A national examination of poverty and interactive caregiving practices among parents of young children

Elizabeth Crouch1,2 · Elizabeth Radcliff1 · Melinda A. Merrell2 · Monique J. Brown3,4 · Kevin J. Bennett5

Accepted: 13 June 2022 / Published online: 24 June 2022
© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2022

Abstract
Interactive caregiving practices can be protective for the development of the brain in early childhood, particularly for children experiencing poverty. There has been limited research examining the prevalence of interactive caregiving practices in early childhood at the population level across the U.S. The purpose of this study was to describe the prevalence of three interactive caregiver activities: (1) reading, (2) telling stories/singing songs, and (3) eating a meal together, using the 2017–2018 National Survey of Children’s Health, among a sample of children age five and younger, and to examine the relationship between these interactive caregiving practices across income levels and by selected potentially confounding household characteristics. Children living in families with incomes below the federal poverty level had lower odds of being read to every day compared to children living in families with incomes at 400% or more above the federal poverty level (aOR 0.70; 95% CI 0.53–0.92). Children living in families within incomes at 100–199% of the federal poverty level had lower odds of being sung to and told stories to every day than children living in families with incomes at 400% or above the federal poverty level (aOR 0.62; 95% CI 0.50–0.78). These findings have long-term implications for children, as interactive caregiving practices are known to improve cognitive activities such as language development, which is associated with educational attainment into adulthood. Finding ways to increase the adoption of interactive caregiving practices may be one way to mitigate disparities in education, especially among families experiencing poverty.

Keywords Parenting stress · Interactive caregiving · Child development · Poverty

Highlights
- Prevalence of the three interactive caregiving practices was lowest among children living below the federal poverty level.
- Interactive caregiving practices varied by race/ethnicity.
- These findings have long-term implications for children, as interactive caregiving practices improve cognitive activities.
- Finding ways to increase interactive caregiving practices may be one way to mitigate disparities in education.

Nearly 15% of children less than eighteen years of age in the United States experienced poverty in 2019 (Semega et al., 2020). Currently, the federal poverty level is less than $26,200 for a family of four (ASPE, 2020). The number of children living in families with incomes below the federal poverty level is assumed to have increased during the COVID-19 pandemic, due in part to layoffs and rising unemployment, resulting in mounting stressors such as increased food insecurity (Parolin, 2020) and income instability.

This is crucial to note, as economic hardship and related stress have been associated with long term negative effects on children’s academic success and development (Stevens & Schaller 2011; Coelli 2011). The effects of poverty may
be most profound when poverty occurs in early childhood, as childhood between the ages of zero to five has been demonstrated to be a critical time period for development, with parents and caregivers playing a profound role in the development of language, cognitive development, and literacy (Pinto et al., 2013). Children experiencing poverty in early childhood (ages 0–5 years) have been shown to have delayed language skills (Engle & Black, 2008). Poverty and delayed development have been shown to be important factors in kindergarten readiness, educational attainment, and risky behaviors into adulthood (Engle & Black, 2008; Duncan & Brooks-Gunn, 2000; Fernald et al., 2013; Murnane, 2007).

Neurobiological research examining the effects of stress on child development has demonstrated that interactive caregiving practices can be protective for the development of the brain in early childhood, particularly for children experiencing poverty (Brody et al., 2017). Positive caregiving practices lay the foundation for healthy social and emotional development by building early bonds of love and trust that provide support for a child’s growing independence and an opportunity to explore the world around them (CDC, n.d.; Pinto et al. 2013; Bernier et al., 2012). Furthermore, positive caregiving practices help to shape a child’s unique personality and to develop their cognitive skills (CDC, n.d.).

One way to practice positive parenting is to adopt interactive caregiving practices; that is, caregiving activities that are characterized by engagement and responsiveness, and are supportive in nature (Shah et al., 2015; Brody et al., 2017). Interactive caregiving practices, such as reading, singing, telling stories, and eating with children, can benefit children in the development of their language and reading skills, which in turn can help to improve academic readiness and achievement (Landry et al., 2017; Merz et al., 2017). Family meals have been shown to support healthy social, behavioral, and emotional growth in children (Miller et al., 2012). Prior research found that caregivers who report daily engagement in the three positive parenting practices of reading to children, engaging in storytelling or singing, and eating meals together as a family are also less likely to have reported concerns of developmental delays than caregivers who did not report daily engagement in these activities (Cprek et al., 2015). There have also been neurobiological research showing that caregiving activities may have a protective influence on the brain (Brody et al., 2017). Therefore, there has been a push for pediatricians to promote interactive caregiving practices during pediatric consultations (Yogman et al., 2018).

