



HHS Public Access

Author manuscript

Dev Psychol. Author manuscript; available in PMC 2016 July 28.

Published in final edited form as:

Dev Psychol. 2014 December ; 50(12): 2587–2599. doi:10.1037/a0038179.

Living with a Grandparent and Parent in Early Childhood: Associations with School Readiness and Differences by Demographic Characteristics

Natasha V. Pilkauskas

Abstract

Despite the increasing prevalence of three-generation family households (grandparent, parent, child), relatively little research has studied these households during early childhood. Using nationally representative data from the Early Childhood Longitudinal Study – Birth Cohort ($N \sim 6,550$), this study investigates the associations between three-generation coresidence in early childhood and school readiness, and how the associations differ by maternal age, race/ethnicity, nativity, relationship status and poverty. For the full sample of children, no associations between three-generation coresidence and school readiness were found. Analyses by demographic characteristics found that race/ethnicity and nativity moderate the associations; whereas maternal age, relationship status and poverty do not. The findings suggest that three-generation coresidence was associated with lower levels of expressive language for White, Asian and Black children, but more expressive language for Hispanic children. Coresidence was also associated with more externalizing behavior for White and American Indian/Alaskan Native children but less externalizing behavior for Hispanic and Black children. Analyses by maternal nativity found that for children of immigrant mothers, three-generation coresidence was associated with more expressive language and less externalizing and internalizing behavior. Interactions between race/ethnicity and nativity found that the positive associations for Hispanic children were concentrated among children of immigrant parents. No differences were found between grandmother-only and grandmother/grandfather three-generation family households. Overall the findings suggest there may be heterogeneity by race/ethnicity and nativity in the associations between three-generation coresidence and school readiness.

Keywords

Grandparents; Three-generation households; School readiness; Extended households; Multigenerational households

Over the last several decades, large demographic shifts (decreased marriage, increased divorce and non-marital fertility) and increasing longevity have resulted in a greater reliance on multigenerational bonds (Bengtson, 2001; Mare, 2011). As a result, children are more likely to spend time in a three-generation family household, in which a grandparent, parent and child coreside. The share of children in three-generation family households grew from 6% in 2001, to 8% in 2011 (U.S. Census Bureau, 2011), and nearly 25% of children live in a three-generation household in early childhood (Pilkauskas & Martinson, 2014). Yet, relatively few studies have explored whether three-generation coresidence in early childhood

is linked with children's school readiness—an important predictor of academic success (Duncan et al., 2007); extant studies have primarily utilized data on specific, mostly disadvantaged, subpopulations.

Understanding whether three-generation coresidence in early childhood is associated with school readiness is important for several reasons. Three-generation coresidence is most common during early childhood (Fields, 2003), and development during this period is strongly linked with long-term wellbeing (Campbell, Pungello, Miller-Johnson, Burchinal & Ramey, 2001; Entwisle, Alexander & Olson, 2004). Prior to school entry, families play a particularly significant role in child development (Demo & Cox, 2000), and grandparent coresidence may influence that development if their presence affects the economic, emotional or parental resources available for the child (Dunifon, 2013).

This study investigates the associations between three-generation coresidence during early childhood and school readiness using the Early Childhood Longitudinal Study Birth Cohort (ECLS-B). Unlike most prior research which has focused on disadvantaged populations (e.g. poor children or single mother households), this paper uses longitudinal, nationally representative data to study the full array of children in three-generation households. Analyses are conducted to consider whether maternal age, race/ethnicity, nativity, relationship status and poverty moderate the association between three-generation coresidence and school readiness. These characteristics were chosen as they have been highlighted in prior research as particularly important moderators of the association between coresidence and school readiness. Yet, with the exception of race/ethnicity, little research has investigated whether these family characteristics moderate the association between three-generation coresidence and child cognitive and socioemotional outcomes. By studying differences in the association between three-generation coresidence and school readiness by demographic characteristics, we are able to examine not only heterogeneity by group (i.e. are associations different for Hispanic versus White children), but also across groups (e.g. age versus race/ethnicity), to investigate whether particular demographic characteristics more strongly moderate the associations.

Background and Literature

Theoretical Pathways of Influence

Coresident grandparents may affect child development directly through their interactions with the child or indirectly through the parents of the child (Dunifon, 2013). Specifically, grandparents may provide instrumental support (e.g. financial, childcare) or emotional resources that improve the wellbeing of children and parents (Linver, Brooks-Gunn & Kohen, 2002). Grandparents may directly improve child cognitive and socioemotional outcomes by reading, counting, or talking with the child, or through role modeling, monitoring of behavior, or discussing emotions and behavior (e.g. Pettit, Laird, Dodge, Bates & Criss, 2001). Equally, grandparents might indirectly influence children by improving the wellbeing of parents (Stack, 1974). If grandparents provide instrumental support, say through finances, or by doing household chores, parents may have more money and time to invest in cognitively stimulating activities with the child. Or if grandparents provide parents with emotional support, parents may feel less stress, and may have better

mental health, thereby improving parent-child interactions which could improve child behavioral outcomes.

Although there are many reasons to believe that grandparent coresidence would improve child socioemotional or cognitive outcomes, their presence could also be a drain on household resources. Grandparents may directly hinder child development if they use or reinforce poor parenting approaches. For example, if grandparents allow more TV watching, children may receive less cognitive stimulation. Or if grandparents yell or use physical approaches to discipline, socioemotional outcomes could be negatively impacted (Gershoff, 2013). A coresident grandparent may also indirectly hinder child development by affecting parental or household resources. If a grandparent is in poor financial or physical health, parents may need to provide the grandparent with economic or time resources that would have otherwise been available for the child, resulting in poorer cognitive and behavioral outcomes. A grandparent might interfere with parent's childrearing (Chase-Lansdale, Brooks-Gunn, & Zamsky, 1994), or increase household crowding, which has been linked with poorer socioemotional outcomes (Johnson, Martin, Brooks-Gunn & Petrill, 2008). Lastly, if grandparent coresidence increases conflict between the parent and grandparent, between parents, or household stress more generally, both cognitive and socioemotional outcomes for children might be affected (Brooks-Gunn & Chase-Lansdale, 1991; Black & Nitz, 1996).

In sum, grandparents may indirectly or directly influence child socioemotional or cognitive development, and whether that influence will be positive or negative is not clear. Another important consideration is selection of individuals into three-generation households. Families that select into coresidence may differ on a variety of child, parental or grandparental characteristics. On the one hand, factors that select families into coresidence are likely to be associated with poorer child socioemotional and cognitive outcomes. Low-income, early child bearing, single parenthood, or a relationship transition (e.g. divorce) are all factors that are associated with increased likelihood of coresidence (Kamo, 2000; Pilkauskas, 2012; Cohen & Casper, 2002) and with poorer child cognitive and socioemotional outcomes (Duncan & Brooks-Gunn, 1997; Cherlin, 2010; Cooper, Osborne, Beck & McLanahan, 2011). On the other hand, cultural factors, norms or the importance of family, may select families into coresidence (Baca Zinn & Wells, 2000), which could be linked with improved child cognitive and socioemotional wellbeing.

Moderating Characteristics

This study first investigates whether three-generation coresidence in early childhood is associated with child cognitive and socioemotional wellbeing at kindergarten, using a nationally representative sample of children. However, comparing differences in school readiness by three-generation coresidence on average does not take into account the considerable heterogeneity in three-generation households. Studying whether the associations between three-generation coresidence and school readiness are moderated by family characteristics (maternal age, race/ethnicity, nativity, relationship status and poverty) not only allows for the investigation of heterogeneity in the associations but also for the construction of more similar comparison groups (e.g. young mothers who live with a

grandparent compared to young mothers who do not) and the examination of whether particular characteristics more strongly moderate the associations than others.

There are also a number of theoretical reasons why we might expect differences in the associations by demographic groups. First, the prevalence of three-generation family households varies by family characteristics. Thus, in groups where coresidence is more common, families who coreside are likely relatively similar to families who do not coreside (less negatively selected), and therefore differences between the two groups may be minimal. In groups where coresidence is uncommon, coresidence may indicate some sort of family crisis (negative selection), which could increase stress and conflict, resulting in poorer child cognitive and socioemotional outcomes. Second, we might expect for groups where coresidence is more prevalent that it is more normative, and may have a different social meaning, than for groups where coresidence is uncommon. When coresidence is normative, the roles for grandparents are likely to be more prescribed, which may result in less conflict or parental stress over navigating roles, and grandparents may provide more assistance (Mollborn et al., 2011). In comparison, for children where coresidence is not normative, three-generation coresidence may be associated with poorer cognitive or socioemotional wellbeing compared to their peers who do not coreside.

Third, prior research has found that the type of household extension varies by demographic groups and those groups that are the neediest (such as economic need) are the ones who will move into someone else's home (Kamo, 2000). Downward extension, where parents move in with the grandparent generation, may indicate a need of the parent. In these cases, child development might improve if coresidence provides additional resources to the parent or child. Upward extension, where the grandparent moves in with the parent, suggests that the grandparent may be receiving assistance from the parent. Parents may be caring for elderly grandparents, which could divert resources from the child, leading to poorer socioemotional and cognitive outcomes. Lastly, for certain demographic characteristics there may also be differences in culture that lead to variation in the roles of grandparents in households and child wellbeing. For example, there is some evidence that income pooling in three-generation households varies by race/ethnicity (Angel & Tienda, 1982), which might be associated with child cognitive and socioemotional wellbeing.

