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Profiles of academic/socioemotional competence: Associations with parenting, home, child care, and neighborhood☆

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ABSTRACT

Studies have highlighted the need to better understand child development in rural contexts in the first years of life. This study uses a person-centered approach to determine patterns of academic/socioemotional competence profiles at 36 months of age in a sample of 1292 children living in rural poverty in North Carolina and Pennsylvania who participated in the Family Life Project. This study explores factors that contribute to profiles of academic/socioemotional competence, including parenting behavior, and home, child care, and neighborhood environments. Three profiles of academic/socioemotional competence emerged: 1) *Non-Compliant Average Achiever*, 2) *Unengaged Low Achiever*, and 3) *Engaged High Achiever*. These three groups significantly differed on profile indicators and on early parenting behaviors, and home, child care, and neighborhood characteristics. Study findings have implications for understanding the different profiles of young children's academic/socioemotional competence, and the need to strengthen the early care and education environments of children in rural communities.

1. Introduction

Questions are emerging regarding early competencies of children even prior to preschool entry (i.e., academic/socioemotional child competence), as these early competencies set the stage for later school and life success (Shonkoff et al., 2012). Studies of preschool-age children suggest that multiple developmental competencies (i.e., academic and social) work in concert to facilitate or undermine children's success (Duncan et al., 2007). Therefore, children's competencies in the infant/toddler period should be examined in a holistic and integrated way by considering development across multiple domains. This is because academic and socioemotional competencies are, arguably, intertwined in the first few years of life (Daily, Burkhauser, & Halle, 2010), and they require similar levels of self-regulatory capacities such as environmental appraisals and self-monitoring (Wentzel, 1991). Various factors facilitate these early childhood competencies, including children's home, school, and community environments. There is particular urgency to understand these factors in rural communities because of the unique opportunities (e.g., less crime and more community cohesion compared to urban settings) and challenges (e.g., limited access to resources compared to urban settings) of these contexts. In this study, we used an integrative person-centered approach to determine patterns of children's academic/socioemotional competence at 36 months of age. This integrative person-centered approach illustrates nuances and reveals profiles with respect to how a child develops across multiple domains simultaneously, thus providing an alternative to a variable-centered approach, which focuses on generalized associations between variables across a sample and on central tendency, ignoring heterogeneity within a population (Marsh, Lüdtke, Trautwein, & Morin, 2009). It also seeks to uncover how proximal processes and distal settings, such as rural communities, play a role in young children's academic/socioemotional patterns at 36 months, an important time period before preschool and formal schooling.

Using data from the Family Life Project, a longitudinal study of

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children born in rural, low-wealth counties in North Carolina and Pennsylvania, we sought to identify profiles of academic/socioemotional competence using multiple methods (observation, direct assessments and ratings) and multi-informant (teachers, parents) and contextual factors that might contribute to specific profiles. Extensive research, summarized below, links parenting behavior, and home, child care, and neighborhood environment to children's development in early childhood; however, less is known about how these characteristics predict different patterns of development, which may be used to better tailor early intervention efforts. Exploring these relations in rural communities is crucial as these communities by definition are more isolated, with barriers such as geographic distance resulting in limited access to formal child care, living-wage jobs, social services, and physical health, mental health, and recreational opportunities (Weber, Duncan, & Whitener, 2002). On the other hand, rural communities benefit from less exposure to violent crime, more access to extended family, stronger connections to religious institutions, a greater sense of community, and a strong emphasis on family and relationships (Durham & Smith, 2006). Nonetheless, relative to children growing up in urban areas, children in rural communities are likely to start formal schooling with fewer literacy, math, and social-emotional skills (Sheridan, Koziol, Clarke, Rispoli, & Coutts, 2014).

1.1. Theoretical framework

Children's early skills are intimately interrelated. For example, studies show that children's socioemotional skills build on their language skills and vice versa (Daily et al., 2010). Aligned with this concept, in this study we view young children's academic/socioemotional competencies as interrelated cognitive, regulatory, and social school readiness skills that children are developing which impact their later development. Blair (2002) also notes that as children's regulatory skills are nascent in the early years, they are nevertheless the underlying mechanism supporting cognitive and social behaviors associated with school achievement. This view aligns with Cunha's and Heckman's (2008) production of human capability model and Bronfenbrenner's bio-ecological model, which provide a framework for young children's academic/socioemotional competence and the influence of multi-level contextual factors (Bronfenbrenner, 1992). Cunha and Heckman's (2008) production of human capabilities model emphasizes the synergy between cognitive (i.e., academic) and non-cognitive (i.e., socioemotional) skills in support of school and life outcomes. In particular, they note that during the first few years of life children “have endowments of cognitive potential and temperament” (Claessens, Duncan, & Engel, 2009, p. 417) which are impacted by genetics, as well as families, communities, and preschool programs, and schools. These influencers support children's cognitive and non-cognitive development that produce adult human capital by providing more language and cognitive rich interactions and opportunities, which are thought to help children's academic and social skills. Similarly, Bronfenbrenner's model emphasizes the notion that children's development is shaped by reciprocal interactions with persons, objects, and symbols in the immediate external environment, which make up the microsystem. While interactions in the microsystems of the home and the child care settings for children of this age (or proximal processes) are primary, other interactive systems, such as the community also impact children through their effect on these proximal processes. For example, studies have shown that the dispersion of services and limited work employment impacts parents' time and ability to provide stimulating interactions for their child (Vernon-Feagans, Gallagher, & Kainz, 2008). Each of these systems, individually and jointly, shapes human development. As the child grows, the microsystem extends beyond the home to other individuals, groups, and social settings in which the child is a direct participant, including child care, school, and the community (Bronfenbrenner, 1992). Thus, in this study we seek to understand the extent to which the microsystem (e.g., families, child care programs) and macrosystem (e.g., rural neighborhood) are potentially associated with patterns of children's academic/socioemotional competence.

1.2. Determining factors associated with child academic/socioemotional competence patterns

As noted by models presented by Bronfenbrenner and Cunhas and Heckman, parenting behavior, and home, child care, and neighborhood characteristics are likely to influence young children's academic/socioemotional competence. The home environment has been associated with children's preschool (Bradley, Corwyn, Burchinal, McAdoo, & García Coll, 2001; Iruka, 2009) and later outcomes (Davis-Kean, 2005). Specifically, a home environment that is cognitively stimulating supports children's language and cognitive development through the provision of enriching opportunities and interactions. Parenting has also been linked to children's adjustment across development. When characterized by warm, supportive, and sensitive interactions, parenting has been shown to facilitate children's socioemotional adjustment, including their executive function; while parenting characterized by harsh, inconsistent, and less sensitive parenting has been linked to early problem behaviors (Bernier, Carlson, & Whipple, 2010; Deater-Deckard, Ivy, & Petrill, 2006). Some studies have suggested that due to the limited community resources in rural settings, parents may not have the necessary tools to provide cognitively stimulating experiences and compounded with fewer high-paying jobs with non-standard hours, this may result in parents having less time available to spend with their children (Miller & Votruba-Drzal, 2013).

