



## Research paper

## Multiple child care arrangements and school readiness in kindergarten



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## ABSTRACT

Nationally, nearly one in five children younger than age 5 experiences multiple, concurrent child care arrangements. Yet, it remains unclear whether the use of multiple arrangements contributes to school readiness at kindergarten-entry, or whether these associations vary by the timing of multiple arrangements and the type(s) of care used. Using nationally-representative data ( $N = 6450$ ), this study estimated associations between experiencing multiple arrangements at ages 9 months, 2 years, and 4 years and children's school readiness in the fall of kindergarten. It also examined whether these associations depend on the type(s) of care combined. Results from OLS and propensity score weighted regression models suggest that multiple arrangements are associated with positive, neutral, or negative school readiness outcomes depending on both the timing and the type(s) of care used.

## 1. Introduction

Historically high levels of maternal labor force participation have led to nearly 60% of children younger than age 5 years in the U.S. being regularly cared for by non-parental caregivers (Laughlin, 2013). Understanding how children's experiences in non-parental care contribute to their cognitive and socioemotional development has become a key research and policy concern. Much of this research has focused exclusively on the effects of the type, quality, and quantity of children's primary care arrangements. Yet, nearly one in every five children younger than age 5 years experiences two or more child care arrangements during a typical week (Laughlin, 2013). Consequently, the effects of multiple, concurrent arrangements on children's development are not well understood despite this being a common experience for young children.

Conceptually, experiencing multiple, concurrent arrangements has been considered as a form of child care instability, which may be disruptive to children and harmful for their development. By requiring children to transition across different caregivers and care settings, multiple arrangements may interfere with the development of sensitive and secure caregiving relationships with child care providers and provoke child stress. Prior research has found that multiple arrangements are associated with adverse socioemotional outcomes in early childhood (e.g., Claessens & Chen, 2013; Morrissey, 2009; Pilarz & Hill, 2014). Less attention has been paid to the associations between multiple arrangements and cognitive outcomes, but the limited evidence suggests that these associations likely depend on the type or quality of

care used (Gordon, Colaner, Usdansky, & Melgar, 2013; Tran & Weinraub, 2006). However, these prior studies have mostly focused on estimating concurrent associations between multiple arrangements and child outcomes during one particular developmental period. It remains unknown whether multiple arrangements matter for school readiness at kindergarten-entry, an important predictor of later school achievement (Duncan et al., 2007), or whether these associations depend on the timing of multiple arrangements relative to child age, extent of exposure to multiple arrangements, or type(s) of care used.

Given the prevalence of multiple arrangements, understanding the conditions under which multiple arrangements may influence children's development is crucial for developing effective policies and programs to support young children's development. The current study extends prior research by estimating associations between the use of multiple arrangements at three distinct developmental periods in early childhood and school readiness in the fall of kindergarten. Using nationally-representative, U.S. data, this study uses OLS and propensity score weighted (PSW) regression models to estimate associations between the number of arrangements used at ages 9 months, 2 years, and 4 years and child cognitive and socioemotional outcomes in kindergarten, as well as whether these associations vary by the type(s) of care used.

## 2. Conceptual framework

Stability and predictability in developmental settings, including

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non-parental care arrangements, is critical for fostering healthy development in early childhood (Bronfenbrenner & Morris, 2006; Sameroff, 2009). Theoretically, there are two primary reasons why multiple, concurrent arrangements may create instability in children's lives and lead to adverse developmental outcomes. First, multiple arrangements require children to transition across different caregivers and care settings across a single day or week. Because children form more secure attachment relationships and engage in higher quality interactions with more stable caregivers (Ahnert, Pinguart, & Lamb, 2006; Barnas & Cummings, 1994; Raikes, 1993), transitions across care settings may disrupt the quality and security of these relationships, which may in turn have adverse implications for children's socioemotional development (Lamb & Ahnert, 2006; Shonkoff & Phillips, 2000).

Second, children may experience transitions across multiple care settings as stressful. Prior research shows that children's cortisol levels rise from morning to afternoon on days when they attend center-based or family daycare settings in comparison to days at home, and toddlerhood, in particular, appears to be a peak period for rising cortisol levels at daycare (Vermeer & Van IJzendoorn, 2006; Watamura, Donzella, Alwin, & Gunnar, 2003). There is also evidence that this rising pattern in cortisol levels is more pronounced in lower quality settings and settings with larger peer groups and more adults (Dettling et al., 2000; Gunnar, Kryzer, Van Ryzin, & Phillips, 2010; Legendre, 2003). Frequent transitions across care settings with different peer groups, caregivers, and expectations may place children in multiple arrangements at greater risk for elevated cortisol levels. Persistent or chronic stress may alter the stress response system (Ganzel, Morris, & Wethington, 2010), with adverse implications for children's self-regulation (of attention and emotions) and behavioral development (Blair, 2010; Blair & Raver, 2015).

