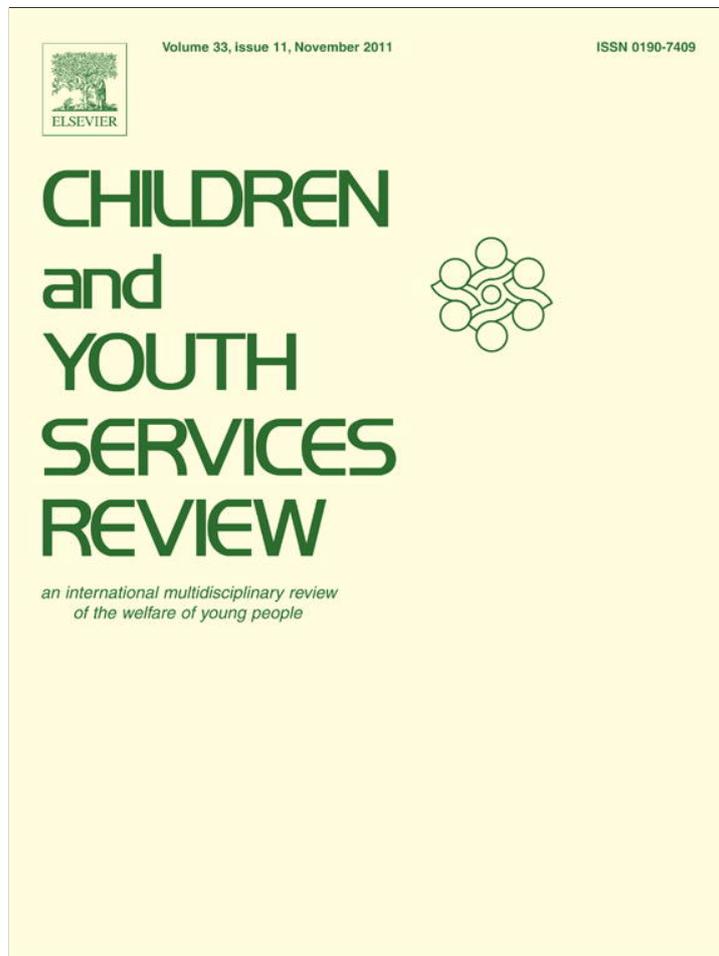


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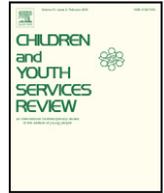
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Teacher and center stability and school readiness among low-income, ethnically diverse children in subsidized, center-based child care

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ABSTRACT

Given large numbers of children attending center-based child care and considerable teacher and child mobility, it is important to study correlates and outcomes of children experiencing a change in their primary teacher/caregiver and/or a change to a different child care center. The present study investigated teacher and center stability in a group of 3238 urban, ethnically diverse, low-income, four-year-olds receiving subsidies to attend center-based child care. Children were individually assessed for cognitive and language development at the beginning and end of the pre-kindergarten year. Parents and teachers rated children on their socio-emotional skills and behavior at both time points. Children who experienced a change in their primary caregiver from the beginning to the end of the school year (41% of the sample) showed less growth in initiative for learning and attachment/closeness with adults over time, and scored lower on most indices of school readiness compared to those that had a stable caregiver. Children who moved to a different center during the year scored lower on teacher-reported initiative and attachment. African American children who switched centers were particularly at-risk for poorer outcomes, and boys who experienced a change in primary teacher, in particular, showed slower growth in cognitive development.

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1. Introduction

Use of center-based child care among preschool-age children has grown exponentially over the last several decades. From 1965 to 1993, the proportion of three- to four-year old children with employed mothers using center care nationwide increased fourfold from 9% to 40% (Hofferth, 1996). Recent census data indicate this upward trend is continuing with close to 45% of preschool-age children in center-based child care (U.S. Department of Education, 2008).

As a result, child care centers and the caregivers/teachers in these centers are playing a more prominent role than ever before in shaping the lives of young preschoolers. A growing body of literature suggests that center care may promote young children's intellectual skills and school readiness. Center care attendance has been linked to greater cognitive and language development and increased pre-academic skills compared with time in home-based care of comparable quality (Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007; NICHD ECCRN [ECCRN], 2000, 2008; NICHD ECCRN & Duncan, 2003).

Center-based care may be especially beneficial for children from low-income families, a population of vital importance to study given that 39% of children living in the United States are in poverty (National Center for Children in Poverty, 2007). Studies show that for

children from low-income families, relative to home-based care, center-based care has positive benefits for cognitive development (Fuller, Kagan, Caspary, & Gauthier, 2002; Zaslow, McGroder, Cave, & Mariner, 1999) and enduring positive effects into the first few years of school (Bassok, French, Fuller, & Kagan, 2008; Broberg, Wessels, Lamb, & Hwang, 1997; Yoshikawa, 1999). Loeb, Fuller, Kagan, and Carrol (2004) examined the impact of child care in low-income families with mothers in welfare-to-work programs and found positive effects on cognitive development for children in center care after controlling for child's age and ethnicity, mother's education, work and welfare status, and family income. However, a number of studies have found that extensive use of center care, especially when the quality of care is low to moderate, is sometimes linked with increased problem behaviors in preschool, kindergarten, and elementary school (Belsky et al., 2007; Dmitrieva, Steinberg, & Belsky, 2007; Loeb et al., 2007; NICHD ECCRN, 2003) and with suboptimal social development in kindergarten (Barnett, 1995; Yoshikawa, 1995).

The positive (and negative) effects of center-based care on children's development are undoubtedly shaped in large part by the providers who care for the children in these settings. Caregivers play an important role in the type and quality of experiences children have in center care (Clarke-Stewart & Allhusen, 2005; Roach, Riley, Adams, & Edie, 2005; Shonkoff & Phillips, 2000). Young children whose caregivers provide frequent cognitive and verbal stimulation, who are sensitive and responsive to their emotional and physical needs, and who provide generous amounts of attention develop stronger school

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readiness skills than children who fail to receive these inputs (Burchinal, Cryer, Clifford, & Howes, 2002; Howes et al., 2008; Peisner-Feinberg et al., 2001). The formation of secure caregiver–child attachment relationships that results from sensitive and responsive caregiving is an important aspect likely to account for some of the relations observed between positive caregiver behavior and children's school readiness outcomes. Research suggests that children are more likely to form secure and close attachment relationships when caregivers provide warm and sensitive care and engage in frequent and high quality interactions (Goldberg, 2000; Thompson, 1999). Numerous studies have found that positive and secure attachment relationships forged between children and their caregivers are linked to a number of positive child outcomes, including increased cognitive competence, fewer problem behaviors, and more positive peer relationships later in school (Elicker & Fortner-Wood, 1995; Pianta, 1994, 1999).

Children's child care experiences, however, rather than being static, are quite fluid and unstable (de Schipper, Van IJzendoorn, & Tavecchio, 2004; Morrissey, 2009; Tran & Weinraub, 2006; Vandell, Dadisman, & Gallagher, 2000). Researchers distinguish several aspects of child care stability: (a) changes in primary caregiver over the course of a year (Miller, 2003) or staff turnover rate (Whitebook, Sakai, Gerber, & Howes, 2001), (b) the amount of time a particular caregiver spends with the child over a day in the childcare setting (de Schipper et al., 2004), (c) multiplicity, or the number of different arrangements experienced by a child per day or week (Morrissey, 2008), and (d) longitudinal stability over time. The present paper examines the first and last of these types of stability. Given recent estimates showing that a large portion of preschool-age children in the United States are regularly in center-based arrangements and studies showing the dynamic and changing nature of child care experienced by preschoolers, there is a need to examine how changes in child care arrangements may impact developmental and school readiness outcomes. Presently, the extent to which children change centers and caregivers is not well understood, and not much is known about the impact such changes may have on school readiness. Even less is known about child care stability in low-income populations, who presumably experience less stable child care than more affluent populations. Miller (2003) found that among a group of low-income 5–9 year-old children, more than half had changed child care arrangements at least once during the course of a 2-year period. Less is known about the correlates or consequences of childcare instability among preschool-age children from low-income families.