Child care quality is also associated with child outcomes (e.g., Zaslow et al., 2016) across development. For example, the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SECCYD) found that higher quality child care was related to better cognitive-academic performance at preschool, and these benefits were evident in early and later elementary school, as well as at age 15 (Burchinal, Vernon-Feagans, Vitiello, & Greenberg, 2014; Vandell, Belsky, Burchinal, Steinberg, & Vandergrift, 2010). Some findings, albeit weak, have found some links between classroom quality and executive function, especially classrooms that provide opportunities for interactions and higher order thinking (Weiland & Yoshikawa, 2013). When examined within the context of rural communities, evidence has shown that children in these communities are less likely to have access to higher quality center-based programs. Center-based programs which are generally found to be of higher quality tend to be less accessible to children in rural settings for various reasons including not offering hours that meet parents' needs and potentially families' preference for home-based care (Miller & Votruba-Drzal, 2013).

Multiple studies have found a relation between neighborhood factors, such as aggregate income, education level, and crime, and child language and academic competence and performance (Barbarin et al., 2006). The level of trust and cohesion among neighbors (i.e., collective efficacy/socialization) has been associated with increased authoritative parenting, which, in turn, served to deter affiliation with deviant peers and delinquent behavior among older children (Simons, Simons, Burt, Brody, & Cutrona, 2005). Another neighborhood characteristic, geographic isolation, is an indicator of how far one lives from jobs, shopping outlets, and public institutions and may be a risk factor given less access to services, or a protective factor given less exposure to drugs, violence, and other social ills (Burchinal, Vernon-Feagans, Cox, & The Family Life Project Key Investigators, 2008). Mixed findings exist regarding the link between geographic isolation and child outcomes, with one study noting that it exacerbated the experience of poverty (Atchinson, 2001) and another showing it as a protective factor by buffering children from community risks, such as unemployment and illicit activities (Burchinal et al., 2008). One study showed that while child moves in early childhood were associated with poor self-regulation, it was moderated by neighborhood poverty (Roy, McCoy, & Raver,

2014). The mixed findings are likely due to measures used, sample characteristics, and the rurality of neighborhoods examined.

1.3. Current study

Despite the importance of the environmental contexts of home, child care, and neighborhood for specific child outcomes, no known study has examined their effects on academic/socioemotional competence profiles, especially for children in rural communities. Children's competencies in the first few years of life are generally integrated, emphasizing the need to examine them holistically and explore how various micro and macro systems may be associated with these patterns. Thus, in this study we seek to examine (1) the academic/socioemotional competence profiles that exist at 36 months and (2) parenting behavior, and home, child care, and neighborhood environment indicators that predict membership in each profile that represents a child's social, cognitive, and behavioral competence.

The present study uses data from the Family Life Project, a longitudinal study of children born in rural, low-wealth counties in North Carolina and Pennsylvania. Armed with data from multiple methods (i.e., observation, direct assessments and ratings) and informants (i.e., teachers and parents), we sought to identify profiles of academic/socioemotional competence, and to link these profiles to contextual factors (i.e., parenting behavior, and home, child care, and neighborhood environment indicators). We hypothesize that there will be patterns of children who are either above average, average, or below average on most indicators. We also expect that higher quality parenting and home and child care environments will be associated with the likelihood of children being in an optimal academic/socioemotional competence profile. While more distal to children, we also anticipate that a better neighborhood environment will also be significantly associated, albeit not as strongly, with likelihood of being in an optimal academic/socioemotional competence profile.

2. Method

2.1. Participants

2.1.1. Full study

We used data from the longitudinal Family Life Project (FLP), a representative sample of all babies born to mothers who resided in one of three rural, low-wealth counties in Eastern North Carolina or three in Central Pennsylvania over a one-year period, oversampling for families in poverty and African American ethnicity (n = 1292; Vernon-Feagans, Cox, & The Family Life Project Key Investigators, 2013). Low-income families in both states and African American families in North Carolina were over-sampled to ensure adequate power for dynamic and longitudinal analyses of families at elevated psychosocial risk (African American families were not over-sampled in Pennsylvania because the target communities were at least 95% White). The FLP was designed to study young children and families who resided in two of the four major geographical areas of the United States with high poverty rates (Dill, 2001). Recruitment occurred from September 2003 to September 2004, using a standardized script and screening protocol (for complete recruitment details see Willoughby et al., 2013). FLP recruiters identified 5471 (59% North Carolina, 41% Pennsylvania) women who gave birth to a child during the recruitment year. A total of 1515 (28%) of all identified families were determined to be ineligible for participation for three primary reasons: not speaking English as the primary language in the home, residence outside a target county, and intent to move within 3 years. Of the 2691 eligible families who agreed to the randomization process, 1571 (58%) families were selected to participate based on the sampling fractions that were continually updated from the data center. Of those families selected, 1292 (82%) were successfully enrolled in the study (i.e., completed a 2-month home visit).

In all analysis data were weighted to insure representativeness. Specifically, participants were recruited from a total of 18 strata (defined by the incomplete crossing of poverty_hospital site [including birth records in NC] _race [in NC, African American]) (see Vernon-Feagans & Cox, 2013 for full details). Within each stratum, participants were oversampled to achieve target numbers of low income and, in NC, African American families in the total sample. Probability weights were generated to take into account this oversampling and to permit inferences about all children in target counties as if the sample had been obtained using simple random sampling.

Extensive data were collected, including demographics, work experiences, and child care, during observations in primary child care arrangements at 6, 15, 24, and 36 months of age, and family home visits when the study child was 2, 6, 15, 24, and 36 months of age. Measures used in this study were carefully reviewed and selected to ensure appropriateness for use with specific age groups and for rural communities (see Vernon-Feagans et al., 2013 for more information). We received Institutional Review Board approval prior to data collection.

2.1.2. Study sample

Data from the 36-month home visit served as the primary data for the current study. All but 6% off the sample were retained through 36 months of age. Thus, the sample for this current study is generally similar to the full study sample. African Americans comprised about a quarter (22.5%) of the sample and the race of the rest of the sample was predominantly White (see Table 1). The average income-to-needs ratio was 2.2 with a range of 0–13, showing the economic diversity in rural communities. Primary respondents, typically mothers, averaged 30 years of age (SE = 0.21) and had a high school diploma with some additional training. Sixty-five percent of the sample were married with 35% designated as unmarried, divorced, or separated. Participating families averaged 2.3 children (SE = 0.03). In terms of child-care use, children averaged about 21 h in care per week (SE = 0.7), and 43% were using center-based care (indicating that 57% were in parental-only or home-based care).

2.2. Procedures

The primary caregiver and the child care provider completed questionnaires regarding the target child's social and behavioral competence. Children's cognitive competence was assessed directly by

Table 1
Sample description.

