SOCIOLOGICAL INQUIRY

*Socioeconomic Resource Environments in Biological and Alternative Family Care and Children's Cognitive Performance**

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We examined social and economic resources in the environments of children involved with child protective services and their associations with children's cognitive performance. We used a national dataset of child protection investigations (children aged 6–16 at Wave 1). Using latent class analysis, we constructed profiles of the financial resources, parental education and employment, and family structure and size. We then examined within- and across-time associations between resource environment profiles and children's math and reading scores and tested whether associations differed by family care type. Our latent class analysis identified four distinct family resource environments: educated middle class, single earner, large working class, and severely disadvantaged. Family resource environment profiles predicted current cognitive performance and changes in performance over time, but associations were more consistent for children in biological family care. Children who remain in home following maltreatment allegations may benefit from services that target social as well as economic resources.

Children who have experienced maltreatment or who have been placed in foster care experience poor cognitive and academic outcomes as compared with children generally (Berger et al. 2015; Crozier and Barth 2005; Font and Cage 2018; Leiter 2007; Stone 2007). Research on children in the general population has shown that children's family resource environments—the combined social and economic supports available in the household—promote healthy development. Indeed, income, education, and family structure are primary mechanisms through which social inequalities are perpetuated (Killewald, Pfeffer, and Schachner 2017; McLanahan and Percheski 2008; Monaghan 2017). Children with higher-income, stably married, and college-educated parents experience more optimal social–behavioral and cognitive development as compared to children with low-income, unmarried, and less-educated parents (Berger and Font 2015; Magnuson 2007; Reeves and Howard 2013; Shriner, Mullis, and Shriner 2010; Western, Bloome, and Percheski 2008). Yet, children involved with child protective services (CPS; meaning they were alleged to be victims of maltreatment) often come from economically disadvantaged environments (Berger and Waldfogel 2011) and most research on the cognitive and developmental outcomes of children involved with CPS has primarily included measures of the

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socioeconomic environment as statistical controls (rather than focal predictors) in the pursuit of identifying effects of child maltreatment or foster care experiences. Comparatively little research has examined variability in the family resource environments in which CPS-involved children reside, nor how this matters for their development.

Moreover, family resource environments are sometimes changed as a result of CPS intervention—either because children's birth families receive services that enhance their resources or because children are placed in alternative care and their new caregivers provide different resource environments. Research focused on general population children suggests that enhanced family resource environments will benefit children's academic performance (Dahl and Lochner 2016; Magnuson 2007), but maltreated and foster children may not be benefited or harmed by family resource environments in the same ways. Rather, they may require higher-quality family environments than general population children to reach typical development (Sattler and Font 2017), and, given potentially transient living situations, temporary changes may have little influence on later development. In this study, we investigated three research questions: (1) What types of family resource environments are experienced by alleged child maltreatment victims in birth parent, relative, and non-relative family care arrangements? (2) Does the cognitive performance of alleged child maltreatment victims vary by their family resource environment? and (3) Do the associations between family resource environment and children's cognitive performance vary by family care type (e.g., birth parent, kinship, or non-relative family care)?

Background

Why some children excel in school and others struggle is a well-studied issue, particularly with regard to poverty. However, children involved with CPS are a special case, due to their possible exposure to child maltreatment and foster care. Child maltreatment is associated with higher rates of school absenteeism (Leiter 2007), grade retention, and disciplinary referrals (Kendall-Tackett and Eckenrode 1996), and with lower grade-point average (Slade and Wissow 2007) and math scores (Coohey et al. 2011). Foster care is associated with similar negative school outcomes (Stone 2007)—unsurprisingly, given that a majority of foster children are also victims of maltreatment. Research into this problem has often focused on child maltreatment and foster care as causal drivers of the association, but in reality, maltreatment or foster care placement rarely, if ever, occurs in the context of an otherwise high-functioning family. CPS involvement, including placement in foster care, is most likely to occur in the context of other social disadvantages, including intergenerational maltreatment patterns, poverty, substance abuse, domestic violence, mental illness,

criminality, family instability, and substandard parenting (Barth, Wildfire, and Green 2006; Berger 2004; Berger et al. 2016; Lindsey 1991; Schneider 2016; Walsh, MacMillan, and Jamieson 2003; Widom, Czaja, and DuMont 2015). A wealth of research has documented that adverse childhood experiences, which include many of these same disadvantages, are associated with a range of negative consequences later in life, including poorer physical and mental health, increased delinquency, and reduced school engagement (Bethell et al. 2014; Mersky, Topitzes, and Reynolds 2013). Thus, other aspects of maltreated and foster children's environments, particularly their family's social and economic resources, warrant more consideration. Parents have different abilities and resources, which constrain their perceived and actual options. When children are placed outside of their homes, characteristics and effects of their new environments must also be considered. Our study examined caregivers' financial resources, education, employment, and family context, and whether these characteristics and their effects on children's cognitive performance vary by children's living arrangements.