Nevertheless, whether or not multiple arrangements adversely affect children's development may depend on several other aspects of children's child care experiences. First, the timing of multiple arrangements with regard to child age may matter. If multiple arrangements create instability, then infants, who are engaged in the process of forming initial attachment relationships with primary caregivers, may be more adversely affected than older children (Howes & Hamilton, 1992). From a chronic stress perspective, toddlers may be more vulnerable to instability in child care settings. Therefore, experiencing multiple arrangements during infancy or toddlerhood may be associated with poorer school readiness outcomes relative to experiencing multiple arrangements during the preschool period.

Second, the extent of children's exposure to multiple arrangements may matter. On the one hand, if multiple arrangements create instability and chronic stress, then children who experience multiple arrangements for longer periods in early childhood would exhibit worse outcomes compared to children in multiple arrangements for shorter periods of time. On the other hand, the stability over time of children's care experiences also matters. Although transitions into multiple arrangements may be more challenging than transitions into a single arrangement, for configurations of regular, multiple arrangements that are stable or consistent over time, children may establish secure attachment relationships with multiple care providers and learn to navigate multiple settings over time. If this is the case, then children who are consistently in multiple arrangements in early childhood may not experience adverse outcomes.

Third, the effects of multiple arrangements on children's development are likely to depend on the types of non-parental care(s) that are combined. On average, center-based care settings provide more cognitive stimulation and planned learning activities than home-based settings but also expose children to larger peer groups and child-to-adult ratios (Dowsett, Huston, Imes, & Gennetian, 2008), which may be more stressful for children. Indeed, findings from longitudinal, correlational studies using large, national datasets typically show that center-based care is associated with poorer socioemotional skills but better cognitive skills at school entry relative to home-based care or exclusive parental

care (Coley, Votruba-Drzal, Miller, & Koury, 2013; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007; Morrissey, 2010; Votruba-Drzal, Coley, Koury, & Miller, 2013), although experimental and quasi-experimental studies of state pre-kindergarten (e.g., Gormley & Gayer, 2005; Weiland & Yoshikawa, 2013) and Head Start programs (U.S. Department of Health and Human Services, 2010) have not found negative impacts on children's socioemotional outcomes. These correlational studies also suggest that center-based care during the preschool period is particularly important for promoting children's cognitive skills, whereas early and extensive center-based care may take a toll on socioemotional skills (Coley et al., 2013; Loeb et al., 2007; Morrissey, 2010; Votruba-Drzal et al., 2013). Given that many publicly-subsidized and high-quality center-based programs for preschoolers, such as Head Start and state pre-kindergarten, are only offered on a part-time or school-day schedule (NSECE Project Team, 2014), parents may opt to combine a center with home-based care in order to access these options. Thus, the effects of multiple arrangements may depend on whether or not these include center-based care.

### 3. Multiple child care arrangements and early childhood development

Prior research examining the associations between the number of concurrent child care arrangements and children's development has focused on the effects of multiple arrangements on socioemotional outcomes in early childhood, prior to kindergarten-entry. In general, these studies have found that children in multiple arrangements exhibit poorer socioemotional outcomes compared to children in a single arrangement, including more externalizing and internalizing behavior problems and fewer prosocial behaviors (Claessens & Chen, 2013; De Schipper, Tavecchio, Van IJzendoorn, & Linting, 2003; De Schipper, Tavecchio, Van IJzendoorn, & Van Zeijl, 2004; De Schipper, Van IJzendoorn, & Tavecchio, 2004; Morrissey, 2009; Pilarz & Hill, 2014). One exception is a study by Loeb, Fuller, Kagan, and Carrol (2004), which found no association between the number of concurrent arrangements used and socioemotional outcomes at age 4 years, accounting for the type and quality of care and stability of care over time. Two additional studies have also found that increases in the number of concurrent arrangements used are associated with increases in the risk of child physical health problems in early childhood, including communicable illnesses and asthma diagnosis, which appears to be explained by children in multiple arrangements being exposed to more peers (Chen, 2013; Morrissey, 2013).

Recent studies also suggest that adverse effects of multiple arrangements on children's socioemotional outcomes may depend on the stability over time of multiple arrangements. Claessens and Chen (2013) found that the adverse associations between multiple arrangements and children's prosocial behaviors and conduct problems at age 4 were limited to children who were in multiple arrangements at age 4 and had no prior experience of multiple arrangements (at ages 9 months or 2 years), suggesting that stability of multiple arrangements across time may act as a buffer or that recent transitions into multiple arrangements may be driving the effects. Moreover, Pilarz and Hill (2014) found that only concurrent experiences of multiple arrangements measured at a point in time—but not stable multiple arrangements (defined as lasting six months or longer)—were associated with more behavior problems at age 3. These studies provide suggestive evidence that although transitioning into multiple arrangements may be more challenging than transitioning into a single arrangement, children may adapt to two or more regular arrangements over time. These studies do not suggest that greater cumulative exposure over time to multiple arrangements is associated with adverse outcomes.

Only two prior studies have examined differences in the effects of multiple arrangements by the timing of multiple arrangements with respect to the child's age. Using within-child fixed effects models, Morrissey (2009) found that the associations between increases in the

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