Characteristic	*N*	Mean (*SE*) or percent	Range
Income-to-needs ratio	1123	2.17 (0.06)	0–13.40
Maternal age (years)	1123	30.04 (0.21)	17.29–69.18
Maternal education (years)	1123	15.29 (0.09)	7.00–22.00
Number children under 18	1123	2.30 (0.03)	1.00–9.00
Number children under 5	1123	1.48 (0.02)	1.00–6.00
Family structure (% married)	1123	65.01%	–
Child age (months)	1123	36.99 (0.06)	34.36–47.31
Child is male	1204	51.99%	–
Child race (% African American)	1204	22.46%	–
Child temperament	1087	35.65 (0.13)	–
Positive parenting	1055	3.01 (0.02)	1.00–4.60
Negative parenting	1055	2.13 (0.02)	1.0–5.00
HOME score	1068	18.28 (0.11)	0–22.00
Child care center use (36 months)	653	43.19%	–
Child care hours (per week)	1123	20.89 (0.70)	0–117.00
CVI positive interactions (proportion)	451	1.40 (0.05)	0.02–4.88
Geographic isolation	999	6.03 (0.16)	0.86–26.31
Collective socialization	1116	0.72 (0.01)	0–1.00

Note. Weights were used because of complex sampling design with standard errors provided to show an estimate of how far the sample mean is likely to be from the population mean. HOME = Home Observation for the Measurement of the Environment. CVI = Childcare Verbal Interaction.

Table 2
Means and standard deviations for profile variables.

Characteristic	*N*	Mean (*SD*)	Range
Agency/enthusiasm	996	3.12 (0.87)	1–5
Aggression	996	1.12 (0.41)	1–5
Compliance	996	3.92 (0.89)	1–5
Persistence	996	3.29 (0.88)	1–5
Social-emotional competence (Par)	1095	2.33 (0.59)	1–4
Social-emotional competence (Tchr)	455	2.59 (0.59)	1–4
Receptive vocabulary (WPPSI)	1063	98.86 (17.59)	55–145
Block design (WPPSI)	1058	90.39 (14.57)	55–140
Expressive language (PLS)	1078	98.10 (15.69)	50–150
Problem behaviors	1093	0.59 (0.29)	0–1.56
Executive function	973	− 1.71 (1.73)	− 8.12–3.85

trained and certified research assistants. Trained research assistants coded video-taped interactions with a subsample re-coded to ensure inter-rater reliability. Trained research assistants conducted observations of the home and child care environments. Children's primary caregivers completed questions about the neighborhood. With the exception of data related to child gender and race, which were collected at the 2-month home visit, and parenting, which was summarized across the 24- and 36-month home visits, all data were collected when children were approximately 36 months of age.

2.3. Measures

Data were collected using multiple methods, such as observations and direct assessment, and from multiple informants, such as parents and teachers. We first present information about the behavioral indicators of child competence, followed by social indicators and then cognitive indicators, all of which were measured at 36 months of age. Means and standard deviations for these indicators are presented in Table 2. After discussion of the child competence indicators, we describe the measures used to assess parenting behavior, and home, child-care quality, and neighborhood characteristics.

2.3.1. Academic/socioemotional competence profile indicators at 36 months of age

2.3.1.1. Behavioral indicators of child competence. Child behavior was assessed during a parent-child interaction. Children were videotaped at home during a 10-minute puzzle task while completing three puzzles of increasing levels of difficulty (Cox & Paley, 1997). Trained research assistants rated children's agency/enthusiasm (child's vigor, confidence, and eagerness to do the tasks), persistence (child's problem-oriented approach), compliance (willingness to listen to parent and comply), and aggression (subtle or overt physically aggressive behaviors or angry vocalizations toward task, object, or individual). Ratings for each subscale ranged from 1 to 7 (1 = *not characteristic of the child* to 7 = *highly characteristic of the child*). Intercoder reliability was monitored weekly using intraclass coefficients (ICC) as indicators of reliability between the trainees and the master coder until an ICC of 0.80 was achieved (ICC 2,1; Shrout & Fleiss, 1979). Coding differences were resolved through conferencing, and the consensus codes were used for analysis.

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 2005) is a norm-referenced, 25-item rating scale of the child's behaviors completed by the parent (or the identified primary caregiver; Goodman, 2001) and was used to assess children's behavioral competence. SDQ subscales consisted of 25 items in the areas of conduct problems (e.g., “often fights with other children or bullies them”), emotional symptoms (e.g., “has many worries or often seems worried”), hyperactive behaviors (e.g., easily distracted, concentration wanders), peer problems (e.g., “picked on or bullied by other children”), and prosocial skills (e.g., “considerate of other people's feelings”). Each item was scored on a 3-point Likert scale (0 = *not true* to 2 = *certainly true*) (Goodman, 2001). The SDQ total score represents the mean of all subscale items with higher scores indicating greater difficulties (α = 0.72).

2.3.1.2. Social indicators of child competence. The Head Start Competence Scale (HSCS; Domitrovich, Cortes, & Greenberg, 2000) is a parent (16 items) or teacher (12 items) report used to measure children's social and emotional skills that reflects interpersonal relationships and emotion regulation (scores are kept and presented separately). Based on confirmatory factor analysis, a total score was created by averaging all of the items on the measure (α = 0.93 primary caregiver, 0.90 child care provider). Primary caregivers and child care providers (for children who were in out-of-home care) indicated how well each item on the scale described the child, using a 4-point scale (1 = *not at all well* to 4 = *very well*). Items included “resolves problems with friends,” “stops and calms down when upset,” and “listens to others' points of view.” The total score for each reported subscale represents the mean of all subscale items with higher scores indicating greater socioemotional competence.

2.3.1.3. Cognitive indicators of child competence. This study used multiple indicators of children's cognitive competence. Child's language development was assessed with the *Wechsler Preschool and Primary Scale of Intelligence* (WPPSI) and the *Preschool Language Score* (PLS-4). The *Receptive Vocabulary* and *Block Design* subtests were administered from the *Wechsler Preschool and Primary Scale of Intelligence* (WPPSI; Kaufman, 1992), with satisfactory validity and reliability (Wechsler, 2002). The PLS-4 is a norm-based measure of children's language skills, measured from birth to 6 years (Zimmerman, Steiner, & Pond, 2002; α = 0.83–0.95). The *Expressive Communication* subscale of the PLS-4 measures the child's ability to communicate with others. Test-retest reliability ranged from 0.82–0.95 (Zimmerman et al., 2002). Internal consistency ranged from α = 0.73–0.91. Inter-rater reliability was 0.99.