There has been limited research examining the prevalence of interactive caregiving practices in early childhood (ages 0–5 years) at the population level across the U.S., to determine whether disparities exist by income and other selected individual and household characteristics, and whether the current prevalence of interactive caregiving practices at the population level aligns with pediatric care recommendations for interactive caregiving practices (Shah et al., 2015; Cprek et al., 2015; Kenney, 2012). Shah et al. 2015 examined interactive caregiving practices and the risk for developmental delay, by poverty level, among children ages 4 to 36 months, using the 2011–2012 National Survey of Children’s Health (NSCH) (Shah et al., 2015). Cprek et al. 2015 looked at a slightly different set of interactive caregiving practices and the risk of developmental, social, or behavioral delay, among children five years of age and younger, also using the 2011–2012 NSCH (Cprek et al., 2015). Kenney 2012 looked at the prevalence of multiple interactive caregiving practices, using the 2007 NSCH (Kenney, 2012). Therefore, prior studies examining the population prevalence of interactive caregiving practices in early childhood are either dated, using population level studies from 2007 or 2011–2012, or have limited inclusion of potential confounding household characteristics beyond poverty (Shah et al. 2015; Cprek et al. 2015).

Therefore, the purpose of this study is to describe the prevalence of three interactive caregiver activities: (1) reading, (2) telling stories/singing songs, and (3) eating a meal together in a 2017–2018 nationally representative sample of children age five and younger, and to examine the relationship between these interactive caregiving practices across income levels and by selected potentially confounding household characteristics. These findings will be useful for informing prevention and intervention programming and efforts geared towards positive parenting across the United States.

**Methods**

**Participants**

This cross-sectional study used the 2017–2018 National Survey of Children’s Health (NSCH), a mail and online survey conducted by the Data Resource Center (DRC). Eligible respondents must be parents or caregivers living with a child 17 years or younger at the time of the interview. One child is chosen at random to be representative for the respondent. Further information on both the sampling methodology and selection processes is available on the DRC website (childhealthdata.org).

The 2017–2018 NSCH had 52,129 completed interviews (Data Resource Center for Child and Adolescent Health, n.d.). The sample was further delimited to children five years of age or younger, which delimits the sample size to 16,750 children who were five years of age or younger, as this is the age group where interactive caregiving practices...
may be most impactful (Pinto et al., 2013). Among the 16,570 children who were age 5 and younger children in the original data set, there were a total of 14,357 respondents who had complete demographic information and responses to all outcomes of interest (Pinto et al., 2013), therefore comprising the study sample.

**Procedure**

Our outcomes of interest were three interactive caregiver activities: (1) reading, (2) telling stories/singing songs, and (3) eating a meal together. For reading to the child, the NSCH question utilized was: “During the past week, how many days did you or other family members read to this child, age 0–5 years?” For singing and telling stories to the child, we used the following NSCH question: “During the past week, how many days did you or other family members tell stories or sing songs to this child?” For family eating meals together, respondents were asked: “During the past week, on how many days did all the family members who live in the household eat a meal together?” For all three outcomes, potential responses were 0 days, 1–3 days, 4–6 days, and every day. Responses were then coded into every day versus 0–6 days. The response of every day was chosen based on the performance measure standard for early language literacy activities for the Maternal Infant and Early Childhood Home Visiting Program (MIECHV; HRSA, 2018). Informed consent statement is not applicable here, as this study was approved as exempt by the [name concealed for review] institutional review board. This study is not human subjects research.

**Measures**

Variables that could be potential confounders were included in our analysis. Child characteristics included four categories for race/ethnicity: Non-Hispanic White, Non-Hispanic Black, Hispanic, and Non-Hispanic Other. Child gender categories were male or female. A flag for special healthcare needs of the child was included, using the NSCH five-item tool of reported use of prescription medication, elevated use of healthcare services, functional limitations, specialized therapy, and ongoing emotional, developmental, or behavioral conditions. Attending to a child’s special healthcare needs may limit the ability of the caregiver to engage in the three everyday interactive caregiving activities measured in the survey.

Characteristics of the caregiver included relation to the child, primary language spoken in the home, the highest educational attainment of a parent or guardian in the household, family structure, and poverty/income level. Respondent’s relation to the child included mother, father, and other. Primary language spoken in the home had two categories: English or not English. Educational attainment was grouped into those with less than or equal to high school degree/GED and those with at least some college education or more. Family structure categorizations included two parents currently married, two parents not currently married, single mother, and other. Finally, poverty/income level encompassed the following: 0–99% of the federal poverty level (FPL), 100–199% FPL, 200–399% FPL, and 400% FPL or above.

