

### **Bacon Public Lectureship & White Paper**

### WHAT IS KNOWN ABOUT THIS TOPIC

Given that many children from immigrant families start school at a disadvantage relative to native-born children, researchers, policy makers, and practitioners have inquired into which prekindergarten alternatives might be most effective at boosting school readiness for this group of children.

# WHAT THIS STUDY ADDS

This synthesis report reviews research studies that have examined the effects of formal versus informal prekindergarten alternatives in the year before entering school on both academic and socioemotional measures of school readiness for children in immigrant families.

# IMPLICATIONS FOR PRACTICE & POLICY

In general, this literature review suggests that formal prekindergarten in the year before kindergarten for children in immigrant families enhances both academic and socioemotional outcomes. Public policymakers might consider broadening access to such services for this vulnerable group of children.

### Improving School Readiness: Formal versus Informal Pre-Kindergartern and Children in Immigrant Families

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### **ABSTRACT**

The United States is witnessing two major trends in its rising cohorts of young children preparing to start school: an increase in the utilization of formal (e.g., center-based) childcare options in the year before starting kindergarten and an increase in the share of these young children who come from immigrant families. Given that many children from immigrant families start school at a disadvantage relative to native-born children, researchers, policy makers, and practitioners have inquired into which prekindergarten alternatives might be most effective at boosting school readiness for this group of children. This review covers the effects of formal versus informal prekindergarten alternatives in the year before entering school on both academic and socioemotional measures of school readiness for children in immigrant families. In general, the results of this literature review show positive effects of formal prekindergarten in the year before kindergarten for children in immigrant families. This is evidenced across both academic and socioemotional domains of readiness measures. That said, there are several, noteworthy common limitations in this body of literature, which can be used to shape future research agendas and policy dialogue.

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#### INTRODUCTION

Two key trends are occurring in early childhood. First, a growing number of children are attending prekindergarten in formal settings, potentially due to a growing maternal workforce, single parenting, or changes to job prospects (Burchinal, 1999; Committee of Family and Work Policies, 2003; Spain & Bianchi, 1996; Takanishi, 2004; West, Denton & Germino-Hausken, 1999; Yamauchi & Leigh, 2011). These formal and school-like prekindergarten settings include center-based care and Head Start; features might include care outside the child's home, trained providers, extensive peer interaction, and an overt focus on development and learning (Cannon, Jacknowitz & Karoly, 2012; Clark-Stewart et al., 1994; Crosnoe, 2007; Scarr, 1998; Takanishi, 2004). In contrast, fewer children are now found exclusively in informal care settings, which encompass parental care, relative care, and non-relative non-parental care such as a babysitter or nanny; these currently less-common options are characterized by likely taking place in the child's home, having unstructured activities, untrained providers, no overt focus on development or learning, and potentially less peer interaction (Crosnoe, 2007).

Blau and Currie (2004) found that generally speaking, most prekindergarten-aged children in the U.S. are now being cared for in formal settings – and the majority of these children are found in center-based care (Administration for Children and Families, 2006; Loeb et al., 2007). Recent research has shown that of a national sample of children who were in prekindergarten in the year before entering kindergarten, approximately 70 percent were in a center (Gottfried, 2014). Given this increased utilization of formal prekindergarten care, researchers have inquired as to whether it is indeed an effective option for preparing children to start school – i.e., in boosting school readiness, which is defined by Crosnoe (2007) as: "the cognitive, social, and emotional skills that allow children to 'get a good start' in elementary school" (p. 153).

On average, children tend to be more academically schoolready from having attended formal prekindergarten prior to

starting kindergarten (Burchinal, 1999; Campbell et al., 2001; Gilliam & Zigler, 2001; Loeb et al., 2004; Loeb et al., 2007; Magnuson et al., 2004; National Institute of Child Health and Human Development [NICHD], 2006). This is especially pertinent for those children attending formal prekindergarten in the year directly before entering kindergarten (Barnett, 1995; Currie, 2001). Additionally, research shows prekindergarten attendance is particularly beneficial for children from racial minority groups and higher-poverty families (Campbell et al., 2002; Currie & Thomas, 1999; Gormley & Phillips, 2005; Loeb et al., 2007; Magnuson et al., 2004). On the other hand, findings also show formal prekindergarten attendance reduces positive socioemotional growth and increases problem behaviors (Baker, Gruber & Milligan, 2008; Belsky, 1999; Belsky et al., 2007; Burchinal, 1999; Gormley & Gayer, 2005; Herbst & Tekin, 2010; Loeb et al., 2007; NICHD, 2006; Magnuson et al., 2007; Vandell & Corasaniti, 1990; Yamauchi & Leigh, 2011). Researchers have also found socioemotional outcomes might be improved by attending formal prekindergarten for some groups of children, such as children of higher poverty (Brandon, 2004; Fuller, 2007; Loeb et al., 2007; Votruba-Dzral et al., 2004). Therefore, the implications of these studies remain mixed, depending on the policy objective (e.g., preparing different subsets of children academically versus socioemotionally to start school might lead to different prekindergarten recommendations).