Family Economic and Social Resources

Income is the most tangible and widely studied family resource in relation to cognitive development. Decades of research indicate substantial skill gaps between children from low-income and high-income families (Duncan et al. 1998; Reardon, Valentino, and Shores 2012), and these gaps are present at the point of school entry (Bradbury et al. 2015). Despite these strong correlations, instrumental variables analyses have found only small (though significant) effects of income on children's academic achievement (Dahl and Lochner 2016). There are nevertheless several explanations for how economic resources can affect children's cognitive development and academic performance. Although housing- and neighborhood-related factors such as pollution and lead exposure are undoubtedly relevant, parents' abilities and choices play a central role in understanding the correlational and causal affects. Limited financial resources undermine families' ability to meet basic needs of shelter and food, without which children are unable to dedicate mental resources to learning (Duncan et al. 1998). Relatedly, family process models (Conger et al. 1994) posit that poverty causes financial stress, which in turn disrupts normal family functioning, adversely impacts individual health and well-being, and interferes with parents' psychological state (Conger, Conger, and Martin 2010; Wolfe et al. 2012). One manifestation of such stress can be aggressive or harsh parenting behaviors, as well as withdrawn or neglectful behaviors, both of which affect child development (Newland et al. 2013). Both of these explanations suggest that the severity of poverty—the extent to which the ability to meet basic needs is threatened—may be especially salient. Additionally, while

middle-class parents engage in concerted cultivation by deliberately developing children's skills and ability to interact with institutions, poorer parents are more likely to raise children using the accomplishment of natural growth, which provides comparatively poor training and results in cumulative disadvantage (Lareau 2002). Of course, there are many purchasable goods or services that, though beyond basic needs, may promote cognitive development. Studies have indicated that cognitive stimulation and parental investment—which includes not only parental behavior but also the availability of age-appropriate books and toys—explain much of the association between poverty and cognitive development (Guo and Harris 2000).

Inability to provide basic needs or to purchase developmentally relevant goods and services is a simple but incomplete explanation for poor education outcomes of low-income children. Whereas provider-related parenting responsibilities are clearly tied to income, other aspects of parenting behavior that do not intuitively result from poverty also vary by income and contribute significantly to the income-achievement gap (Reeves and Howard 2013). Associations between socioeconomic background and child academic achievement are, in part, driven by parenting behaviors, including cognitive stimulation and educational expectations (Carolan and Wasserman 2014; Guo and Harris 2000; Reeves and Howard 2013). And, although low-income parents face constrained choices in their investments, including access to quality childcare, educational activities, and developmentally appropriate toys and books (Gershoff et al. 2007), there are also differences in values, preferences, and choices that may produce differential child development. These values and preferences may be informed by parents' educational background, family context, or other characteristics that confound poverty; thus, consideration of family's total resource packages—including not only income, but also educational and family contexts—may be necessary to understand children's academic strengths and vulnerabilities.

Parental educational attainment is the most salient predictor of children's educational success, with benefits accumulating over time (Bukodi and Goldthorpe 2013; Torche 2011). In addition, increases in parental educational attainment over time promote positive educational outcomes for children, especially for young children and children whose mothers have low initial levels of education (Carneiro, Meghir, and Parey 2013; Magnuson 2007). In part, maternal education correlates with children's educational attainment because more highly educated mothers typically have other advantages—they are more likely to be married and have delayed childbearing to an older age, and are thus better positioned to provide for children (Carneiro, Meghir, and Parey 2013; Mare and Maralani 2006). Parents also encourage educational development and performance through behavioral role-modeling, setting expectations, and engagement

with their children's schooling (Heckman 2008; Sandefur, Meier, and Campbell 2006); caregivers who did not complete high school (much less a college degree) may be less able to communicate values and priorities to children that promote school engagement and effort.

Employment, particularly maternal employment, is a widely studied predictor of children's outcomes. This body of literature continues to produce conflicting results, and meta-analyses suggest that variability in findings reflects moderating influences of family structure, income, and other attributes (Goldberg et al. 2008). This is unsurprising given that issues of work, employment, and family structure are intertwined. Intuitively, employment could influence children in one of three ways. First, earnings correlate with household income, because wages, even if low, are usually (though not always) higher than what is available through common cash transfer or welfare programs. Earned income also increases total income because government financial support for working families is high relative to available supports for non-working families (Tach and Edin 2017), and thus, employment increases income directly and through access to additional tax benefits. Second, employment allows caregivers to model work ethic and industriousness for their children. Children may internalize and apply those values to their schooling. Third, employment may reduce supervision quality and time spent with children, particularly in dual-earner and single-parent households. Employed caregivers may also be less available to help with homework or participate in educational activities.

Within birth families, there is a large and long-standing body of research on family complexity that suggests family structure as a key factor in the perpetuation of social inequalities (McLanahan and Percheski 2008). Children in single-parent households have access to fewer economic resources and receive lesser-quality parenting than their peers (Berger and Font 2015; Hofferth 2006), resulting in less-optimal academic and health outcomes (Bramlett and Blumberg 2007; Shriner, Mullis, and Shriner 2010). Disadvantages attributed to some types of family structures may be largely driven by stressful or frequent changes in structure, however (Potter 2012; Tillman 2007). Family structure changes may also produce complex sibling groups: The majority of firstborn children of an unmarried parent will have one or more half-siblings (Cancian, Meyer, and Cook 2011), and the probability of women having children from multiple men is correlated with material and social disadvantages (Carlson and Furstenberg 2006). Families with a single caregiver and families with larger numbers of children may be less able to support children's learning because individualized attention is less available when the ratio of caregivers to children is lower. In those scenarios, children may receive less support for completing schoolwork and be less likely to have their academic needs identified or addressed.