**Analysis Plan**

Per the NSCH instructions, while caregivers are the ones providing responses to questions about the child, the results are discussed from the child’s perspective (childhealthdata.org). To calculate frequencies, proportions, and unadjusted associations for each variable, descriptive statistics and bivariate analyses, including chi-square tests to test for significance differences by groups, were used. Multivariable regression models were used to examine the association between household characteristics and the three interactive caregiving practices of reading to a child, singing to a child, and eating meals together as a family. In order to calculate accurate model estimates, the NSCH survey sampling weights, cluster, and strata were used for all analyses. Further information on these can be found on the DRC website (childhealthdata.org). For all data management and analyses, SAS statistical software (SAS, version 9.3; SAS Institute Inc.) was used.

**Results**

**Sample Description**

One in five children in our sample lived in families within incomes below the federal poverty level (20.1%). Just over half of the sample was male (51.3%) and Non-Hispanic white (53.0%; Table 1). Ten percent (10.2%) of children had special healthcare needs. Most children had their mother as the respondent (62.1%). Over fifteen percent of children (15.5%) lived in a home where the primary language was not English. The majority of children resided in a home with two parents, currently married (66.5%). Nearly a third (31.4%) of children had public health insurance. Three-quarters of children in our sample had a caregiver with at least some college education or more (75.8%).

Examining outcomes of interest, over one-third of children (37.2%; Table 1) were read to every day. Nearly half of all children experienced family singing and storytelling every day (48.2%). Finally, over half of children (54.0%) lived with families who ate meals together every day.
Bivariate Analyses

One-fifth (20.1%) of children in our sample resided below the poverty level, yet the proportion of children living below the poverty level was much lower among children whose families read to them each day or whose families sung and told stories to them. Among children whose families read to the child every day, 14.3% were children...
whose families resided below the poverty level. Among children whose families who sing and tell stories to the child, 16.5% of children who resided below the federal poverty level (Table 1). In unadjusted analyses, variables significantly associated with being read to every day, as well as sung to every day, included poverty/income level, race/ethnicity of the child, respondent’s relation to the child, primary language spoken in the home, educational attainment of the respondent, family structure, and health insurance ($p < 0.001$).

**Logistic Regression**

**Reading**

After adjusting for household characteristics, children living in families with incomes below the federal poverty level had lower odds of being read to every day compared to children living in families with incomes at 400% or more above the federal poverty level (aOR 0.70; 95% CI 0.53–0.92; see Table 2). Families living at each level below the 400% or more federal poverty level were less likely to read to their children. Non-Hispanic African American children (aOR 0.60; 95% CI 0.45–0.79) and Hispanic children (aOR 0.54; 95% CI 0.43–0.68) had a lower likelihood of being read to every day compared to Non-Hispanic white Children. Children with caregivers who had a high school education or less had lower odds of being read to every day than children with caregivers who had some college education or more (aOR 0.65; 95% CI 0.51–0.81). Other significant covariates to being read to every day included respondent relation as father or other, primary language not being English, and public and private health insurance.

**Singing & Story-Telling**

Children living in families within incomes at 100–199% of the federal poverty level had lower odds of being sung to and told stories to every day than children living in families with incomes at 400% or above the federal poverty level (aOR 0.62; 95% CI 0.50–0.78). Hispanic children (aOR 0.70; 95% CI 0.56–0.88) and Non-Hispanic African American children (aOR 0.58; 95% CI 0.45–0.75) had a lower likelihood of being sung to every day than Non-Hispanic white children. Children with caregivers who had a high school education or less had lower odds of being sung to and told stories every day than children with caregivers who had some college education or more (aOR 0.71; 95% CI 0.56–0.89). Additional significant covariates to being sung and told stories to every day included families with incomes at 200–399% above the federal poverty level, father being the respondent, primary language not being English, and other family structure.

**Family Meals**

Children residing in families with incomes at 200–399% above the federal poverty level had a higher odds of family eating meals together than children living in families at 400% or above the federal poverty level (aOR 1.23; 95% CI 1.05–1.44). Children living with a single mother had a lower likelihood to have meals together every day than children living with two parents currently married (aOR 0.66; 95% CI 0.52–0.85). Children with public insurance had a higher odds of eating meals every day with their family than children with private insurance (aOR 1.46; 95% CI 1.15–1.87). Other significant covariates to eating together every day included race/ethnicity identified as other, and caregiver education of high school education or less.