As a second trend, more and more young children from immigrant families are making up the share of school-age children (Hernandez, Denton, & Macartney, 2008; O'Hare, 2004). Suarez-Orozco and Suarez-Orozco (2001), Crosnoe (2007), and Turney and Kao (2009) define children from immigrant families as: either first-generation children born outside of the U.S. or second-generation children of foreign-born parents. The terms English Learner (EL), English Language Learner (ELL), Dual Language Learner (DLL), Language Minority Students (LM), or Limited English Proficient (LEP) often attempt to describe the same population as children in immigrant families.

### **GLOSSARY**

Formal prekindergarten: Care outside the child's home, trained providers, extensive peer interaction, and an overt focus on development and learning, i.e., center-based care, Head Start

**Informal prekindergarten**: Care by likely taking place in the child's home, having unstructured activities, untrained providers, no overt focus on development or learning, and potentially less peer interaction, e.g., parents, relatives, babysitters, nanny

Children from immigrant families: 1st generation children or 2nd generation children of foreign-born parents. This term, for the purposes of this synthesis report, encompasses other, often overlapping terminology like English Learner (ELL), English Language Learner (ELL), Dual Language Learner (DLL), Language Minority Students (LM), or Limited English Proficient (LEP)

**School readiness**: The academic, social, and emotional skills that allow children to get a good start in elementary school *Academic school readiness*: English proficiency, reading skills, math skills

Socioemotional school readiness: social skills (e.g., interpersonal skills, self control, approaches to learning), problem behaviors (e.g., externalizing problems, internalizing problems)

Though these terms are commonly used to describe first- or second-generation children, these are all imperfect at describing this group; the names of these terms only encapsulate one aspect of the schooling experience of these children. At the very core, most of these terms (with the exception of DLL) are framed in a way to describe a deficit in learning the English language, though it is recognized that this is only one key trait of the majority of children in immigrant families in the U.S. (Crosnoe, 2007; Magnuson, Lahaie & Waldfogel, 2006). In addition non-English language spoken in the home may not always mean children or parents were those who moved from a different country. For example, a possible exception may be a 3rd generation child who is not an immigrant him/herself but primarily speaks a non-English language in the home due to, for example, a grandparent that lives with the family. To be as comprehensive as possible, the term "children in immigrant families" is utilized in this study although the study urges the reader to keep in mind that this term certainly encapsulates a broader concept.

Children in immigrant families continue to be a growing schooling population (Magnuson et al., 2006). Indeed, more than one-third of these children are age five or younger, and they make up approximately 25 percent of all U.S. children this same age, this number jumps to 50 percent in California (Hernandez, Denton & Macartney, 2008; Karoly & Gonzalez, 2011). Historically, children in immigrant families have been geographically located in a few states, such as California or Texas. However, the trend in U.S. immigration is no longer localized. As a result of nationwide changes in immigration patterns, some states in the South and Midwest have experienced some of the largest increases in the shares of children in immigrant families in recent decades (NCELA, 2010). Recently, the U.S. Department of Education (2014) reported the proportion of children in immigrant families in the Pacific Northwest region increased 46 percent between the 1997-1998 and 2011-2012 school years.

As a generalization, these children tend to share certain characteristics. Compared to children in native-born families, children in immigrant families tend to be of lower socioeconomic status (SES) and have parents who are less educated and less knowledgeable about the U.S. education system (Cannon, Jacknowitz & Karoly, 2012; Capps et al., 2004; Crosnoe, 2007; Karoly & Gonzalez, 2011). Even though many of the children defined as being in immigrant families are actually born in the U.S., a large majority of these children are still in families whose parents were not born in the U.S. and hence English is not spoken proficiently or at all in the home (Klingener & Artiles, 2006; Lesaux & Siegel, 2003; Zill, 1995). Almost 80 percent of the non-English spoken is Spanish (Gormley, 2008). Of course, there are many high SES immigrant families where English is spoken fluently and where parents have high

levels of education. However, the overwhelming majority of immigrant families currently moving to the U.S. do, on average, move from impoverished conditions (Capps et al., 2004; Hernandez, 2004; U.S. Department of Education, 2013).

