Child Care and the Development of Behavior Problems among Economically Disadvantaged Children in Middle Childhood

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Abstract

Research examining the longer term influences of child care on children's development has expanded in recent years, but few studies have considered low-income children's experiences in community care arrangements. Using data from the Three-City Study (N = 349), this study examines the influences of child care quality, extent and type on low-income children's development of behavior problems during middle childhood (7 - 11 years old). Higher levels of child care quality were linked to moderate reductions in both externalizing and total behavior problems. High quality child care was especially protective against the development of behavior problems for boys and African American children. Child care type and the extent of care that children experienced were generally unrelated to behavior problems in middle childhood.

KEY WORDS: CHILD CARE, LOW-INCOME, MIDDLE CHILDHOOD, SOCIAL DEVELOPMENT

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Nonparental child care arrangements have become important contexts for early child development in the U.S., with recent national estimates showing that approximately 12.2 million children under age 6 attend child care or preschool programs (Mulligan, Brimhall, & West, 2005). Economically disadvantaged children are slightly less likely than their advantaged counterparts to experience nonparental care during their preschool years, with 65% of children from poor families and 75% of children from non-poor families regularly cared for in child care settings (Mulligan et al., 2005). Yet child care experiences may be particularly salient for low-income children' health and development. Faced with limited resources in their home environments, low-income children may be especially responsive either to the added supports of stimulating and responsive nonparental care, or to the added risks of poor quality or extensive child care (Dearing, McCartney, & Taylor, in press; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007; Magnuson, Ruhm, & Waldfogel, 2007).

Beyond a few model early intervention programs and a handful of short-term longitudinal studies, our knowledge is limited concerning the implications of child care experiences for low-income children's later development. Whether child care experiences have long-term effects on low-income children's socioemotional functioning, such as their skills in regulating their emotions and behaviors, getting along with peers, and refraining from inappropriate behaviors,is understudied. Behavioral and emotional skills are essential for early school success and also have long-term implications for children's mental health and behavioral functioning (Campbell, 2006; Raver, 2002). As children transition into formal schooling and traverse middle childhood,

lower problem behaviors and better behavioral skills are central indicators of developmental success.

Middle childhood, spanning ages 5 to 12 years, is an important period for psychosocial development as children engage much more regularly with the world outside of their families (e.g., teachers, peers, other adults). When children begin formal schooling, they must negotiate more rigorous academic demands that necessitate flexible thinking and systematic methods of learning as well as higher levels of self regulation. They must comply with teachers and learn to independently initiate and maintain relationships with peers (Huston & Ripke, 2006). Behaviorally and emotionally, the initial years of schooling are paramount, as children's aggression, anxiety, self regulatory behaviors, and social skills set the stage for interactions with peers and teachers, and contribute to children's sense of competence and well-being (Huston & Ripke, 2006). The behaviors, skills and social scripts that are developed during middle childhood contribute to lifelong functioning. Indeed, problem behaviors and behavioral/ emotional skills that are established in middle childhood exhibit significant continuity across adolescence and even into adulthood (Huston & Ripke, 2006).

Grounded in bioecological models of development (Bronfenbrenner & Morris, 1998; Sameroff, 1994), this study seeks to enhance our understanding of how experiences in early education and care settings shape the development of behavior problems among economically disadvantaged children into middle childhood. Bioecological theory describes human development as the result of proximal processes and reciprocal interactions between individuals and their environments. Driving future development are proximal processes that occur in microsystems, along with the characteristics of individuals that affect the contexts that they select into as well as the experiences that they elicit in these contexts. Within the child care

microsystem, this model argues that caregiving experiences as well as children's individual characteristics together influence future developmental trajectories (Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Morris, 1998), with potentially divergent influences for children with different characteristics.

Effects of Child Care Quality on Children's Behavior Problems and Socioemotional Functioning

Research to date has identified three aspects of child care experiences that are important potential influences on children's well-being: quality of care, extent of care, and type of care setting. High quality child care is characterized by caregivers who are warm and responsive, and who provide materials and experiences that stimulate learning and emotional support, and who afford consistency and structure. Experiences in high quality care settings promote socioemotional development by helping children learn to regulate their emotions, behavior and attention, to get along with peers, and to comply with rules and requests. Indeed, research has proliferated documenting the associations between early education and care experiences and children's socioemotional development. In concurrent and short-term longitudinal studies with large, socioeconomically diverse samples, high quality child care has been found to predict modestly lower behavior problems and negative affect as well as enhanced peer relations, sociability, and compliance (e.g., Love et al., 2003; NICHD ECCRN, 1998; 2001). There is little evidence, however, that these links endure into middle childhood. Findings from the NICHD ECCRN (2005; Belsky et al., 2007) suggest that child care quality does not predict behavior problems or other measures of social functioning in middle childhood. Similarly, results from the Cost, Quality, and Outcomes Study found no links between quality and children's socioemotional functioning in 2nd grade, although significant links were identified between

teacher-child closeness during early child care and lower behavior problems during middle childhood (Peisner-Feinberg et al., 2001).

There is a notable paucity of research assessing potentially protective or risky effects of child care quality on economically disadvantaged children's long-term behavioral functioning. Though the studies discussed above include children from a range of socioeconomic backgrounds, most children were from middle-class families. In contrast, to the experiences of more affluent children, economically disadvantaged families tend to face high levels of stress and have limited resources to invest in children, leading to less stimulating, responsive, and emotionally supportive home environments for their children (Magnuson & Votruba-Drzal, under review). Such economic disparities in turn have significant implications for children's development of behavior problems (Duncan & Brooks-Gunn, 1997; McLoyd, 1998; Votruba-Drzal, 2006). High quality nonparental care settings may protect economically disadvantaged children by providing them with opportunities and experiences that facilitate the mastery of central developmental challenges in early and middle childhood (Dearing, et al., in press).

Model early intervention programs, such as the Perry Preschool Project and the Abecedarian Program, show that high quality early child care experiences, combined with comprehensive services for children and families, protect low-income children against significant behavioral problems later in life such as juvenile delinquency and incarceration (Campbell, Ramey, Pungello, Sparling, Miller-Johnson, 2002; Schweinhart, et al., 2005; Reynolds, Temple, Robertson, & Mann, 2001). These interventions were administered by highly trained professionals and provided multifaceted services to low-income children and families. In contrast, recent research indicates that the quality of child care typically experienced by economically disadvantaged children is highly variable and indeed, often rated as inadequately

meeting children's developmental needs (Coley, Li-Grining, & Chase-Lansdale, 2006; Li-Grining & Coley, 2006; Phillips, Voran, Kisker, Howes, & Whitebook, 1994; Fuller, Kagan, Loeb, & Chang, 2004), questioning the generalizability of results from such model intervention programs.