Living Arrangements of Children Involved with Protective Services

At the point of initial CPS contact, most children live with a biological parent. From there, approximately 5.5 percent enter the formal foster care system (U.S. Department of Health and Human Services 2017) and are placed with kin, non-relative foster families, or (especially if older adolescents) in group or residential settings. Children may also be placed with relatives on an informal or voluntary basis (Malm and Allen 2016). Depending on the nature and progression of the case, among other factors, children may then return to their birth families, remain in foster or voluntary kinship care, or be adopted or placed in guardianship.

Social and economic conditions vary across family setting. Families reported to CPS are largely low-income (Berger and Waldfogel 2011; Lindsey 1991) and face significant material hardships (Slack et al. 2011; Yang 2014). The resources of other family settings vary. Non-relative foster and adoptive families are more likely to be economically secure due to system requirements and supports—approval for foster care and adoption typically includes an (albeit vague and subjective) evaluation of financial stability and foster and adoptive parents may receive financial subsidies (Child Welfare Information Gateway 2014b). In addition, because becoming a foster or adoptive parent requires an explicit choice, whereas as many births—particularly to populations most likely to become involved with CPS—are unplanned (Finer and Zolna 2011), foster and adoptive parents may be more financially stable before becoming caregivers. Overall, kinship caregivers (who are held to less rigorous approval standards) have fewer economic resources and receive less financial support from CPS than non-relative caregivers (Ehrle and Geen 2002; Murray, Macomber, and Geen 2004).

Non-relative foster and adoptive parents are more likely to be married than birth families or kinship caregivers, but it is not clear whether family structure is an important factor for children living apart from their birth families. Some of the disadvantages of single-parent families are less likely to apply, given that prospective alternative caregivers for CPS-involved children undergo screening, are held to specific standards, and are often provided financial support (Child Welfare Information Gateway 2014b, 2015, 2016). At the same time, foster children may disproportionately benefit from stable and well-resourced family environments because they are likely to have experienced substantial family turmoil prior to care.

Overall, research has identified few harms or benefits of foster care (relative to remaining in home after maltreatment) for cognitive outcomes (Berger et al. 2015; Font and Maguire-Jack 2013). The often short-term nature of foster care provides a plausible hypothesis that the quality of children's foster home

environments would have a commensurately small impact on child well-being, particularly for children who are returned home. In addition, investments in children may differ across settings based on the temporary nature of the arrangement or the caregiver–child relationship. From a biological perspective, it can be argued that the blood lineage of biological and kinship families encourages heavier investment (Lawler 2008); however, neither attachment nor commitment is dependent on blood lineage (Dozier and Lindhiem 2006; Dozier et al. 2001). Commitment, however, does vary across foster families, including the extent to which they consider a foster child as a family member (Dozier and Lindhiem 2006; Schofield and Beek 2005). Hence, the degree to which foster caregivers apply their socioeconomic advantages to promote their foster child's academic achievement may vary. Nevertheless, within foster care, behaviors and qualities of foster parents matter for children's adjustment and well-being (Chamberlain et al. 2008; Cole 2005; Sattler and Font 2017).

Current Study

This study assesses how the family resource environments of birth parent, kinship, and non-relative caregivers influence the math and reading performance of children involved with CPS. We anticipate that the family resource environments will predict math and reading scores, but that high-quality resource environments will not be sufficient to bring this high-risk population of children to normative academic performance. In other words, even in the highest-quality environments, we hypothesize that average math and reading scores in this population will be below general population averages. Moreover, due to the temporary nature of most non-relative care arrangements, and, to a lesser extent, kinship arrangements, we expect children in birth parent care to be most strongly affected by their family resource environments.

Method

Data

We used the second National Survey of Child and Adolescent Well-being (NSCAW II) for this study. NSCAW II is a cohort of children investigated by CPS that commenced in 2008. To date, NSCAW II has three waves of interviews: Wave 1: 3–6 months after the child protection investigation; Wave 2: 18 months later; and Wave 3: 36 months later. NSCAW II oversamples infants, children in foster care, and children receiving services; however, when weighted, NSCAW II constitutes a nationally representative sample of children involved with the CPS. As part of each wave of data collection, children and their current caregivers are interviewed, as well as ongoing caseworkers.

Current caregivers may be birth parents, relatives, non-relative foster parents, or others. The original sample was 5,569 children. We restricted our sample to children aged 6–16 at Wave 1, as 6 was the minimum eligible age for the study outcome measures (N = 1,877). We also excluded children who were ever reported to be placed in a group home or facility (n = 105), leaving a final sample of 1,772 children (5,316 child-waves).