Thus, there are reasons to expect differences in the associations by demographic characteristics, yet it is also possible that despite variations in prevalence or norms, some characteristics moderate the association whereas others do not. By looking at multiple moderating characteristics, this paper can address whether certain characteristics are more important moderators to consider when studying three-generation coresidence and child wellbeing. Although many characteristics are associated with three-generation coresidence, this paper addresses differences by maternal age, race/ethnicity, nativity, relationship status and poverty, as younger, minority, single, immigrant and poor families are more likely to coreside, and because prior research on child wellbeing in three-generation households has emphasized the importance of these characteristics (summarized below). This paper also investigates whether three-generation family type— specifically whether a grandmother- only or whether both grandparents are coresident – moderates the associations with school

readiness, as research has largely focused on grandmother-only three-generation households, but many children live with two grandparents.

Prior Literature

Although a relatively large literature has found three-generation coresidence is associated with improved wellbeing for teenagers (excepting McLanahan & Sandefur, 1994 who find poorer wellbeing; Astone & Washington, 1994; Barbarin & Soler, 1993; Deleire & Kalil, 2002; Ensminger, Kellam & Rubin, 1983; Pittman, 2007), far less research has focused on early childhood, and the findings are mixed for this developmental period. Understanding the prior literature on early childhood and three-generation coresidence is complicated by the fact that nearly every study concentrates on a particular subgroup, many focus on race/ethnicity as a moderator, and a large share only investigate single mother and grandmother three-generation households.

A few studies have focused on single mothers living with a grandparent and have found both positive and null associations. In a study of young single mothers with low birth weight children, Pope et al. (1993) found improved cognitive outcomes for children who lived with a grandmother. A study of low-income families found that children in single mother and grandmother households had similar socioemotional outcomes as children in married households (Kellam, Ensminger, & Turner 1977). Yet a study of unmarried mothers who lived with a grandparent (not just grandmothers) found no associations between coresidence and child cognitive and socioemotional outcomes (Augustine & Raley, 2013; nor do they find differences by race/ethnicity).

Another group of studies has investigated differences in the associations between three-generation coresidence and early child cognitive and socioemotional outcomes, by race/ethnicity. Studies focusing on single teen or young mothers, found improved behavior for Black and Latino boys who lived with a grandmother (Leadbeater & Bishop, 1994), and worse behavior and cognitive outcomes for White children who lived with a grandmother (East & Felice, 1996) or grandparents (Unger & Cooley, 1992). Another study of low-income families found no associations with cognitive or behavioral outcomes by race/ethnicity (Foster & Kalil, 2007). Studies using nationally representative data (both single and partnered mothers), found that three-generation coresidence was associated with positive cognitive and behavioral outcomes for Black 2 year olds, but not for White or Latino children (Mollborn, Fomby & Dennis, 2011, 2012); whereas a nationally representative study of three-generation coresidence among single mothers found that time in a three-generation household was associated with improved cognitive outcomes for White children and worse cognitive outcomes for Black children ages 5-15 (Dunifon & Kowaleski-Jones, 2007).

Although the vast majority of research on three-generation coresidence and outcomes in early childhood has focused exclusively on race as a moderator, one study of low-income children (ages 0-4 and 10-14) also studied differences by maternal age. Pittman and Boswell (2008) found improved socioemotional outcomes for children in three-generation households whose mothers were older, and improved cognitive outcomes for White and Hispanic children whose mothers were older.

This study adds to the prior literature in a number of ways. First, it investigates the association between three-generation coresidence and school readiness, using nationally representative data. Second, it investigates differences by several moderating characteristics. Although prior research has examined differences by race/ethnicity, this is the first to investigate associations among Asian American and American Indian/Alaskan Native children and to study differences by nativity, noted in earlier research as an important area of future study (Pittman & Boswell, 2008). The prior literature has also identified specific subpopulations – low-income, young mothers, and single mothers – as particularly important groups to study. Yet no research to date (excepting Pittman & Boswell, 2008 for maternal age), has investigated whether these characteristics moderate the associations between coresidence and child outcomes. Lastly, the literature has primarily focused on coresidence with a grandmother. Although some studies have examined coresidence with grandparents more generally, no research has investigated whether there are differences by coresidence with a grandmother, grandfather or two grandparents. The current study is not able to study grandfather only three-generation households due to insufficient sample, but differences by whether the child lives in a grandmother only three-generation household or a two-grandparent, three-generation household are investigated.

Method

Data and Sample

Data came from the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B) a nationally-representative sample of children who were born in 2001. Children were sampled from birth certificates using data from the National Center for Health Statistics (Bethel, Green, Nord, Kalton & West, 2005). Data were collected when children were approximately 9 months old, 2 years old, 4 years old and at the start of kindergarten (all children were interviewed in the fall of 2006, and the 25% of children who had not started kindergarten were interviewed again in 2007). Interviews were conducted with mothers, fathers and children, and parents were paid a small fee for participation.

Approximately 10,700 children were interviewed at the 9 month survey and by the 4 year interview, approximately 8,950 remained (in accordance with the Institute for Education Sciences reporting rules, all sample sizes were rounded to the nearest 50). Of the remaining children, the ECLS-B took an 85% sample for the kindergarten interview resulting in approximately 6850 interviews. Of these children, 300 were missing values on the outcome variables and were excluded from the analysis, resulting in a final sample of 6550. To preserve data on children who had missing data on covariates ($N \sim 450$), multiple imputation using chained equations was conducted to generate 25 imputed data sets (Johnson & Young, 2011; Royston, 2004). Following von Hippel (2007), the dependent variables were included in the imputation models, but all cases with missing information on an outcome variable were excluded from the final analyses. Additional analyses were conducted using the fully imputed dataset and the unimputed dataset and results were very similar.

Analyses of the respondents who attrited prior to the age 4 interview suggested attriters had lower levels of income at the first survey, were less likely to be married, and had less education as compared with those who did not attrite. Attriters were also less likely to be

immigrants but were slightly more likely to be Hispanic. In terms of three-generation coresidence, levels of coresidence were similar among attriters and those who remained in the sample. Ways in which attrition might have affected the study findings are considered in the discussion section.

Measures

Cognitive outcomes—Three measures of cognitive development were collected in the ECLS-B kindergarten waves: early reading, mathematics ability, and expressive language. Children's cognitive ability was assessed directly by interviewers using ECLS-B developed instruments designed to be adaptive and to assess a broad level of developmentally appropriate knowledge and skills (Snow et al., 2009). Early reading skills were assessed through letter recognition and sounds, matching of words, and knowledge of phonetics and print conventions that included verbal responses, pointing to images, and multiple choice responses. For mathematics ability, children were assessed on number sense, statistics and probability, spatial sense and patterns in a variety of ways (e.g. counting stars, using plastic manipulatives). ECLS-B item response theory (IRT) scale scores for both mathematics and reading (reliability of .92 for both scores; Najarian, Snow, Lennon, Kinsey & Mulligan, 2010) were used and standardized (mean 0, SD 1) so that higher scores reflected higher math or reading ability.

Expressive language was assessed using the Let's Tell Stories subscale from the Preschool Language Assessment Scales (Duncan & De Avila, 1998). Children were read two scripted stories with pictures. The child then retold the story using the pictures as prompts and were rated on their language use (0 = "no response" to 5="articulate, detailed, vivid, complex language use"). The two scores were averaged and standardized so that higher scores reflected more expressive language.

Socioemotional outcomes—The three socioemotional outcomes were adapted from the Preschool and Kindergarten Behavior Scales—Second Edition (PKBS-2; Merrell, 2003) and the Social Skills Rating System. For each measure, parents reported whether a child 1 ("never") to 5 ("very often") engaged in each behavior. Responses were summed and standardized so that a higher score indicated more externalizing, internalizing or prosocial behavior.

Externalizing behavior was assessed using 7 items ($\alpha=.80$) asking about temper tantrums, aggressive, destructive and impulsive behaviors. Internalizing behavior was assessed using two questions asking whether the child was "worried about things" or "seemed unhappy" ($\alpha=.34$). Although the α on internalizing behavior was quite low, this scale has been used in other work using the ECLS-B (Han, Lee & Waldfogel, 2012), and was included for completeness. Eleven items were included in the prosocial behavior measure which included items such as being accepted and liked by other children, using words to express feelings and trying to understand others ($\alpha=.84$).

Three-generation family households—To capture any three-generation coresidence in early childhood, coresidence was coded as 1 if the child lived with his or her own parent(s) and at least one grandparent (a grandmother, grandfather or both), at any of the

first three survey waves (9 months, 2 years, or 4 years). Coresidence at kindergarten was not included to ensure proper time ordering of the analyses.