Virtually no studies have considered whether the quality of child care provides long-term protection against behavior problems for economically disadvantaged children. The Peisner-Feinberg et al. study (2001) found the protective effects of teacher-child closeness on children's behavior problems to be sustained more strongly among children of mothers with low education, which was used as a proxy for low-income. Assessing low-income children from the Three-City Study, Votruba-Drzal, Coley and Chase-Lansdale (2004) found that the quality of child care experienced by preschool-age children (average age of 3 years) predicted improvements in children's socioemotional functioning over a 1 ½ year period, with higher quality care reducing internalizing and serious externalizing behavior problems and enhancing positive behaviors. Similar results were reported by Loeb, Fuller, Kagan and Carrol (2004) using a different sample of low-income children. It is unknown whether such short-term protective effects of child care quality on low-income children's behavioral functioning extend to middle childhood.

Extent of Child Care Use and Children's Behavior Problems and Socioemotional Functioning

Along with child care quality, the extent of nonparental care that children are exposed to is a salient dimension of early experiences in child care. Increasing evidence suggests that extensive experience in nonparental care during the early years may be harmful for behavioral functioning. Early, extensive nonparental care may threaten behavioral development by undermining maternal sensitivity, as mothers have less time to spend with young children and become familiar with their signals (NICHD ECCRN, 1999), or by imposing high levels of stress

associated with extended peer exposure that increases the likelihood of children displaying behavior problems by taxing their nascent self-regulatory and social skills. In a series of studies using data from the NICHD Study of Early Child Care, the NICHD ECCRN (1998; 2003; 2005) and Belsky and colleagues (2007) found positive links between the quantity of care (i.e., hours per week) and externalizing behavior problems during early childhood, although these effects faded out by middle childhood. Negative links also emerged between the hours children were in care and their social competence; these results remained through the transition to middle childhood (age 8), but faded thereafter becoming nonsignificant by the end of middle childhood (age 12).

It is unknown whether a detrimental effect of extensive nonparental care will emerge among low-income children. A recent study using a nationally representative sample found no detrimental effects of high hours in center care for low-income children's behavioral functioning in kindergarten, although negative effects were apparent among middle and high-income children (Loeb, et al., 2007). Similarly, short term longitudinal studies with low-income samples suggest no effects of extent of care (Love et al., 2003; Votruba-Drzal, et al., 2004)

Center Care and Children's Behavior Problems and Socioemotional Functioning

A third important aspect of children's early care experiences are captured by the type of care they experience, that is care provided in child care centers or prekindergarten programs, versus daycare homes or informal care arrangements with relatives or babysitters. Though beneficial for children's academic development, recent evidence with large and nationally representative samples suggests that center-based care is linked to elevated levels of externalizing problems in early childhood and that these associations are evident through middle childhood (Belsky et al., 2007; Magnuson, et al., 2007). Recent studies have further argued that

these harmful effects of center care on children's behaviors are stronger among poor children in comparison to their more advantaged counterparts (Loeb et al., 2007; Magnuson et al., 2007). It is interesting to note, however, that when studies are able to separate effects of child care quality, extent, and type, no detrimental effects of center care have been found for low-income preschoolers' behavioral functioning (Loeb et al., 2004; Votruba-Drzal et al., 2004). It is unclear whether such effects might emerge later during middle childhood.

Does Child Care Quality Matter More for Certain Children?

Bioecological theories of development suggest that the effects of early experiences in nonparental care settings may differ based on characteristics of the developing child, such as gender and race/ethnicity. A variety of factors may lead to differential effects of early child care experiences on behavior problems related to child gender. These factors include gender differences in the development of inhibitory control (Kochanska, Murray, Jacques, Koenig, & Vandegeest, 1996) and in the nature of children's social interactions in same-sex peer groups (Fabes, Hanish, & Martin, 2003; Maccoby 1998), as well as boys' overall greater vulnerability and reactivity to psychosocial stress (Zaslow & Hayes, 1986).

A handful of recent studies have considered whether characteristics of nonpaternal care settings (e.g., quality, quantity, and type) are differentially related to children's behavioral functioning for girls versus boys. Most recent research has found no evidence of gender moderation in either the short or long term (Belsky et al., 2007; Burchinal, Peisner-Feinberg, Bryant, & Clifford, 2000; Howes & Olenick, 1986; Peisner-Feinberg et al., 2001). On the other hand, recent research with low-income children from the Three-City Study found that high quality child care appeared more protective for boys than girls when it came to the development

of externalizing behavior problems, and low-quality care seemed to be especially risky for boys' development of serious internalizing behavior problems (Votruba-Drzal et al., 2004).

Another child characteristic that may moderate associations between early nonmaternal care experiences and the development of behavior problems in middle childhood is child race/ethnicity. Conceptual models highlight the importance of considering child care settings within the context of children's ethnic and cultural backgrounds, taking into account the ecological contexts of children's home and care settings (Johnson et al., 2003). A number of studies have reported race/ethnicity differences in the use of child care, with African American families more likely to access center-based care, and Hispanics more likely to use informal kin care (Fuller, Holloway, & Liang, 1996; Radey & Brewster, 2007). Only recently has research begun to ask explicitly whether characteristics of child care settings (e.g., quality, type, and quantity) have differential effects on children's development across sociocultural contexts.

Two contrasting hypotheses have been proposed regarding child care effects across children from socioculturally diverse backgrounds. One argument is that high quality child care can have an enhanced protective role for children experiencing risks from factors such as disproportionately high poverty or immigrant/non-English-speaking status which might limit children's and families' access to economic and social resources. A second argument, in contrast, suggests that child care settings may not meet the culturally-specific needs of children from ethnic minority families (Burchinal & Cryer, 2003). Alternatively, our current measures of child care quality may not be valid for ethnic minority children, hindering our ability to detect links between quality and child well-being among specific groups of ethnic minority children (Burchinal & Cryer, 2003).

Assessing two large, longitudinal studies of child care quality (the NICHD study and the Cost, Quality, and Child Outcomes Study), Burchinal and Cryer (2003) found support for neither argument. Rather, their results suggest that highly-used measures of child care quality are equally valid and reliable across African American, Hispanic, and White samples, and further that quality is similarly predictive of children's cognitive and socioemotional skills during the preschool years (see also Burchinal et al., 2000). It is important to note, however, that their samples had numerous limitations, particularly in regards to the percentage of Hispanic families, leading to questions concerning generalizability. In contrast, a recent study using data from the ECLS-K found that center-based care was not related to heightened behavior problems among English-proficient Hispanic children but was a particularly strong predictor of behavior problems for African American children in kindergarten (Loeb et al., 2007). Furthermore, a third recent study found a particular aspect of child care quality, relationship-focused care, to be predictive of less adaptive functioning for Hispanic children, but not related to functioning among African American children (Owen, Klausli, Mata-Otero, & Caughy, 2008). Together, these results suggest that the interactions between child care characteristics and children's ethnic backgrounds are complex and deserving of continued careful attention.