Measures

Our outcome measures were the Applied Problems and Letter Word Identification subtests, designed to measure math and reading, respectively, from the Woodcock–Johnson III Tests of Achievement (Woodcock et al. 2001). Internal reliability for these scales is reported as ≥.8 (Mather and Woodcock 2001). Scores were standardized using population norms reported by the test creators, such that a score of 0 indicates average and a score of 1 is equivalent to a standard deviation above average.

Each item included in the latent class analysis, described in the Approach section, was measured at each of the three waves and was reported by the child's primary caregiver at the time of the interview. Financial resources were measured using income as a percent of the federal poverty line (FPL) and categorized as (1) under 50 percent FPL; (2) 50–100 percent FPL; (3) 101–200 percent FPL; and (4) >200 percent FPL. Primary caregiver's education was measured as (1) less than high school; (2) completed high school, no college; (3) some college, no degree; and (4) college degree. Employment was categorized as (1) no caregiver in household employed; (2) secondary caregiver employed only; (3) primary caregiver employed only; and (4) primary and secondary caregivers employed. A single-caregiver household, by definition, could only be in category 1 or category 3. Family structure was measured using caregiver's current relationship status (married, single, or cohabiting), and family size was measured as the number of children in household. Family care type was defined in three groups: 1 = living with birth parent(s); 2 = living with a relative; and 3=living with a non-relative. This was measured based on a derived setting variable that took into account information from the caseworker, child, and caregiver interviews.

Our models included child demographic characteristics as statistical controls: child age, gender, race (white, black, Hispanic, other), and cognitive disability (yes/no). Because type of maltreatment exposure may affect the probability of placement in alternative family care (Lindsey 1991) and may differentially predict academic performance (Font and Berger 2015; Manly et al. 2013), we also included non-mutually exclusive indicators of caseworker-reported maltreatment type (physical abuse, sexual abuse, physical neglect, and supervision neglect). Measures of caregiver self-reported physical and mental

health, drawn from a 12-item health survey (Ware, Kosinski, and Keller 1996), were included due to well-documented correlations of socioeconomic attributes with caregiver health (Herd, Goesling, and House 2007) and of caregiver health and child development (Kahn, Brandt, and Whitaker 2004).

Analytic Approach

We employed latent class analysis (LCA) using Stata's doLCA plugin (Lanza et al. 2015) to categorize respondents by family resource environment. LCA uses logistic probabilities to determine the co-occurrence of solidarity and conflict among predictor variables. Our classes were constructed based on measures of caregiver education, caregiver marriage/cohabitation status, household earners, number of children in household, and income-to-poverty ratio (as described above). Classes were generated based on all child-wave observations with non-missing values for at least three of the five measures. Of the 5,336 child-wave observations, 116 were missing on more than two measures; class membership for these observations was imputed along with missing data on all other variables (described below). To determine the optimal number of classes, we tested progressive numbers of latent classes and compared multiple fit statistics. The four-class solution was the best fit using the BIC, CAIC, and entropy R-squared metrics; the five-class solution was slightly preferred by the AIC and adjusted BIC metrics. Given the closeness in fit for the four- and five-class solutions, we chose the four-class solution for parsimony.

After the LCA, multiple imputation with chained equations was used to address missing values on all measures. Seventy-five imputed datasets were generated. We then estimated the associations between our resource environment classes and math and reading scores using two strategies. First, we estimated pooled linear regression models, which estimated the within-time associations between group membership and the academic outcomes. We then estimated panel models with child fixed effects, which estimated how a change in family resource environment was associated with changes in math and reading scores. The child fixed-effects models are better than the pooled models for addressing selection bias due to unobserved variables, because, by focusing on change over time, the effects of all (observed or unobserved) time-invariant characteristics are zeroed out and thus do not bias coefficient estimates. At the same time, the fixed-effects models only incorporate information about children who experience change, and thus do not provide estimates relevant to those who remain in the same environment. We then used Wald tests to compare coefficients across groups.

Table 1
Item-Response Probabilities Conditional on Class Membership for Four-Class Solution

Class characterization	Class 1 Educated middle class	Class 2 Single earners	Class 3 Large working class	Class 4 Severely disadvantaged
Income-to-poverty ratio				
<50% FPL	.00	.00	.15	.36
50–100% FPL	.00	.15	.38	.50
101–200% FPL	.24	.52	.48	.14
>200% FPL	.76	.34	.00	.00
Caregiver employment				
None	.16	.22	.19	.65
Primary caregiver only	.15	.72	.20	.31
Secondary caregiver only	.22	.01	.36	.02
Dual-earner	.47	.04	.25	.02
Primary caregiver education				
Less than HS	.13	.20	.44	.56
HS diploma	.16	.14	.24	.13
Some college	.20	.17	.09	.09
College completion	.50	.49	.23	.22
Relationship status				
Married	.88	.16	.76	.17
Cohabiting	.11	.11	.24	.14
Single	.01	.73	.00	.68
Number of children in household				
1	.37	.52	.10	.32
2	.26	.23	.16	.19
3	.16	.15	.25	.21
4	.13	.06	.23	.13
5 or more	.09	.04	.26	.14

Results

Latent Classes

In Table 1, we show the item-response probabilities by class for each of the five measures used to generate the latent classes. Class 1 was the *educated*

middle class families: These families were all above the FPL, 84 percent had at least one employed caregiver, and 88 percent had married caregivers. Half of primary caregivers in Class 1 had completed a college degree, and an additional 20 percent attended college but did not finish.