**Discussion**

To our knowledge, this is the first study to examine the prevalence of three interactive caregiver activities: (1) reading, (2) telling stories/singing songs, and (3) eating a meal together, and examine the relationship between these interactive caregiving practices across poverty levels and other individual and household characteristics in a large national data set. Confirming prior research, we found in the unadjusted analyses that the prevalence of each of the three interactive caregiving practices was lowest among children living in families with incomes below the federal poverty level and rose with increasing income levels (Shah et al., 2015). Children living in families with incomes below the poverty line were less likely to be read to every day. Furthermore, as education is often associated with income, children whose caregivers had a high school education or less had a lower likelihood of being read to, sung to, or told stories to every day.

The findings from this study illustrate the systemic interactions between race/ethnicity and poverty. Non-Hispanic African American children and Hispanic children were less likely to be read to, sung to, or told stories every day compared to their white counterparts. The prevalence of two of the three interactive caregiving practices measured being lower among racial/ethnic minority children is a functional outcome of structural racism in the U.S. (Bailey et al., 2017). Racism in America is a pervasive and urgent public health crisis, (Devakumar et al., 2020), with the American Public Health Association describing racism as a “driving force” among the social determinants of health (American Public Health Association, n.d.). The experience of racism may lead to stress and mental health symptoms that make it difficult for parents to engage with children (Bailey et al., 2017). Specifically, racial/ethnic minority children are more likely to reside in high-poverty
neighborhoods than white children (Bankston & Caldas, 1996; Chilton et al., 2007).

Residential segregation and historical redlining have further resulted in racial/ethnic minority groups being primarily located within neighborhoods that are zoned for lower-quality schools (Bailey et al. 2017). The subsequent educational and socioeconomic gaps at the population level between racial/ethnic minority groups and whites may be a barrier to regular practice of interactive caregiving practices among racial/ethnic minority children, due to additional constraints on time and resources these families may have due to income instability. Resource constraints from income

Table 2 Adjusted odds ratio and 95% Wald confidence intervals predicting reading to child, singing and telling stories to child, and family eating together, among respondents to the 2017–2018 national survey of children’s health with children 0 to 5 years of age (N = 14,357)

| Family income level | Model 1 Family reads to children | Model 2 Family sings and tells stories to children | Model 3 Family eats meals together |
|---------------------|----------------------------------|---------------------------------------------------|----------------------------------|
|                     | aOR | 95% CI | aOR | 95% CI | aOR | 95% CI |
| Family income level |      |        |      |        |      |        |
| 0–99% FPL           | 0.70 | 0.53–0.92 | 0.79 | 0.60–1.04 | 1.30 | 0.99–1.71 |
| 100–199% FPL        | 0.58 | 0.46–0.73 | 0.62 | 0.50–0.78 | 1.09 | 0.86–1.40 |
| 200–399% FPL        | 0.70 | 0.60–0.82 | 0.83 | 0.70–0.97 | 1.23 | 1.05–1.44 |
| 400% or above       | Referent | Referent | Referent | Referent | Referent | Referent |

Child characteristics

| Race/ethnicity | Model 1 Family reads to children | Model 2 Family sings and tells stories to children | Model 3 Family eats meals together |
|----------------|----------------------------------|---------------------------------------------------|----------------------------------|
| Non-Hispanic white | Referent | Referent | Referent | Referent |
| Non-Hispanic African American | 0.60 | 0.45–0.79 | 0.58 | 0.45–0.75 | 1.08 | 0.86–1.35 |
| Hispanic       | 0.54 | 0.43–0.68 | 0.70 | 0.56–0.88 | 0.94 | 0.73–1.21 |
| Other          | 0.90 | 0.74–1.10 | 0.97 | 0.79–1.18 | 1.37 | 1.13–1.67 |

Child characteristics

| Gender  | Model 1 Family reads to children | Model 2 Family sings and tells stories to children | Model 3 Family eats meals together |
|---------|----------------------------------|---------------------------------------------------|----------------------------------|
| Male    | Referent | Referent | Referent | Referent |
| Female  | 1.09 | 0.96–1.25 | 1.13 | 0.98–1.29 | 0.99 | 0.87–1.15 |