Research Aims

The current investigation aims to strengthen understanding of how low-income children's early education and care experiences shape their development into middle childhood. It will do so by addressing two primary goals. First, we will examine whether there are long-lasting associations between the developmental quality, extent, and type of child care settings low-income children experience and the development of their behavior problems into middle childhood. Second, consistent with the bioecological model of child development, we will

explore whether associations between dimensions of child care settings and low-income children's development vary according to two key child characteristics - gender and race/ethnicity.

Method

Data for this paper were drawn from three waves of the *Three-City Study*, a longitudinal, multimethod study of the well-being of low-income children and families in the wake of welfare reform. Two components of the Three-City Study, the main survey and the Embedded Developmental Study (EDS), were used. The main survey was conducted with a household-based, stratified random sample of about 2,400 low-income children and their primary caregivers in low-income neighborhoods in Boston, Chicago, and San Antonio. In 1999, these families were randomly selected from over 40,000 screened households, with a screening rate of 90%. In households that had incomes below 200 percent of the poverty line and a child between the ages of 0 and 4 or the ages of 10 and 14, interviewers randomly selected one focal child and interviewed the child and his or her primary female caregiver. In the vast majority of cases the caregiver was the biological mother, thus "mothers" will be used to refer to caregivers in these analyses. The interview completion rate was 83%, resulting in an overall response rate of 74%. In 2000-2001, families were recontacted and interviewed in wave 2 of the survey, which was 16 months after the first wave on average. Approximately 88% of the families interviewed in wave 1 of the survey were followed in wave 2. In 2005 a third wave of data was collected and 80% of the families interviewed in wave 1 of the survey were followed through to the 3rd wave of data collection. During each wave of the main survey, mothers participated in an in-home interview lasting approximately 2 hours during which they answered questions about themselves, their families, households, and children. In addition, children who were at least two years old were

given individualized tests to assess their cognitive achievement. Essentially identical questions and measures were given during the three waves of data collection.

The second component of the Three-City Study that is used in these analyses is the Embedded Developmental Study (EDS), which provides a more intensive view into the lives of preschool-aged children (between the ages of 2 to 4 years during the wave 1 survey and 3 to 5 during wave 2. The goal of the EDS was to use multiple methodologies to capture rich detail about children's primary caregivers and early environments. Here we focus on two components of the EDS, one devoted to mothers and another focused on child care. The mother component of the EDS consisted of a supplemental interview that included extensive questions concerning the focal child's primary care arrangements. The child care component of the EDS was comprised of observations of child care settings and interviews with child care providers. Eligibility for the child care component was determined by a series of questions from the main survey relating to the focal child's care in non-maternal care arrangements. Mothers who reported that their 2 to 4 year old child was in child care for 10 hours or more per week were invited to participate in the child care component of the EDS (out of 737children eligible for inclusion in the EDS component, 51% did not experience regular nonmaternal care and hence were not invited to participate in the EDC child care component in wave 1, and out of 670 children eligible for inclusion in the EDS component, 60% did not experience regular nonmaternal care and hence were not invited to participate in the EDC child care component in wave 2). After obtaining permission from the mother and the child care provider, children were observed in their primary child care setting for at least 2 hours, and the child care providers were interviewed. The response rate for the child care component of the EDS was 70% in wave 1 of the survey, and 73% in wave 2.

The current paper is based on 349 families who participated in a child care observation at either wave 1 or wave 2. Comparisons of the children in our sample to the broader sample of 2 – 4 year olds in the *Three-City Study* revealed few significant differences, with the exception that the children in our sample were more likely to be African American and less likely to be Hispanic, and to have parents who were employed and had slightly higher levels of education. Among the 349 children who were eligible to be included in the sample, 5% were missing wave 1 child behavior problems measures (17 cases), 19% were missing a child care observation at one wave (68 cases), 16% were missing data on at least one covariate (56 cases), and 21% were missing wave 3 child behavior problems measures (72 cases). Our analysis of missing data suggested that the data were missing at random. Traditional approaches to handling missing data, such as listwise deletion or mean imputation can bias estimates, misrepresent statistical power, and lead to invalid conclusions (Rubin, 1987). Therefore, missing data on all variables in our analyses were imputed using multiple imputation by chained equations (MICE), which was implemented in Stata 10 to create ten complete data sets (Royston, 2004, 2005). Based on the relative efficiency calculation by Rubin (1987), ten imputations were deemed sufficient for the level of missing data in our study. Following imputation, regression analysis was performed with the ten data sets using *mim* commands in Stata. These commands generate appropriate parameter estimates and standard errors for regression analyses performed on imputed data.

Analytic Approach

A major analytic challenge when considering child care's influence on children's development involves disentangling whether child care characteristics truly enhance development or whether it is simply the case that more advantaged parents have children who are more developmentally advanced and also choose higher quality child care. Certain characteristics

of children and families, such as race/ethnicity, income, parental education and employment, social support, and children's age and gender, influence parents' decisions regarding child care (Fuller et al., 1996; Singer, Fuller, Keiley, & Wolf, 1998). Most studies have controlled for a variety of family differences that might influence both family decision-making and children's development in order to isolate less-biased estimates of child care's influence. Since it is impossible to measure all important family characteristics, an additional strategy is to limit the influence of unmeasured variables statistically.

In the current analyses, associations between child care characteristics and the development of behavior problems in middle childhood were modeled using a longitudinal lagged regression model that is based on an accumulation of inputs framework, which has been articulated most clearly in the work of NICHD Early Child Care Research Network and Duncan (2003) and Blau (1999). This model suggests that child *i*'s development at time *t* is an additive function of all child care, maternal, child, and household inputs to a child's development prior to that point in time. So, for example, as shown in Equation 1, children's behavior problems during middle childhood (wave 3) are expressed as a function of child care characteristics, including the type of care arrangement, number of hours spent in care, and the quality of the care that children have experienced across wave 1 and wave 2 of the study.