Class 2 consisted primarily of *single earner families.* They largely reported working-class incomes: None were below 50 percent FPL, but most families (52%) were between 101 and 200 percent FPL. In Class 2, the primary caregiver was typically single (67%), the sole earner (81%), and educated (17% some college, 48% college degree). Class 2 families had fewer than two children on average.

Class 3 constituted *large working class families*. Nearly three-quarters of households in this class had three or more children, and all had married or cohabiting caregivers. The majority of Class 3 households had incomes near the poverty line: All were below 200 percent FPL, but only 15 percent were below 50 percent FPL. Almost all households in Class 3 (81%) had at least one caregiver who was employed, but most had fairly low educational attainment (44% of primary caregivers without a high school diploma and only 23% with a college degree).

Class 4 contained the most *severely disadvantaged families*. Nearly all families in Class 4 were at or below the poverty line (86%). In 65 percent of observations, neither a primary nor secondary caregiver was employed; only 2 percent of Class 4 families were dual-earner. Most of Class 4's primary caregivers did not complete high school (56%) and were single caregivers (68%).

In Figure 1, we show the weighted percent of child-wave observations in each class by family type. A plurality (42%) of birth parent families were classified as *severely disadvantaged*, and 37 percent were *single earners.* Comparatively few were classified as either *large working class* (13%) or *educated middle class* (8%). The distribution of class profiles for kinship families was quite similar to birth families, though kinship families were slightly more likely to be *single earners* and slightly less likely to be *severely disadvantaged.* In contrast, non-relative families were far less likely to be *severely disadvantaged* (12%) and more likely to be *educated middle class* (19%), but a majority of non-relative families (55%) were classified as *single earners.*

In Table 2, we show the weighted sample characteristics by class. There were stark racial differences in class profile. Black and Hispanic children were 9 and 23 percent of the *educated middle class* group, respectively, versus 24 and 34 percent of the *severely disadvantaged* group. Black children were overrepresented in *severely disadvantaged* and *single earner* families, whereas Hispanic children were overrepresented in *severely disadvantaged* families and underrepresented in all other groups. White children were strongly underrepresented in *severely disadvantaged* families and overrepresented in *educated*

Table 2
Weighted Sample Characteristics by Class Membership, Percent, or Mean (SE)

	C1. Educated middle class	C2. Single earners	C3. Large working class	C4. Severely disadvantaged
Black[acdf]	9.2	21.0	12.2	23.5
White[abcef]	62.4	45.3	48.9	36.1
Hispanic[ce]	22.8	22.8	20.4	33.8
Other race/ethnicity[ae]	5.5	10.9	9.5	6.6
Child age[ade]	11.6 (.20)	12.1 (.13)	11.3 (.22)	11.3 (.10)
Female	48.9	51.9	48.8	52.1
Cognitive disability	31.3	28.8	29.2	32.6
Physical abuse allegations[cef]	43.6	36.0	36.1	26.4
Sexual abuse allegations	12.3	11.2	12.5	12.8
Physical neglect allegations[c]	11.9	14.6	17.4	18.4
Supervision neglect allegations[acef]	35.4	45.7	41.6	56.3
Caregiver mental health (standardized)$_{abce}$	.32 (.06)	.04 (.04)	.01 (.07)	–.15 (.04)
Caregiver physical health (standardized)[cde]	.09 (.08)	.12 (.04)	–.07 (.08)	–.18 (.04)

Notes: Based on postimputation data with sampling weights.
Significant differences between groups using $p < .05$: [a]C1 ≠ C2; [b]C1 ≠ C3; [c]C1 ≠ C4; [d]C2 ≠ C3; [e]C2 ≠ C4; [f]C3 ≠ C4.

middle class families. Other race children were overrepresented in both *single earner* and *large working class* families. There was little difference by child age, gender, or cognitive disability status across groups. Children in *educated middle class* families had a higher proportion of physical abuse allegations, and a lower proportion of physical and supervision neglect allegations compared with all other groups. In contrast, children in *severely disadvantaged* families had the highest proportion of supervision neglect allegations (56%), but a similar proportion of physical neglect allegations compared with children in *large working class* families. Overall average caregiver mental health was most positive in *educated middle class* families and lowest in *severely disadvantaged* families; there were no differences between *single earner* and *large working*