Research assistants administered six tasks designed to measure children's executive function (EF). The battery of EF tasks included two measures of working memory, three measures of inhibitory control, and one measure of attention shifting. For each task, children had to pass a set of training items, assessing their comprehension of task constructs and procedures, before continuing on to the scored trials (see Willoughby, Blair, Wirth, & Greenberg, 2010 for more details). In the *Working Memory Span* (*WM*) task, children are shown a picture of a house with an animal and a colored dot inside of the house. Next, they are shown an empty house and asked to remember the animal or dot color that was previously in the house. This task requires children to activate one piece of information (i.e., animal name) while overcoming interference from the other (i.e., color name). Scoring is based on the number of correct responses on one 1-item trial, two 2-item trials, and two 3-item trials (Blair et al., 2011).

The *Spatial Conflict Arrows* (*SCA*) task is used to assess inhibitory control. Children respond to the initial set of items by touching a response card located in the same position as the stimuli (e.g., stimuli are presented on the left side of the test booklet and the correct response requires that the child touch the left side of his/her response card). During the test items, children are required to activate a contra-lateral response (e.g., the stimuli is presented on the left side of the test booklet, and the correct response requires that the child touch the right side of his/her response card; spatial location is no longer informative). Scoring is based on number of correct responses.

The *Silly Sounds Stroop* (*SSS*) task assesses inhibitory control of a pre-potent response. Children are instructed to point to the dog picture when they hear a “meow” and to point to the cat picture when they hear a “woof.” Thus, children are required to inhibit the natural pairing of an animal picture with that animal sound. The task was scored as number correct.

The *Animal Go No-Go* (*GNG*) task is a standard go no-go task that is intended to assess inhibitory motor control. Children are instructed to

click a button every time they see an animal, but not when that animal is a pig. The task includes varying numbers of go trials prior to each no-go trial, in standard order: 1-go, 3-go, 3-go, 5-go, 1-go, 1-go, and 3-go trials. For example, in the 1-go the child would see 1 go animal, like a dog, before the no-go animal, the pig. For 3-go trials the child would see a horse, a cat, a dog, and then the no-go pig. No-go trials require inhibitory control. Scores were derived from the number of correct answers.

The *Something's the Same* (*STS*) task is intended to assess attention shifting. Children are shown two pictures that match on one of several dimensions (e.g., shape). Next, children are shown the same two pictures, but now with a new third picture. The third picture is similar to one of the first two pictures but along a different dimension (e.g., color). Children must choose which one of the two original pictures is the same as the new picture along this new dimension, requiring children to shift their focus from the first dimension of similarity to a second dimension of similarity. Again, scoring is based on the number of correct answers.

All the scores from the EF tasks are combined and then Item Response Theory-based (IRT) scores are calculated. IRT scores are a reflection of the number of items children would have answered correctly on the assessment if they had been administered all items in the battery, and they also ensure scores are on the same metric. These scores can then be interpreted similar to a *Z*-score metric where 0 refers to average ability in the FLP sample at age-four assessments. As this study uses 36-month data, scores will be mostly negative because most children have lower ability at three versus four years of age. Many children at this age had a challenge in completing these tasks, resulting in missing data.

2.3.2. Indicators of parenting, and home, child care, and neighborhood environment characteristics

2.3.2.1. Parenting. Primary caregiver behaviors during play interactions with their children were videotaped during the 36-month home visits. Primary caregivers and their children were seated at a table and were asked to complete a set of three puzzles of increasing difficulty. The task lasted 10 min. Ratings of these videotaped interactions used in previous studies (e.g., NICHD Study of Early Child Care, 1999) include: sensitivity, detachment/disengagement, positive regard, intrusiveness, animation, stimulation of development, and negative regard. Coders rated each of these areas on a 7-point Likert scale (1 = *not at all characteristic* to 7 = *highly characteristic*). Approximately 30% of the parent codes were double-coded with an inter-rater reliability rating of 0.80 or above on all subscales. A *Positive Parenting* composite was created by summing the scale scores for sensitivity, positive regard, stimulation of development, animation, and detachment/disengagement (reverse-scored). A *Negative Parenting* composite was created by summing the scale scores for intrusiveness and negative regard for the child. These composites of positive and negative parenting show the intra-class correlation for coders ranged from 0.85 to 0.98 (e.g., Vernon-Feagans, Garrett-Peters, Willoughby, Mills-Koonce, & The Family Life Project Key Investigators, 2012).

2.3.2.2. HOME. The quality and quantity of stimulation and support available to children in the home environment was assessed with the *Home Observation for the Measurement of the Environment* (HOME; Bradley, 1994). The 28 items of the HOME representing the three subscales—Responsivity, Acceptance, and Learning Materials—were used as they most related to children's outcomes. Trained research assistants scored the items in a yes/no fashion with higher scores indicating higher quality environments. For the current study, Cronbach's alpha for the total score of all subtests was 0.75.

2.3.2.3. Child care quality. We used the Childcare Verbal Interaction observation (CVI) as an indicator of child care quality for children in center-based care. The Family Life Project uses this unique time-sampling observational coding system to provide detailed data about the verbal and nonverbal interactions that occur between the target child and others in the child care setting (Vernon-Feagans, Manlove, & Volling, 1996). To complete the CVI, the data collector observed the child care setting for two 10-minute sessions to record a variety of information about the setting, including codes for the child's activity (solitary play, engaged with others, disengaged, focused on TV, or engaged in care routine, such as feeding or toileting) and verbal and non-verbal positive adult and peer interactions. Behaviors were recorded using 10-second blocks of continuous coding. To increase measurement reliability, behavior categories were summed across the two observation periods (Rushton, Brainerd, & Pressley, 1983). For this analysis, we focused on the proportion of coded interactions. All positive verbal and nonverbal interactions between target children and teachers were combined to create the *positive interactions* variable. Recorded interactions included touch, show, give/share, request participation, accept toy, positive or neutral vocalization, and parallel/joint fantasy play. Inter-rater reliability was obtained on 15% of the observations collected at 36 months of age, with an average Cohen's kappa of 0.79.

We also included an indicator for child care center (compared to parent-only or home-based care) and the number of hours per week in child care because research on child care quality has been mixed about the link between program type and hours in child care on children's cognitive and social outcomes (Brooks-Gunn, Han, & Waldfogel, 2002; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2005).

2.3.2.4. Neighborhood characteristics. The FLP investigators developed a measure of *geographic isolation* by using Global Positioning System (GPS) technology (Burchinal et al., 2009). GPS units were used to measure the longitude and latitude for the family residence. These measurements were then used to compute the physical distance between the family residence and the nearest 10 common neighborhood services: gas station, physician's office (any type), library, fire station, elementary school, high school, public park, supermarket, freeway on-ramp, and public transportation. A single summary score was computed as the mean of the 10 distances and was log-transformed to reduce skew in its distribution. *Collective socialization* was assessed through a computer-based questionnaire allowing for complete confidentiality of all responses. The 14-item measure (1 = *true* and 0 = *false*) evaluated individual perceptions of the level of trust between neighbors, for example, “People in this neighborhood can be trusted” (Brody et al., 2001). Collected from the primary caregiver, typically the mother, at the 36-month wave of data collection, items were summed and averaged to create a mean scale score (Cronbach's alpha = 0.68).