Generally, being in low SES families, lacking English proficiency, and having lower parental educational levels (and likely less knowledge about the education system in the U.S.) places young children in immigrant families at a disproportionally higher risk of not acquiring the requisite skills to start school successfully (Cannon & Karoly, 2007; Garcia, 2000; Hammer & Miccio, 2006; Lee & Burkam, 2002; Levin & Belfield, 2002). This is further exacerbated by the fact that young children in immigrant families are more likely to remain in informal care until kindergarten and less likely to attend formal prekindergarten programs (Karoly & Gonzalez, 2011; Matthews & Jang, 2007). However, as previously mentioned, research has suggested at-risk groups can make large gains in school readiness skills by attending formal prekindergarten care (Brandon, 2004; Campbell et al., 2002; Currie & Thomas, 1999; Fuller, 2007; Loeb et al., 2007; Magnuson et al., 2004).

It has certainly been speculated that formal prekindergarten care would be especially critical for children in immigrant families as a way to close school readiness gaps. For example, attending formal prekindergarten care may provide additional opportunities for children from immigrant families to strengthen their English auditory and speaking skills (Genesee et al., 2005; Silverman & Hines, 2009). A pre-schooling experience allows these children to have early opportunities to make sense of a non-home, formal, and potentially school-like environment. This serves in stark contrast to many children in informal care who might only first experience these opportunities at kindergarten entry and not before (Reardon & Galindo, 2006; West, Denton & Reaney, 2000). In addition to the established academic benefits of attending formal prekindergarten research has found, for the general child population, children in immigrant families might experience an additional boost from attending formal care: early English-language development, hence putting them at an academic advantage once entering school (Coyne et al., 2001).

Fostering the ability of children to express needs in English might also serve as a benefit for socioemotional development. An additional year of interacting in English in a school-like environment may reduce frustration and associated problem behaviors as well as improve the ability to communicate with others in English and associated social skills. This may not be apparent for children in immigrant families who remain in parental care at home, as they would not have these same interaction opportunities (Gormley, 2008). Therefore, there are theoretical reasons to support the positive influence that formal prekindergarten care settings may have specifically for young children in immigrant families. Yet, many children in immi-

grant families do not attend formal care and risk falling behind other, non-immigrant children who do, and hence emerges a school readiness gap.

It is well established that strong skills acquired prior to kindergarten entry have implications for long-term success once children do start school - academically, socioemotionally, and socioeconomically (Claessens, Duncan & Engel, 2009; Crosnoe, 2007; Entwisle & Alexander, 2002; Lee & Burkam, 2002). Moreover, early English proficiency highly correlates with immigrant children's current and future academic performance, educational attainment, and employment prospects (August & Shanahan, 2006). Therefore, given the growing evidence that many children in immigrant families are less ready to enter school than children from native-born families (Hernandez, 2004; Crosnoe, 2006) and given the benefits from attending formal prekindergarten programs, researchers and policy makers are concerned about school readiness gaps that emerge for children in immigrant families from lack of attendance in formal prekindergarten care (Cannon & Karoly, 2007; Galindo, 2010; Rooney et al., 2006; Suarez-Orozco & Suarez-Orozco, 2001).

This school readiness gap for children in immigrant families will continue to be a concern in the U.S. as the growth in the number of school-aged children from immigrant families continues to surpass the growth in the number of nativeborn school-aged children (Fry, 2008). As a result, the issue of school readiness for school-aged children in immigrant families is now a widespread concern more than ever, and alongside the changes in immigration patterns mentioned previously, preparing children in immigrant families to enter U.S. schools is a widespread, national policy priority (Zehler et al., 2003). As a result, a range of educational stakeholders have called for greater attention to the role that formal prekindergarten may play in boosting school readiness for emerging cohorts of young children from immigrant families (Brandon, 2004; Hernandez, 2004; Shonkoff & Phillips, 2000).

The objective of this study is to summarize the findings from the quantitative research on the influence of prekindergarten on indicators of school readiness for this group. To best understand the degree to which formal prekindergarten options might be promoting school readiness for children in immigrant families, there are three guiding questions:

- 1. For children in immigrant families, does attending formal prekindergarten care (as opposed to informal care) in the year before kindergarten lead to differences in academic indictors of school readiness?
- 2. For children in immigrant families, does attending formal prekindergarten care (as opposed to informal care) in the year before kindergarten lead to differences in socioemotional indictors of school readiness?

3. What are common research limitations in the extant body of research in this area?

This study provides a first comprehensive review of the role that formal versus informal prekindergarten care in the year prior to kindergarten has played in affecting academic and socioemotional indictors of school readiness for children in immigrant families. A better understanding as to how to address school readiness for children in immigrant families appeals to a wide range of educational stakeholders. By identifying which prekindergarten care options best facilitate academic and social development, this study can help to develop more informed research agendas and policy decisions based on a broader understanding of the effects of early childhood education for a subset of young children with an increasing presence in U.S. schools.