Moderators—To consider whether certain family characteristics moderated the association between three-generation coresidence and school readiness, analyses were run stratifying by: maternal age at the birth, race/ethnicity, nativity, relationship status and poverty. Mothers' age was coded as under 20, 20-24, 25-29, 30-34 and 35 or older. Race/ethnicity was coded as non-Hispanic Black, non-Hispanic White, Hispanic, Asian American/Pacific Islander or American Indian/Alaskan Native (hereafter referred to as: Black, White, Hispanic, Asian and AI/AN for brevity). The “other” racial group was not studied due to insufficient sample, but was included in the full sample analyses to provide nationally representative estimates.

Mother's nativity (or immigrant status) was coded as 1 if she was not born in the US. Mother's relationship status was constructed to capture both relationship type and transitions (as transitions are associated with moves into three-generation households but also poorer child outcomes, due to disruptions in household resources and routines; Fomby & Cherlin, 2007). Mothers were coded as stably married (meaning married at the 9 month, 2-year and 4-year surveys), stably cohabiting, stably single, a move from partnered to unpartnered, unpartnered to partnered and two relationship transitions over the first 4 years. Last, a measure was constructed to indicate whether families were always poor over the first 4 years, whether they were sometimes poor, or if they were never poor.

Because the associations may also vary by whether or not one or two grandparents lived with the child, analyses were also run including an indicator of whether the grandmother alone or the grandfather and grandmother both were coresident. Analyses of three-generation households that included just a grandfather were not possible due to small sample sizes ($n \sim 100$) and households where children lived with a grandmother or both grandparents at different times were excluded ($n \sim 150$).

Covariates—Other characteristics that are associated with coresidence and child wellbeing were included in the models as covariates and all were measured at the first survey wave (9 months) with the exception of number of residential moves, child's age at kindergarten, and kindergarten year (and mother's relationship status and poverty status detailed earlier). Mother's education was coded as less than high school, high school, some college, or college or greater. In addition to poverty, two economic covariates were included: mother's employment prior to the birth and whether the mother received Women, Infants and Children (WIC) assistance. Analyses were also run utilizing other measures of income (whether families were poor at the birth, a ratio of income to household size, and household income) and the findings did not change.

Analyses also included controls for the number of siblings in the household (first birth, one, two or three plus siblings), the number of residential moves (none, one, two or more) between the 9 month and 4 year interview, region of the country (northwest, northeast, south and west) and an indicator for urban residence as child wellbeing varies by household size and location. As English language proficiency might affect measures of reading and

language (although for children whose native language was Spanish, assessments were conducted in Spanish), a dummy variable for English primary language use and an English language proficiency scale for the mother was included. English language proficiency was based on four questions (how well the respondent speaks, reads, understands and writes in English) that were scored on a 4-point Likert scale (1= not well at all, 4 = very well) that were summed so that higher values correspond with greater English language proficiency (Han, Lee & Waldfogel, 2012).

Child characteristics included an indicator of whether the child was a boy, was born low birth weight, or was born prematurely, as prior research has linked these characteristics with child outcomes. As child development varies strongly by the age of the child, and children were interviewed at slightly different ages, a measure of the age of the child in months at the kindergarten survey wave was also included in each model. Some children entered kindergarten in 2006 and some in 2007, so a dummy variable was included indicating kindergarten attendance in 2006.

A number of maternal grandparent measures were captured for the full sample (not just coresident grandparents) that might be associated with both coresidence and child wellbeing: a measure of whether the mother's parents were living together when she was 16 (as relationship status is highly correlated with economic wellbeing), a measure of whether the mother's parents received AFDC when she grew up (an indicator of childhood disadvantage), a measure of maternal grandmother's education (coded as no formal education, less than high school, high school, some college, college or more), and measures of whether the maternal grandmother or grandfather ever had a major depressive episode (as reported by the parent). Information on the paternal grandparents was not available, nor was it possible to distinguish whether the coresident grandparent was a maternal or paternal grandparent.

Analytic Strategy

Ordinary least squares regression models with extensive demographic controls were used to assess the associations between three-generation coresidence (from 9 months to age 4) and child cognitive and socioemotional outcomes (at kindergarten). All analyses were weighted using ECLS-B constructed replicate weights that adjusted for oversampling and attrition. Analyses were stratified by each moderating characteristic (maternal age, race/ethnicity, immigrant status, relationship status, and poverty status) and Chow tests were conducted to test whether findings for demographic group were significantly different from each other (e.g. Black versus White, Black versus Hispanic). For the analyses that distinguished between grandmother only and grandmother/grandfather three-generation households, adjusted Wald tests were run to test for significant differences between the coefficients.

Results

Sample Characteristics

Sample characteristics are described in Table 1. At the birth of the child, 8% of mothers were under age 20, 24% were age 20-24, 26% were 25-29, 25% were 30-34 and 18% were

35 or older. About 14% of the sample was Black, 58% White, 22% Hispanic, 3% Asian and 1% AI/AN. Nineteen percent of the sample included mothers who were born outside of the U.S. Two-thirds of mothers were stably married from the birth through age 4, 7% stably cohabited and 12% were single. Six-percent of mothers were initially partnered and later broke up, 6% were single and partnered up and 3% of mothers had two relationship transitions.

Table 1 also describes the sample by three-generation family household status. Three-generation households were significantly more likely to include mothers who were young, Black or Hispanic, single, who experienced a relationship transition, and who were always or sometimes poor. Three-generation households were also more likely to include mothers who were having their first child, had a low birth-weight child, grew up with a single parent or were poor when growing up (received AFDC).

Table 2 shows the percent of mothers in each moderating demographic group who live in a three-generation household. Two-thirds of mothers under age 20 lived in a three-generation family household in their child's early years, whereas only 6% of mothers over age 35 did likewise. Similarly, minority mothers (32% of Black, 29% of Hispanic, 27% of Asian, 34% of AI/AN) were much more likely to have coresided than White mothers (17%). Mothers who were immigrants were equally likely to coreside as those who were native-born. Differences by relationship status show that only 12% of stably married mothers lived in a three-generation family household in early childhood, 24% of stably cohabiting, and 53% of stably single mothers. Mothers who experienced a relationship transition also had high rates of coresidence (30-54%). Lastly, 32% of mothers who were always poor and 38% of mothers who were sometimes poor coresided, whereas only 14% of mothers who were never poor lived in a three-generation family household.

Table 2 also shows mean differences in the standardized cognitive and socioemotional outcomes by three-generation status for each of the moderating demographic groups. For the full sample, children in three-generation family households had significantly poorer reading, math, expressive language and externalizing behavior as compared to children who did not coreside. When stratified by maternal age, there were few significant differences in school readiness between three-generation households and not coresident households. White and Asian children who lived in a three-generation family household during early childhood had significantly poorer reading, math, expressive language and externalizing behavior than children who did not coreside. Children of native-born mothers who lived in a three-generation family household had significantly poorer reading, math, expressive language and externalizing behaviors than those who did not coreside; whereas there were few significant differences by coresidence for children of immigrant mothers. There were few statistically significant differences by relationship status, although children in stably married three-generation households had significantly lower reading and math scores than those who did not coreside. Lastly, children who were never poor and coresided had significantly lower reading and math scores than those who did not live in a three-generation household.

Associations between Three-Generation Coresidence and Child Cognitive and Socioemotional Outcomes

Table 3 presents the coefficients on three-generation coresidence from regression analyses for the full sample and for each of the five moderating characteristics. All regressions control for the full set of covariates and are available upon request (Appendix Table 1 includes all the covariates for the full sample regression). Starting with the full sample results, there was no association between three-generation coresidence in early childhood and child cognitive or socioemotional outcomes. Similarly, when the analyses were stratified by maternal age, no significant associations were found, except for mothers under 20, where coresidence was associated with fewer internalizing behaviors as compared to young mothers who did not coreside.

Results from the regressions analyses that stratified by race/ethnicity, suggest that race/ethnicity moderates the associations with three-generation coresidence. In general, three-generation coresidence in early childhood was not associated with reading or math scores, although coresidence was associated with lower reading scores for Asian children as compared with their non-resident peers (Chow tests confirm that the coefficient for Asian children was distinct from Hispanic, Black and White children). For expressive language, three-generation coresidence was associated with less expressive language for White and Asian children, and marginally associated with lower scores for Black children (the coefficient for AI/AN children was not significant despite being larger than the White coefficient, possibly due to insufficient power). For Hispanic children on the other hand, coresidence was associated with more expressive language. Results from Chow tests suggest that the association for Hispanic children was significantly different from that of Black, White, Asian and AI/AN children.

Three-generation coresidence was associated with fewer externalizing behaviors for Black and Hispanic children, but significantly more externalizing behavior for White and AI/AN children. Chow tests show that Hispanic and Black children were different than all other groups (but not each other). Coresidence was not associated with internalizing behaviors for any race/ethnic group, although for Black children it was marginally associated with lower levels of internalizing behavior. For AI/AN children, coresidence was associated with fewer pro-social behaviors, whereas no significant associations were found for other racial/ethnic groups, but Chow tests found that the coefficient was not significantly different from other race/ethnic groups.