2.3.3. Control variables

We included standard individual and human capital variables as controls, including child race, child gender, child age, household income-to-needs ratio, maternal age and education, number of children, family structure, and child temperament. Child race was coded as African-American and non–African-American. Child gender was coded as male = 1. Child age, income-to-needs ratio, maternal age, maternal education, and number of children were continuous variables. Family structure was coded as married = 1. Poverty status was based on an income-to-needs ratio, a standard measure of a family's economic situation, where 1.0 indicates the poverty line and was used as the cut-off point for poor and non-poor. This ratio was computed by dividing family income, exclusive of federal aid, by the federal poverty threshold for that family's size.

Child temperament was assessed with the four subscales from the Observation of Child Temperament Scale (OCTS), collected at the two 36-month home visits (Stifter, Putnam, & Jahromi, 2008). Adapted from the Infant Behavior Record (IBR; Bayley, 1969), the aim of this instrument is to capture the preschool child's behavior across the entire

visit. The four subscales are: *activity level*, *reaction to novel persons*, *positive affect*, and *shyness/fearfulness* (reversed). *Activity level* reflects the child's amount of gross body movement. *Reaction to novel persons* reflects how the child reacts to unfamiliar people, which would be the two home visitors in the Family Life Project. *Positive affect* reflects how happy the child is during the home visit as seen in the amount of smiling and laughter they display. *Shyness/fearfulness* reflects the degree to which the child shows some level of fear/uncertainty to new persons, objects, and situations. The OCTS was completed individually by the two data collectors at two separate home visits for a total of 4 observations (2 for each of 2 observers). The four recordings were then averaged with high scores indicating positive adaptable temperament.

2.4. Missing data

With the exception of child care-based data (e.g., CVI, hours in care; approximately 43% of children were in out-of-home care), the average missing data was 15% with a range of 5% to a high of 25%, mostly due to missing executive function scores (some children were not able to complete the tasks). Analyses indicated that children in parent-only care, boys, Whites, less educated mothers, and families with more children were likely to have missing data. To adjust for potential biases due to missing data, we used a robust FIML estimator in all analyses (Mplus; Muthén & Muthén, 2007).

2.5. Analytical plan

To create profiles, we used a variety of measures of social, behavioral, and cognitive development for the FLP sample at 36 months. These measures included those described above: observations of agency/enthusiasm, aggression, compliance, and persistence from the Parent-Child Interaction Tasks, parent- and teacher- reported HSCS, assessments of the WPPSI-III, PLS, SDQ, and executive functioning. Specifically, the first task for Latent Profile Analysis (LPA) was to identify the number of subgroups within a sample. This was done by comparing the efficacy of models with one through *k* subgroups by evaluating a combination of fit statistics, class proportions, and entropy values to determine the most effective model (Nylund, Asparouhov, & Muthén, 2007). Smaller values of the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and Sample Size Adjusted Bayesian Information Criterion (SABIC) indicate better fit (Byrne, 2001), while entropy values approaching 1 indicate better fit. The Vuong, Lo, Mendell, Rubin statistic (VLMR; Lo, Mendell, & Rubin, 2001; Vuong, 1989) was also used to test whether a model with *k* subgroups fit the data better than a model with *k*-1 subgroups. VLMR test *p*-values lower than 0.05 indicate that a model with *k* subgroups fits the data better than a *k*-1 model, and *p*-values > 0.05 indicate that there was no evidence that a model with *k* subgroups fits the data better than one with *k*-1 subgroups.

The equality of means across profile group and likelihood of group membership by parenting behavior, and home, child care, and neighborhood environment characteristics, including the HOME Inventory and the Parent-Child Interaction parenting composites (positive and negative parenting), the child care CVI, and geographic isolation and collective socialization at the neighborhood level were examined using the 3-step approach in Mplus® (Asparouhov & Muthén, 2014). In addition to using weights, we included standard individual and human capital variables as controls, including child race, child gender, child age, household income-to-needs ratio, maternal age and education, number of children, family structure, and child temperament. In sum, the 3-step approach in Mplus® allowed for latent profile analysis and multinomial logistic regression to determine association with profile group membership, as well as adjustment for missing data through FIML, which estimates a likelihood function for each individual based on the variables that are present so that all the available data are used.

Table 3
Model fit indices for 1- to 5-class solutions of quality indicators.

	One class	Two class	**Three class**	Four class	Five class
AIC	30,521.68	29,274.52	**28,517.19**	28,135.43	26,296.25
BIC	30,632.17	29,445.26	**28,748.20**	28,426.70	26,647.79
SABIC	30,562.29	29,337.27	**28,602.09**	28,242.48	26,425.45
VLMR *p*-value	–	0.048	**0.7407**	0.2461	0.7642
Entropy	–	0.734	**0.806**	0.817	0.814
% Class 1	100%	43%	**8%**	9%	7%
% Class 2		57%	**42%**	41%	8%
% Class 3			**50%**	49%	46%
% Class 4				1%	38%
% Class 5					1%

Note. $N = 1292$. Weights were used because of complex sampling design. Bold indicates best fit.

3. Results

To determine the number of subgroups in the sample, comparative modeling was used. Results from comparative modeling are presented in Table 3. A combination of statistical considerations and substantive theory was used to decide on the best fitting model – the 3-class—including decreasing BIC, high entropy, meaningful percentage in each class, and estimated posterior probabilities (Herman, Ostrander, Walkup, Silva, & March, 2007). While the 3-class model had a non-significant VLMR *p*-value (also the case with 4-class model) compared to the 2-class model, it had a better entropy value compared to the 2-class model and meaningful percentage compared to the 4-class model. In addition, the latent 3-class proportion (8%, 42%, and 50%) was in line with the estimated posterior probabilities proportions (9%, 42%, 49%). Thus, we determined the 3-class model to be a better fit for the data. Our 3-class solution was further confirmed by previous studies showing that young children's skill sets are interrelated (Daily et al., 2010) with groups of children that are above average, average, and below average (Iruka, Gardner-Neblett, Matthews, & Winn, 2014).