The remainder of this article consists of six additional sections. Section 2 describes how the research studies included in this review were selected and analyzed. Section 3 presents research on the role formal prekindergarten plays on academic indictors of school readiness. Section 4 presents findings on socioemotional measures of school readiness. Section 5 presents common, but important, limitations in quantitative research in this area. Section 6 presents a summary of main findings and implications. Section 7 concludes and directs further research.

### **METHOD**

In order to develop an overview of the role of prekindergarten care on school readiness outcomes for children in immigrant families, a broad literature search was carried out. For this purpose, the following electronic searches were utilized: JSTOR, Academic Search Premier, Web of Science, ERIC, PyscInfo, and Google Scholar. The search terms for the school readiness measures included the following broad terms: "school readiness", "school entry", and "entry effects". In addition, given that school readiness itself falls into two main categories of academic readiness and socioemotional readiness as defined by Crosnoe (2007) above, the following terms were used as search terms for academic school readiness: "achievement", "academic", "reading", "literacy", "math", "English language acquisition" and "English proficiency" (both of which were considered as indicators of school readiness, given the focus on children in immigrant families), "cognitive", and "cognitive development". For socioemotional school readiness, the following terms were used as search terms for: "socioemotional", "social skills", "noncognitive development", "development", and "emotional skills."

Prekindergarten search terms included the following: "prekindergarten", "childcare", "center-based care", "center care", "preschool", "Head Start", "formal care", "out of home care", "informal care", "family child care", "parental care", "relative

care", and "non-parental care." Finally, to identify children in immigrant families, the following terms were used: "children in immigrant families", "immigrant families", "English Language Learners", "Dual Language Learners", "Language Minority", and "Limited English Proficiency". Note, the word "children" was also replaced by "students".

The following criteria had to be met in order to be included in this final sample. First, articles had to be published in the last decade (2004-2014). However, any articles that were highly referenced and deemed important to the field were considered in the initial pool, even if published prior to 2004. Second, each study must compare care types for children in immigrant families, namely formal care options versus informal care. More specifically, children in the treatment group must be in a formal setting, and children in the comparison group must be in informal settings (or vice-versa). Since this is a review comparing formal versus informal care alternatives articles focused on interventions, programs, curricula, or instruction within a single type of care option (e.g., Montessori versus traditional center-based care, bilingual versus English-only center-based care) were not considered. Third, articles must have utilized a rigorous methodology that included either an experimental or quasi-experimental design to account for an appropriate control group, addressed the nested structure of educational/schooling data, and/or included a wide span of statistical controls to account for individual differences and selection on observable variables. Fourth, articles must have relied on large samples – any sample under 30 children was considered a small sample per the rubric of Buysse et al. (2013). The intention of this review is to determine if there are established effects of prekindergarten care alternatives on children in immigrant families. Articles that relied on a quantitative, rigorous methodology and larger samples can begin to address these types of questions pertaining to effects (Ruijs & Peetsma, 2009). The methodology and samples are described in the description of each study. Fifth, articles must have focused specifically on outcome measures at school entry, or at the end of prekindergarten in the year prior to school entry, in order to evaluate school readiness. Sixth, given the particular importance of prekindergarten attendance in the year just before kindergarten (Barnett, 1995; Currie, 2001), articles must have focused on attending prekindergarten during this year. Seventh, only peer-reviewed journal articles or reports written in English were considered. Finally, articles must have addressed children in immigrant families in the U.S.

The articles in the initial sample were flagged based on information available from the titles and abstracts using the scholarly search engines listed above. Articles were deemed as potentially relevant if the title or article alluded to research pertaining to children of immigrant families, informal versus formal care types, and school readiness—using the key search

terms listed above. Searches were run using a combination of search terms and phrases until the process no longer yielded additional studies to include in the initial sample. Following these online searches, the references in this initial set of articles were used to find additional articles. This initial scan procured 40 potentially relevant articles. These 40 articles were reviewed in detail and pared down to studies that met all of the search criteria. The final sample included 10 articles. Of these, eight focused on academic outcomes, and four focused on socioemotional outcomes. Given the limited number of studies, a meta-analysis was not possible. The following is a review summary of each of these studies. Within the next two sections, academic outcomes are explored, followed by socioemotional outcomes.