Differences by mother's nativity reveal interesting differences in the association between coresidence and child cognitive and socioemotional outcomes. No significant associations were found for reading, math or prosocial behaviors, but for expressive language, externalizing and internalizing behaviors, three-generation coresidence in early childhood was associated with more expressive language and fewer externalizing/internalizing behaviors for children whose mothers were immigrants. For the native-born mothers, only expressive language was associated with coresidence; children who lived in a three-generation family household had lower levels of expressive language as compared to children who did not coreside.

Very few associations were significant in the models that stratified by mother's relationship status. Although there are reasons to expect that children in single parent households might benefit most from coresidence, the only significant association for children in stably single parent three-generation households was for internalizing behaviors. The only other significant association by relationship status was for stably cohabiting mothers, where coresidence was linked with less expressive language. None of the associations for the mothers with partner transitions were significant, but these findings should be interpreted with caution, as it is not possible to disentangle a relationship transition from a transition into (or out of) a three-generation household. Chow tests found few significant differences, suggesting that the associations across relationship groups were not different.

Lastly, the analyses that studied differences by poverty found no associations between coresidence and school readiness. Again, as was the case with relationship status transitions, the non-findings from the "sometimes poor" group should be interpreted with caution – as a move into or out of poverty could be a result of coresidence (moving in with grandparents results in higher income) or a driver of leaving coresidence, which could confound the findings.

Race/Ethnicity and Immigrant Status Interactions

The analyses suggested that race/ethnicity and nativity moderated the association between three-generation coresidence and school readiness, but the two are closely related, especially for Asian and Hispanic mothers. To further investigate whether there were racial/ethnic differences in the associations, or whether those differences were driven by nativity, an analysis was run interacting the two characteristics. These analyses were restricted to Asian and Hispanic children, for whom a significant portion of household included immigrant families (84% and 57% respectively). Although Black and White households also included some immigrants (9% and 4% respectively), few Black or White households included three-generations, making these analyses not possible.

Table 4 shows the results of the analyses that stratify by race/ethnicity and immigrant status. Among Hispanic immigrant mothers, three-generation coresidence was significantly associated with greater expressive language and less externalizing behaviors. In comparison, none of the associations were significant for Hispanic native-born mothers. Chow tests show that the differences between Hispanic immigrant mothers and non-immigrant mothers were significant for both expressive language and externalizing behavior. These findings suggest that the positive associations observed for Hispanic children in three-generation households are concentrated among Hispanic children of immigrant mothers.

For Asian children, the story is a bit more complicated. The analyses by race/ethnicity found that three-generation coresidence was associated with lower reading and expressive language for Asian children. Similarly, when the analyses were further stratified by nativity, there was a negative association with coresidence for those two outcomes, but the differences between immigrant and non-immigrant mother households were not significant. Yet one significant difference emerged - for prosocial behavior. Among Asian immigrant mothers, coresidence was not associated with prosocial behavior, but it was associated with fewer prosocial behaviors for children with non-immigrant Asian mothers, and the two coefficients were

significantly different from one another. In general, these findings suggest that for Asian families, nativity does not drive the findings for reading and expressive language, but there may be some differences for prosocial behavior.

Differences by Grandmother-Only and Grandmother/Grandfather Households

As noted earlier, much of the previous literature on three-generation family households has focused on grandmother only coresidence, but many children live with both grandparents. Among three-generation households in the ECLS-B (data not shown), 50% of children live with both grandparents, 45% live with just a grandmother and 6% live with just a grandfather. To investigate whether there were differences in the associations with school readiness by whether a child lived with a grandmother or both grandparents, analyses (not shown but available upon request) that included indicator variables for both types of three-generation households were run (grandfathers were excluded due to insufficient sample as were children who lived in a both types of three-generation households over the first years of life). For the full sample, there were no associations with school readiness and no differences between grandmother only or two grandparent households. For the analyses by moderating characteristics, occasionally differences emerged, but they were inconsistent (showing improved and worse outcomes for both types of households) and overall there were few associations (possibly as a result of insufficient power). Additionally, none of the findings were consistent across outcomes or moderating groups (e.g. one association emerged for stable cohabiters and one for stably single mothers). Together, these findings suggest that there are few differences between grandmother-only and two-grandparent three-generation family households.

Discussion

This study is the first to examine the associations between three-generation coresidence in early childhood and school readiness using a nationally representative sample and to study differences in the associations by multiple moderating characteristics. Much of the prior research on three-generation households has focused on unmarried (Augustine & Raley, 2013; Deleire & Kalil, 2002; Dunifon & Kowaleski-Jones, 2007) or teen mothers (CITES), but this study found that 36% of three-generation households in early childhood include married mothers and 77% include mothers over 20. This paper contributes to the literature by not only studying associations among groups where coresidence is particularly common, but by also studying the many types of three-generation family households. In particular, this paper is the first to investigate differences by maternal age, nativity, relationship status, and poverty. Additionally, although prior research has examined heterogeneity by race/ethnicity, this study is also the first to investigate the association among Asian-American and AI/AN children. By studying multiple moderating characteristics, it is possible to understand differences by demographic characteristic (e.g. by age groups) as well as across demographic characteristics (e.g. age vs. nativity).

The analyses found no associations between three-generation coresidence during early childhood and school readiness for the full sample of children. Analyses that studied differences by demographic groups, found that race/ethnicity and nativity moderated the

associations between coresidence and school readiness, but that age, relationship status and poverty did not. Specifically, three-generation coresidence was associated with less expressive language for White, Asian and Black children, whereas it was associated with more expressive language for Hispanic children. For externalizing behavior, coresidence was associated with less externalizing behavior for Black and Hispanic children, but more externalizing behavior for White and AI/AN children. Few associations with math, reading, internalizing behavior or prosocial behavior were found, although for Asian children, coresidence was associated with lower reading scores.

Differences by mother's nativity showed that three-generation coresidence for children of immigrant mothers was associated with improved expressive language, and fewer externalizing or internalizing behaviors. In comparison, for children of native-born mothers, coresidence was only associated with lower levels of expressive language. Yet race/ethnicity and nativity are closely related, and because these two characteristics moderated the associations with school readiness, this study also investigated an interaction of these two characteristics. Those analyses found that for Hispanic children, the beneficial associations from three-generation coresidence on expressive language and externalizing behavior were concentrated among children of Hispanic immigrant mothers. In comparison, the analyses for Asian children did not find differences between immigrant and native-born mothers. Together these analyses suggest although race/ethnicity moderates the associations between coresidence and school readiness, there may also be differences by mother's nativity.

Although the findings here suggest that in general, for Hispanic (immigrant mother) children, coresidence was associated with higher levels of school readiness, for Black children the association was mixed (positive and negative), and for White, Asian and AI/AN children, the associations suggested lower levels of school readiness, it is possible that selection may account for differences across groups. Negative selection, or selection into coresidence as a result of a negative event, is mostly likely to be present for White children, where coresidence is least common. Although poorer cognitive and socioemotional outcomes for White children might be explained by negative selection, for Asian and AI/AN children, where coresidence is quite common, this explanation is less plausible. Nonetheless, selection could still explain differences if, for example, coresident grandparents in White, Asian or AI/AN households are generally in poorer health than those in Black or Hispanic households. Or, it is also possible that Hispanic three-generation households are different from White, Asian and AI/AN households, in terms of income pooling or shared resources, and that leads to improved socioemotional and cognitive outcomes. Unfortunately, it was not possible to test for differences in grandparent health or income pooling, an area for future research. Nonetheless, these results suggest that race/ethnicity and nativity may moderate the associations between coresidence and school readiness.

Why might race/ethnicity and nativity moderate the associations with school readiness but not maternal age, relationship status or poverty? Again, it is possible that selection accounts for some of these differences. If for example, a poor mother who coresides is worse off in some unobserved way (say impulsive behavior), it is possible that coresidence offsets these negative characteristics – resulting in a null associations as compared with non-coresident poor mothers. Or, perhaps there are differences by race/ethnicity (and nativity) in three-

generation households, in terms of income pooling, cultural norms, or even parenting practices (CITE KAMO) that do not differ by age or poverty. It is also possible that poverty or relationship status moderate the associations within racial/ethnic groups but it was not possible to investigate those interactions due to insufficient sample or lack of variation (e.g. the majority of Black three-generation households include a single mother and nearly all Asian three-generation households include married mothers). Future research that can consider these interactions would be a useful next step.

A large portion of the prior literature on three-generation coresidence has focused on grandmother-only three-generation family households. However, in these data, more than half of three-generation households included both grandparents. Therefore this study also investigated differences in the associations between grandmother-only and grandmother/grandfather three-generation households. In general, few differences in the associations were found, suggesting that grandmother-only and two-grandparent three-generation households are linked with school readiness in similar ways. It is also possible that differences between maternal and paternal coresident grandparents exist (prior research on infant survival has found differences by maternal and paternal grandparents; Voland & Beise, 2002), but this study was not able to distinguish between the two. Future research that can distinguish between maternal and paternal grandparents would be beneficial.