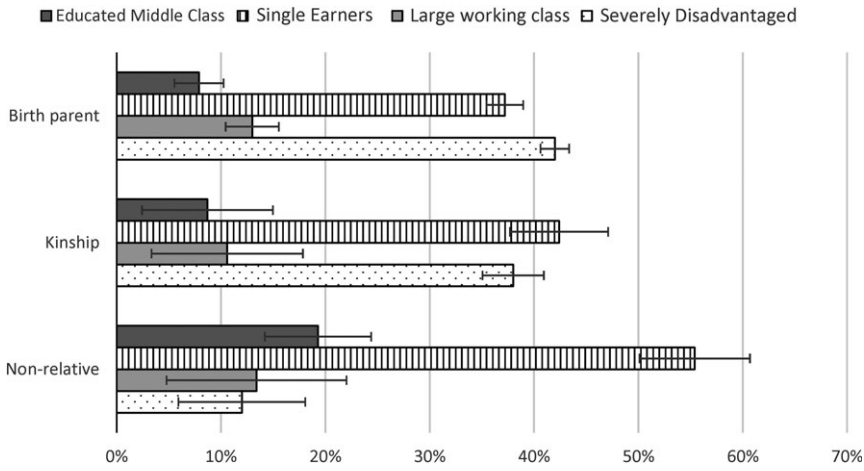

Figure 1 Family Resource Environment by Family Care Type.

class families in caregiver mental health. Caregivers in both *educated middle class* and *single earner* families reported above-average physical health.

Regression Results

In Table 3, we show the results of weighted pooled regression and child fixed-effects models. The reference group for family resource environments is *educated middle class,* and the reference group for family type is birth parent care. In our basic OLS model (including all controls except family type), we found that for math scores, the severely disadvantaged family environment was associated with lower scores compared with all other groups, and there were no differences among the remaining groups. Specifically, compared with a child in the *educated middle class* environment, a child in a *severely disadvantaged* environment had a .3 standard deviations (SDs) lower average math score. However, we found that children in all environments other than the educated middle class setting had lower reading scores, with coefficients ranging from −.33 to −.52 SDs. The coefficients were smaller in the fixed-effects models, but the patterns were similar. We found that moving into a severely disadvantaged environment reduces math scores by approximately one-tenth of a standard deviation, and moving from an educated middle class environment to any other setting reduces reading scores by .11 to .13 SDs. Including a control for family type (Model 2) did not substantively alter family resource environment coefficients for either OLS or fixed-effects models. Yet, children

Table 3
Regression Results

	Pooled OLS		Child Fixed Effects	
	Math	Reading	Math	Reading
Model 1				
Family resource environment (reference: Educated middle class)				
Single earners	−.11 (.13)	−.39 (.13)**	−.10 (.06)	−.13 (.06)*
Large working class	−.10 (.14)	−.33 (.15)*	−.03 (.08)	−.11 (.06)$^{+}$
Severely disadvantaged	−.30 (.13)*	−.52 (.13)***	−.11 (.07)$^{+}$	−.12 (.06)*
Model 2				
Family resource environment (reference: Educated middle class)				
Single earners	−.12 (.13)	−.39 (.13)**	−.10 (.06)	−.14 (.06)**
Large working class	−.11 (.14)	−.34 (.15)*	−.03 (.08)	−.11 (.06)$^{+}$
Severely disadvantaged	−.32 (.14)*	−.53 (.14)***	−.12 (.07)$^{+}$	−.13 (.06)*
Family type (reference: Birth parent)				
Kinship	−.14 (.09)	−.15 (.10)	−.04 (.08)	.03 (.07)
Non-relative	−.23 (.11)*	−.15 (.13)	−.03 (.10)	−.09 (.08)
Model 3				
Family resource environment (reference: Educated middle class)				
Single earners	−.07 (.17)	−.40 (.17)*		
Large working class	−.08 (.18)	−.36 (.18)$^{+}$		
Severely disadvantaged	−.28 (.17)$^{+}$	−.55 (.17)**		

Table 3

(continued)

	Pooled OLS		Child Fixed Effects	
	Math	Reading	Math	Reading
Family type (reference: Birth parent)				
Kinship	.21 (.21)	−.16 (.27)		
Non-relative	−.26 (.23)	−.24 (.25)		
Family resource environment X type interactions				
Single earners # Kinship	−.39 (.24)	−.04 (.30)		
Single earners # Non-relative	.01 (.27)	.06 (.30)		
Large working class # Kinship	−.45 (.28)	−.04 (.35)		
Large working class # Non-relative	.25 (.29)	.32 (.33)		
Severely disadvantaged # Kinship	−.35 (.23)	.06 (.29)		
Severely disadvantaged # Non-relative	−.06 (.37)	.12 (.37)		

Note: 5,316 child-wave observations. Pooled OLS models include sampling weights and controls for child age, gender, race, and cognitive disability, caregiver mental health, caregiver physical health, duration in current placement, alleged maltreatment type, and wave of observation. Fixed-effects models include controls for child age, caregiver mental health, caregiver physical health, duration in current placement, and wave of observation. Outcome variables are standardized according to population norms.
*p <.05; **p <.01; ***p <.001; ^{+}p <.1.

in non-relative foster care had lower math (but not reading) scores than children in birth parent care in the OLS models only.