Child characteristics

| Special health care needs | Model 1 Family reads to children | Model 2 Family sings and tells stories to children | Model 3 Family eats meals together |
|---------------------------|----------------------------------|---------------------------------------------------|----------------------------------|
| Yes                       | 1.21 | 0.99–1.48 | 1.15 | 0.95–1.40 | 0.92 | 0.74–1.23 |

Child characteristics

| Family/caregiver characteristics | Model 1 Family reads to children | Model 2 Family sings and tells stories to children | Model 3 Family eats meals together |
|----------------------------------|----------------------------------|---------------------------------------------------|----------------------------------|
| Respondent’s relation to child   | Referent | Referent | Referent | Referent |
| Mother                           | Referent | Referent | Referent | Referent |
| Father                           | 0.82 | 0.70–0.96 | 0.65 | 0.56–0.77 | 1.07 | 0.91–1.25 |
| Other                            | 0.82 | 0.53–0.97 | 1.00 | 0.63–1.59 | 0.84 | 0.57–1.24 |

Family/caregiver characteristics

| Primary language | Model 1 Family reads to children | Model 2 Family sings and tells stories to children | Model 3 Family eats meals together |
|-----------------|----------------------------------|---------------------------------------------------|----------------------------------|
| English         | Referent | Referent | Referent | Referent |
| Not English     | 0.72 | 0.53–0.97 | 0.69 | 0.52–0.92 | 1.08 | 0.83–1.42 |

Family/caregiver characteristics

| Education | Model 1 Family reads to children | Model 2 Family sings and tells stories to children | Model 3 Family eats meals together |
|-----------|----------------------------------|---------------------------------------------------|----------------------------------|
| High school diploma or less     | 0.65 | 0.51–0.81 | 0.71 | 0.56–0.89 | 1.39 | 1.10–1.76 |
| Some college or more            | Referent | Referent | Referent | Referent |

Family/caregiver characteristics

| Family structure | Model 1 Family reads to children | Model 2 Family sings and tells stories to children | Model 3 Family eats meals together |
|-----------------|----------------------------------|---------------------------------------------------|----------------------------------|
| Two parents, currently married | Referent | Referent | Referent | Referent |
| Two parents, not currently married | 0.95 | 0.70–1.28 | 1.20 | 0.91–1.59 | 0.80 | 0.61–1.05 |
| Single mother    | 0.94 | 0.73–1.20 | 0.82 | 0.65–1.03 | 0.66 | 0.52–0.85 |
| Other            | 0.71 | 0.42–1.23 | 0.53 | 0.31–0.92 | 0.82 | 0.48–1.38 |

Family/caregiver characteristics

| Health insurance | Model 1 Family reads to children | Model 2 Family sings and tells stories to children | Model 3 Family eats meals together |
|-----------------|----------------------------------|---------------------------------------------------|----------------------------------|
| Private         | Referent | Referent | Referent | Referent |
| Public          | 0.84 | 0.68–1.05 | 0.90 | 0.72–1.13 | 1.46 | 1.15–1.87 |
| Public and private | 0.54 | 0.39–0.75 | 0.70 | 0.47–1.04 | 0.93 | 0.61–1.40 |
| Not insured/ unspecified | 0.90 | 0.63–1.30 | 0.92 | 0.63–1.34 | 1.27 | 0.88–1.84 |

aOR adjusted odds ratio; CI confidence interval

Bolded ORs and 95% CIs represent statistical significance at p < 0.05

Journal of Child and Family Studies (2022) 31:2266–2274
stability, coupled with lower education and time with children, will further intensify disparities experienced by minority children (Crouch et al., 2019).

While interactive caregiving practices are “free”, they do require time and resources such as books, materials, and uninterrupted time with your child. Caregiver education is also a large component of knowing why these practices are important to do with your child. Limited time and resources among children and families experiencing poverty are also associated with parenting stress, which may exacerbate these disparities (Crouch et al., 2019). These findings have long term implications for children, as interactive caregiving practices are known to improve cognitive activities such as language development, which is associated with educational attainment into adulthood (Engle and Black, 2008). Finding ways to increase the adoption of interactive caregiving practices may be one way to mitigate disparities in education, especially among families experiencing poverty.

Specific interventions to address child and family poverty may be important tools to support families in acquiring resources to increase their ability to engage in interactive caregiving practices more frequently. One of the current central anti-child poverty policies in the U.S., first adopted at the federal level in 1975, is the Earned Income Tax Credit (EITC) which provides refundable tax credits for working families (Haveman et al., 2015). This program has decreased poverty rates while increasing employment rates, especially among single mothers; yet, 1 in 5 eligible families still do not participate (Haveman et al., 2015; IRS, n.d.). Expansion of the amount of available child tax credits and a proposal to provide advance payments to families are enhancements enacted through the third COVID-19 relief package, The American Rescue Plan Act of 2021 (https://www.congress.gov/117/bills/hr1319/BILLS-117hr1319enr.pdf). Decreasing poverty may improve the prevalence of interactive caregiving practices, as time and resource constraints to do these activities may be improved.