3.1. Academic/socioemotional child competence profiles

The three academic/socioemotional profiles that emerged were: 1) *Non-Compliant Average Achiever*, 2) *Unengaged Low Achiever*, and 3) *Engaged High Achiever* (see Fig. 1). The standardized scores and confidence intervals for each profile are presented in Table 4. To adjust for multiple comparisons, the Bonferroni method was used such that significant differences were based on $p < 0.017$. The first profile, *Non-Compliant Average Achiever*, consisted of 8% of children in the sample. These children were observed, on average, as being slightly below average on agency/enthusiasm, compliance, and persistence and significantly higher in aggression during videotaped parent-child interactions; rated average on socioemotional competence by parents and teachers; scored average on assessments of receptive language, block design, and executive function; and rated slightly above average on behavioral problems by the primary caregiver. The second profile, *Unengaged Low Achiever*, consisted of 42% of children in the sample. These children were observed as being slightly below average on agency/enthusiasm, persistence, and aggression during parent-child interactions; slightly below average on socioemotional competence by parents and teachers; scored slightly below average on assessments of receptive language, block design, and executive function; and rated slightly above average on behavioral problems by the primary caregiver. The last profile, *Engaged High Achiever*, consisted of 50% of children in the sample. These children were observed as being above average on agency/enthusiasm, compliance, and persistence and below average in aggression during parent-child interactions; rated above average on socioemotional competence by parents and teachers; scored above average on assessments of receptive language, block design, and executive function: and rated below by primary caregivers average on

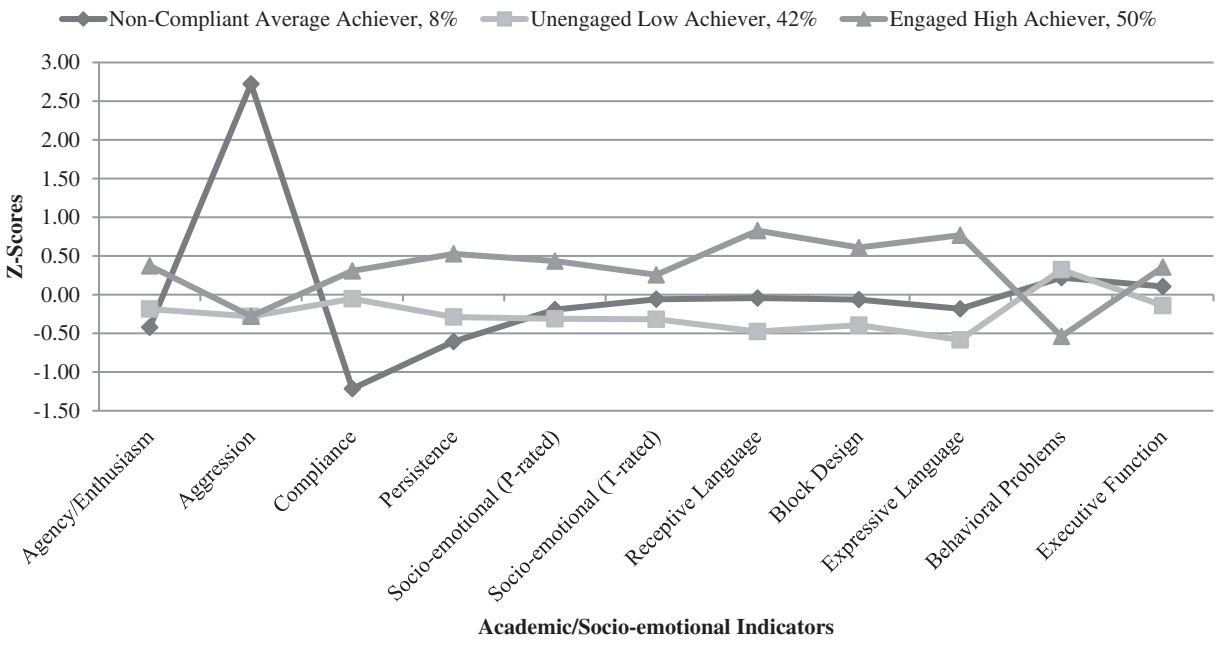

Fig. 1. Profiles of academic/socioemotional child competence.
Note. $N = 1292$.

behavioral problems.

Mplus® analyses showed the three groups significantly differed on all indicators, while accounting for the uncertainty of the profile group (see Table 4). Confidence intervals are provided to examine whether the means for each indicator across classes overlap, to further address the uncertainty of latent class classification. Similar analyses were also conducted to determine the extent to which the three profile groups differed on parenting behavior, and home, child care, and neighborhood environments (see Table 4). Specifically, children in the Engaged High Achiever group in comparison to children in the other two groups were significantly more likely to be in higher quality home, child care, and neighborhood environments.

3.2. Examining factors associated with academic/socioemotional profiles

Weighted multinomial logistic regression was conducted with Mplus® using indicators of parenting behavior, and home, child care, and neighborhood environments to examine how these characteristics were associated with the likelihood of membership in a particular academic/socioemotional profile. Analyses were conducted such that

Table 4
Sample descriptions and group comparisons (with weights).

	Group 1: Non-Compliant Average Achiever (8%) Mean (*SE*)	95% C.I.	Group 2: Unengaged Low Achiever (42%) Mean (*SE*)	95% C.I.	Group 3: Engaged High Achiever (50%) Mean (*SE*)	95% C.I.	Comparison
Profile indicators							
Agency/enthusiasm	− 0.42 (0.18)	− 0.72–− 0.12	− 0.19 (0.07)	− 0.31–− 0.07	0.37 (0.06)	0.28–0.47	1,2 < 3
Aggression	2.72 (0.23)	2.3–3.1	− 0.28 (0.00)	− 0.28–− 0.28	− 0.28 (0.02)	− 0.31–− 0.24	1 < 2,3
Compliance	− 1.22 (0.16)	− 0.15–− 0.95	− 0.05 (0.06)	− 0.16–0.05	0.31 (0.05)	0.23–0.38	1 < 2 < 3
Persistence	− 0.61 (0.15)	− 0.86–− 0.35	− 0.29 (0.08)	− 0.42–− 0.16	0.53 (0.06)	0.44–0.62	1 < 2 < 3
Social-emotional competence (Par)	− 0.19 (0.14)	− 0.43–0.04	− 0.31 (0.07)	− 0.42–− 0.20	0.43 (0.05)	0.35–0.52	1,2 < 3
Social-emotional competence (Tchr)	− 0.06 (0.18)	− 0.36–0.24	− 0.32 (0.08)	− 0.45–− 0.19	0.26 (0.10)	0.09–0.42	1,2 < 3
Receptive vocabulary (WPPSI)	− 0.04 (0.18)	− 0.33–0.25	− 0.48 (0.07)	− 0.59–− 0.37	0.83 (0.07)	0.72–0.94	2 < 1 < 3
Block design (WPPSI)	− 0.06 (0.21)	− 0.41–0.28	− 0.39 (0.06)	− 0.49–− 0.30	0.61 (0.07)	0.49–0.73	2 < 1 < 3
Expressive language (PLS)	− 0.18 (0.15)	− 0.43–0.07	− 0.58 (0.06)	− 0.69–− 0.48	0.77 (0.08)	0.63–0.91	2 < 1 < 3
Problem behaviors	0.22 (0.15)	− 0.02–0.46	0.32 (0.07)	0.20–0.44	− 0.54 (0.05)	− 0.62–− 0.46	1,2 > 3
Executive function	0.11 (0.18)	− 0.20–0.41	− 0.14 (0.05)	− 0.23–− 0.05	0.36 (0.07)	0.24–0.47	2 < 1,3
Predictors							
Positive parenting	2.63 (0.09)	2.5–2.8	2.77 (0.03)	2.7–2.8	3.28 (0.03)	3.2–3.3	1,2 < 3
Negative parenting	2.60 (0.11)	2.4–2.8	2.41 (0.04)	2.3–2.5	1.82 (0.03)	1.8–0.19	1 > 2 > 3
HOME score	18.06 (0.36)	17.3–18.8	16.85 (0.18)	16.5–17.2	19.53 (0.11)	19.3–19.7	2 < 1 < 3
Child care center	0.41 (0.08)	0.26–0.57	0.44 (0.03)	0.38–0.50	0.43 (0.03)	0.36–0.49	–
Child care hours	20.62 (2.48)	15.7–25.6	20.32 (0.96)	18.4–22.2	21.33 (0.99)	19.4–23.3	–
CVI positive interactions	− 0.03 (0.20)	− 0.42–0.37	0.01 (0.07)	− 13–0.16	0.03 (0.08)	− 0.13–0.18	–
Geographic isolation	5.37 (0.54)	4.3–6.4	6.01 (0.23)	5.6–6.5	6.13 (0.23)	5.7–6.6	–
Collective socialization	0.68 (0.03)	0.63–0.74	0.65 (0.01)	0.63–0.67	0.79 (0.01)	0.76–0.81	1,2 < 3