1. $\text{Child Outcomes}_{3i} = B_0 + B_1 \text{ Child Outcomes}_{1i} + B_2 \text{ Child Care}_{1\text{-}2i} + B_3\text{Maternal}_{1\text{-}2i} + B_4\text{Child}_{1\text{-}2i} + \varepsilon_{t,}$

To reduce the threat of selection bias posed by measured characteristics of children and families, a series of child, maternal, and household factors aggregated over waves 1 and 2 of the survey were included in the models as covariates. More specifically, the covariates that we included in our models include child age, gender, race/ethnicity as well as maternal education, employment,

and marital status. Each of these factors has been associated with characteristics of children's early care experiences and behavior problems in prior research. Thus, the failure to include these variables in our analysis may result in omitted variable bias. A time 1 measure of the same child outcome that was being modeled as the dependent variable at time 3 was included as an additional covariate in the model to reduce omitted variable bias further. The regression coefficients are thus interpreted as the effects of each independent variable on changes in behavior problems over time (Kessler & Greenberg, 1981). Including the time 1 child outcome as a covariate allows us to control for unmeasured, time-invariant differences in children that were present at the first interview (Cain, 1975; Chase-Lansdale et al., 2003). In this model, unmeasured, time-varying characteristics of children that may be related to child care selection at time 1 or time 2 and children's development over time may continue to bias estimates of the relation between child care characteristics and children's development.

In addition to considering main effects of child care experiences, we explore whether or not the effects of child care type, extent and quality vary as a function of a child's gender and race. This is done by adding interactions between child care characteristics and both child gender and race/ethnicity to our model. The interactions were entered into the regression model simultaneously. Then a series of post-hoc regression analyses were conducted to compare the non-omitted race/ethnic groups. All analyses were weighted with probability weights that were taken from the base year of the survey. Inversely proportional to the likelihood of being selected into and participating in the sample, probability weights adjust for our complex survey design and strengthen our ability to make inferences to our population of inference, which includes all children living in low-income neighborhoods in Boston, Chicago, or San Antonio in households with incomes less than 200 percent of the poverty line.

Measures

Child Care Characteristics. The global developmental quality of each child's care arrangement was measured during child care observations at wave 1 and wave 2 using widely-used and well-validated instruments. Center-based care arrangements were rated using the Early Childhood Environment Rating Scale – Revised (ECERS, Harms, Clifford & Cryer, 1998). Each item on the ECERS-R is given a score of 1 to 7, through the dichotomous rating of a number of subitems. Item scores are grounded by the odd numbers, with 1 = inadequate, 3 = minimal, 5 = good, and 7 = excellent care respectively. The first 37 items of the ECERS-R cover the domains of space and furnishings (α_{T1} = .74; α_{T2} = .79), personal care routines (α_{T1} = .83; α_{T2} = .79), language-reasoning (α_{T1} = .78; α_{T2} = .83), activities (α_{T1} = .80; α_{T2} = .91), social interactions (α_{T1} = .90; α_{T2} = .87), and program structure (α_{T1} = .50; α_{T2} = .77). Fifteen percent of the observations were independently double-coded, with an average intraclass correlation (ICC) at the subscale level of .90 in wave 1 and .89 in wave 2. The quality of day care homes and informal home care arrangements was measured using the Family Day Care Rating Scale (FDCRS, Harms & Clifford, 1989). This instrument is organized in a manner very similar to the ECERS-R. The first 29 items cover the spheres of space and furnishings for care and learning (α_{T1} = .84; α_{T2} = .84), basic care (α_{T1} = .87; α_{T2} = .90), language and reasoning (α_{T1} = .82; α_{T2} = .79), learning activities (α_{T1} = .87; α_{T2} = .72), and social development (α_{T1} = .87; α_{T2} = .57). The average ICCs at the subscale level for the FDCRS were .98 and .99 in waves 1 and 2, respectively.

The Arnett Scale of Provider Sensitivity (Arnett, 1989) was used to measure the emotional and behavioral relationships between the care providers and children in both center- and home-based care arrangements. The Arnett Scale supplemented items related to the teacher-

child relationships on the ECERS and FDCRS which focus more on supervision and discipline. It consists of 26 items rated on a 4-point scale, which were combined into one measure (α_{T1} = .94 and α_{T2} = .92) with higher scores indicating that care providers were observed as warm, engaged, and used consistent and appropriate discipline strategies, and with low scores reflecting that providers were harsh, detached, and used inconsistent or inappropriately strong forms of discipline. Composite scores had average ICCs of .81 at wave 1 and .82 at wave 2.

Descriptively, the child care measures indicated that scores on subscales of the ECERS ranged from 1 to 7 at wave 1 and 2 with an average ECERS quality rating of 5.31 at wave 1 and 4.79 at wave 2. FDCRS, scores ranged from 1 to 7 at wave 1 and 1 to 6.29 at wave 2. Average FDCRS quality ratings were 3.21 at wave 1 and 2.94 at wave 2, indicating lower average quality for home care arrangements when compared to center care in this sample. These patterns were less notable when considering scores on the Arnett.

In order to create a global child care quality composite that reflects important dimensions of child care independent of the type of care children experience at each of the first two waves of the survey, ratings on the subscales of the ECERS and FDCRS were combined with the composite score on the Arnett. Specifically, we standardized the subscales of the ECERS/FDCRS measures and the composite score from the Arnett and then calculated a mean across the standardized scores. The ECERS and FDCRS have largely similar subscales, except that the Activities subscale of the FDCRS includes items similar to those in both the Activities and Program Structure subscales of the ECERS. Hence, the latter two subscales were collapsed in the ECERS, creating 5 parallel subscales for both center and home child care arrangements. It is important to note that the ECERS and FDCRS were developed as separate instruments, acknowledging that center- and home-based child care arrangements may have distinct patterns

of functioning and access to resources. This poses challenges to the validity of our global quality composite. However, many aspects of child care quality are likely to cut across different settings, reflected in considerable overlap between the ECERS and FDCRS items and subscales. Other studies have recognized this similarity as well, through comparisons of ECERS and FDCRS scores (Growing Up in Poverty Project, 2000).

Across wave 1 and wave 2, correlations across subscales of the ECERS/FDCRS and Arnett measures were all moderate to large, ranging from .31 to .66. The 5 ECERS/FDCRS and Arnett scales were combined into a total quality composite for each child at each wave, with strong internal reliability (α_{T1} = .94 and α_{T2} = .91). The total quality scores from wave 1 and wave 2 were then averaged to reflect the average level of child care quality that children experienced across the first two waves of the study.