A number of studies have documented the changing nature of preschool children's child care experiences. For example, the use of two or more simultaneous child care arrangements increases with age with a sharp increase occurring during the preschool years, so that by four years of age, approximately 37% of children are in multiple child care arrangements (Morrissey, 2008). One study that examined the use of multiple child care arrangements in low-income families (below 200% of federal poverty level) found that approximately 34% of preschool children with non-employed mothers and 46% with employed mothers regularly used two or more child care arrangements on a simultaneous basis (Tout, Zaslow, Ramano Papillo, & Vandivere, 2001). Staff turnover per year, a measure of child care instability, has been estimated to range between 25 and 40% for center care (Phillips, Voran, Kisker, Howes, & Whitebook, 1994; Whitebook et al., 2001; Whitebook, Sakai, & Howes, 1997) and to be about 30% for home-based providers (Kontos, Howes, Shinn, & Galinsky, 1995). In another study, Miller (2003) examined preschool and after-school child care use over a 2-year period of 3500 mothers of children 5–9 years of age who had received welfare assistance, and found that more than half who used child care had changed child care arrangements at some point.

Current recommendations concerning the stability of child care for preschoolers are often based on conclusions drawn from attachment

theory. Evidence from attachment research suggests that the formation of warm and secure attachment relationships with caregivers fosters children's intellectual skills and social and emotional competency. Children who form positive, secure attachment relationships with caregivers show better performance on measures of cognitive development, fewer problem behaviors, and more positive peer relationships in school than children who form less-secure attachment relationships (Elicker & Fortner-Wood, 1995; Goossens & van IJzendoorn, 1990; Howes & Hamilton, 1992; Moss, Parent, Gosselin, Rousseau, & St-Laurent, 1996). Secure and positive attachment relationships between children and their caregivers take time to develop (Raikes, 1993). Continuity or consistency in children's child care arrangements or caregivers over time may help facilitate the development of secure and positive caregiver–child relationships by providing caregivers the time and opportunity to learn the behavioral patterns and interaction style of the child, and provide appropriate care accordingly. Children who remain in the same child care arrangements and are cared for by the same caregivers over time may come to develop expectations about the availability and behaviors of the caregivers, and thus, may be more willing to form close relationships with their caregivers. Conversely, children who are constantly shuffled from one caregiver or care arrangement to another may begin to experience a sense of loss, which can affect their ability and willingness to form enduring relationships (Howes, 1988). Howes and Hamilton (1992) found that children who experience multiple caregiver changes have more difficulty in forming secure attachment relationships to new caregivers. Howes (1988), examining multiplicity of care arrangements during the preschool years, found that children who were in fewer child care arrangements concurrently (controlling for family characteristics such as education, work satisfaction, work status, and family structure) were rated later by their first grade teacher as having made more academic progress at the end of the year than other children.

The notion that continuous and stable child care may be better for preschoolers is also supported by research that suggests that children's stability of care arrangements may be linked to a number of child and school readiness outcomes. Stability has been implicated in children's behavioral problems and social competence with peers. Howes and Hamilton (1993) tested the effects of primary teacher changes (spanning the toddler and preschool years) on children's aggression and withdrawal behavior at four years of age after controlling for the quality of children's child care. The authors found that children who experienced more primary teacher changes were more aggressive at age four. They also found that changes in primary teacher predicted children's withdrawal behavior; children who changed from one primary teacher to another were more withdrawn behaviorally than children who had not changed primary teachers. There was evidence that the nature of the caregiver change was a moderating influence on children's behavior; children were less likely to exhibit behavioral problems if they experienced a change to a more positive teacher–child relationship than if they changed to a less positive teacher–child relationship. Changes in child care arrangements have also been implicated in children's social development; more changes in settings are associated with poorer social competence with peers (Howes & Stewart, 1987).

The present study investigates the stability of center care in a group of 3238 low-income, ethnically diverse, four-year-old children receiving subsidies to attend center-based child care during the 2003–2004 and 2004–2005 academic years. Children were participants in the Miami School Readiness Project, a large-scale, university–community collaborative, multi-agency, applied school readiness and program evaluation project (Winsler et al., 2008). Examining child care stability and the development of children from low-income families is particularly important given that low-income, minority preschool children are at high risk for academic problems and difficulties (Crosnoe, 2006; Duncan & Brooks-Gunn, 1997; Qi, Kaiser,

Milan, & Hancock, 2006). Consistent with contemporary emphases on both the cognitive/academic and the socio-emotional and behavioral aspects of school readiness (Denham, 2006; Snow, 2006), multiple areas of child functioning were assessed at the beginning and end of the pre-kindergarten school year, including children's cognitive, language, socio-emotional skills, and behavior problems.

Consistent with the methodological approaches used by both the NICHD Study of Early Child Care and Youth Development (NICHD ECCRN & Duncan, 2003) and the NCEDE Multi-Site Study of Pre-Kindergarten (Howes et al., 2008), the present study analyzes within-child gain scores over time with general linear mixed models in an effort to help control for both potential selection bias and systematic differences across programs in children's initial starting points, methodological problems well known within the field of early education program evaluations (Gilliam & Zigler, 2000). We examine differences within and across time in average national percentile scores on measures of school readiness for four-year-old children who (a) did or did not experience a change in child care center from the beginning to the end of the school year, and (b) children who did and did not experience a change over the year in their primary teacher/child care worker. Child gender was also examined as a potential moderator of the effects of experiencing a change in either teacher and/or center, given that prior research finds gender differences favoring girls in the school readiness of low-income children (Winsler et al., 2008) and that teacher–child relationships and the effects of child care on children are often different for boys compared to girls, with male children being more vulnerable to childcare effects (Clarke-Stewart & Allhusen, 2005; Ewing & Taylor, 2009; NICHD ECCRN, 1998).

More specifically, the research questions were: (1) To what extent are children who experience a change in child care center over the course of the year different from those who stay at the same center on cognitive, language, and socio-emotional skills, both in terms of children's initial and final status and their gains made from the beginning to the end of the year? (2) To what extent are children who experience a change in primary caregiver/teacher over the course of the year different from those who remained with the same teacher on cognitive, language, and socio-emotional skills, both in terms of children's initial and final status and their gains made from the beginning to the end of the year? and (3) Are observed differences in child outcomes as a function of teacher and/or center change moderated by child gender and ethnicity?

Although it is clear that many children from economically impoverished families experience unstable child care with respect to multiple child care arrangements (Tout et al., 2001) and child care arrangement changes over time (Miller, 2003), it was less clear what to expect in the present study where center changes and teacher changes were examined in children from low-income families receiving child care subsidies. It was expected that children would experience a significant amount of caregiver/teacher change in center care because prior research suggests that one-year teacher turnover within center-based arrangements is high (25–40%) (Phillips et al., 1994; Whitebook et al., 1997; Whitebook et al., 2001). It was expected that a smaller percentage of children would experience a change of center.

Given prior research indicating that teacher change during the preschool years negatively affects children's socio-emotional health (Howes & Hamilton, 1993), it was expected that children who changed caregivers/teachers from the beginning to the end of the school year or changed centers altogether would show poorer socio-emotional outcomes and more problem behaviors than children who did not change caregivers/teachers. On the assumption that children who stay with the same teacher and center are perhaps more likely to form secure attachment relationships with their caregivers (Raikes, 1993), and these secure child–caregiver attachment relationships are likely to facilitate cognitive and language development, we hypothesized that children who changed teachers or centers would show lower language and cognitive development relative to children who did not change

teachers/centers. Based on prior research indicating that boys tend to be more adversely affected than girls by center care use (Crockenberg, 2003) and the general finding that males tend to be more vulnerable to stress than girls (Zaslow & Hayes, 1986), we hypothesized that the differences between those who did and did not experience instability would be larger for boys than for girls. Finally, we hypothesized that decrements in language and cognitive development related to changing teachers and/or centers would be larger for African American and Hispanic children than for White children. Research indicates that minority children are more likely to be exposed to risk factors early on, including racism, residential, economic, and social segregation, unsafe neighborhoods, and schools with fewer resources and qualified teachers (Duncan, Brooks-Gunn, & Klebanov, 1994; Garcia Coll et al., 1996), all of which can exacerbate the potential negative impact of experiencing teacher and/or center instability.