### PREKINDERGARTEN CARE AND THE EFFECTS ON ACADEMIC SCHOOL READINESS

Using the methodology described above, the systematic and thorough literature review yielded eight studies on academic outcomes, seven of which concluded formal prekindergarten care in the year preceding kindergarten was correlated with positive findings. Only one article found negative effects of attending formal prekindergarten care for children in immigrant families. The three measures of academic skills included English proficiency, reading skills, and math skills. Studies assessing English proficiency used a dichotomous variable available in the data. A student was deemed English proficient if the student did not take a language screener to determine English proficiency (assuming that these children were considered English proficient) or if the student took the screener and met the threshold for English proficiency. A student was considered not English proficient if the student took the screen but did not meet the threshold for English proficiency. All studies incorporated direct testing assessments of children's reading and/or math skills in their studies, though one study (Rumberger & Tran, 2006) also utilized teacher-assessments of children's academic skills. Reading skill measures often included letter and word recognition, phonology, vocabulary, reading comprehension, and writing conventions. Math skills measures evaluated numbers, geometry, operations, spatial relations, and measurement. All but one of the studies relied on the Early Childhood Longitudinal Study—Kindergarten Class of 1998-1999 (ECLS-K) or Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) datasets, enabling similar definitions of academic skills and allowing comparability across the studies. Table 1 provides an outline of key characteristics of the studies, with the subsequent section describing the findings for each study.

### Positive Findings

Magnuson et al. (2004) explored the association of formal versus informal care in the year before kindergarten with read-

Table 1: Summary of Academic Outcome Studies (in chronological order)

Author	Year	Data	Sample Definition	Sample	Measures	Method
Magnuson et al.	2004	ECLS-K	Children whose mother spoke a non-English language	2,205 children	Math and read- ing skills	OLS regression
Magnuson, Lahaie and Waldfogel	2006	ECLS-K	Children whose mothers were born outside the U.S.	1,926 children	Math and reading skills; English profi- ciency	OLS regression
Rumberger and Tran	2006	ECLS-K	Language-minority children, i.e. children where a non- English language is regularly spoken in the home. Sub- groups of language-minority children include English, Spanish, and other language-dominant children, deter- mined by the primary language spoken in the home.	3,967 children	Math and reading skills	Hierarchical linear modeling (HLM)
Crosnoe	2007	ECLS-K	Children from Mexican immigrant families, including those born in Mexico or born in the U.S. to Mexicanborn parents	784 children	Math skills	OLS regression
Gormley	2008	Tulsa Public Schools data	Hispanic children, including children whose primary home language was Spanish and whose parent(s) were born in Mexico	315 children	Math, writing, and read- ing skills (in English and Spanish for each child)	Regression discontinuity model (comparing children who made the age cutoff versus those who did not)
Bassok	2010	ECLS-B	Hispanic children from Spanish-speaking homes	550 children	Math, writing, and reading skills	OLS regression
Cannon Jac- knowitz, and Karoly	2012	ECLS-B	Linguistically-isolated children, which they defined as: children with at least one immigrant parent, non-English language primarily used in the household, and parents with limited English proficiency	250 children	Math and reading skills	OLS regression
Bumgarner and Lin	2014	ECLS-K	First and second-generation Hispanic immigrant children	1,192 children	English profi- ciency	Logistic regression

ing and math skills assessed at kindergarten entry. To investigate this, the authors relied on the ECLS-K dataset, a nationally representative dataset of U.S school children. Children's reading and math kindergarten entry skills were defined as: letter and word recognition, associating letters with sounds, vocabulary, and reading comprehension for reading skills; and numbers, geometry, and spatial understanding for math skills. In this study, the authors specifically assessed the magnitude of this association for a sample of children whose mothers spoke a language other than English. Of the analytic sample of 12,804 children, the sub-group included 2,205 children whose mother spoke a non-English language. As for formal versus informal care, the study was able to categorize each child as attending one of four alternatives: center-based care (including prekindergarten, preschool, and center-based day care), Head Start, other non-parental care (such as relative care or nonrelative babysitters), and parental care.

This study used an ordinary least squares (OLS) regression model to estimate the relationship between care type and entry skills, controlling for a wide array of demographics, child's home and family environment measures, and neighborhood and school characteristics that, as the authors argue, may be correlated with childcare selection. The findings indicated that

children whose mothers spoke a language other than English made greater gains in academic skills in center-based care, Head Start, or other non-parental care compared to those remaining in parental care. Of all possible formal and informal care options, children in immigrant families in center-based care had the largest reading and math scores at kindergarten entry.

Magnuson, Lahaie and Waldfogel (2006), also having used the ECLS-K dataset, expanded upon the previous Magnuson et al. (2004) study by examining the role of care type in the year preceding kindergarten for a sample of children of immigrant families. The authors defined children of immigrant families as children with mothers born outside the United States (i.e., by birth country rather than by language spoken). Among the 12,626 children entering kindergarten for the first time in the Fall of 1998 in the authors' analytic sample, 1,926 were children in immigrant families. The authors expanded on the kindergarten readiness measures assessed in the Magnuson et al. (2004) study by also including English proficiency, in addition to the previously explored reading and math skills. The same care types were assessed in this study as in the Magnuson (2004) study, and included: center-based care, Head Start, nonparental care (e.g. relatives, nanny, babysitter), or parental care. Note that while the scope of the authors' study was not inten-

tionally limited to children of Spanish-speaking families, particular aspects of the data collection invariably led to a sample of Spanish-speaking immigrants. For example, if a child did not pass the English screening test, the mathematics skill assessment could also be administered in Spanish but no other foreign languages.