In Figure 2, we plot predicted math and reading scores by family resource environment and care type based on an OLS regression model that included environment-by-care type interactions. To calculate the predicted scores, we held all statistical controls constant across groups. Plotting predicted scores allows for a comparison of scores for subgroups within the CPS sample to the population norm scores used to standardize the tests. As noted earlier, the test scores are standardized such that a mean of 0 would indicate that the sample group was similar to the typical score in a general population sample, and ± 1 indicates 1 standard deviation (SD) above or below the general population average. The results show that average academic performance in the CPS population is far below the general population average. Only among children in birth parent care in an educated middle class environment were mean reading scores above the population average; in no settings were math scores at or above average. For children in birth parent care, single earner and large working class environments were associated with similar math and reading scores (about .2 SDs below average), whereas severely disadvantaged environments were associated with more negative scores (.4 SDs below average). Among kinship families, children in educated middle class environments scored near-average on reading and .17 SDs below average on math, whereas children in all other environments were .4–.5 SDs below average on reading and .6–.8 SDs below average on math. Lastly, among non-relative families, children in educated middle class and large working class families had better reading scores (.08-.12 SDs below average) than those in single earner and severely disadvantaged environments (.41-.52 SDs below average).

Limitations

We note several limitations to this study. First, we were reliant on self-reported income to construct our poverty measure, and individual reports of income can be inaccurate. Misreporting of income has the potential to obfuscate differences between groups. Second, our sample of children in non-relative and kinship settings was moderately small and heterogeneous, and as a result, our models had relatively large standard errors. Third, there may be unobserved selection processes into foster and kinship care. In particular, it may be the case that kin or non-relative families with greater resources may be more willing to foster children with higher needs. Future research should examine family resource environments with a larger sample of non-relative and kinship foster homes and over a longer duration. Fourth, the associations we found between resource environments and child cognitive performance among youth involved with CPS may reflect other prior or concurrent environmental exposures.

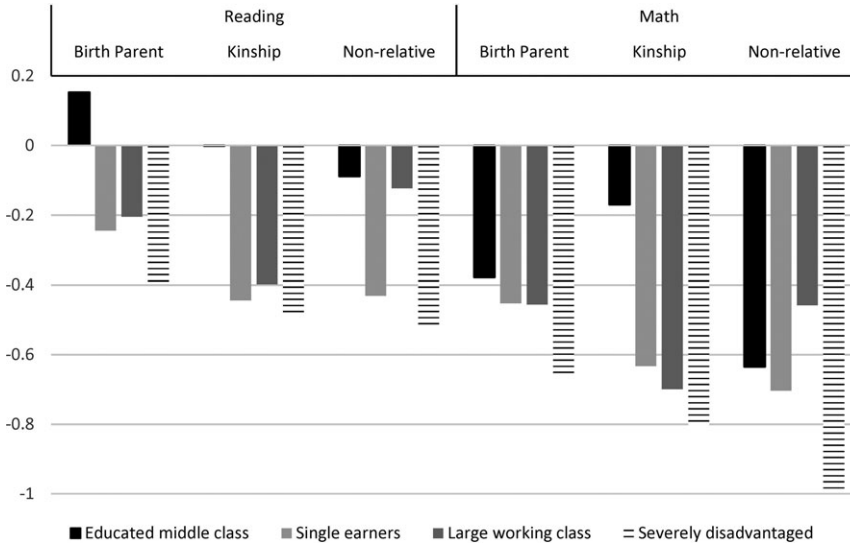

Figure 2 Predicted Reading and Math Scores by Family Resource Environment and Setting.

Among children in foster care, there are insufficient data on their prior family environments, which may continue to impact their development once in foster care. Although in our panel models (using child fixed effects) we were able to account for some sources of selection bias, these models are often insufficient for identifying causal associations and limit our inferences to children whose environments changed between waves. In particular, although family is the primary socialization unit for children, the quality of other social environments and contexts, including schools and neighborhoods, also influences children's academic development and performance (Hamre and Pianta 2005; Leventhal and Brooks-Gunn 2000) and likely confounds family resource environment as well as family type. Children involved with CPS often reside in low-quality neighborhoods and attend underperforming schools (Drake and Pandey 1996; Fries, Klein, and Ballantyne 2014). Foster care may provide access to higher-quality schools (Fries, Klein, and Ballantyne 2014), but also may cause learning disruptions due to multiple school changes (Ferguson and Wolkow 2012), and thereby produce, or exacerbate, academic delays (Sullivan, Jones, and Mathiesen 2010). Unfortunately, our data do not contain relevant measures of school quality, but this area is ripe for future research.