It is difficult to place the findings from this study in context with earlier work, as most of the prior research has studied particular sub-populations, and few have studied moderating characteristics (besides race/ethnicity). The most closely related research investigated extended living arrangements among Black, White and Latino households and cognitive and behavioral outcomes at age 2 (Mollborn et al., 2011). Similar to the findings here they found improved behavioral outcomes for Black children, but unlike the findings here they also found improved cognitive outcomes for Black children and no associations for White or Latino children. Differences in the findings may be a result of the different developmental ages studied or different cognitive and behavior measures.

This study has several limitations. First, the periodic nature of the data means that household structure is not observed for children before the 9-month interview or between survey waves. Research has shown that transitions into and out of three-generation households are common (Mollborn et al., 2012; Pilkauskas, 2012), thus it is likely that grandparent coresidence is underestimated, which may bias the results toward zero (if households that were coresident at some point in time are not observed as coresident). Second, as noted earlier, selection may affect the observed associations; therefore, the associations documented here are those that persist, net of a number of socio-demographic controls. Research that can better account for selection would be a useful next step. Third, the data do not identify whether the grandparent or the parent is the householder, thus, the type of household extension (upward or downward) cannot be observed and this might affect the associations. Nor is it possible to know what kind of support or parenting grandparents are providing within these households. Fourth, as noted earlier, families who attrite from the sample are slightly more economically disadvantaged. To the extent that disadvantaged families are more likely to coreside, attrition is likely to have attenuated the findings (although no associations were found for poor families). Last, although this paper is the first to study Asian and AI/AN children, it is

limited in terms of the conclusions that can be drawn about racial/ethnic differences. Children from many cultures are studied as a single racial/ethnic group, and as such, important variations within groups are ignored. Small samples did not allow for further refinement of these ethnic groups, but future research on within group differences is important.

Despite these limitations, the findings from this study suggest that in general, the associations between three-generation coresidence and school readiness are moderated by race/ethnicity and nativity, and that the direction of the association (beneficial or negative) may vary by these groups. This paper shows that maternal age, poverty and relationship status, may be less important moderators of the association between coresidence and school readiness, despite large differences in the prevalence of three-generation households by these demographic characteristics. As the population ages, three-generation living arrangements are likely to increase in prevalence. The large share of children, and in particular minority children, who live in three-generation households in early childhood suggests that more research needs to be done to understand the impacts of these living arrangements on children and families.

References

- Angel R, Tienda M. Determinants of extended household structure: Cultural pattern or economic need? *American Journal of Sociology*. 1982;1360–1383.
- Astone NM, Washington ML. The association between grandparental coresidence and adolescent childbearing. *Journal of Family Issues*. 1994; 15(4):575–589.
- Augustine JM, Raley RK. Multigenerational households and the school readiness of children born to unmarried mothers. *Journal of Family Issues*. 2013; 34(4):431–459. [PubMed: 23847390]
- Baca Zinn, M.; Wells, B. Diversity within Latino families: New lessons for family social science. In: Demo, DH.; Allen, KR.; Fine, MA., editors. *Handbook of family diversity*. New York: Oxford University Press; 2000. p. 252-273.
- Barbarin O, Soler RE. Behavioral, emotional, and academic adjustment in a national probability sample of African American children: Effects of age, gender and family structure. *Journal of Black Psychology*. 1993; 19:423.
- Bengtson VL. Beyond the nuclear family: The increasing importance of multigenerational bonds. *Journal of Marriage and Family*. 2001; 63:1–16.
- Bethel, J.; Green, JL.; Nord, C.; Kalton, G.; West, J. Early Childhood Longitudinal Study, Birth Cohort (ECLS-B) methodology report for the 9-Month data collection (2001-02): Volume 2: Sampling. Washington D.C.: National Center for Education Statistics; 2005.
- Black MM, Nitz K. Grandmother co-residence, parenting, and child development among low income, urban teen mothers. *Journal of Adolescent Health*. 1996; 18(3):218–226. [PubMed: 8777198]
- Brooks-Gunn J, Chase-Lansdale P. Children having children: effects on the family system. *Pediatric Annals*. 1991; 20(9):467, 470. [PubMed: 1945544]
- Campbell FA, Pungello EP, Miller-Johnson S, Burchinal M, Ramey CT. The development of cognitive and academic abilities: Growth curves from an early childhood educational experiment. *Developmental Psychology*. 2001; 37(2):231–242. [PubMed: 11269391]
- Chase-Lansdale PL, Brooks-Gunn J, Zamsky ES. Young African-American multigenerational families in poverty: Quality of mothering and grandmothering. *Child Development*. 1994; 65(2):373–393. [PubMed: 8013228]
- Cherlin AJ. Demographic trends in the United States: A review of research in the 2000s. *Journal of Marriage and Family*. 2010; 72(3):403–419. [PubMed: 22399825]
- Cohen PN, Casper LM. In whose home? Multigenerational families in the United States, 1998-2000. *Sociological Perspectives*. 2002; 45(1):1–20.

- Cooper C, Osborne C, Beck A, McLanahan S. Partnership instability, school readiness and gender disparities. *Sociology of Education*. 2011; 83(3):246–259. [PubMed: 21949448]
- Deleire T, Kalil A. Good things come in threes: Single-parent multigenerational family structure and adolescent adjustment. *Demography*. 2002; 39(2):393–413. [PubMed: 12048958]
- Demo DH, Cox MJ. Families with young children: A review of research in the 1990s. *Journal of Marriage and Family*. 2000; 62(3):876–895.
- Duncan, G.; Brooks-Gunn, J., editors. *Consequences of Growing up Poor*. New York: Russell Sage; 1997.
- Duncan GJ, Dowsett CJ, Claessens A, Magnuson K, Huston AC, Klebanov P, et al. Japel C. School readiness and later achievement. *Developmental Psychology*. 2007; 43(6):1428–1446. [PubMed: 18020822]
- Duncan, SE.; De Avila, EA. *PreLAS 2000*. Monterey, CA: CTB/McGraw-Hill; 1998.
- Dunifon R. The influence of grandparents on the lives of children and adolescents. *Child Development Perspectives*. 2013; 7(1):55–60.
- Dunifon R, Kowaleski-Jones L. The influence of grandparents in single-mother families. *Journal of Marriage and the Family*. 2007; 69(2):465–481.
- East, P.; Felice, M. *Adolescent pregnancy and parenting*. Mahwah, NJ: Lawrence Erlbaum; 1996.
- Ensminger, ME.; Kellam, SG.; Rubin, BR. School and family origins of delinquency: Comparisons by sex. In: Van Dusen, KT.; Mednick, SA., editors. *Prospective Studies of Crime and Delinquency*. Boston: Kluwer-Nijhoff Publishing Co; 1983. p. 73-97.
- Entwisle, DR.; Alexander, KL.; Olson, LS. The first-grade transition in life course perspective. In: Mortimer, JT.; Shanahan, MJ., editors. *Handbook of the life course*. New York: Springer; 2004.
- Fields, J. *Current Population Reports. US Census Bureau; Washington, D.C: 2003. Children's living arrangements and characteristics: March 2002*.
- Fomby P, Cherlin AJ. Family instability and child well-being. *American Sociological Review*. 2007; 72(2):181–204. [PubMed: 21918579]
- Foster EM, Kalil A. Living arrangements and children's development in low-income White, Black, and Latino Families. *Child Development*. 2007; 78(6):1657–1674. [PubMed: 17988313]
- Gershoff ET. Spanking and child development: We know enough now to stop hitting our children. *Child Development Perspectives*. 2013; 7(3):133–137. [PubMed: 24039629]
- Han WJ, Lee RH, Waldfogel J. School readiness among children of immigrants in the US: Evidence from a large national birth cohort study. *Children and Youth Services Review*. 2012; 34:771–782. [PubMed: 22711952]
- Johnson AD, Martin A, Brooks-Gunn J, Petrill SA. Order in the house! Associations among household chaos, the home literacy environment, maternal reading ability, and children's early reading. *Merrill-Palmer Quarterly*. 2008; 54(4):445. [PubMed: 19526070]
- Johnson DR, Young R. Toward best practices in analyzing datasets with missing data: Comparisons and recommendations. *Journal of Marriage and Family*. 2011; 73(5):926–945.
- Kamo Y. Racial and ethnic differences in extended family households. *Sociological Perspectives*. 2000; 43(2):211–229.
- Kellam SG, Ensminger ME, Turner RJ. Family structure and mental health of children concurrent and longitudinal community-wide studies. *Archives of General Psychiatry*. 1977; 34:1012–1022. [PubMed: 901133]
- Kreider, R.; Ellis, R. *Current Population Reports. US Census Bureau; 2011. Living arrangements of children: 2009*.
- Leadbeater BJ, Bishop SJ. Predictors of behavior problems in preschool-children of inner-city Afro-American and Puerto-Rican adolescent mothers. *Child Development*. 1994; 65(2):638–648. [PubMed: 8013244]
- Linver MR, Brooks-Gunn J, Kohen DE. Family processes as pathways from income to young children's development. *Developmental Psychology*. 2002; 38(5):719. [PubMed: 12220050]
- Mare RD. A multigenerational view of inequality. *Demography*. 2011; 48(1):1–23. [PubMed: 21271318]