The methodology was similar to the previous study, including using OLS regressions with a substantial number of child and family control variables that may have been correlated with child care selection. The results indicated several statistically significant findings in favor of the utilization of formal prekindergarten care over informal care for children in immigrant families. For all children in the study, both immigrant and native-born, attending formal prekindergarten care was associated with higher reading and math scores at the start of kindergarten compared to any child who remained in informal prekindergarten care during the year before kindergarten. The authors were most concerned as to whether children in immigrant families experienced any additional benefits from formal prekindergarten care attendance compared to children in native-born families: hence, the assessment of English proficiency at the start of kindergarten. Compared to native-born children, children in immigrant families who attended centerbased care in the year before kindergarten improved English proficiency at the start of kindergarten by an additional 22%. While this result is not surprising, the findings do suggest center-based care may support children in immigrant families in reducing the English-proficiency gap with their native-born peers. Moreover, the authors further delineated the relationship by maternal language. As the authors expected, children in immigrant families whose mothers did not speak English had the highest gains in English proficiency at kindergarten entry from attending center-based prekindergarten care compared to those in informal care. The authors also found that compared to children from native-born families in informal care, children of immigrant families performed lower on the math assessment when enrolled in informal non-parental care (e.g., nanny).

Rumberger and Tran (2006), having used the ECLS-K, assessed the impact of preschool in the year preceding kindergarten on both academic and social measures of school readiness among what the authors defined as language-minority children (e.g., children where a non-English language is regularly spoken in the home). Their analytic sample included 17,124 children, 3,967 of whom were language-minority children. Consistent with prior research described thus far, formal preschool in this study was defined as center-based childcare and Head Start, and informal was non-center relative, parental, or similar care. Aspects of the study related to academic school readiness are discussed here while those related to social readiness are discussed in the next section. Rumberger and Tran (2006) fo-

cused on reading and math measures at the start of kindergarten and utilized hierarchical linear modeling (HLM) to estimate the effects of prekindergarten care, while controlling for individual background characteristics and family traits as a way to account for factors predicting preschool participation (though the authors acknowledged that controlling for all relevant characteristics was difficult and subsequently hindered their ability to assess causality). HLM was specifically chosen because it is one way to account for the nested structure of clustered data. While language minority children universally scored lower on both direct and teacher assessments in reading and math skills, the authors found that those language minority children who had attended center-based childcare had higher reading and math scores at kindergarten entry compared to other languageminority children attending Head Start program or informal care. Though Head Start programs are also considered formal childcare, language minority children enrolled in Head Start programs actually scored lower in reading and math assessments (both direct and teacher-based) than children not attending any preschool in the year prior to kindergarten entry. We hypothesize there are unobserved socioeconomic barriers also at play when considering the role of Head Start.

Gormley (2008) evaluated the effect of Oklahoma's voluntary, universal prekindergarten program for Hispanic children in the year prior to kindergarten. Data were collected from Oklahoma in 2006, including parent surveys and student assessments. From the parent surveys, it was possible to identify 160 children whose primary home language was Spanish and 155 whose parents were born in Mexico. The author evaluated reading, writing, and math skills of those children just prior to kindergarten entry. These tests were based on assessments administered in both English and Spanish using the Woodcock Johnson tests.

This study compared children who attended universal prekindergarten care to those who did not. To do so, the author utilized a regression discontinuity model where children who met the birthday cutoff to enroll in and attend the prekindergarten program (treatment group) were compared to children that did not meet the birthday cutoff and therefore had to wait to enroll in the program in the next year (control group). Based on this model, Gormley (2008) found Hispanic children, whose primary language in the home is Spanish and were in the treatment group, showed an increase in reading, writing, and math skills at kindergarten entry compared to the control group. There were no effects for Hispanic children whose primary home language was English, hence providing a differential and unique effect for children from immigrant families - a finding similar to that of Magnuson, Lahaie and Waldfogel (2006). This study also found that Hispanic children with parents born in Mexico and who were in the treatment group had higher scores on each of the three tests at kindergarten entry.

Overall, Gormley's (2008) key finding was that children who come from a home where Spanish is the primary language or from a home where the parents were born in Mexico tend to have higher school entry skills when having attended formal prekindergarten care compared to those children in the control group who did not attend formal care.