The extent of child care children experienced was measured using maternal reports of the number of hours per week that children were in child care at wave 1 and wave 2 of the survey. These numbers were then averaged to create a composite measure of the extent of care that children experienced across wave 1 and wave 2 of the survey. Child care type was coded as center or home-based care at each wave. These variables were aggregated across wave1 and wave 2 to create dummy variables of child care type indicating whether children experienced consistent center care across both waves of the survey, center care at one wave only, or consistent home-based care across waves 1 and 2 (omitted).

Behavior Problems. Children's behavior problems were measured using mothers' reports on the age-appropriate version of the Child Behavior Checklist (CBCL) (Achenbach, 1991, 1992; Achenbach & Rescorla, 2001). At waves 1 of the survey the CBCL/4-18 and the CBCL/ 2-3 CBCL were used to measure problem behavior. At wave 3 the CBCL/6-18 was used to

measure behavior problems for all children. Here we focus on the internalizing, externalizing, and total behavior problems scales. The CBCL internalizing scale focuses on anxiety, depression, withdrawal, and somatic complaints, whereas the externalizing scale includes items related to aggression and rule breaking. The total behavior problems scale includes all items on the internalizing and externalizing subscales as well as several additional behavior problems measures, such as social, thought, and attention problems. The dependent variables in this study are standard scores (t-scores) for internalizing (α_{T3} = .87), externalizing (α_{T3} = .90), and total (α_{T3} = .95) behavior problems from the wave 3 survey, which were collected in middle childhood (Achenbach, 1991, 1992; Achenbach & Rescorla, 2001). Standard scores (t-scores) for internalizing (CBCL/2-3 α_{T1} = .83; CBCL/4 - 18 α_{T1} = .88), externalizing (CBCL/2-3 α_{T1} = .91; CBCL/4 - 18 α_{T1} = .90), and total (CBCL/2-3 α_{T1} = .95; CBCL/4 - 18 α_{T1} = .95) behavior problems from wave 1 are included as covariates in our models to reduce bias related to unobserved heterogeneity. We also included an indicator for children whose behavior problem scores were collected at wave 1 using the 2-3 year old version of the CBCL, as opposed to the 4-18 year old version, to control for differences in instrumentation at wave 1.

Child Characteristics. Basic demographic characteristics of children that have been linked to children's development and to child care experiences were included in the regression analyses. Child age at the time of the assessment of the dependent variable is represented in months and gender as a dummy variable. Child race is represented with a series of dummy variables indicating whether the child is of Hispanic (omitted), non-Hispanic African American, or White/other non-Hispanic origin. Child characteristics were obtained via mother report.

Maternal and Household Characteristics. Mother reports of several maternal and household characteristics averaged across wave 1 and wave 2 of the survey were included in the

regression equations as covariates. Mother's education was coded as having a high school degree or less (omitted), or greater than a high school education. A second dummy variable represented whether mothers were employed (10 hours per week or more) or not. Family structure also was coded as a dummy variable indicating that the child lived with a married versus unmarried mother.

Demographic characteristics of children as well as their mothers and households are presented in Table 1 along with descriptive information about their child care arrangements. Children in the analytic sample averaged 3 years in the first wave (range 2 to 5 years) and averaged 9 years in the third wave (range 7 to 11). They were primarily African American (55%) and Hispanic (37%) and most lived with single mothers (84%) with relatively low education. Table 2 includes descriptive information on each of our behavior problems measures across wave 1 and wave 3 of the survey.

Insert Tables 1 & 2 Here

Results

Child Care Characteristics and Low-Income Children's Development in Middle Childhood

Table 3 presents bivariate correlations of the child care and behavior problems variables.

Insert Table 3 here

Lagged Ordinary Least Squares (OLS) regressions were performed to examine associations between children's behavior problems in middle childhood (i.e. at wave 3) and child care

characteristics across waves 1 and 2. Covariates included behavior problems at wave 1 as well as child and mother characteristics across waves 1 and 2. Table 4 presents results from these main effect regression models.

Insert Table 4 here

Child care quality was linked to significant reductions in children's total and externalizing behavior problems over time. The magnitude of these associations was small to modest in size. A one standard deviation increase in the child care quality composite was linked to .21 of a standard deviation reduction in total behavior problems and to .26 of a standard deviation decline in externalizing behavior problems. The association between child care quality and internalizing behavior problems in middle childhood was also negative and of a relatively similar size (.16 of a standard deviation), but failed to reach conventional levels of statistical significance (p=.10). Controlling for the quality of care, neither the type of child care that children experienced nor the extent of care were significantly related to the development of children's behavior problems in middle childhood.

Child Characteristics as Moderators

Having examined the main effects of child care characteristics on children's development in middle childhood, we now consider whether associations between child care characteristics and children's development varied as a function of child gender and race/ethnicity. To test these differences we simultaneously tested a series of interactions between child care characteristics and child gender, and interactions between child care characteristics and child race/ethnicity. The results of these analyses can be found in Table 5. Post-hoc regression analyses were

performed in which we switched the omitted race/ethnic category from Hispanic to African American to facilitate statistical comparisons between the coefficients on child care characteristics for White/other and African American children.

Insert Table 5 Here

Child Care Characteristics and Gender. Average levels behavior problems for boys and girls were not significantly different from each other at wave 1 or wave 3. Nor were there significant difference in average child care characteristics by child gender. However, child care quality was more strongly associated with the development of boys' behavior problems when compared to girls. As can be seen in Table 5, high-quality child care appeared to be especially protective for boys' development of both total and internalizing behavior problems. The results for externalizing behavior problems suggest a similar pattern, but the interaction term did not reach statistical significance. A standard deviation increase in the child care quality composite was associated with .34 more of a standard deviation reduction in total behavior problems, and .37 more of a standard deviation decline in internalizing behavior problems for boys when compared to girls. These results suggest that the overall links between child care quality and children's internalizing and total behavior problems found in our main effects models were driven primarily by boys. There was also some evidence to suggest that child care type showed different patterned links with boys' and girls' behavior problems, with a tendency for center care (i.e., one wave of center care and two waves of consistent center care) to be more harmful for boys than girls when it came to the development of internalizing problems, when comparing center care to home-based care. This same pattern emerged for externalizing and total behavior

problems, but these interactions were not statistically significant. Finally, consistent with the results of the main effects models, no significant associations were observed between the extent of child care and the development of behavior problems for boys or girls.