2. Method

2.1. Participants

Child participants for the study consisted of 3238 (47% female) four-year-old children receiving subsidies to attend center-based child care in the county of Miami-Dade, Florida, during the 2003–2004 and 2004–2005 academic years in the context of the Miami School Readiness Project (Winsler et al., 2008). The sample included in this study represents only those children who attended a center-based program for the entire school year and had at least some repeated-measures (beginning- and end-of-the-year) child assessment data. Table 1 describes the demographic data of the children and families included in the study.

At the T1 assessment, children were, on average, 49 months of age. Overall, the majority (61%) were Hispanic/Latino according to school records, with an additional 33% being Black/African American (including those of Caribbean/Haitian origin), and 6% White non-Hispanic/Caucasian or “other.” Children's strongest language, as measured by the language in which the child was assessed (determined by informal teacher report and assessor determination at time of testing), was 54% English and 46% Spanish. Certain demographic data could not be obtained for children and families for academic year 2004–2005. These data include family size and parent's ethnicity, marital status, and educational level. Hence, some demographic data reflect only children and families from the academic year 2003–2004. The majority of parents were single, divorced, or widowed (92% combined) and they typically had completed a high school education or received a GED (78%). There

Table 1
Demographic characteristics of the sample (n = 3238).

	n	M or %	SD
Child's age (in months)	3237	49.0	6.7
Child's gender			
% Male	3237	53.1	
Child's ethnicity			
% Hispanic/Latino	3197	61.4	
% Black/African American		32.9	
% Caucasian/Other		5.7	
Child's LAP-D assessment language			
% English	3234	54.4	
% Spanish		45.6	
Marital status			
% Married	2016	7.4	
% Single, divorced or widowed		92.6	
Educational level			
% Less than high school diploma/GED		6.3	
% High school diploma/GED	2023	77.5	
% Some college/vocational or above		16.2	
Family size	2024	3.3	1.1
Annual household income	2024	\$16,077	\$7357

were, on average, three members in the family and they reported, on average, an income of \$16,077.

The 516 different centers attended by the children reflect naturally occurring child care programs in the community that included for-profit, non-profit, and faith-based child care (non Head Start) centers and preschool programs that accepted child care subsidies. Home-based, family childcare programs, informal kith and kin care, and public school pre-K programs were not included in the present study. Global center quality data (using the Early Childhood Environment Rating Scale-Revised (ECERS-R; Harms, Clifford, & Cryer, 1998)) was available from a representative subset of 78 of these programs, and revealed an overall average ECERS score of 4.08 and a score of 4.12 for the subscale of quality of interactions provided by teachers/caregivers (scores within the 3–5 range on this scale indicate mediocre quality) (Winsler et al., 2008).

2.2. Measures

2.2.1. Cognitive and Language Skills

Children's cognitive and language skills were measured with the Learning Accomplishment Profile-Diagnostic (LAP-D; Nehring, Nehring, Bruni, & Randolph, 1992). The LAP-D, a norm-referenced standardized instrument, produces scale scores in four domains, each with two subscale scores: (1) cognitive – matching and counting; (2) language – comprehension and naming; (3) fine motor – writing and manipulation; and (4) gross motor – body and object movement. The items on the scales are designed to get progressively more difficult the more items the child is able to answer, with scoring starting after the basal level is established and ending when the ceiling is reached (i.e., failure to complete three out of five tasks/items). Overall standardized national percentile scores in the domains of cognitive and language were used in analyses. The instrument was administered at the beginning of the academic year (T1 September–October) and at the end of the school year (T2: May–June) by 82 educated (masters-level social workers or educational/school psychologists), bilingual (English/Spanish) assessors who had completed extensive multi-day trainings on the instrument conducted by personnel from the local collaborating university and the publisher of the instruments. The assessors arrived early in the day at their designated center and individually administered the hour-long assessment in a separate room with each child. The language the child was assessed in was based on what the teacher believed was the child's strong language. In cases where this was not clear, the assessor made the language choice after talking with the child and establishing which language was more comfortable for the child. The LAP-D exhibits strong psychometric properties. The instrument has been shown to have good internal consistency reliability within the norming sample (alphas of 0.76 to 0.92) and good content validity and construct validity (Nehring et al., 1992). Internal consistency reliability for the LAP-D within the Miami sample was 0.93 for the cognitive scale and 0.95 for language (Winsler et al., 2008).

2.2.2. Socio-emotional skills and behavior problems

Children's social-emotional skills and behavior problems were measured with parent- and teacher-reports on the Devereux Early Childhood Assessment (DECA; LeBuffe & Naglieri, 1999). Teachers and parents separately reported on children's behavior by rating them on items within four sub-scales: initiative, self-control, attachment/closeness with adults, and behavioral concerns. Surveys were given out and collected at T1 and T2. Raters used a 5-point Likert-type scale

to indicate how often within the past four weeks a child exhibited behaviors described by the assessment items (0 = Never, 1 = Rarely, 2 = Occasionally, 3 = Frequently, and 4 = Very Frequently). Example items for the initiative subscale are “chooses to do a task that was challenging for her/him” and “starts or organizes play with other children.” For the self-control subscale, example items include “listens to or respects others,” “controls her/his anger” and “handles frustration well.” Example attachment subscale items include “responds positively to adult comforting when upset” and “acts happy or excited when parent/guardian returned.” The behavior concern scale includes items such as “fights with other children” and “has temper tantrums.” The first three subscales (initiative, self-control, attachment/closeness with adults) are scored with larger numbers indicating greater socio-emotional strength while the behavior concerns scale is scored with larger numbers indicating greater problems with behavior. All four subscales are used as dependent measures in the study and are reported in terms of percentile ranks comparing how the participants fared nationally with other children the same age from the standardization sample.

Parents received the forms in English or Spanish (based on teacher knowledge of parental language or on direct parent preference when asked) upon picking up the child from the center and were asked to return the completed forms back with their child. Teachers also had the choice of completing the form in English or Spanish. Nineteen percent of the teachers and 37% of the parents completed the Spanish form at T1 and 16% of teachers and 34% of parents did so at T2.

During national standardization, the DECA was reported to have internal consistency reliability alphas of 0.90 (teacher) and 0.84 (parent) for initiative, 0.90 (teacher) and 0.86 (parent) for self-control, 0.85 (teacher) and 0.76 (parent) for attachment/closeness and 0.80 (teacher) and 0.71 (parent) for behavior concerns (LeBuffe & Naglieri, 1999). Further, the authors report criterion-related validity in that DECA scores reliably distinguish children with known emotional and behavioral problems from normally developing children. Internal consistency reliabilities for the Miami sample were 0.91 (parent) and 0.94 (teacher) for total protective factors and 0.72 (parent) and 0.81 (teacher) for behavior concerns (Winsler et al., 2008).

2.2.3. Center and teacher change

Teacher/caregiver change and center change status were coded based on unique teacher and center codes collected at the beginning (T1) and end (T2) of the school year. Teacher/caregiver change was defined as the child having a different teacher/caregiver code (based on the primary teacher who completed the DECA) from the beginning to the end of the school year, but having remained in the same center. Center/provider change was defined as the child being at a different center at T1 and T2.

A small percentage of families ($n = 273$; 8%) who had both T1 and T2 child assessment data at age four attended a different center from the beginning to the end of the four-year-old preschool school year. It is important to note that this is an underestimate of the degree to which children receiving child care subsidies change centers because it does not include the 22% of children who were not reachable for the assessment at T2. Included among children without T2 assessment data are an unknown number of children who may have switched to a new, nonparticipating center. The subsample of children who were not assessed at T2 was examined to see if they were different in terms of demographic characteristics and T1 functioning compared to those

Notes to Table 2

^a Significant time effect $p < 0.05$.

^b Significant change group main effect $p < 0.05$.

^c Significant change group, by time, by ethnicity interaction $p < 0.05$.

Table 2
School readiness scores at T1 and T2 for center change, overall and by gender and ethnicity.