Note. $N = 1292$. Weights were used because of complex sampling design with standard errors provided to show an estimate of how far the sample mean is likely to be from the population mean. HOME = Home Observation for the Measurement of the Environment. CVI = Childcare Verbal Interaction. C.I. = confidence interval.

Table 5
Multinomial logistic regression results of home environment/parenting, child care, and neighborhood factors predicting child profiles.

	Non-Compliant Average Achiever[a]			Unengaged Low Achiever[a]			Unengaged Low Achiever[b]			Engaged High Achiever[b]			Non-Compliant Average Achiever[c]			Engaged High Achiever[c]		
	B	*SE*	O.R.	*B*	*SE*	O.R.	*B*	*SE*	O.R.	*B*	*SE*	O.R.	*B*	*SE*	O.R.	*B*	*SE*	O.R.
Intercept	15.36	7.75		19.25	6.74		3.89	6.56		−15.36	7.75	−1.98	−3.89	6.56		−19.25	6.74	
Positive parenting	**−1.61**	**0.60**	**0.20**	−0.44	0.36		**1.17**	**0.59**	**3.22**	**1.61**	**0.60**	**5.00**	**−1.17**	**0.59**	**0.31**	0.44	0.36	
Negative parenting	**1.80**	**0.45**	**6.04**	**0.91**	**0.34**	**2.47**	**−0.89**	**0.39**	**0.41**	**−1.80**	**0.45**	**0.17**	**0.89**	**0.39**	**2.44**	**−0.91**	**0.34**	**0.40**
HOME score	−0.12	0.14		**−0.29**	**0.12**	**0.75**	−0.16	0.09		0.12	0.14		0.16	0.09		**0.29**	**0.12**	**1.33**
Child care center	−0.94	0.80		−1.13	0.64		−0.19	0.74		0.94	0.80		0.19	0.74		1.13	0.64	
Child care hours	0.02	0.02		−0.02	0.02		**−0.04**	**0.02**	**0.96**	−0.02	0.02		**0.04**	**0.02**	**1.04**	0.02	0.02	
CVI positive interactions	−0.49	0.36		−0.41	0.25		0.08	0.32		0.49	0.36		−0.08	0.32		0.41	0.25	
Geographic isolation	−0.07	0.10		0.04	0.09		0.11	0.10		0.07	0.10		−0.11	0.10		−0.04	0.09	
Collective socialization	**−2.13**	**1.01**	**0.12**	−1.62	1.12		0.51	0.89		**2.13**	**1.01**	**8.37**	−0.51	0.89		1.62	1.12	

Note. $N = 1292$. Weights used because of complex sampling design with standard errors provided to show an estimate of how far the sample mean is likely to be from the population mean. Bolded odds ratio are significant at $p < 0.05$. O.R. = Odds Ratio. HOME = Home Observation for the Measurement of the Environment. CVI = Childcare Verbal Interaction.
Covariates of state; child race, gender, age, and temperament; household income-to-needs ratio; maternal age and education; number of children under age 5 and 18; and family structure were included in the analyses.
[a] Reference Group is Engaged High Achiever.
[b] Reference Group is Non-Compliant Average Achiever.
[c] Reference Group is Unengaged Low Achiever.

each profile group served as the reference group. Odds ratios (ORs) are provided in Table 5 to demonstrate how a one-unit change in parenting behavior, and home, child care, and neighborhood environments are associated with the likelihood of being in a particular group compared to being in the reference group.

Parenting behavior, and quality of the home, child care hours, and neighborhood environments were associated with the likelihood of a child being in a particular group in reference to another group (see Table 4). Specifically, a one-unit increase in positive parenting was associated with an increased likelihood of being in the Engaged High Achiever group by 5 and the Unengaged Low Achiever group by 3.2 compared to the Non-Compliant Average Achiever group. A one-unit increase in negative parenting was associated with increased odds of being in the Non-Compliant Average Achiever group by 6 and 2.5 for the Unengaged Low Achiever group, compared to the Engaged High Achiever group. A one-unit increase in home environment quality was associated with increased odds of being in the Engaged High Achiever group compared to the Unengaged Low Achiever by 1.3 times.

High number of hours in child care was associated with increased odds of being in the Non-Compliant Average Achiever compared to the Unengaged Low Achiever group. Regarding the neighborhood, a one-unit increase in collective socialization was associated with the increased odds of being in the Engaged High Achiever group versus the Non-Compliant Average Achiever group by 8.3.

4. Discussion

The aim of this study was to determine patterns of academic/socioemotional child competence for children living in low-resourced, rural communities based on children's academic and socioemotional indicators, as well as parenting behavior, home, child care, and neighborhood environments associated with particular profiles. Three academic/socioemotional profiles emerged: 1) *Non-Compliant Average Achiever*, 2) *Unengaged Low Achiever*, and 3) *Engaged High Achiever*. Parenting behavior, quality of the home, child care hours, and neighborhood environments were significantly associated with the likelihood of children being in a particular academic/socioemotional competence profile at 36-months.