Child Care Characteristics and Race/Ethnicity. There were no significant differences in average levels of behavior problems by child race/ethnicity at wave 1 or wave 3. Characteristics of child care experiences were similar by race/ethnicity as well, with the exception that the average level of child care quality of children falling into the White/Other race/ethnic category was significantly higher than both African American (.86 st. dev., $p < .01$) and Hispanic children (.66 st. dev., $p < .01$). There was no significant difference in the quality of care experienced by African American and Hispanic children. The association between child care quality and behavior problems in middle childhood also varied as a function of race/ethnicity. The results presented in Table 5 show that child care quality seemed to be especially protective against the development of behavior problems among African American children. Greater child care quality was related to significantly greater reductions in externalizing behavior problems for African American children than for both Hispanic and White/other children. Similarly, higher child care quality was related to slightly greater declines in total behavior problems for African American children when compared to Hispanic children, but not when compared to White/other children. Although none of the interactions between child care quality and child race/ethnicity reached statistical significance for internalizing behavior problems, the same pattern of results emerged.

Discussion

Utilizing multi-method data from a representative sample of young children in low-income neighborhoods in Boston, Chicago, and San Antonio, this study extends existing research by assessing longer term effects of child care characteristics on the development of behavior

problems through middle childhood. In this analysis, we asked whether three aspects of child care experiences predicted children's behavior problems: the global developmental quality of care, the extent of care, and care type.

The Importance of Child Care Quality

The most consistent results from this analysis highlight the importance of the quality of care in the reduction of problem behaviors. Using well-validated, standardized observational measures of the global developmental quality of the care provided by child care settings and controlling for the type and extent of care, we found that higher quality care was protective against the development of behavior problems in middle childhood. Children who attended more responsive, stimulating, and well-structured care settings than their peers during their preschool years showed reductions in both externalizing and total behavior problems by mid-elementary school. The pattern of results was similar for internalizing behavior problems, though insufficiently precise to reach statistical significance. This means, of course, that the reverse was true as well: children attending lower quality child care showed more elevated behavior problems than their peers by mid-elementary school.

These results extend a very limited and contradictory base of research concerning whether child care quality shows longer-term links with children's socioemotional functioning into middle childhood. Peisner-Feinberg and colleagues (2001), for instance, found positive effects of close teacher-child relationships but not global developmental quality on 2nd graders' social functioning, whereas other research has unearthed longer-term benefits of high quality care on children's cognitive skills but not socioemotional functioning into middle childhood. For example, the NICHD study found that care quality predicted higher cognitive scores in third and

fifth grades (NICHD ECCRN, 2005; Belsky et al., 2007), but found no effects on behavior problems or socioemotional functioning among their notably more advantaged sample.

Why might our results differ so substantially from those derived from more economically advantaged samples? A risk and resilience framework may be useful in reconciling these differences (Masten, Best, & Garmezy, 1990; Rutter, 1990). Children in our sample likely face an accumulation of risks across multiple contexts, where children are primarily from ethnic minority, single-parent families with extremely limited economic resources, and they reside in high poverty urban neighborhoods. While most children have the resources to cope with one risk without serious developmental consequences, the cumulative risk perspective suggests that the accumulation of risk across settings leaves children vulnerable to maladaptive psychosocial functioning (Friedman & Chase-Lansdale, 2002). Faced with contextual risks from multiple sources, high quality, responsive, and stimulating child care settings may serve as a protective factor, or source of resilience, for young children to avoid problematic behavior and to develop nascent emotional and behavioral skills in self-regulation, peer interactions, and conflict management during their early school years. Indeed, it is interesting to note that the current results show stronger and more consistent effects of child care quality on children's behavior problems than found by Votruba-Drzal and colleagues (2004) using a subset of this sample and looking at short-term effects predicting children's well-being during early childhood.

A second set of core findings from this study indicated that particular subgroups of children were driving our findings related to child care quality. Based upon bioecological theory which suggests that the effects of contextual experiences may differ in response to characteristics of the individual, we hypothesized that child gender and race/ethnicity may moderate links between child care and children's development of behavior problems. Our results supported this

hypothesis. Regarding gender, our findings suggest that higher quality early education and care experiences were particularly important for boys. Child care quality was more consistently related to boys' internalizing and total behavior problems and a similar pattern of results was evident for externalizing problems though it was not statistically significant. The behavior problems of boys may be more responsive to the quality of their early nonmaternal care arrangements due to their greater challenges with self-regulation, where boys tend to have lower levels of inhibitory control and physiological regulation than girls (Kochanska, et al., 1996; Dettling, Parker, Lane, Sebanc, & Gunnar, 2000). Moreover, during preschool boys' peer interactions appear to incorporate more conflict and roughness than girls' play, with the latter involving more on verbal interactions and cooperation (Fabes, et al., 2003; Maccoby, 1998). Thus, as noted by Votruba-Drzal and colleagues (2004), more responsive and well structured child care settings may provide an important support to boys in helping to regulate their behaviors and emotions and supervise their play in a productive manner.

In addition to this gender moderation, results also found that children's race/ethnicity was important. More specifically, child care quality was particularly protective against the development of behavior problems for African American children when compared to Hispanic children and sometimes in comparison to White/other children. African American children experienced greater declines in externalizing behavior problems than both Hispanic and White/other children when they were cared for in high quality settings. Furthermore, higher quality care was linked to greater declines in total behavior problems for African American children when compared to Hispanic children, but not when compared to White/other children. The same pattern of results existed for internalizing problems as well, though the interactions were not statistically significant. These results may be related to the greater acceptance and

wider use of formal child care and maternal employment among African American children, resulting in a better match between families' goals and expectations and child care settings. As noted by Johnson and colleagues (2003), in understanding ethnic minority families' experiences in child care, we must attend to their broader cultural and ecological contexts. Based upon theories of person-environment fit and models of competency in children of color (Garcia Coll et al., 1996; Johnson et al., 2003; see also Yoshikawa, Gassman-Pines, Morris, Gennetian, & Godfrey, under review), this conceptualization argues that children's development must be understood in context, with minority children's contexts affected by their social and cultural location. Hispanic families may have fewer social norms concerning maternal employment and nonmaternal care provision; they also may experience greater disconnects between the language environment of child care settings and home settings (Magnuson & Waldfogel, 2005). Indeed, other research has found that Hispanic parents, particularly in immigrant families, are less likely to access a broad range of social services in addition to formal child care and these restrictions are linked with poorer outcomes for children (Kalil & Chen, in press).

It is interesting to note that these stronger beneficial effects of child care quality for African American than for Hispanic children contrast with a lack of ethnic moderation found in larger scales studies assessed by Burchinal and Cryer (2003). As those authors remind us, those larger scale studies include extremely small samples of Latino families and exclude families who were not fluent in English. Those larger, national studies also have small groups of low-income families. Though our sample is smaller, it is representative of low-income families in our three cities, and includes both English and Spanish speaking Hispanic children, with approximately 20% of children residing in immigrant families. It is possible that this more representative sample of low-income, ethnic minority children was better poised to unearth important ethnic

differences in the effects of child care on children, over a longer time period. Given the paucity of research in this arena and the continuing notable expansion of ethnic diversity in the U.S., continued assessment of ethnic and cultural variation in child care effects on child well-being is clearly warranted.