- Merrell, KW. *Preschool and kindergarten behavior scales - second edition*. Austin, TX: PRO-ED; 2003.
- Mollborn S, Fomby P, Dennis JA. Who matters for children's early development? race/ethnicity and extended household structures in the United States. *Child Indicators Research*. 2011; 4(3):389–411. [PubMed: 21927627]
- Mollborn S, Fomby P, Dennis JA. Extended household transitions, race/ethnicity, and early childhood cognitive outcomes *Social. Science Research*. 2012; 41(5):1152–1165.
- Najarian, M.; Snow, K.; Lennon, J.; Kinsey, S.; Mulligan, G. *Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), Preschool-Kindergarten 2007 Psychometric Report*. NCES; 2010.
- Pettit GS, Laird RD, Dodge KA, Bates JE, Criss MM. Antecedents and behavior problem outcomes of parental monitoring and psychological control in early adolescence. *Child Development*. 2001; 72(2):583–598. [PubMed: 11333086]
- Pilkauskas NV. Three-generation family households: Differences by family structure at birth. *Journal of Marriage and Family*. 2012; 74(5):931–943. [PubMed: 24014117]
- Pilkauskas NV, Martinson ML. Three-generation family households in early childhood: Comparisons between the United States, the United Kingdom, and Australia. *Demographic Research*. 2014; 30:1639–1652. [PubMed: 25429249]
- Pittman LD. Grandmothers' involvement among young adolescents growing up in poverty. *Journal of Research on Adolescence*. 2007; 17:89–116.
- Pittman LD, Boswell MK. Low-income multigenerational households: Variation in family functioning by mothers' age and race/ethnicity. *Journal of Family Issues*. 2008; 29:851–881.
- Pope SK, Whiteside L, Brooks-Gunn J, Kelleher KJ, Rickert VI, Bradley RH, Casey PH. Low-birth-weight infants born to adolescent mothers – effects of coresidency with grandmother on child-development. *Jama-Journal of the American Medical Association*. 1993; 269(11):1396–1400.
- Royston P. Multiple imputation of missing values. *Stata Journal*. 2004; 4:227–241.
- Snow, K.; Derecho, A.; Wheelless, S.; Lennon, J.; Rosen, J.; Rogers, J.; et al. Einaudi, P. *Early Childhood Longitudinal Study Birth Cohort (ECLS-B), Kindergarten 2006 and 2007 Data File User's Manual*. NCES; 2009.
- Sonuga-Barke EJS, Mistry M. The effect of extended family living on the mental health of three-generations within two Asian communities. *British Journal of Clinical Psychology*. 2000; 39(2): 129–141. [PubMed: 10895357]
- Stack, C. *All our kin: Strategies for survival in a black community*. Basic Books; 1975.
- Unger DG, Cooley M. Partner and grandmother contact in black and white teen parent families. *Journal of Adolescent Health*. 1992; 13(7):546–552. [PubMed: 1420208]
- U.S. Census Bureau. *America's families and living arrangements: 2011*. 2011. Retrieved from <http://www.census.gov/population/www/socdemo/hh-fam/cps2011.html>
- Voland E, Beise J. Opposite effects of maternal and paternal grandmothers on infant survival in historical Krummhorn. *Behavioral Ecology and Sociobiology*. 2002; 52(6):435–443.
- Von Hippel PT. Regression with missing Ys: An improved strategy for analyzing multiply imputed data. *Sociological Methodology*. 2007; 37(1):83–117.

Table 1
Sample Characteristics by Three-Generation Household Coresidence

	Full sample	Three-Generation	Not Three-Generation
	(% or M)	(% or M)	(% or M)
Ever Three-Generation	23	-	-
<i>Maternal Characteristics</i>			
Age			
<20	8	23	3
20-24	24	41	19
25-29	26	20	28
30-34	25	11	29
35+	18	5	21
Race/Ethnicity			
Black	14	20	12
White	58	43	62
Hispanic	22	29	20
Asian	3	4	3
American Indian/Alaskan Native	1	1	1
Other	2	2	2
Nativity			
Immigrant	19	18	19
Native-Born	81	82	81
Relationship Status			
Stably Married	67	36	75
Stably Cohabiting	7	7	7
Stably Single/Divorced	12	28	7
Partnered to Unpartnered	6	8	5
Unpartnered to Partnered	6	14	3
Two Transitions	3	7	2
Poverty			
Always Poor	11	16	9
Sometimes Poor	25	43	20
Never Poor	64	41	70
Education			
Less than HS	19	30	16
High school	28	36	26
Some College	28	26	28
College +	25	7	30
Mother work prior to birth	72	70	73
WIC	52	77	45
Siblings			
No siblings	40	58	35

	Full sample	Three-Generation	Not Three-Generation
	(% or M)	(% or M)	(% or M)
1 sibling	34	26	37
2 siblings	16	10	18
3 + siblings	3	1	3
English primary language	87	85	88
Mother's English literacy (<i>M</i>)	11.0	11.2	10.9
(<i>SD</i>)	(2.9)	(2.5)	(2.9)
Residential Moves			
None	53	40	57
One	30	33	29
Two	17	27	14
Urban	85	85	86
Region			
Northwest	22	18	24
Northeast	17	16	17
South	37	41	35
West	24	25	24
<i>Child Characteristics</i>			
Boy	51	50	51
Premature	12	13	11
Low birth weight	7	9	7
Kindergarten Start			
2006	73	74	72
2007	27	26	28
Kindergarten age (<i>M</i>)	68.2	68.1	68.2
(<i>SD</i>)	(4.4)	(4.6)	(4.4)
<i>Maternal grandparent Characteristics</i>			
Lived with both parents at 16	58	47	61
AFDC growing up	11	15	10
Depression			
Grandmother	7	8	7
Grandfather	3	2	3
Grandmother's Education			
Less than HS	37	41	36
High school	30	33	30
Some college	18	18	19
College +	15	9	17
<i>N</i>	6550	1500	5050

Note: All *N*s are unweighted and rounded to the nearest 50. Standard deviations (*SD*) in parentheses. Estimates are weighted using WKRO. WIC=Women, Infants and Children, AFDC=Aid to Needy Families with Dependent Children.

Table 2
Means on School Readiness Outcomes by Moderating Characteristics and Three-Generation (3G) Coreidence

	N	% Reading		Math		Expressive Language		Externalizing		Internalizing		Prosocial Behavior		
		3G	Not 3G	3G	Not 3G	3G	Not 3G	3G	Not 3G	3G	Not 3G	3G	Not 3G	
<i>Full Sample</i>	6,550	23	-0.17	0.05	-0.17	0.11	0.03	0.11	0.05	-0.05	-0.08	-0.01	0.07	0.10
<i>Mother's Age</i>														
<20	450	67	-0.39	-0.37	-0.41	-0.35	-0.04	-0.12	0.05	-0.06	-0.09	0.03	0.13	0.06
20-24	1,500	38	-0.15	-0.18	-0.16	-0.22	0.07	-0.04	0.10	0.07	-0.05	-0.02	0.15	0.13
25-29	1,600	17	-0.12	0.00	-0.11	0.06	0.00	0.09	-0.04	0.04	-0.07	-0.01	-0.02	0.09
30-34	1,750	10	0.02	0.19	0.05	0.28	0.18	0.19	0.03	-0.12	-0.19	0.03	-0.08	0.11
35+	1,300	6	0.09	0.22	0.04	0.30	-0.19	0.19	0.08	-0.19	0.01	-0.05	-0.20	0.09
<i>Race/Ethnicity</i>														
Black	1,050	32	-0.21	-0.15	-0.36	-0.27	-0.04	0.06	-0.05	0.07	-0.50	-0.38	0.07	0.13
White	3,000	17	-0.09	0.21	-0.01	0.32	0.18	0.31	0.20	-0.09	0.10	0.05	0.10	0.16
Hispanic	1,100	29	-0.34	-0.32	-0.36	-0.31	-0.13	-0.47	-0.08	0.01	-0.08	0.02	0.08	-0.07
Asian	900	27	0.29	0.54	0.29	0.49	-0.24	-0.03	-0.16	-0.28	0.15	0.05	-0.12	-0.09
AI/AN	300	34	-0.22	-0.34	-0.33	-0.28	-0.11	0.04	0.29	0.09	0.07	-0.10	-0.17	0.18
<i>Nativity</i>														
Immigrant	1,500	21	-0.22	-0.17	-0.23	-0.15	-0.31	-0.49	-0.20	-0.03	0.00	0.14	-0.09	-0.14
Native-Born	5,000	23	-0.16	0.11	-0.16	0.17	0.10	0.25	0.11	-0.06	-0.10	-0.04	0.11	0.16
<i>Relationship Status</i>														
Stably married	4,450	12	0.01	0.19	0.01	0.25	0.04	0.16	-0.02	-0.12	0.05	0.03	0.03	0.12
Stably cohabiting	400	24	-0.26	-0.44	-0.16	-0.38	-0.52	-0.25	-0.07	0.00	-0.21	-0.06	0.11	-0.06
Stably single	750	53	-0.28	-0.46	-0.35	-0.45	0.04	-0.01	0.14	0.27	-0.25	-0.15	0.04	0.06
Partnered to single	350	30	-0.37	-0.16	-0.24	-0.08	-0.02	0.03	0.01	0.08	0.18	-0.12	0.00	0.09
Single to partnered	350	54	-0.32	-0.41	-0.36	-0.44	0.20	0.04	0.01	0.34	-0.03	-0.13	0.19	0.02
Two partnership transitions	200	47	-0.03	-0.10	-0.01	-0.12	0.22	0.11	0.29	0.19	-0.29	-0.14	0.22	0.14
<i>Poverty</i>														
Always poor	800	32	-0.57	-0.58	-0.68	-0.57	-0.25	-0.32	0.29	0.29	-0.12	-0.07	-0.25	-0.12
Sometime poor	1,600	38	-0.21	-0.32	-0.28	-0.28	-0.01	-0.20	0.08	0.09	-0.07	-0.03	0.16	0.00
Never poor	4,150	14	0.03	0.25	0.13	0.31	0.18	0.26	-0.07	-0.14	-0.07	0.01	0.10	0.16

Notes: Sample is weighted by year of data using WKR0 weights. All Ns are unweighted and rounded to the nearest 50. Statistically significant differences ($p < .05$) are noted in italics.