	Change of center (Δ)		Stable center (s)	
	T1	T2	T1	T2
LAPD Cognitive skills^a				
Overall ($N_{\Delta} = 258, N_s = 2828$)	40.61 (28.16)	48.08 (26.37)	39.82 (27.41)	45.65 (27.31)
Boys ($N_{\Delta} = 138, N_s = 1507$)	33.99 (26.96)	42.78 (27.04)	37.21 (26.78)	43.05 (26.86)
Girls ($N_{\Delta} = 120, N_s = 1321$)	48.23 (27.69)	54.18 (24.29)	42.83 (27.82)	48.61 (27.55)
White ($N_{\Delta} = 19, N_s = 146$)	38.16 (24.40)	50.84 (24.80)	46.05 (27.93)	49.84 (28.70)
Latino ($N_{\Delta} = 138, N_s = 1740$)	38.57 (27.74)	47.57 (26.83)	38.23 (26.36)	43.72 (26.73)
Black ($N_{\Delta} = 98, N_s = 909$)	44.47 (29.28)	48.74 (26.43)	42.28 (29.02)	48.90 (27.93)
LAPD Language skills^{a,c}				
Overall	33.17 (26.23)	44.58 (27.88)	30.56 (25.69)	39.42 (26.97)
Boys	28.50 (24.92)	39.74 (27.34)	28.78 (24.97)	37.14 (26.24)
Girls	38.55 (26.77)	50.16 (27.57)	32.62 (26.35)	42.04 (27.56)
White	33.79 (24.14)	51.37 (27.85)	34.94 (27.43)	48.18 (27.63)
Latino	29.41 (23.83)	42.41 (27.49)	28.52 (24.85)	36.15 (26.09)
Black	38.43 (28.93)	46.87 (28.47)	34.19 (26.72)	44.60 (27.66)
DECA-teacher Initiative^{a,b,c}				
Overall ($N_{\Delta} = 169, N_s = 2131$)	50.12 (27.93)	55.46 (27.94)	53.33 (28.90)	60.38 (29.15)
Boys ($N_{\Delta} = 89, N_s = 1131$)	46.96 (27.26)	51.00 (28.72)	48.69 (28.90)	55.41 (29.64)
Girls ($N_{\Delta} = 80, N_s = 1000$)	53.64 (28.42)	60.41 (26.34)	58.56 (27.99)	65.98 (27.54)
White ($N_{\Delta} = 16, N_s = 118$)	53.00 (27.46)	64.13 (31.95)	57.41 (27.95)	62.94 (28.82)
Latino ($N_{\Delta} = 89, N_s = 1303$)	45.37 (28.58)	57.04 (28.76)	51.56 (28.95)	59.20 (29.28)
Black ($N_{\Delta} = 61, N_s = 689$)	56.28 (25.71)	51.08 (25.27)	56.11 (28.70)	61.97 (29.05)
Self-control^b				
Overall	60.75 (26.16)	61.61 (27.14)	62.55 (27.75)	65.03 (27.88)
Boys	57.17 (26.36)	56.20 (27.74)	58.29 (28.83)	59.87 (28.92)
Girls	64.73 (25.52)	67.63 (25.28)	67.34 (25.67)	70.85 (25.44)
White	72.63 (19.04)	75.81 (21.75)	64.99 (26.16)	65.54 (25.16)
Latino	61.24 (28.29)	65.90 (28.07)	64.47 (26.94)	67.41 (27.02)
Black	57.98 (23.50)	52.56 (24.37)	58.16 (29.09)	60.03 (29.36)
Attachment^{a,b,c}				
Overall	44.62 (26.05)	46.33 (27.11)	48.38 (27.53)	51.48 (28.54)
Boys	40.57 (24.91)	41.11 (27.99)	44.10 (27.10)	46.73 (28.67)
Girls	49.11 (26.69)	52.13 (25.00)	53.23 (27.22)	56.84 (27.43)
White	51.19 (23.72)	57.13 (32.52)	52.67 (27.82)	54.55 (25.75)
Latino	43.04 (27.69)	49.30 (25.92)	48.43 (27.15)	51.70 (28.15)
Black	45.90 (24.23)	39.79 (26.53)	47.43 (28.14)	50.22 (29.80)
Behavior concerns^b				
Overall	53.93 (26.52)	55.07 (28.85)	54.85 (28.60)	53.44 (29.01)
Boys	58.63 (25.86)	60.39 (28.36)	60.42 (27.80)	59.66 (28.36)
Girls	48.70 (26.42)	49.15 (28.40)	48.58 (28.20)	46.44 (28.14)
White	47.94 (24.10)	55.75 (28.32)	50.77 (30.71)	51.14 (27.11)
Latino	51.57 (28.60)	51.69 (30.97)	53.40 (28.56)	52.13 (29.52)
Black	57.69 (23.55)	59.84 (25.14)	58.26 (28.24)	56.38 (28.23)
DECA-parent Initiative^a				
Overall ($N_{\Delta} = 122, N_s = 1494$)	47.59 (31.56)	50.83 (30.58)	50.54 (31.04)	54.64 (30.57)
Boys ($N_{\Delta} = 64, N_s = 803$)	41.95 (32.32)	43.92 (58.45)	48.07 (31.14)	51.80 (30.42)
Girls ($N_{\Delta} = 58, N_s = 691$)	53.81 (29.80)	58.45 (30.92)	53.35 (30.68)	57.91 (30.45)
White ($N_{\Delta} = 12, N_s = 91$)	41.08 (28.61)	50.83 (29.41)	54.69 (32.75)	60.05 (31.88)
Latino ($N_{\Delta} = 70, N_s = 953$)	50.51 (31.81)	65.69 (30.85)	50.01 (30.61)	54.97 (30.64)
Black ($N_{\Delta} = 38, N_s = 436$)	45.37 (32.30)	42.63 (29.24)	50.50 (31.61)	52.77 (30.13)
Self-control^a				
Overall	58.28 (30.23)	63.01 (29.30)	60.65 (30.51)	64.99 (28.61)
Boys	52.98 (31.97)	59.56 (29.90)	58.51 (31.00)	62.46 (28.99)
Girls	64.12 (27.27)	66.81 (28.40)	63.09 (29.77)	67.88 (27.90)
White	56.67 (28.50)	62.67 (31.11)	62.49 (32.65)	67.54 (31.24)
Latino	63.37 (29.51)	66.80 (29.19)	61.60 (29.63)	66.33 (27.82)
Black	50.92 (30.47)	58.00 (27.98)	58.32 (31.80)	61.13 (29.59)
Attachment				
Overall	37.15 (31.17)	38.12 (30.92)	37.57 (30.29)	38.28 (30.44)
Boys	37.11 (33.91)	36.23 (32.72)	35.91 (29.64)	36.56 (29.97)
Girls	37.19 (28.11)	40.21 (28.94)	39.41 (30.88)	40.32 (30.89)
White	47.33 (31.78)	43.58 (27.37)	44.80 (32.40)	47.59 (30.65)
Latino	41.54 (31.21)	39.80 (31.03)	38.66 (30.18)	38.97 (30.45)
Black	26.84 (29.28)	32.84 (31.27)	33.47 (29.70)	34.62 (30.08)
Behavior concerns^a				
Overall	70.94 (30.80)	66.61 (31.27)	71.27 (27.96)	69.35 (28.47)
Boys	77.58 (27.61)	71.82 (27.59)	74.00 (26.39)	72.45 (29.48)
Girls	63.62 (32.68)	66.54 (29.21)	68.17 (29.32)	60.16 (32.17)
White	74.17 (24.90)	65.58 (19.51)	63.49 (32.00)	61.65 (31.00)
Latino	67.63 (33.28)	64.40 (34.21)	72.28 (27.04)	69.73 (28.15)
Black	76.05 (27.54)	70.26 (29.17)	70.45 (28.85)	69.99 (28.68)

present for the T2 assessment. Children with assessment data at T2 did not differ from children missing T2 assessment data on T1 assessment scores or on gender, but they did differ slightly on age ($MT1$ age in months for children with and without assessment data = 55.80 vs. 55.44; $t=2.72$, $p<0.01$). The groups did differ on ethnicity (more Black children were missing T2 assessment data than Hispanic/Latino children; $\chi^2=40.77$, $p<0.001$) and LAP-D assessment language (children with T2 assessment data were assessed more frequently in Spanish at T1 than children without assessment data; $\chi^2=163.82$, $p<0.001$).

In terms of rates of teacher change, 41% ($n=839$) of children changed caregivers from the beginning to the end of the school year. This figure includes the children ($n=566$) who stayed in the same center and the children who changed both teachers and centers ($n=273$).