Limited Results for Child Care Type and Extent

In addition to the quality of child care, this study also assessed the effect of child care type and the extent of use. As mentioned previously, studies using data from the NICHD SECCYD and the ECLS-K have uncovered harmful effects of extensive or early-initiated child care on behavior problems, some of which endure in middle childhood (Belsky et al., 2007; Loeb et al., 2007). Similarly, these studies have found that the use of center-based care is linked with heightened behavior problems continuing into elementary school, albeit also with enhanced cognitive skills (Belsky et al., 2007; Loeb et al., 2007; Magnuson et al., 2007; NICHD ECCRN & Duncan 2003). These patterns were not replicated in this study. Categorizing children's preschool experiences over two waves as being housed consistently in home care settings, consistently in formal center care, or inconsistently in center care, and measuring the hours per week children experienced child care, we found that neither care type nor extent were linked to children's behavior problems in middle childhood. One exception to this pattern was a trend finding which suggested that center care in comparison to home-based care may be harmful for boys, but not girls when it comes to the development of internalizing problems.

In comparing these results to other longitudinal studies, it is important to note that we did not assess hours of care or center care starting in infancy, but focused only on the preschool years. Extensive and large-group care settings may be more taxing for infants and toddlers than preschool-age children. Moreover, returning to the risk and resilience perspective noted above, it

is possible that for children in high poverty neighborhoods and families, the challenges of center care or extensive child care may not pose a measurable burden in isolation. Facing enhanced rates of residential moves and relationship transitions in comparison to advantaged families, poor children may react in a less discernable fashion to the extent and type of child care, with process variables like quality holding greater import. Indeed, a previous shorter-term study with the Three-City Study sample found that extent of care was linked with children's behavior problems only in interaction with the quality of care: more extensive experience in high quality care predicted decreased behavior problems, whereas extensive experience in low-quality care predicted increases in behavior problems (Votruba-Drzal et al., 2004).

This study provides an important addition to existing research on child care arrangements and children's developmental trajectories. Overall, our results highlight the importance of the developmental quality of care experiences for disadvantaged young children, arguing that high quality child care experiences can have a sustained influence on children's behavioral functioning, through their transition to formal schooling and into middle childhood. Early child care quality is important for understanding low-income children's ability to function effectively in school, get along with their peers, and control their impulses. Future research should seek to assess a broader array of behavioral and emotional functioning measures, for example assessing prosocial behaviors and social skills.

Conclusions

This study has several strengths. One is the sampling of the Three-City Study, which provides an in-depth look at a representative sample of young children and their families living in economic disadvantage, at both the family and community levels, in three cities. As such, this sample, whose experiences of urban poverty place children at notable risk for maladaptive social

functioning, represents a population of significant concern to policy makers and practitioners. Increasing understanding of what types of supportive services can enhance the well-being of such children is of paramount importance for practitioners and policy makers. Moreover, our study focuses on children and families' experiences in community care, which are the care settings that disadvantaged parents have been able to access in their communities. Although model early intervention studies have provided centrally important information on how to productively intervene and provide bundles of high-quality services to disadvantaged families, such studies cannot tell us whether such findings can be generalized to the types of services to which disadvantaged families actually have access.

It is also important to point out limitations of the current study. As in all nonexperimental work, we cannot draw causal conclusions from the results, and remain cognizant that the links detected here, between child care environments and children's developmental trajectories, could be due to selection or other unmeasured variables. However, the inclusion of child and family characteristics as well as earlier child functioning lessens the likelihood of such alternative explanations. The analytic sample was also relatively small, and representative of a particular population of disadvantaged urban families. Although attention was paid to carefully measuring characteristics of both child care centers and more informal home arrangements, this study was not able to compare children's experiences in maternal care to those of their peers in child care settings. Continued careful analysis of early child care environments and children's development using diverse samples and multiple methods that include measures of both behavior problems and social competence will help the field to triangulate evidence of how child care can support low-income children's healthy development. Further studies can also more carefully assess individual children's experiences in child care

settings (rather than a more global classroom and group-level assessments obtained through measures such as the ECERS, FDCRS and Arnett). Such research might shed light on the differential patterns related to child gender and ethnicity unearthed in this work.

Finally, studies have raised questions about the validity of the CBCL for high poverty or ethnic minority children and the results of these studies are mixed. Some have validated the CBCL with low-income, African-American, and Latino families (Gross, Young, Fogg, Ridge, Cowell, Richardson, & Sivan 2006; Sivan, Ridge, Gross, Richardson, & Cowell, 2008), whereas others have uncovered problems with using CBCL norms for these populations (Raadal, Milgrom, Cauce, Mancl, 1994; Sandberg, Meyer-Bahlburg, & Yager, 1991). Thus, it is important for our findings to be replicated using alternative measures of behavior problems.

In sum, this paper is part of a new generation of child care research that is taking a more nuanced approached to multiple dimensions of children's experiences in child care. With a sizable sample, valid, reliable, and longitudinal measures and rigorous statistical methodology, we have increasing confidence that child care quality is an important factor in the developmental trajectories of young children in poverty. The results of the present study add to a growing body of empirical evidence suggesting the need for policy and programmatic efforts to increase low-income families' access to high quality child care.

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We gratefully acknowledge the support of the following organizations. University of Pittsburgh's Central Research Development Fund's Small Grants Program. Government agencies: National Institute of Child Health and Human Development (R03 HD057294 "Child Care Resources in Low-Income Communities" & RO1 HD36093 "Welfare Reform and the Well-Being of Children"), Office of the Assistant Secretary of Planning and Evaluation, Administration on Developmental Disabilities, Administration for Children and Families, Social Security Administration, and National Institute of Mental Health. Foundations: The Boston Foundation, The Annie E. Casey Foundation, The Edna McConnell Clark Foundation, The Lloyd A. Fry Foundation, The Hogg Foundation for Mental Health, The Robert Wood Johnson Foundation, The Joyce Foundation, The Henry J. Kaiser Family Foundation, The W.K. Kellogg Foundation, The Kronkosky Charitable Foundation, The John D. and Catherine T. MacArthur Foundation, The Charles Stewart Mott Foundation, The David and Lucile Packard Foundation,

The Searle Fund for Policy Research, and The Woods Fund of Chicago. A special thank you is also extended to the families who participated in the Three-City Study.