The pediatrician’s office, which is used for frequent well and sick child visits during the ages of 0–5, may be an effective touch point for children and families that experience poverty. Programs such as the Safe Environment for Every Kid (SEEK) program have been utilized to link caregivers to community support programs and services through their primary care provider (Dubowitz et al., 2009). The Reach Out and Read, and the Video Interaction Project, both provide physical resources such as books and toys, as well as guidance on interactive parenting in pediatric primary care (Zuckerman and Khandekar, 2010). Neighborhoods and their community members may be able to use health systems as a resource for receiving social supports and parenting education, in addition to medical services (Bruner & Schor, 2009). Finally, the implementation of family-based resource centers within primary care offices, neighborhoods, churches, and schools may be an additional means to provide parenting supports (Jutte et al., 2015).

The ability to reach large numbers of low-income children and families is difficult without coordinated policy efforts. National policy approaches to assist caregivers include home visiting programs, such as the Maternal Infant Early Childhood Home Visiting Program (MIECHV), as well as other child development initiatives such as the National Bright Futures Guidelines for Health Supervision of Infants, Children, and Adolescents, as well as the Centers for Disease Control and Prevention’s Essentials for Childhood Initiative, which are geared towards building safe and supportive relationships for children (CDC, 2014; Hagan et al., 2017). Home visiting programs, such as MIECHV, focus on caregiving training to improve developmental outcomes; daily reading and singing to children is a benchmark measure reported by MIECHV home visitors (HRSA, 2018).

Local solutions may include programs such as Strengthening Families Approach, which is a parenting program focused on building parental resilience and social connections, or Triple P (Positive Parenting Program), which provides concrete support during times of need, parenting knowledge, and knowledge of child development and social-emotional capabilities of children (Hagan et al., 2017; Triple P, n.d.). Expanded implementation of these types of parent-support programs may be one way to reach caregivers to provide them with support to regularly engage in interactive caregiving practices. Continued state and federal funding of programs that support positive interactive caregiving practices will be important to the well-being of our children, particularly those that experience poverty.

**Strengths and Limitations**

This study does have limitations, including the self-reporting of interactive caregiving practices for children by the caregivers. Caregivers may over-report the frequency of interactive caregiving practices, due to social desirability. There is also potential evidence of reporter bias in our findings, as fathers reported much lower levels of reading, singing/storytelling, and eating together than mothers did. In addition, we were not able to assess the quality of the interactive caregiving activity, which has also been shown to be important for language development (Leffel & Suskind, 2013). Due to the address-based sampling used by the NSCH, the study findings do not include families that may be transient or homeless. Families that are transient and homeless may even have less opportunities for interactive caregiving practices.

Strengths of the current study are that it is based on the latest data from the NSCH and provides an update to the prevalence of interactive caregiving practices at the
population level. In addition, the use of population-level data to examine the association between interactive caregiving and socioeconomic characteristics affords an opportunity to intervene at the population level through policy efforts.

This population-level study adds to the literature by highlighting the disparities children experiencing poverty face in the receipt of interactive caregiving practices. Findings from this study may be used by policymakers, program developers, pediatricians, and other stakeholders to target efforts for interventions for caregivers and communities (Leitch, 2017). Further research may wish to look at the dose response relationship between interactive caregiving activities and days spent during the week engaging in these activities.

Data availability

The data that support the findings of this study are publicly available at the Data Resource Center for Child and Adolescent Health at childhealthdata.org.

Funding M. J. Brown is supported by the National Institute of Mental Health of the National Institutes of Health under Award Number K01MH115794. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

Ethical Approval This study was approved by the Institutional Review Board of the University of South Carolina.

Publisher’s note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

American Public Health Association. (n.d.). Racism and Health. https://www.apha.org/topics-and-issues/health-equity/racism-and-health.

ASPE (Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services). (2020). 2020 Poverty Guidelines. https://aspe.hhs.gov/2020-poverty-guidelines.

Bailey, Z. D., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: Evidence and interventions. The Lancet, 389, 1453–1463. https://doi.org/10.1016/S0140-6736(17)30569-X.