3. Results

3.1. Differences between families who did and did not change centers and/or caregivers

To explore the possibility that systematic demographic differences may exist between families who changed centers or teachers versus families who did not experience a change, several demographic characteristics and child care factors were compared between these groups. Researchers have noted the importance of accounting for (either controlling statistically or examining moderating relationships) family and child care selection factors that may influence how families select/use child care for their children (Liang, Fuller, & Singer, 2000; Singer, Fuller, Keiley, & Wolf, 1998). Results of these analyses show that families who changed child care centers did not differ from families with stable child care arrangements on child gender ($\chi^2=0.02$, $p=0.90$), ethnicity ($\chi^2=2.97$, $p=0.23$), parent education ($t=1.54$, $p=0.13$), marital status ($\chi^2=0.45$, $p=0.50$) or family size ($t=1.52$, $p=0.13$), but did differ on parent income ($t=-3.19$, $p<0.01$; income of families who changed centers = \$14,371 compared to families who did not change centers = \$16,235) and on LAP-D assessment language ($\chi^2=4.67$, $p<0.05$; 11% of children who were assessed in Spanish changed child care centers compared to 14% of those who were assessed in English). Thus it would appear that those who changed to a new center throughout the year were slightly more likely to have English as their primary language and have lower family incomes than those who stayed at the same center. There were no differences between those who did and did not experience a change in teacher/caregiver for child gender ($\chi^2=0.002$, $p=0.96$), ethnicity ($\chi^2=0.96$, $p=0.62$), parent income ($t=-0.15$, $p=0.88$), education ($t=-0.63$, $p=0.53$), marital status ($\chi^2=1.01$, $p=0.32$), family size ($t=0.69$, $p=0.50$), or LAP-D assessment language ($\chi^2=1.60$, $p=0.21$).

3.2. Center change and children's outcomes

The first question addressed in the study concerned whether children who experienced a change in child care center scored differently from children who did not experience center change on cognitive, linguistic, and socio-emotional skills and behavior, both in terms of children's initial and final status and their gains made from the beginning to the end of the school year. Table 2 shows children's T1 and T2 scores on all of the outcome measures separately for children who changed and did not change centers from the beginning to the end of the year. The means are given for the overall group as well as separately for boys and girls and separately for the three ethnic groups. Consistent with our gain score approach, mixed repeated-measures MANOVAs were conducted with time as the repeated measure, first with the two LAP-D measures, then with the four teacher DECA measures, and finally with the four parent DECA

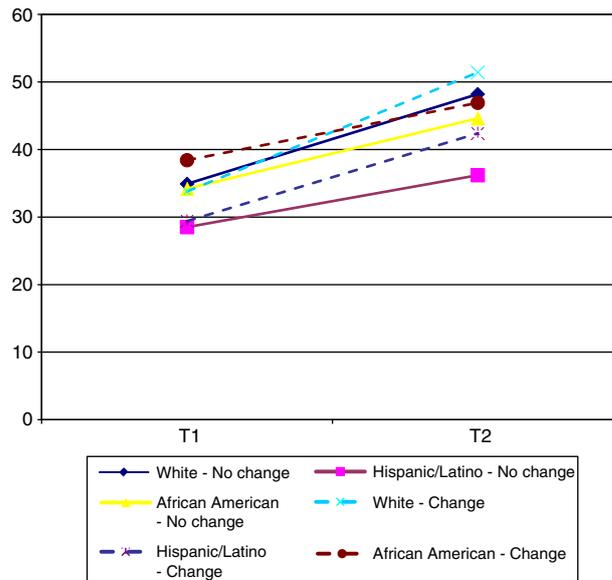


Fig. 1. T1-T2 gains on language skills for children who changed and did not change center providers by ethnic group.

variables included as dependent measures. Between-subjects variables included center change status (changed, did not change centers), gender, and ethnicity, and family income was included as a covariate. Cell sizes were not large enough for the three-way interaction, so gender and ethnicity were entered separately as between-subjects variables.

As seen in Table 2, there were significant main effects for time for all outcomes except for parent-reported attachment, indicating that both groups of children, regardless of whether they changed centers or not, generally made progress from the beginning of the year to the end of the year in terms of school readiness when compared to national percentiles for their age group. None of the interactions between time and center change group proved significant, indicating that, overall, the same patterns over time in children's school readiness scores occurred regardless of whether children changed to a different center or not. There were three notable between-subjects effects for change group. Children who stayed at the same center started and ended the year higher in terms of both teacher-reported initiative and attachment than children who changed centers ($F[1, 2299]=4.09$, $p<0.05$ and $F[1, 2299]=5.49$, $p<0.05$ respectively). Also, children's language skills were higher (at both T1 and T2) for those children who changed providers during the course of the year compared to those who stayed at the same center all year ($F[1, 3085]=6.24$, $p<0.05$).

There were no significant interactions between center change, time, and gender, indicating that the same change patterns over time were observed for both boys and girls. There were, however, interactions between center change, time, and ethnicity. While most children's language skills increased considerably from T1 to T2, language gains made by African American children who changed centers was smaller (group-by-time-by-change status interaction $F[2, 3044]=2.92$, $p<0.05$) (see Fig. 1). Similarly, while teacher-reported initiative ($F[2, 2270]=7.35$, $p<0.05$) and adult closeness/attachment ($F[2, 2270]=3.35$, $p<0.05$) increased for most children, this was not the case for African American children who changed centers, who lost ground in these areas from the beginning to the end of the year (for this group of children, initiative decreased from the 56th to the 51st percentile and adult closeness decreased from the 46th to the 40th percentile) (the pattern for initiative can be seen in Fig. 2).

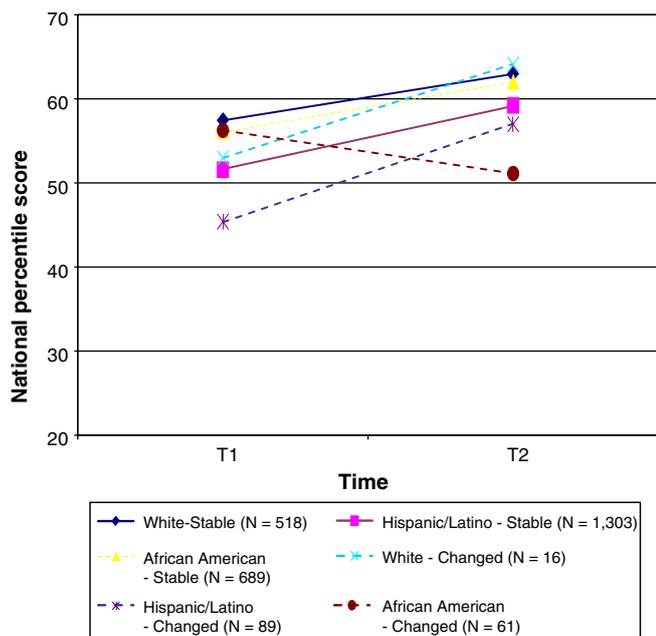


Fig. 2. T1–T2 gains on teacher-reported initiative for children who changed and did not change center providers by ethnic group.

3.3. Teacher change and children's outcomes

The second research question concerned whether children who changed only teachers scored differently from children who do not change teachers on measures of cognitive, linguistic, and socio-emotional skills at the beginning and end of the school year, and their gains/losses made from the beginning to the end of the school year. Table 3 shows children's T1 and T2 scores separately for children who changed and did not change teachers from the beginning to the end of the school year, both overall and by ethnic and gender groups. As shown in Table 3, children from both groups generally made progress in all areas as shown by significant main effects for time, regardless of whether they experienced a change in teacher. Significant multivariate interactions between time and teacher change status did emerge, however, for the DECA Teacher $F(4, 2069) = 3.25, p < 0.05$. In terms of gains/losses made from the beginning to the end of the school year, children who kept the same teacher showed larger T1–T2 increases on teacher-reported initiative ($F[1, 2702] = 4.83, p < 0.05$) and adult closeness/attachment ($F[1, 2072] = 3.96, p < 0.05$) than children who changed caregivers/teachers. Interestingly, children who changed teachers showed a healthy decrease from the beginning to the end of the school year on teacher-reported behavior concerns ($F[1, 2072] = 4.33, p < 0.05$) whereas this was not true for children whose caregivers/teacher remained stable. It is notable that children who changed centers also had the highest teacher-reported child behavior concerns at the beginning of the year, perhaps indicating a poor fit between child and teacher and a potential reason for the teacher switch in the first year.