Table 1 [a]

Child Care and Demographic Characteristics of the Sample (N = 349)

	Mean	S.D.
Child Care		
Quality	4.30	1.25
Type of care[b]		
Stable Center Care	22.40	41.70
Ever Center Care	35.90	48.00
Home Care	41.50	49.20
Hours per week	29.71	13.61
Child Characteristics		
Age	110.60	10.57
Boy[b]	53.70	49.86
Race[b]		
White/other	7.93	27.00
African American	55.10	49.70
Hispanic	36.90	48.20
Maternal Characteristics		
Education [b]		
High school education or less	48.00	49.90
Greater than high school	50.03	50.10
Employed [b]	58.60	38.10
Married [b]	16.20	33.30
CBCL 2-3 year old version [b]	77.30	41.90

[a] Descriptive statistics are unweighted

[b] Proportions

Table 2 [a]

Descriptive Statistics on Child Outcomes (N = 349)

	Wave 1		Wave 3	
	Mean	S.D.	Mean	S.D.
Child Behavior Problems T-Scores				
Total	52.36	10.49	53.51	10.77
Internalizing	51.93	10.36	52.45	10.34
Externalizing	52.56	10.55	54.18	10.30

[a] Descriptive statistics are unweighted

Table 3

Correlations Between Child Care Characteristics and Children's Behavior Problems (N=349)

	1	2	3	4	5	6	7	8	9	10
Chid Care Characteristics										
1. Quality	–									
2. Stable center care	0.47 ***	–								
3. Ever center care	0.15	-0.39 ***	–							
4. Hours per week	-0.04	-0.02	-0.05	–						
Behavior Problems Wave 1										
5. Total	-0.04	-0.06	0.13	-0.03	–					
6. Internalizing	0.02	-0.06	0.15	0.00	0.86 ***	–				
7. Externalizing	-0.04	0.02	0.09	-0.06	0.90 ***	0.71 ***	–			
Behavior Problems Wave 3										
8. Total	-0.23 *	-0.17	0.11	-0.02	0.39 ***	0.31 ***	0.34 ***	–		
9. Internalizing	-0.14	-0.17	0.07	-0.02	0.36 ***	0.32 ***	0.28 **	0.68 ***	–	
10. Externalizing	-0.28 ***	-0.18	0.11	-0.06	0.34 ***	0.26 *	0.32 ***	0.75 ***	0.50 ***	–

Note . ***p < .001. **p < .01. * p < .05.

Table 4

Main Effects Models Examining the Influence of Child Care Characteristics on the Development of Behavior Problems in Middle Childhood

	CBCL T-Score					
	Total		Internalizing		Externalizing	
	Coefficient	*SE*	Coefficient	*SE*	Coefficient	*SE*
Child Care						
Quality	-1.83 *	0.83	-1.29	0.79	-2.16 *	0.89
Type of care						
Stable Center Care	-0.45	2.70	-1.97	2.31	-0.51	2.92
Ever Center Care	0.87	2.05	-0.42	1.95	1.47	1.85
Hours per week	-0.02	0.06	-0.03	0.06	-0.04	0.06
Child Characteristics						
Age	0.18	0.13	0.18	0.12	0.17	0.11
Race						
White/other	4.03	2.93	2.25	3.96	5.01 t	2.70
African American	-1.86	2.20	-3.86 t	1.95	1.71	2.01
Boy	-0.81	1.71	1.13	1.70	-0.96	1.56
Maternal Characteristics						
Education						
Greater than high school	0.54	1.88	1.73	1.76	-0.37	1.62
Employed	-1.91	2.42	0.96	2.25	-2.25	2.36
Married	-3.71	2.25	-0.48	2.43	-1.66	2.18
CBCL 2-3 year old version	4.24	2.94	2.94	2.71	6.06 *	2.69
Child outcomes wave 1	0.41 ***	0.10	0.36 ***	0.08	0.29 ***	0.08

Note . ***p < .001. **p < .01. * p < .05. t < .10

Table 5
Interaction Models Examining the Influence of Child Care Characteristics on the Development of Behavior Problems in Middle Childhood

	CBCL T-Score					
	Total		Internalizing		Externalizing	
	Coefficient	*SE*	Coefficient	*SE*	Coefficient	*SE*
Main Effects						
Child Care						
Quality	1.73	1.44	1.89	1.30	0.86	1.71
Type of care						
Stable Center Care	-8.83	5.78	-10.56 *	4.58	-5.77	5.90
Ever Center Care	-5.75	3.59	-3.81	3.35	-4.22	3.44
Hours per week	0.02	0.08	0.04	0.08	-0.02	0.08
Child Characteristics						
Age	0.19	0.13	0.18	0.12	0.18	0.12
Race						
White/other	-2.88	14.61	-2.47	16.71	-1.45	14.48
African American	9.81	9.68	7.55	8.92	13.59	8.75
Boy	8.34	8.50	11.72	8.92	4.15	7.45
Maternal Characteristics						
Education						
Greater than high school	0.82	1.86	1.51	1.70	0.27	1.60
Employed	-1.55 t	2.32	1.27	2.28	-2.14	2.25
Married	-4.62 *	2.31	-0.65	2.40	-2.61	2.30
CBCL 2-3 year old version	4.65	2.88	3.07	2.62	6.23 *	2.60
Child outcomes wave 1	0.43 ***	0.10	0.39 ***	0.08	0.29 ***	0.08
Gender by Child Care Interactions						
Boy by Quality	-2.96 *	1.43	-3.05 *	1.43	-1.99	1.42
Boy by Stable Center	7.24	5.24	7.85 t	4.58	4.94	4.71
Boy by Ever Center	6.22	4.07	6.65 t	3.87	4.82	3.55
Boy by Hours	0.00	0.15	-0.04	0.13	0.03	0.13
Race by Child Care Interactions						
African American by Quality	-3.10 t	1.64	-2.35	1.55	-3.13 *	1.51
African American by Stable Center	6.53	5.40	6.28	4.78	3.64	4.95
African American by Ever Center	4.95	4.92	0.64	3.92	4.48	3.83
African American by Hours	-0.04	0.14	-0.10	0.11	-0.02	0.13
White/other by Quality	0.69	2.77	0.21	3.42	1.77	2.61
White/other by Stable Center	7.08	8.77	8.29	10.76	-0.08	8.26
White/other by Ever Center	5.41	8.20	-3.68	8.94	2.09	6.92
White/other by Hours	-0.07	0.18	0.04	0.14	-1.31	0.16

Note . ***p < .001. **p < .01. * p < .05. t < .10