Bankston, III, C., & Caldas, S. J. (1996). Majority African American schools and social injustice: The influence of de facto segregation on academic achievement. Social Forces, 75, 535–555. https://doi.org/10.1093/sf/75.2.535.

Bernier, A., Carlson, S. M., Deschênes, M., & Matte-Gagné, C. (2012). Social factors in the development of early executive functioning: A closer look at the caregiving environment. Developmental Science, 15(1), 12–24. https://doi.org/10.1111/j.1467-7687.2011.01093.x.

Brody, G. H., Gray, J. C., Yu, T., Barton, A. W., Beach, S. R., Galván, A., MacKillop, J., Windle, M., Chen, E., Miller, G., & Sweet, L. H. (2017). Protective prevention effects on the association of poverty with brain development. JAMA Pediatrics, 171(1), 46–52. https://doi.org/10.1001/jamapediatrics.2016.2988.

Bruner, C. H., & Schor, E. L. (2009). Clinical health care and community building: Addressing racial disparities in healthy child development. National Center for Service Integration Clearinghouse and Child and Family Policy Center.

CDC (U.S. Centers for Disease Control and Prevention). National Center on Birth Defects and Developmental Disabilities. (n.d.). Child development: Positive parenting tips. https://www.cdc.gov/ncbddd/childdevelopment/positiveparenting/index.html.

CDC (U.S. Centers for Disease Control and Prevention), National Center for Injury Prevention and Control. (2014). Essential for childhood: Steps to create safe, stable, nurturing relationships and environment. https://www.cdc.gov/violenceprevention/pdf/essentials-for-childhood-framework508.pdf.

Chilton, M., Chyatte, M., & Breaux, J. (2007). The negative effects of poverty & food insecurity on child development. Indian Journal of Medical Research, 126, 262–72.

Coelli, M. B. (2011). Parental job loss and the education enrollment of youth. Labour Economics, 18(1), 25–35. https://doi.org/10.1016/j.labeco.2010.04.015.

Cprek, S. E., Williams, C. M., Asaolu, I., Alexander, L. A., & Vanderpool, R. C. (2015). Three positive parenting practices and their correlation with risk of childhood developmental, social, or behavioral delays: An analysis of the National Survey of Children’s Health. Maternal and Child Health Journal, 19(11), 2403–2411. https://doi.org/10.1007/s10995-015-1759-1.

Crouch, E., Radcliff, E., Brown, M., & Hung, P. (2019). Exploring the association between parenting stress and a child’s exposure to adverse childhood experiences (ACEs). Children and Youth Services Review, 102, 186–192. https://doi.org/10.1016/j.childyouth.2019.05.019.

Data Resource Center for Child and Adolescent Health. (n.d.). NSCH Interactive Data Query (2016–Present). https://www.childhealthdata.org/browse/survey.

Devakumar, D., Selvarajah, S., Shannon, G., Muraya, K., Lasooy, S., Corona, S., Paradies, Y., Abubakar, I., & Achiume, E. T. (2020). Racism, the public health crisis we can no longer ignore. The Lancet, 395, e112–e113. https://doi.org/10.1016/S0140-6736(20)31371-4.

Dubowitz, H., Feigelman, S., Lane, W., & Kim, J. (2009). Preadolescent primary care to help prevent child maltreatment: The Safe Environment for Every Kid (SEEK) model. Pediatrics, 123, 858–864. https://doi.org/10.1111/j.1692-8609.2009.00987_x.

Duncan, G. J., & Brooks-Gunn, J. (2000). Family poverty, welfare reform, and child development. Child Development, 71(1), 188–196. https://doi.org/10.1111/1467-8624.00133.

Engle, P. L., & Black, M. M. (2008). The effect of poverty on child development and educational outcomes. Annals of the New York Academy of Sciences, 1136, 243–256. https://doi.org/10.1196/annals.1425.023.

Fernald, A., Marchman, V. A., & Weisleder, A. (2013). SES differences in language processing skill and vocabulary are evident at 18 months. Developmental Science, 16(2), 234–248. https://doi.org/10.1111/j.2041-4139.2012.00979.x.

Hagan, J. F., Shaw, J. S., & Duncan, P. M. (Eds.) (2017). Bright futures: guidelines for health supervision of infants, children, and adolescents (4th ed.). American Academy of Pediatrics. https://ebooks.aappublications.org/content/bright-futures-guidelines-for-health-supervision-of-infants-children-and-adolescents-4th-ed.
Haveman, R., Blank, R., Moffitt, R., Smeeding, T., & Wallace, G. (2015). The war on poverty: 50 years later. *Journal of Policy Analysis and Management, 34*(3), 593–638.