There were several main effects for teacher change status. Children who stayed with the same teacher started and ended the year higher on fine motor skills ($F[1, 3085] = 5.31, p < 0.05$), cognitive skills ($F[1, 3085] = 11.03, p < 0.05$) language skills ($F[1, 3085] = 14.38, p < 0.05$), teacher-reported initiative ($F[1, 2072] = 5.98, p < 0.05$), self control ($F[1, 2072] = 13.05, p < 0.05$) adult closeness ($F[1, 2072] = 7.85, p < 0.05$) parent-reported initiative ($F[1, 1357] = 4.07, p < 0.05$), self control ($F[1, 1357] = 4.96, p < 0.05$), and lower on teacher-reported behavior concerns ($F[1, 2072] = 4.42, p < 0.05$) than children who experienced a change of teacher.

The impact of caregiver/teacher change differed significantly by gender in one case such that boys who experienced a change of caregiver showed a smaller increase in cognitive skills from the beginning to the end of the school year (increase from the 35th to the 39th percentile) compared to other groups (gender-by-time-by-change status interaction $F[1, 1952] = 3.87, p < 0.05$) (see Fig. 3). Also, parent-reported DECA initiative revealed a marginally significant gender-by-time-by-change status interaction ($F[1, 1546] = 3.42, p = 0.06$) indicating again that boys who changed teachers showed the smallest gains over time compared to all other groups. There were no significant interactions involving ethnicity for teacher change.

4. Discussion

The main goal of this study was to examine whether low-income children who experience a change in their child care provider or who experience a change of primary teacher over the course of the year score worse on a variety of school readiness measures from children who do not experience such changes in their caregiving environment during their four-year-old pre-kindergarten year. Also of interest was whether lack of stability in either teacher or center had the same consequences for children's school readiness for children of different ethnic and gender groups. Assessing the influence of center-based child care on children's outcomes prior to school entry is an important area of study given recent estimates indicating that approximately 45% of preschool-age children use center-based child care on a regular basis (U. S. Department of Education, National Center for Education Statistics, 2008). However, currently little is known about the extent to which changes in center care arrangements and teachers within center care are associated with young children's developmental outcomes. Even less is known about the impact of these center-based experiences in low-income populations, whose school readiness by the time they reach grade-school age lags behind their more affluent counterparts (August & Hakuta, 1997; Bradley & Corwyn, 2002; Duncan & Brooks-Gunn, 1997), making the low-income, child care subsidy-receiving population an important group to study. The present study contributes to the literature by examining the relationship between center and teacher stability and children's outcomes in a large and typically understudied (mostly Latino and Black) population of low-income children receiving subsidies to attend center-based child care in the community.

Results of the study showed that four-year-old low-income children receiving subsidies to attend center-based child care programs in the Miami community experience considerable change in their primary caregivers over the course of their four-year-old year. Forty-one percent of children in this study experienced a change in their primary caregiver from the beginning to the end of the school year. Changing from one child care center to another from the beginning to the end of the school year in this study was not as common, at about 8%, but this is clearly an underestimate of the prevalence of center change experienced by this low-income population given that this number only represents the children who were reachable at the end of the year for T2 child assessments after having continued to be eligible for childcare subsidies at the end of the year and after moving to another subsidy-accepting center that was participating in the study. Clearly, many other children left the center to go somewhere else by the end of the year and simply were not found for the T2 assessment. However, it is clear that low-income children commonly experience changes in their primary teacher from the beginning to the end of the school year even when they stay at the same center.

Family income likely plays a role in the ability of families to purchase high-quality child care, a feature of child care that has been linked to fewer changes in child care arrangements over time (Tran & Weinraub, 2006). In the present study, involving only low-income families qualifying for child care subsidies, the families who switched

Table 3
School readiness scores at T1 and T2 for teacher change, overall and by gender and ethnicity.

	Changed teacher (Δ)		Same teacher (s)	
	T1	T2	T1	T2
LAPD Cognitive skills^{a,b,c}				
Overall ($N_{\Delta} = 789, N_s = 1167$)	37.93 (26.92)	43.28 (26.80)	41.82 (27.89)	47.00 (27.43)
Boys ($N_{\Delta} = 430, N_s = 629$)	34.95 (25.71)	39.23 (26.35)	38.37 (27.22)	44.36 (26.84)
Girls ($N_{\Delta} = 359, N_s = 538$)	41.50 (27.92)	48.14 (26.57)	41.50 (27.92)	50.08 (27.81)
White ($N_{\Delta} = 40, N_s = 53$)	48.25 (26.87)	53.53 (27.71)	44.72 (28.77)	49.57 (28.09)
Latino ($N_{\Delta} = 490, N_s = 709$)	36.17 (25.69)	41.53 (26.36)	40.38 (27.10)	44.59 (26.63)
Black ($N_{\Delta} = 254, N_s = 392$)	40.07 (28.78)	45.02 (27.20)	44.64 (29.02)	51.51 (28.29)
LAPD Language skills^{a,b}				
Overall	29.49 (24.62)	36.56 (26.04)	33.60 (26.89)	40.91 (27.57)
Boys	27.83 (24.22)	34.07 (24.98)	31.18 (25.83)	38.21 (27.05)
Girls	31.47 (24.98)	39.55 (26.98)	36.43 (27.84)	44.06 (27.86)
White	35.95 (25.52)	52.10 (29.24)	39.17 (30.50)	48.08 (27.47)
Latino	28.00 (24.36)	32.94 (24.62)	31.20 (26.19)	37.27 (26.93)
Black	31.68 (24.85)	41.37 (26.75)	37.77 (27.29)	46.84 (27.78)
DECA-teacher Initiative^{a,b,d}				
Overall ($N_{\Delta} = 839, N_s = 1235$)	52.26 (29.01)	57.46 (29.38)	53.62 (28.85)	61.62 (28.89)
Boys ($N_{\Delta} = 452, N_s = 664$)	48.20 (28.81)	52.90 (30.08)	48.76 (28.69)	56.28 (29.28)
Girls ($N_{\Delta} = 387, N_s = 571$)	56.99 (28.57)	62.78 (27.63)	59.28 (28.03)	67.83 (27.16)
White ($N_{\Delta} = 43, N_s = 56$)	55.93 (28.22)	59.12 (30.67)	55.91 (27.79)	62.27 (27.43)
Latino ($N_{\Delta} = 523, N_s = 750$)	51.51 (29.08)	58.03 (28.08)	50.94 (28.97)	59.75 (29.51)
Black ($N_{\Delta} = 267, N_s = 413$)	53.59 (29.07)	55.83 (29.98)	58.17 (28.27)	64.77 (27.84)
Self-control^{a,b,d}				
Overall	60.07 (29.14)	62.02 (29.26)	63.69 (26.87)	66.32 (26.70)
Boys	55.17 (29.81)	56.84 (30.13)	60.23 (28.05)	61.25 (27.77)
Girls	65.81 (27.27)	68.07 (27.02)	67.71 (24.85)	72.22 (24.12)
White	61.12 (27.04)	60.26 (28.06)	63.32 (26.29)	65.11 (23.81)
Latino	63.25 (28.37)	65.58 (28.52)	64.76 (26.24)	68.03 (25.93)
Black	54.13 (29.92)	55.25 (29.81)	61.17 (28.06)	62.82 (28.18)
Attachment^{a,b,d}				
Overall	46.92 (28.66)	48.37 (28.73)	48.60 (26.74)	52.65 (27.96)
Boys	42.94 (28.27)	44.19 (29.34)	44.26 (26.01)	46.99 (27.78)
Girls	51.57 (28.44)	53.25 (27.23)	53.66 (26.72)	59.24 (26.74)
White	50.77 (25.63)	51.26 (26.71)	51.80 (27.27)	53.23 (23.17)
Latino	47.91 (28.99)	49.86 (28.38)	47.91 (26.10)	52.48 (27.58)
Black	44.93 (28.44)	45.04 (29.60)	48.88 (27.78)	52.39 (29.46)
Behavior concerns^{a,b,d}				
Overall	57.33 (28.75)	54.30 (29.21)	53.66 (28.27)	53.32 (28.74)
Boys	62.30 (27.40)	60.43 (28.05)	59.65 (27.67)	59.37 (28.25)
Girls	51.53 (29.23)	47.15 (28.95)	46.70 (27.39)	46.28 (27.72)
White	55.58 (33.03)	53.56 (28.25)	53.52 (28.46)	53.02 (27.26)
Latino	54.94 (28.75)	52.72 (29.98)	52.78 (28.29)	52.11 (29.24)
Black	62.06 (27.68)	57.70 (27.60)	55.23 (28.45)	55.45 (28.08)
DECA-parent Initiative^{a,b}				
Overall ($N_{\Delta} = 539, N_s = 820$)	49.01 (31.36)	52.81 (30.80)	52.11 (30.52)	55.67 (30.07)
Boys ($N_{\Delta} = 297, N_s = 443$)	48.29 (31.64)	50.12 (31.10)	48.99 (30.66)	53.39 (29.56)
Girls ($N_{\Delta} = 242, N_s = 377$)	49.89 (31.04)	56.10 (30.16)	55.77 (29.98)	58.35 (30.48)
White ($N_{\Delta} = 27, N_s = 38$)	54.11 (36.95)	59.33 (34.96)	51.21 (31.84)	58.18 (31.25)
Latino ($N_{\Delta} = 355, N_s = 520$)	48.86 (30.98)	53.57 (30.70)	51.61 (30.04)	56.27 (30.21)
Black ($N_{\Delta} = 153, N_s = 251$)	48.99 (31.43)	49.96 (30.26)	52.59 (31.47)	53.99 (29.79)
Self-control^{a,b}				
Overall	58.45 (31.26)	62.66 (29.50)	61.83 (29.55)	65.60 (28.16)
Boys	55.89 (31.89)	59.91 (30.56)	60.11 (29.79)	63.90 (27.71)
Girls	61.60 (30.24)	66.04 (27.84)	63.85 (29.18)	67.60 (28.58)
White	56.19 (33.75)	56.63 (35.14)	56.82 (34.45)	66.13 (31.06)
Latino	60.17 (30.45)	66.03 (28.00)	62.78 (28.52)	66.18 (27.81)
Black	55.60 (32.51)	56.05 (30.67)	60.54 (30.83)	63.73 (28.82)
Attachment				
Overall	36.78 (30.90)	38.26 (30.87)	38.30 (29.92)	37.95 (29.86)
Boys	36.11 (31.12)	35.97 (30.23)	36.47 (29.05)	36.90 (29.77)
Girls	37.60 (30.67)	41.06 (31.47)	40.46 (30.81)	39.17 (29.97)
White	52.44 (38.61)	51.11 (32.73)	45.18 (31.14)	42.08 (29.25)
Latino	37.71 (30.19)	39.63 (30.81)	39.91 (30.06)	38.44 (29.75)
Black	32.17 (30.34)	32.22 (29.62)	33.73 (29.24)	35.98 (30.37)
Behavior concerns^a				
Overall	72.17 (28.53)	69.50 (29.18)	70.65 (27.88)	69.35 (27.73)
Boys	76.06 (26.99)	73.05 (28.21)	73.49 (25.96)	71.07 (26.84)
Girls	67.41 (29.67)	65.15 (29.82)	67.31 (29.66)	67.33 (28.65)
White	66.11 (33.29)	63.78 (30.90)	66.95 (32.18)	64.26 (28.38)
Latino	72.38 (28.16)	68.83 (29.39)	71.78 (26.81)	69.82 (27.57)
Black	72.64 (28.72)	71.89 (28.69)	68.42 (29.41)	68.91 (28.26)