4.1. What academic/socioemotional competence patterns emerged?

The three profile groups represented children who were above average on various academic/socioemotional indicators, children who showed about average (but non-compliant and aggressive) skills, and children who were below average. The finding that 50% of the children show promise in their academic and social functioning (*Engaged High Achiever* group) by displaying above average academic and socioemotional functioning, as well as language and executive function skills, indicates that many children have a strong foundation prior to preschool and formal school entry. A concerning fact is that 8% of children labeled as *Non-Compliant Average Achievers* showed significant aggressive and non-compliant behaviors, but were average in their socioemotional, language, and executive function skills, indicating a potential need for behavioral intervention prior to formal school entry. Meanwhile, over 40% of children, were labeled *Unengaged Low Achievers* and were slightly below average on many indicators of academic, socioemotional, language, and executive function skills. This is the first study of its kind providing a different vantage point about the academic and social competence patterns of children in rural communities at 36 months. The majority of children were showing patterns indicating they are functioning as expected in many aspects of their development — language, cognition, social competence, and executive function. Of concerning note is the large proportion of children who are not only showing below average scores on cognitive and language assessment, but are also not persistent or attentive in their activities, including early behavior challenges. The relatively large percentage of

low achievers is consistent with prior studies showing the lower achievement of children in rural communities in comparison to their urban peers (Miller & Votruba-Drzal, 2013; Roscigno & Crowle, 2001). The dispersion and lack of access to high-quality child care and health services and libraries in rural communities may limit the families' abilities to provide enriching experiences; parents limited time due to non-standard hours may also explain some of these findings.

4.2. What factors were associated with academic/socioemotional competence patterns?

Aspects of parenting behavior, and home, child care, and neighborhood environments above and beyond child and family socio-demographics were associated with the probability of being in a particular academic/socioemotional competence profile at 36 months of age. Higher quality parenting and home environments were predictive of children's likelihood of being in the higher academic/socioemotional functioning group as compared to the lower functioning group. This suggests that optimal home environments and responsive parent-child interactions are likely to be positively associated with children's early functioning, which is consistent with prior research (Iruka, 2009; Raikes et al., 2006). More hours in children care was associated with being in a non-compliant and aggressive group (but average achiever) rather than a low achiever group. This is aligned with prior findings of the negative link between hours in child care and problem behaviors, but also a positive link to language and academic outcomes (Belsky, Vandell, Burchinal, Clarke-Stewart, McCartney, Owen, & NICHD ECCRN, 2007; Vandell et al., 2010), when examined within the context of quality (Luijk et al., 2015). It is important to note that in addition to 43% of the sample being in child care, they were in care for approximately 21 h, which is about four hours per day or part-time, which may have implications for children's adjustment in an out-of-home child care environment.

Finally, characteristics of the neighborhood, particularly the trust and cohesion among the community, were predictive of children being in the higher functioning group rather than the lower functioning groups. This provides support for the notion that sense of community cohesion is associated with children's development (Brody et al., 2001; Sampson, Raudenbush, & Earls, 1997), which is a particular asset of rural communities. This was one of the largest effects, suggesting that in rural communities, neighborhood factors may play a much larger role than previously detected, especially in comparison to children residing in urban communities. This finding also underscores the heterogeneity in rural communities that needs further exploration. In examining the rural mortality phenomenon, James (2014) found diversity in rural communities, including differences in poverty level, demogrpahic characteristics, healthcare infrastructure, and level of rurality. These findings align with the bio-ecological and the human capital frameworks that multiple systems, especially those most proximal to children, are associated with children's development.

Surprisingly, the quality of the child care environment was not associated with the likelihood of being in a particular academic/socioemotional group. One potential reason may be due to the low average quality. Studies have shown that there may be a particular threshold of quality needed to see an impact of quality on children's outcomes (e.g., Burchinal, Vandergrift, Pianta, & Mashburn, 2010), and this may be particularly pronouced for rural communities that have limited access to high-quality center-based programs and limited resources for families who don't qualify for subsidy or state preschool programs (Miller & Votruba-Drzal, 2013). Another reason, as noted above, may be the part-time nature of children's child care experience. Studies have shown that in addition to quality and specific features, dosage is also an important variable to consider when examining child benefits (Zaslow et al., 2016).

While not a main aspect of this study, results show a positive relationship between income and the high functioning group. This underscores the role that family income and resources play in children's competencies, even after accounting for home, child care, and neighborhood environments. In rural communities, income may be more important as it may give families more resources to provide enriching experiences and materials for children, and may indicate families' ability to have employment that is standard and affords more time with their child.

4.3. Limitations

The strengths of this study must be balanced by its limitations. First, this study is based on a sample of rural communities in two states, which is not necessarily generalizable to all rural communities in the U.S. Secondly, this sample was predominantly African American and White families, limiting our ability to note patterns for children from other racial groups in rural communities. Third, much of the data were collected at the same time. Therefore, relations between variables are correlational and not causal. Future studies are needed that examine the stability of these profiles and whether they predict to particular later school outcomes (longitudinal analyses were beyond the scope of this paper). With data missing from children in parent-only care, boys, Whites, less-educated mothers, and families with more children, caution should be taken in generalizing this data. Finally, the analytical method used in this study only confirms the probability of membership in a particular group and in no way indicates causality. While going with the three-class solution is consistent with Nylund et al.' (2007) recommendations, Bauer and Curran (2004) note that caution should be used in generalizing findings from one single study because classes may represent gradients on continuous dimensions. Thus, future studies are needed to examine whether the patterns seen at 36 months remain through school entry and beyond and the extent to which factors might contribute to stability or shift in the patterns.

5. Conclusion

Findings in this study have practice and policy implications. In regards to practice, this study shows that half of the young FLP children in this study are demonstrating adequate and high-level functioning and are less likely in need of early intervention. However, there is a large group of children who may need early behavioral intervention (due to non-compliant aggressive behaviors) or early learning intervention (due to lower than average functioning in academics, language, and executive function). Our findings underscore the importance of developing early intervention programs that attempt to identify the underlying source(s) (e.g., behavioral vs. learning) of children's difficulties prior to implementation and highlight the potential increased efficacy for programs that target children's specific challenges in accordance with the needs of different groups of children. In addition to early intervention for children, the findings also indicate that parenting programs that promote increased parental responsiveness and decreased negativity might be another avenue for intervention. One promising, evidence-based program is the Incredible Years Parenting Program (IY; Webster-Stratton, 2007). IY participation has been associated with less parental distress, defensive responding, dysfunctional parent-child interactions, child difficulty, total stress, and greater empathy and social support (Marcynyszyn, Maher, & Corwin, 2011). Moreover, findings indicated that residing in more cohesive communities and reducing hours in child care (potentially in lower quality child care) may reduce the likelihood that children are in lower functioning groups in the early years.

In regards to policy, this study emphasizes the potential importance of continuing investment in parenting programs (such as through IY and Maternal, Infant, and Early Childhood Home Visiting Program) and improving the quality of out-of-home care for infants and toddlers (such as through the Early Head Start Community Child Care Partnership grants), especially in rural areas. This study also highlights the

importance of investing resources in rural areas to help ensure that neighborhoods are protective and supportive (such as through the Promise Neighborhood initiatives in primarily urban areas; Whitehurst & Croft, 2010), especially in the early years.

The proximal systems in children's lives — families, child care, and neighborhoods — need to be simultaneously addressed to individualize children's learning and experiences that capitalize on their assets while also recognizing their challenges. The findings from this study indicate that while there are challenges to living in rural communities, there are aspects of these communities that are particularly beneficial for young children's development, emphasizing the need for continued investment in rural communities to ensure optimal child development.

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