Table 3
Association between Three-Generation Coreidence and Kindergarten Cognitive and Socioemotional Outcomes by Age, Race/Ethnicity, Nativity, Relationship Status and Poverty

	Read	Math	Expressive Language	Externalizing	Internalizing	Pro-Social
<i>Full Sample</i>						
Ever Three-Generation	0.03 (0.04)	0.03 (0.03)	-0.01 (0.04)	-0.01 (0.04)	-0.04 (0.04)	-0.07 (0.05)
<i>Mother's Age at Birth</i>						
<20	0.05 (0.12)	0.03 (0.10)	-0.02 (0.11)	0.07 (0.14)	-0.30* (0.12)	0.19 (0.15)
20-24	0.06 (0.06)	0.10 (0.06)	0.03 (0.07)	-0.05 (0.07)	0.01 (0.07)	-0.01 (0.08)
25-29	0.00 (0.09)	-0.01 (0.09)	-0.11 (0.09)	-0.14 (0.11)	-0.02 (0.11)	-0.15 (0.10)
30-34	-0.03 (0.11)	-0.09 (0.09)	0.07 (0.08)	0.10 (0.09)	-0.17+ (0.10)	-0.18+ (0.10)
35+	-0.01 (0.13)	-0.06 (0.12)	-0.18 (0.20)	0.21 (0.16)	0.07 (0.16)	-0.23 (0.16)
<i>Race/Ethnicity</i>						
Black	0.05 (0.06)	-0.02 (0.06)	-0.16+ (0.09)	-0.17* (0.08)	-0.18+ (0.10)	-0.12 (0.10)
White	-0.02 (0.07)	0.02 (0.06)	-0.12* (0.06)	0.19* (0.07)	0.05 (0.08)	-0.10 (0.07)
Hispanic	0.05 (0.08)	0.05 (0.06)	0.24** (0.08)	-0.20* (0.09)	-0.11 (0.09)	0.01 (0.12)
Asian	-0.20* (0.08)	-0.09 (0.08)	-0.26** (0.10)	0.14 (0.09)	0.04 (0.08)	-0.10 (0.10)
AI/AN	-0.07 (0.12)	-0.07 (0.11)	-0.22 (0.13)	0.32** (0.10)	0.09 (0.10)	-0.33* (0.14)
<i>Nativity</i>						
Immigrant	0.02 (0.08)	0.05 (0.07)	0.24* (0.10)	-0.20* (0.10)	-0.18* (0.08)	-0.00 (0.12)
Native-Born	0.02 (0.05)	0.02 (0.04)	-0.09* (0.04)	0.05 (0.05)	-0.01 (0.05)	-0.08 (0.05)
<i>Relationship Status</i>						
Stably Married	0.03 (0.06)	0.05 (0.06)	0.06 (0.07)	0.04 (0.07)	0.02 (0.07)	-0.09 (0.07)
Stably Cohabiting	0.00 (0.15)	0.02 (0.14)	-0.44* (0.18)	-0.09 (0.18)	-0.11 (0.14)	0.10 (0.15)
Stably Single	-0.00 (0.08)	-0.05 (0.08)	-0.15 (0.10)	-0.01 (0.13)	-0.32** (0.12)	-0.16 (0.11)
Partnered to Unpartnered	-0.19 (0.11)	-0.20+ (0.11)	0.08 (0.13)	0.07 (0.12)	0.10 (0.15)	-0.09 (0.15)
Unpartnered to Partnered	-0.05 (0.10)	-0.04 (0.12)	-0.07 (0.09)	-0.14 (0.16)	-0.01 (0.15)	-0.02 (0.14)

	Read	Math	Expressive Language	Externalizing	Internalizing	Pro-Social
Two Transitions	0.03 (0.14)	0.02 (0.14)	-0.06 (0.11)	0.12 (0.17)	-0.09 (0.13)	-0.10 (0.22)
<u>Poverty</u>						
Always Poor	0.06 (0.08)	-0.03 (0.08)	-0.07 (0.10)	-0.10 (0.10)	-0.18 (0.14)	-0.16 (0.12)
Sometimes Poor	0.05 (0.06)	-0.04 (0.06)	-0.04 (0.08)	0.01 (0.09)	-0.01 (0.08)	-0.03 (0.09)
Never Poor	-0.02 (0.06)	0.10 ⁺ (0.06)	0.01 (0.05)	-0.01 (0.08)	-0.01 (0.06)	-0.07 (0.07)

Note: Standard errors in parentheses. Analyses are weighted using WKR0. All regressions control for age, race/ethnicity, relationship status, nativity, poverty, education, whether the mother worked before the birth, receipt of WIC, number of siblings, English primary language, English fluency, number of residential moves, region, urbanicity, child gender, child premature, child low birth weight, kindergarten 06 attendance, child's age in months, grandparents together at age 16, grandparent receipt of AFDC, grandparent depression, and grandmother education.

Results from Chow tests find the following significant differences ($p < 0.05$): age < 20 vs. 20-24 for internalizing behaviors; Asian vs. Black, White and Hispanic for reading, Hispanic vs. all for expressive language and externalizing behavior (except Black), Black vs. White, Asian and AI/AN for externalizing, Black vs. AI/AN for internalizing; immigrant vs not for expressive language, externalizing and internalizing; married vs. partnered to unpartnered for math, married vs. cohabs for externalizing, cohabs vs. partnered to unpartnered for externalizing, married vs single for internalizing, single vs partnered to unpartnered for internalizing.

 $p < 0.001$,

**
 $p < 0.01$,

*
 $p < 0.05$,

⁺
 $p < 0.10$

Table 4
Association between Three-Generation Coresidence and Kindergarten Cognitive and Socioemotional Outcomes by Nativity and Hispanic/Asian Race/Ethnicity

	Read	Math	Expressive Language	Externalizing	Internalizing	Pro-Social
<i>Hispanic</i>						
Immigrant & Three-Generation	0.16 (0.10)	0.16 ⁺ (0.08)	0.43 ^{***} (0.11)	-0.32 [*] (0.13)	-0.18 (0.12)	0.01 (0.16)
Native-Born & Three-Generation	-0.06 (0.11)	-0.05 (0.09)	-0.06 (0.12)	-0.01 (0.11)	-0.14 (0.15)	0.02 (0.13)
<i>Asian</i>						
Immigrant & Three-Generation	-0.21 [*] (0.09)	-0.06 (0.08)	-0.31 ^{**} (0.11)	0.13 (0.10)	0.04 (0.09)	0.02 (0.10)
Native-Born & Three-Generation	-0.26 (0.24)	-0.27 (0.21)	-0.10 (0.17)	0.19 (0.23)	-0.22 (0.19)	-0.43 [*] (0.19)

Note: Standard errors in parentheses. Analyses are weighted using WKR0. All regressions control for age, relationship status, poverty, education, whether the mother worked before the birth, receipt of WIC, number of siblings, English primary language, English fluency, number of residential moves, region, urbanicity, child gender, child premature, child low birth weight, kindergarten 06 attendance, child's age in months, grandparents together at age 16, grandparent receipt of AFDC, grandparent depression, and grandmother education.

Results from Chow tests find the following significant differences between immigrant and native-born families ($p<0.05$): Expressive language for Hispanic and Asian households, Externalizing for Hispanic households, Pro-Social for Asian households.