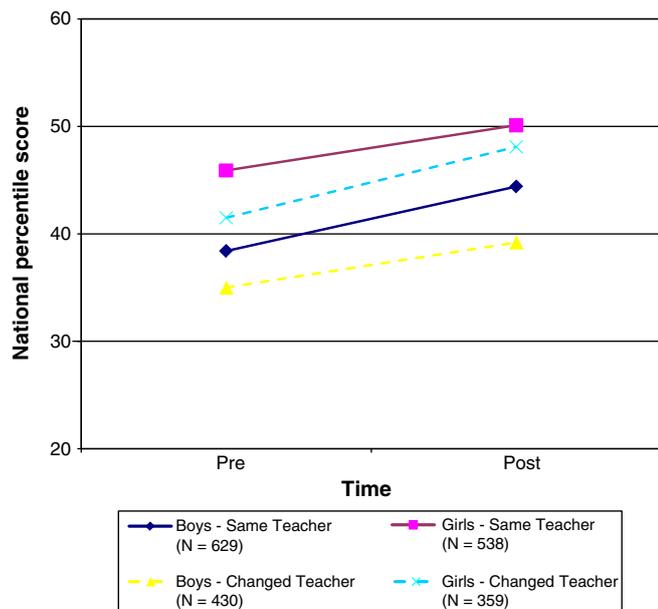


Fig. 3. T1-T2 gains on cognitive skills for children who changed and did not change teachers by gender.

centers during the year were similar on all dimensions to the others, except they did have lower family incomes than those who stayed at the same centers all year. This suggests that even within low-income families who are receiving subsidies to help pay for child care, those with only slightly more income are able to afford more stable child care arrangements.

The children who changed centers in this multilingual community were slightly more likely to have English (than Spanish) as their stronger/assessment language. Prior research suggests that Latino families are more likely to use familial care and home-based providers than center-based care (Hirshberg, Shih-Cheng Huang, & Fuller, 2004), and that Latino parents prefer caregivers with whom they are familiar and share a similar Spanish language heritage (Fuller, Hollaway, & Liang, 1996). Latino children with relatively stronger skills in Spanish were not more likely to change centers, and, in fact, were less likely to change centers than English-speaking children. This suggests a few possibilities. One, it may be that Latino families have fewer child care centers to choose from that offer Spanish-speaking teachers. Or that perhaps Latino families in this community are able to fulfill their desires to find a child care arrangement in which the bilingual language needs of their children are being met. This is not particularly surprising given the Miami context, where there is more access to Spanish-speaking child care arrangements than in many other communities (Administration for Children & Families, 2009).

4.1. Center change and child outcomes

With the steady increase in the use of center-based child care by families over the last three decades, it is important to understand how children participating in such care are faring in terms of school readiness and development outcomes. Given the abundance of research showing how children from low-income backgrounds are less ready for school and show poorer developmental outcomes upon reaching school age

than children from more affluent backgrounds (Crosnoe, 2006; Duncan & Brooks-Gunn, 1997), it is important to understand how experiences in center-based child care affect children from less privileged backgrounds. In terms of the school readiness gains observed by all children, there were few differences observed as a function of center change status in the overall pattern of progress over time made during the pre-kindergarten year in cognitive, language, behavioral, and social development. Consistent with earlier reports from the Miami School Readiness Project (Winsler et al., 2008), children attending center-based child care in the community, as a group, generally made good progress in all areas relative to national norms on these standardized instruments. These findings suggest that children from low-income families participating in center-based child care—regardless of whether they experience a change in center—during their four-year-old preschool year show benefits in a number of school readiness measures, including cognitive, language, and socio-emotional skills. These findings are consistent with prior research that has found positive links between center care use and development in the areas of cognitive, language, and pre-academic skills in economically diverse populations (Loeb et al., 2007; NICHD ECCRN, 2000, 2008; NICHD ECCRN & Duncan, 2003) and cognitive development in low-income populations (Fuller et al., 2002; Loeb et al., 2004).

Of particular concern, however, were several significant three-way ethnic-group, by time, by center-change status interactions with disturbing trends concerning specifically African American children. While most children's language skills increased considerably from the beginning to the end of the year, language gains made specifically by African American children who changed centers were smaller. Also, while teacher-reported child initiative and adult closeness/attachment increased for most children over the year, this was not the case for African American children who experienced a change in their child care centers – these children lost ground in these areas from the beginning to the end of the year. Prior research shows that minority children tend to have more adjustment issues transitioning from preschool to kindergarten than other children (Rimm-Kaufman, Pianta, & Cox, 2000). A similar transitional process may be occurring for African American children when they transition from one child care center to another. One possibility is that changes in child care centers may be accompanied by a shift in the ethnic and income composition of children, which may affect children's behavior and ability to adapt to new environments. It may also be the case that caregivers or teachers need time to adjust to the learning styles and behaviors of new children; this may be particularly true for children who experience parenting styles and expectations that differ from the caregiving and teaching styles in child care centers. There was no evidence in this study that the African American children who changed centers were different at T1 on any of the measures so they did not appear to be at higher risk initially. Clearly, the finding here of poorer school readiness trajectories for African American children in poverty who experience center instability is in need of replication and further research.