HRSA (Health Resources and Services Administration). (2018). The Maternal, Infant, and Early Childhood Home Visiting Program: Form 2 performance indicators and systems outcomes toolkit. https://mchb.hrsa.gov/sites/default/files/mchb/MaternalChildHealthInitiatives/HomeVisiting/performanceresources/Form2_PerformanceMeasurementToolkit_September2018Update_508C.pdf.

IRS (Internal Revenue Service). (n.d.). About EITC. https://www.eitc.irs.gov/eitc-central/about-eitc/about-eitc.

Jutte, D. P., Miller, J. L., & Erickson, D. J. (2015). Neighborhood adversity, child health, and the role for community development. *Pediatrics, 135*(Suppl 2), S48–S57. https://doi.org/10.1542/peds.2014-3549F.

Kenney, M. K. (2012). Child, family, and neighborhood associations with parent and peer interactive play during early childhood. *Maternal and Child Health Journal, 16*(1), 88–101. https://doi.org/10.1007/s10995-012-0998-7.

Landry, S. H., Zucker, T. A., Williams, J. M., Merz, E. C., Guttentag, C. L., & Taylor, H. B. (2017). Improving school readiness of high-risk preschoolers: Combining high quality instructional strategies with responsive training for teachers and parents. *Early Childhood Research Quarterly, 40*, 38–51. https://doi.org/10.1016/j.ecresq.2016.12.001.

Leffel, K., & Suskind, D. (2013). Parent-directed approaches to enrich the early language environments of children living in poverty. *Seminars in Speech and Language, 34*(04), 267–278. http://tmwcenter.uchicago.edu/wp-content/uploads/2017/10/SSL-00517.pdf.

Leitch, L. (2017). Action steps using ACEs and trauma-informed care: A resilience model. *Health & Justice, 5*, 5 https://doi.org/10.1186/s40352-017-0050-5.

Merz, E. C., Landry, S. H., Montroy, J. J., & Williams, J. M. (2017). Bidirectional associations between parental responsiveness and executive function during early childhood. *Social Development, 26*(3), 591–609. https://doi.org/10.1111/sode.12204.

Miller, D. P., Waldfogel, J., & Han, W. J. (2012). Family meals and child academic and behavioral outcomes. *Child Development, 83*(6), 2104–2120. https://doi.org/10.1111/j.1467-8624.2012.01825.x.

Murnane, R. J. (2007). Improving the education of children living in poverty. *The Future of Children, 17*(2), 161–182. https://www.jstor.org/stable/4495065.

Parolin, Z. (2020). Unemployment and child health during COVID-19 in the USA. *The Lancet Public Health, 5*(10), e521–e522. https://doi.org/10.1016/S2468-2667(20)30207-3.

Pinto, A. I., Pessanha, M., & Aguiar, C. (2013). Effects of home environment and center-based child care quality on children’s language, communication, and literacy outcomes. *Early Childhood Research Quarterly, 28*(1), 94–101. https://doi.org/10.1016/j.ecresq.2012.07.001.

Semega, J., Kollar, M., Shrider, E. A., & Creamer, J. (2020). Income and Poverty in the United States: 2019. (Report No. P60-270), U. S. Census Bureau. https://www.census.gov/library/publications/2020/demo/p60-270.html.

Shah, R., Sobotka, S. A., Chen, Y. F., & Msall, M. E. (2015). Positive parenting practices, health disparities, and developmental progress. *Pediatrics, 136*(2), 318–326. https://doi.org/10.1542/peds.2014-3390.

Stevens, A. H., & Schaller, J. (2011). Short-run effects of parental job loss on children’s academic achievement. *Economics of Education Review, 30*(2), 289–299. https://doi.org/10.1016/j.econedurev.2010.10.002.

Triple P (Positive Parenting Program). (n.d.). *Triple P Online*. https://www.triplep-parenting.com/nc-en/find-help/triple-p-online/.

Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., & Golinkoff, R. M., Committee on Psychosocial Aspects of Child and Family Health. (2018). The power of play: A pediatric role in enhancing development in young children. *Pediatrics, 142*(3), e20182058. https://doi.org/10.1542/peds.2018-2058.

Zuckerman, B., & Khandekar, A. (2010). Reach Out and Read: evidence-based approach to promoting early child development. *Current opinion in pediatrics, 22*(4), 539–544. https://doi.org/10.1097/MOP.0b013e32833a4673.