Bassok (2010), relying on a nationally representative dataset, utilized the ECLS-Birth Cohort (ECLS-B) dataset to assess the effect of care type on academic school entry skills for 7,400 children who attended prekindergarten in the year prior to school entry. Of these children in the analytic sample, 750 children were Hispanic and from English-speaking homes while 550 children were Hispanic and from Spanish-speaking homes. Consistent with the previous studies using ECLS-K, this study disaggregated care type by center-based care, Head Start, nonrelative, non-parental relative, and parental care. The first two were considered formal care, whereas the latter three were informal care. This study employed OLS to estimate the effect of preschool participation on academic outcomes, including early mathematics ability and literacy skills (letter/word recognition, phonological understanding, and writing conventions), while also employing a wide array of control measures for child, family, community, and region as a way to account for individual differences and care selection. The findings indicated that children from Spanish-speaking homes who attended centerbased care or Head Start had much higher outcomes compared to those children from Spanish-speaking homes that did not attend these programs. Interestingly, Bassok (2010) also compared children from Spanish-speaking homes to both Hispanic children from English-speaking homes as well as to White children. In both cases, the effects of formal prekindergarten care were much larger for children from Spanish-speaking homes, providing evidence as to how school readiness gaps might be able to shrink for children in immigrant families. Though the results of the mathematical assessments are not reported, the author stated these findings mirrored those of the literary skill findings.

Cannon, Jacknowitz and Karoly (2012) examined the relationship between attending center-based care in the year before kindergarten entry and early reading and math skills for a group of children termed 'linguistically isolated' (i.e., children with at least one immigrant parent, non-English language primarily used in the household, and parents with limited English proficiency). The study compared center-based care, including Head Start, to informal care options, such as relative or non-relative care in the child's or another's home. Similar to Bassok (2010), this study utilized ECLS-B data to run OLS regressions to estimate the effect of prekindergarten care on school readiness, while controlling for child, maternal, household, and regional variables. The final sample size was 4,500,

with 250 immigrant children classified as isolated, 600 as nonisolated, and 450 as English-speaking. As previously described in the review of Bassok (2010), the literary skills tested include letter/word recognition, letter-sound understanding, phonological knowledge, vocabulary, and print convention. Additionally, the mathematics assessment includes numbers, counting, operations, geometry, patterns, and measurement. Almost all children took these assessments in English. The findings were consistent with Bassok (2010) in the benefits of center-based care. All children seemed to benefit from attending centerbased care compared to informal care, with larger positive effects exhibited for linguistically-isolated children. This finding was consistent across both reading and math outcomes. Therefore, children from linguistically-isolated populations (which highly correlates with our definition of children in immigrant families) reduced entry skills gaps from attending center-based care. While all groups of children seemed to benefit from formal care, including native-born English speakers, the evidence here suggested children from immigrant families had the most to gain.

Finally, Bumgarner and Lin (2014) examined the role of center-based care on English proficiency at kindergarten entry for first and second-generation Hispanic immigrant children from the ECLS-K dataset, consisting of 1,192 children. The key variables included: a dichotomous English proficiency outcome based on a threshold for the Oral Language Development Scale 'OLDS' that measured listening comprehension, oral vocabulary, and speech at the start of kindergarten; a dichotomous variable on having attended center-based care in the year prior to kindergarten; and a continuous composite variable on SES based on family income, parent education, and parents' occupational prestige. In addition, the study also took into account a multitude of child-level, family-level, and basic regional/city characteristics in order to account for individual differences and selection of care. Using logistic regression modeling, the authors found both first and second-generation Hispanic children had higher odds of being proficient in English at the start of kindergarten when attending center-based care in the year prior to kindergarten: the odds of English proficiency were almost double the size for those children who attended center-based care compared to those who did not. Moreover, children from families who were two standard deviations below the SES mean had over six times the odds of being English proficient. The odds of having higher English proficiency for children enrolled in center-based care decreased at higher levels of SES.

### Negative Findings

Only one study reported negative findings on the influence of formal prekindergarten care on academic entry skills for children in immigrant families. Crosnoe (2007), using ECLS-K

data, compared formal and informal childcare attendance for children from Mexican immigrant families in the year preceding kindergarten and its effects on math achievement at school entry. The study examined 784 Mexican immigrant children, though an additional 1,777 children in the native Latino classification served as one of the comparison groups. Math achievement was measured through conceptual knowledge, problem solving, number, operations, and measurement. Note that literary achievement was excluded from the study due to linguistic limitations of the literary assessments for bilingual children or families, as previously described. For the purposes of the study, children from Mexican immigrant families included those born in Mexico or born in the U.S. to Mexican-born parents, thereby showing a degree of consistency with the definition applied for children from immigrant families in Bumgarner and Lin (2014), though the former study did not exclusively focus on Mexican families like the Crosnoe (2007) study. Childcare was delineated into two broad categories: informal (parental, relative, non-relative) and formal (center-based care, Head Start care). The key findings from this study were based on an OLS regression model, with math achievement regressed on indicators for care type along with child and family factors as well as indicators for urbanicity.