Main effects for center change status revealed that children who stayed at the same center all year had higher teacher-reported initiative and attachment/closeness with adults scores, at both the beginning and end of the school year, compared to children who experienced a change in their child care center. Also, children's language skills were interestingly higher for those children who changed providers during the course of the year compared to those who stayed at the same center all year. Given that few demographic differences were observed between families who did and did not

Notes to Table 3

- ^a Significant time effect $p < 0.05$.
- ^b Significant change group main effect $p < 0.05$.
- ^c Significant change group, by time, by gender interaction $p < 0.05$.
- ^d Significant change group by time interaction $p < 0.05$.

switch centers, if one assumes that family decisions to switch centers are based somewhat on child characteristics and goodness of fit and not just on economics and convenience, these findings could indicate that parents are more comfortable and more likely to switch centers when their children can express themselves well (are high in language skills). Alternatively, it may be that children who change centers, out of necessity, are challenged to express themselves and figure out more diverse ways of communicating in a new environment. Consequently, they may have developed stronger language skills because of these more diverse language experiences. Unfortunately, we are limited in the present study by not having additional process and quality information about what was going on in the classrooms, nor do we have the much-needed qualitative information from the families about why they switched centers. Future research in this area would do well to obtain such valuable information.

4.2. Teacher change and child outcomes

This study also explored teacher stability, that is, whether or not children who stayed at the same center still had the same teacher toward the end of the school year, and whether teacher change status was associated with child outcomes. Comparisons between groups indicated that, in general, children who did not change caregivers had higher scores at the beginning and end of the school year and made more T1–T2 gains over the course of the year than children who experienced a change in primary caregivers. Children who experienced a change in their caregiver/teacher scored, on average, lower at the beginning and end of the school year on fine motor, cognitive, and language skills, and teacher-reported initiative, self-control, and adult closeness and parent-reported initiative and self-control and higher on teacher-reported behavior concerns than children who did not change their caregiver/teacher. In terms of gains made from the beginning to the end of the school year, children who kept the same teacher showed larger T1–T2 increases on teacher-reported initiative and adult closeness/attachment than children who changed teachers. Also, gender interacted with teacher change in predicting child gains over time in that boys who experienced a change of teacher throughout the school year showed smaller gains in cognitive skills than all other groups. The finding here that boys may be particularly susceptible to changes in primary teacher is consistent with other research showing that the early teacher–child relationship is more predictive of early academic outcomes for boys than for girls (Ewing & Taylor, 2009).

One interesting finding was that children who experienced a change in primary caregiver over the course of the year showed a larger decrease over time in teacher-reported behavior concerns than children who did not have a change in caregivers. It is important to note that the children who went on to experience a change in teacher also had the highest teacher-reported child behavior concerns at the beginning of the year. Perhaps there was a poor fit between child and teacher initially which contributed to the child's high levels of disruptive behavior, and the change of teacher was ultimately beneficial for the child in terms of his or her behavior. Indeed, such findings point out the complexity of research on teacher and center stability and the need in future research for rich context information about conditions present in the home and the child care center, and for information about teacher/center quality both before and after a change in the caregiver/provider occurs.

4.3. Limitations

There are a number of methodological limitations of the present research that are important to keep in mind when interpreting the results. First of all, it is unfortunate that we did not have more information about why children changed centers in the first place, nor did we know what the quality of care was pre- and post switch of

teachers and/or centers. However, the same can be said of most other child care stability studies as well. Clearly, the next step for child care stability research is to obtain detailed qualitative information about what is going on in the classrooms both before and after teachers and/or centers change. It is also unfortunate that we did not have information on family processes, including residential mobility, parental employment stability, and family structure. Children who experience a change in their child care arrangements are likely to experience instability in these other aspects of life as well. The changes in outcomes could be the result of these types of instability, rather than child care instability itself. Secondly, we did not have complete data on all relevant demographic variables for both cohorts of children included in this study, making it more difficult to fully control for selection factors when comparing children who changed and did not change teachers or centers. Also, missing data on the parent- and teacher-reported DECA was considerable (see Table 2). It is possible that parents and teachers who completed the DECA differed from those who did not, thereby, creating uncontrolled selection effects. Thus, the findings of this study need to be interpreted with this in mind. Third, our sample is not nationally representative. However, in some ways this can also be seen as a strength, because research is also needed on particular cultural communities as well. This study provides new data on the correlates of childcare stability within the unique context of community-based childcare for subsidy-receiving, low-income, ethnically diverse children in Miami. Finally, (and an issue for other child care stability research as well), by definition, children who experienced changes in centers or teachers had different teachers rating child behavior at the beginning and end of the year whereas those who did not experience a teacher change had the same person reporting at both time points. As a result, caution may be warranted in interpreting the social-emotional results because it is not clear the extent to which differences in children's social-emotional outcomes were due to differences in actual child behavior over time or to the fact that different teacher raters were involved. Fortunately, however, to partially overcome this, we also had parent reports of child behavior at both time points.

4.4. Summary and implications

In summary, the present investigation provided new and much-needed data on the school readiness outcomes and trajectories of low-income, ethnically diverse children receiving subsidies to attend center-based child care who experienced different types of instability over time in their child care arrangement – either a change of center or a change in primary caregiver within a center. Results generally supported our hypotheses about negative developmental outcomes associated with teacher and center change but effect sizes were relatively small and effects were not observed consistently for all outcomes, informants, and groups of children. All children (regardless of change status) experienced generally positive gains over time in school readiness domains while participating in center-based child care, however children who experienced stability in terms of center and caregiver showed higher scores on most school readiness measures throughout the year and greater gains from the beginning to the end of the year on teacher-reported initiative and closeness with adults than children who experienced provider/caregiver change. African American children, in particular, appear to be particularly vulnerable to changes in centers in terms of both taking initiative for their learning in the classroom and establishing close relations with their teachers; and boys appear to be more at risk of lowered cognitive development when experiencing a change of primary teacher during the four-year-old pre-kindergarten year. These findings are consistent with prior research that has found links between child care stability and children's outcomes, including research that has shown that four-year-old children who experience more primary teacher changes are more aggressive, that children who change from one primary teacher to another show more withdrawal

behavior than children who do not change teachers (Howes & Hamilton, 1993), and that children who experience more changes in child care arrangements show poorer social competence with their peers (Howes & Stewart, 1987). At the same time, these findings go beyond prior research by examining links between child care stability experiences and children's school outcomes in children from low-income families. The findings of this study show that center change and teacher change experiences may be important for low-income children, and suggest that the mechanisms relating child care stability to school outcomes may operate similarly for all groups of children across the full economic spectrum.

The findings from this study have implications for early care and education and for policy. Given potentially suboptimal child outcomes associated with center and teacher instability in early childhood, policy efforts toward maximizing teacher retention and reducing teacher turnover in early childhood program should continue and intensify (Whitebook, Sakai, & Howes, 2004). Also, although there are certainly many factors that go into parents' decisions to change their child care arrangements (most notably financial constraints and physical and/or practical necessity), when making decisions about switching child care arrangements for the needs of the child and the fit between child and center/teacher, parents can be comforted by the finding here that children who start off their year exhibiting behavior problems in the classroom with one teacher often improve in their behavior with a change of context or teacher. However, because there may be some small cost to optimal child development with a switch of center, parents should be informed that, other things being equal, if there are no other pressing reasons to switch centers and if the child is doing well at the current child care center, it may be wise to avoid the disruption associated with changing child care centers. Also, it may be helpful for low-income parents of boys and African American children (and for their teachers) to know that such children may be more likely to struggle with changes of center or primary caregiver, and that they may need additional assistance. Directors at child care centers where fixed and stable assignments of children to particular classrooms and teachers do not take place, and instead children are found in different classrooms on different days with different teachers, should take note of this study and others showing that stability of child care is important, and reconsider the use of such practices.

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