^{***} $p<0.001$,
^{**} $p<0.01$,
^{*} $p<0.05$,
⁺ $p<0.10$

Appendix 1
Full Sample Regression Results - School Readiness Outcomes on Three-Generation Coresidence

	Reading	Math	Expressive Language	Externalizing	Internalizing	Prosocial
Ever Three-Generation	0.03 (0.04)	0.03 (0.03)	-0.01 (0.04)	-0.01 (0.04)	-0.04 (0.04)	-0.07 (0.05)
<i>Maternal Characteristics</i>						
Age						
<20	-0.09 (0.08)	-0.06 (0.07)	-0.04 (0.08)	-0.10 (0.09)	0.12 (0.10)	0.24* (0.10)
20-24	-0.01 (0.06)	-0.04 (0.05)	-0.02 (0.07)	0.03 (0.06)	0.13 ⁺ (0.06)	0.20*** (0.06)
25-29	-0.08 ⁺ (0.04)	-0.06 (0.04)	-0.01 (0.05)	0.11* (0.05)	0.06 (0.05)	0.06 (0.05)
30-34	-0.04 (0.04)	-0.01 (0.04)	0.02 (0.04)	0.07 (0.05)	0.03 (0.05)	0.01 (0.05)
Race/Ethnicity						
White	0.18 (0.12)	0.28* (0.12)	0.00 (0.09)	-0.08 (0.11)	-0.07 (0.12)	0.07 (0.10)
Black	0.25* (0.11)	0.15 (0.12)	-0.12 (0.09)	-0.28* (0.12)	-0.49*** (0.13)	0.13 (0.12)
Hispanic	0.06 (0.12)	0.05 (0.11)	-0.17 (0.10)	-0.18 (0.12)	-0.23 ⁺ (0.12)	0.14 (0.11)
Asian	0.50*** (0.13)	0.46*** (0.12)	-0.13 (0.11)	-0.26 ⁺ (0.14)	-0.29* (0.14)	-0.03 (0.12)
American Indian	0.05 (0.15)	0.06 (0.14)	-0.15 (0.10)	-0.10 (0.14)	-0.19 (0.14)	0.04 (0.14)
Immigrant	0.01 (0.07)	-0.01 (0.07)	-0.09 (0.07)	-0.01 (0.07)	0.21* (0.08)	-0.10 (0.08)
Relationship Status						
Stably Married	-0.00 (0.08)	-0.04 (0.07)	-0.13 (0.09)	-0.23* (0.10)	0.16 ⁺ (0.10)	-0.06 (0.10)
Stably Cohabiting	-0.15 ⁺ (0.08)	-0.12 (0.09)	-0.17 (0.12)	-0.29* (0.12)	0.06 (0.11)	-0.04 (0.14)
Stably Single/Divorced	-0.20* (0.09)	-0.17* (0.08)	-0.04 (0.09)	-0.01 (0.10)	0.13 (0.10)	-0.08 (0.12)
Partnered to Unpartnered	-0.16 ⁺ (0.09)	-0.07 (0.09)	-0.14 (0.10)	-0.15 (0.12)	0.19 ⁺ (0.11)	-0.09 (0.14)
Unpartnered to Partnered	-0.20 ⁺ (0.11)	-0.20* (0.09)	0.03 (0.09)	-0.07 (0.14)	0.18 ⁺ (0.10)	-0.04 (0.13)
Poverty						
Always poor	-0.30*** (0.06)	-0.34*** (0.06)	-0.21*** (0.06)	0.29*** (0.07)	0.19*** (0.07)	-0.18*** (0.06)
Sometimes poor	-0.13** (0.04)	-0.16*** (0.04)	-0.10* (0.04)	0.12* (0.05)	0.10 ⁺ (0.06)	-0.01 (0.04)
Education						
High School	0.09* (0.04)	0.12** (0.04)	-0.02 (0.05)	-0.03 (0.06)	0.05 (0.05)	0.08 (0.06)

	Reading	Math	Expressive Language	Externalizing	Internalizing	Prosocial
Some college	0.26*** (0.05)	0.29*** (0.04)	0.03 (0.06)	-0.02 (0.07)	0.04 (0.06)	0.23** (0.07)
College +	0.47*** (0.06)	0.53*** (0.05)	0.13* (0.07)	-0.05 (0.07)	0.21** (0.06)	0.31*** (0.08)
Mother work prior to birth	0.04 (0.03)	0.03 (0.03)	0.09* (0.04)	-0.02 (0.04)	0.04 (0.04)	0.03 (0.04)
WIC	-0.14** (0.05)	-0.14*** (0.04)	-0.06 (0.04)	0.11* (0.04)	-0.06 (0.04)	-0.01 (0.04)
Number of siblings						
One	-0.07* (0.03)	0.01 (0.03)	-0.00 (0.03)	0.14** (0.04)	-0.11** (0.04)	-0.01 (0.04)
Two	-0.12** (0.04)	-0.04 (0.04)	0.05 (0.05)	0.05 (0.05)	-0.19*** (0.04)	-0.11* (0.05)
Three+	-0.12 (0.10)	0.07 (0.10)	0.04 (0.10)	-0.07 (0.11)	-0.13 (0.10)	0.14 (0.10)
English primary language	-0.09 (0.07)	-0.07 (0.06)	-0.10 (0.07)	0.05 (0.07)	-0.12* (0.06)	-0.07 (0.06)
Mother's English literacy	0.02* (0.01)	0.00 (0.01)	0.08*** (0.01)	-0.01 (0.01)	-0.01 (0.01)	0.03* (0.01)
Residential Moves						
One	0.00 (0.03)	-0.02 (0.03)	0.02 (0.03)	0.04 (0.04)	0.02 (0.04)	0.01 (0.04)
Two	0.02 (0.04)	0.04 (0.04)	0.06 (0.05)	0.04 (0.05)	0.06 (0.05)	0.03 (0.05)
Urban residence	0.09 (0.05)	0.06 (0.05)	0.05 (0.05)	0.00 (0.06)	-0.05 (0.05)	-0.04 (0.05)
Region						
Northwest	-0.05 (0.06)	-0.06 (0.05)	-0.13* (0.05)	0.12 (0.08)	0.10 (0.07)	-0.15* (0.06)
South	0.11+ (0.06)	-0.03 (0.05)	-0.09+ (0.05)	0.08 (0.08)	-0.11+ (0.06)	-0.03 (0.06)
West	0.04 (0.05)	-0.01 (0.05)	-0.09 (0.06)	0.07 (0.08)	-0.01 (0.05)	-0.05 (0.06)
<i>Child Characteristics</i>						
Boy	-0.15*** (0.03)	-0.05+ (0.02)	-0.12*** (0.03)	0.39*** (0.03)	-0.02 (0.03)	-0.29*** (0.03)
Premature	-0.09* (0.04)	-0.06 (0.05)	-0.05 (0.05)	-0.06 (0.06)	-0.08 (0.06)	0.00 (0.05)
Low birth weight	-0.08+ (0.04)	-0.21*** (0.04)	-0.14** (0.05)	0.17** (0.05)	0.14* (0.06)	-0.10* (0.05)
Kindergarten '06	0.12** (0.04)	0.07 (0.05)	0.03 (0.05)	-0.01 (0.05)	-0.02 (0.07)	-0.04 (0.05)
Child's Age in months	0.07*** (0.01)	0.07*** (0.01)	0.03*** (0.00)	-0.02** (0.01)	0.00 (0.01)	0.01* (0.01)
<i>Maternal Grandparent Characteristics</i>						
Lived with both parents at 16	-0.00 (0.03)	-0.00 (0.03)	0.01 (0.04)	-0.07* (0.04)	0.02 (0.04)	0.00 (0.04)
AFDC growing up	-0.05 (0.05)	-0.06 (0.05)	0.01 (0.04)	0.03 (0.04)	-0.01 (0.06)	0.04 (0.06)
Grandmother depression	0.03 (0.05)	0.01 (0.05)	-0.03 (0.06)	0.19** (0.06)	0.20** (0.06)	-0.09 (0.06)

	Reading	Math	Expressive Language	Externalizing	Internalizing	Prosocial
Grandfather depression	0.10 (0.09)	0.05 (0.07)	0.07 (0.07)	0.03 (0.08)	0.04 (0.12)	0.07 (0.09)
Grandmother's Education						
Less than HS	-0.10* (0.05)	-0.08 (0.05)	-0.13* (0.05)	-0.02 (0.06)	-0.11+ (0.06)	-0.03 (0.06)
High school	-0.05 (0.06)	-0.01 (0.05)	-0.04 (0.04)	-0.02 (0.06)	-0.09 (0.05)	-0.03 (0.05)
Some college	-0.07 (0.06)	0.00 (0.05)	-0.02 (0.04)	-0.09 (0.06)	-0.02 (0.05)	0.03 (0.05)
Constant	-5.35*** (0.46)	-5.18*** (0.46)	-2.14*** (0.38)	0.97* (0.46)	-0.17 (0.54)	-0.90+ (0.52)
Observations	6550	6550	6550	6550	6550	6550

Note: Standard errors in parentheses. Analyses are weighted using WKR0. N's are unweighted and rounded to the nearest 50. Omitted categories are: 35+ age, other race/ethnicity, two or more relationship transitions, never poor, less than high school, no siblings, no residential moves, northeast, grandmother college + education. Not shown are the results for residential stability, urban residence, region of the country and grandmother's education as few associations were significant. WIC=Women, Infants and Children, AFDC=Aid to Needy Families with Dependent Children.

*** $p < 0.001$,

** $p < 0.01$,

* $p < 0.05$,

+ $p < 0.10$