Discussion and Conclusions

Although it is well documented that socioeconomic conditions, along with other family traits, are among the primary drivers of inequality in the general population, it is less clear whether these factors matter in the same ways for children living in non-traditional arrangements, such as out-of-home care. This study constructed profiles of the family resource environments in which CPS-involved children reside, consisting of family traits that are commonly linked with inequality or disparate child outcomes: poverty, caregiver educational attainment and employment, family structure, and number of children. We identified four profiles: (1) educated middle class (high income, dual-earner, college-educated, married); (2) single earner (moderate income, working, educated single parents with two or fewer children); (3) large working class (low income, one or both caregivers employed, married, more than two children); and (4) severely disadvantaged (very low income, low employment, low educational attainment, unmarried). A substantial proportion of birth parent (42%) and kinship households (38%) were categorized as severely disadvantaged, compared with only 12 percent of non-relative family environments. Across groups, few families provided educated middle class environments, including less than 10 percent of birth and kinship families, and 19 percent of non-relative families. Many studies have identified linkages between low socioeconomic status and CPS involvement (Berger and Waldfogel 2011; Slack et al. 2011; Yang 2014) and highlighted disparities in the resources of kinship caregivers as compared with non-relative caregivers (Ehrle and Geen 2002; Murray, Macomber, and Geen 2004; Sakai, Lin, and Flores 2011). However, this study highlights that many children involved with CPS are living in environments where they face multiple social disadvantages, irrespective of whether they reside in or out of home, or with a relative or non-relative. Associations between family resource environments and children's academic performance varied, but overall, our results indicate that CPS-involved children are harmed by severely disadvantaged environments, irrespective of whether they are in a birth parent or foster care arrangement. At the same time, our results also suggest that single earner or large working class families may be no more conducive to cultivating reading skills than severely disadvantaged families.

This research has important implications for the role of the CPS system. The social safety net in the United States today is largely oriented around employment and offers comparatively generous supports for low-wage workers with children as compared with unemployed adults with children. Tax subsidies such as the Earned Income Tax Credit provide no support to the unemployed, whereas the Child Tax Credit is nonrefundable (meaning it provides no benefit to those without federal income tax liability). Although those who are

unemployed and who face significant barriers to employment are perhaps a small proportion of the general population, our study found that near the time of CPS investigation, about 47 percent of CPS-investigated children aged 6 and older were residing in a severely disadvantaged family environment. Not only were their caregivers mostly unemployed and in poverty, but they would likely face barriers to obtaining and retaining employment due to low educational attainment and potential childcare problems as single caretakers. Thus, although CPS was never intended as an antipoverty or employment agency, these families may have few other options for assistance. CPS could aid these families through direct financial supports, services that build human capital (e.g., parent education and employment services), or services that mitigate the effects of social disadvantages on children's cognitive performance, such as early educational services (Reynolds et al. 2011). In addition, CPS could, directly or through parenting education services, encourage parental investment in children's education to reduce negative effects of economic hardship (Hango 2007).

Yet, the CPS system, like the economic safety net, is narrowly targeted and typically provides shallow and short-term support. The stated objectives of the CPS system are safety, permanency, *and well-being*, suggesting that CPS acknowledges some responsibility to promote healthy development among the children with whom it comes into contact. Yet, states are primarily encouraged to promote the well-being—including cognitive functioning—of children who "have experienced maltreatment and are receiving child welfare services" (Administration for Children and Families 2012). Though there have been recent increases consequent to the opioid epidemic (U.S. Department of Health and Human Services 2016), substantiation rates and rates of foster care entry among CPS-involved children have declined significantly in the past two decades (Conn et al. 2013). In 2016, out of the 7.4 million children referred to CPS, 388,130 (5.2%) were found to be victims and received postinvestigation services (U.S. Department of Health and Human Services 2017). Put another way, for 95 percent of children reported for suspected abuse or neglect, promoting well-being is not seen as a priority or responsibility of CPS. And yet, many of these children are living in severely disadvantaged environments and are at risk of poor academic outcomes. Although CPS is supposed to distinguish between maltreatment and poverty and intervene only in the former (Child Welfare Information Gateway 2014a), it is inefficient and perhaps unethical to investigate the millions of families each year, but take no action to address the risks associated with the disadvantaged conditions in which so many live.

That any children in out-of-home care are residing in such environments is particularly concerning, given that the state or local government has direct

responsibility for (and authority over) their environments. Governments have wide-reaching power to regulate the types of environments children experience in out-of-home care through licensure policies. It is perhaps unethical or even illegal to exclude prospective foster, kinship, adoptive, or guardian homes on the basis of income, education, family structure or size, or employment (Beltran and Epstein 2012). Although states may not be able to substantially alter their eligibility criteria due to high demand for and low supply of foster parents (Office of the Inspector General 2002a,b), they can better support those they have. Agencies should consider how to evaluate the capacity of prospective foster, kinship, adoptive, or guardian homes to provide cognitive stimulation and promote learning, and provide services that bridge any gaps. Doing so may provide a higher-quality environment for children living away from home and improve recruitment and retention of kinship and non-relative foster parents (Doyle and Peters 2007; Testa and Slack 2002).

In sum, this study shows that many children involved with CPS reside in severely disadvantaged environments, especially when residing in birth parent or kinship care arrangements, and that such environments are associated with lower reading and math skills. When children are placed outside the home under state supervision, CPS has an obligation to ensure the adequacy of their environments. However, children remaining in birth parent care are most likely to live in severely disadvantaged family environments and least likely to receive supportive services. Given that the stated goals of CPS include child well-being in addition to safety and permanency, enhanced provision of services to improve (or compensate for) the family environments of children investigated by CPS is warranted.

ENDNOTES

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