child up in the air		
Not at all	108	20
Rarely	85	16
A few times a month	39	7
A few times a week	129	24
About once a day	66	12
More than once a day	104	20
Play chasing games with child		
Not at all	21	4
Rarely	24	5
A few times a month	47	9
A few times a week	175	33
About once a day	97	18
More than once a day	167	31
Play outside in the yard, a park, or a playground with child		
Not at all	18	3
Rarely	26	5
A few times a month	94	18
A few times a week	204	38
About once a day	68	13
More than once a day	121	23

Note. Mother's engagement in physical play was not reported.

Table 4

Linear Regression of Father's Income, Father's Engagement, and Children's Receptive Vocabulary (N= 531)

	Model 1 Language Activities			Model 2 Physical Play		
	β	<i>SE</i>	<i>p</i>	β	<i>SE</i>	<i>p</i>
Intercept	80.36	5.05	<.001***	80.68	5.07	<.001***
Income T2 (F)	0.05	0.28	0.30	0.04	0.28	0.37
Physical Play (F)	-	-	-	0.02	0.98	0.79
Income T1(F)	0.10	0.34	0.04*	0.10	0.34	0.04*
Education (M)	0.00	0.77	0.92	0.00	0.77	0.92
Education (F)	0.04	0.80	0.40	0.04	0.80	0.41
Live with Child (F)	0.10	0.69	0.06	0.11	0.66	0.03*
Income T1 (M)	0.01	0.40	0.87	0.00	0.40	0.92
Other children (M)	-0.04	0.51	0.44	-0.04	0.51	0.50
Other children (F)	-0.10	0.51	0.09	-0.10	0.50	0.07
Child's sex (M)	0.02	1.22	0.67	0.01	1.24	0.86
Language Activities (F)	-0.01	0.96	0.85	-	-	-
Language Activities (M)	0.02	0.81	0.68	0.02	0.81	0.68
Income T2 X Language Activities (F)	0.00	0.24	0.95	-	-	-
Income T2 X Physical Play (F)	-	-	-	-0.05	0.24	0.22

Model 1:

Adj. $R^2 = 0.02$ and F-Statistic = 1.78*

Model 2:

Adj. $R^2 = 0.02$ and the F-Statistic = 1.98*

Note: M= Mother, F= Father; T1 = Baseline, T2= 15 months after baseline, and T3 = 36 months post-intervention; Child gender was coded 1= Male, 2= Female; * $p < .05$, ** $p < .01$, *** $p < .001$.

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