Crosnoe (2007) found that unlike children in Mexican immigrant families, children from native White, African American, and Latino/a children had much larger gains from attending formal prekindergarten care compared to remaining in parental care. This suggests that unlike other studies in this review, the author indicated formal prekindergarten care attendance of children from Mexican immigrant families would not help to shrink any school readiness gaps, though he does indicate this effect might have been moderated by SES. The study also reported that while all racial/ethnic sub-groups displayed higher math test scores if enrolled in center-based care, Mexican immigrant children enrolled in center-based care actually performed worse on the math assessment compared to Mexican immigrant children that were in parental care in the year preceding kindergarten.

### PREKINDERGARTEN CARE AND THE EFFECTS ON SOCIOEMOTIONAL SCHOOL READINESS

Four studies addressed formal versus informal prekindergarten care alternatives and its effect on children's socioemotional school readiness. Three had largely positive findings of the influence of formal care in the year preceding kindergarten on socioemotional skills while one had somewhat mixed results. All four articles used the ECLS-K data to explore the socioemotional effects of enrolling children in formal prekindergarten care. Socioemotional skills have been operationalized in several related ways, including social skills (self-control, interpersonal skills, and approaches to learning) and problem behaviors (both externalizing and internalizing). All of the studies included at least one of these socioemotional measures, though three included all five in their evaluations. Because these studies utilized the same dataset and key socioemotional measures, there is comparability between the studies. Table 2 provides an outline of key characteristics of each study, with the subsequent section describing the findings of each study.

### Positive Findings

In addition to evaluating academic school readiness, Rumberger and Tran (2006) assessed the role of prekindergarten on socioemotional school readiness measures for languageminority children. ECLS-K data contains teacher assessments on measures on socioemotional development, including approaches to learning, self-control, interpersonal skills, and internalizing and externalizing problem behaviors. Rumberger and Tran (2006) relied on these five measures of socioemotional developmental outcomes in their previously described HLM specifications. As for problem behaviors, they found that for the general population, children in formal childcare were likely to have higher problem behaviors at kindergarten entry compared to children who did not enroll in any preschool the year preceding kindergarten. However, the authors found that language-minority children attending center-based care or Head Start were less likely to display problem behaviors at kindergarten entry. As for social skills, language-minority children

Table 2: Summary of Socioemotional Outcome Studies (in chronological order)

Author	Year	Data	Sample Definition	Sample	Measures	Method
Rumberger and Tran	2006	ECLS-K	Language-minority children, i.e. children where a non- English language is regularly spoken in the home	3,967 children	Social skills and problem behaviors	Hierarchical linear modeling (HLM)
Crosnoe	2007	ECLS-K	Children from Mexican immigrant families, including those born in Mexico or born in the U.S. to Mexicanborn parents	784 children	Social skills and problem behaviors	OLS regression
Turney and Kao	2009	ECLS-K	Immigrant children, including first-generation as well as second-generation children with foreign-born mothers	1,670 children	Social skills and problem behaviors	OLS regression
Gottfried	2014	ECLS-K	ELL children, defined as 1) a student's household language is primarily non-English or 2) if a student received English as a second language (ESL) instruction for any non-English language at school	1,348 children	Social skills and problem behaviors	OLS regression; fixed effects modeling

enrolled in non-Head Start formal programs displayed higher approaches to learning and interpersonal skills than language-minority children not enrolled in any formal care in the year preceding kindergarten. Yet, there was no practically significant relationships between center-based prekindergarten care and approaches to learning, interpersonal skills, or self-control measured at kindergarten entry. However, this latter finding should not necessarily be interpreted as a negative implication – a null effect can be interpreted as a positive finding given that for the general population, there was evidence of negative effects on social skills from formal prekindergarten attendance.

In addition to reviewing math outcomes at school entry, Crosnoe's (2007) examination of childcare types among children of Mexican immigrant families in the year preceding kindergarten also included looking at the effect of prekindergarten care attendance on teacher-rated externalizing problem behaviors – the same scale used in Rumberger and Tran (2006). Crosnoe's examination of externalizing problem behaviors utilized the same data and modeling approach used to evaluate the math outcomes described earlier. This study found the general child population in formal care had more frequencies of externalizing problem behaviors than children in parental care - a finding directly consistent with the Rumberger and Tran (2006) study and generally consistent with the body of literature on prekindergarten care as described in the introduction of this review. After interacting childcare type with immigrant status, however, there was no negative effect for children from Mexican immigrant families. Therefore, while there were no positive effects on socioemotional development from attending formal care, there were no exacerbated negative findings either. While this may appear to be a null effect, this is nonetheless promising given the aforementioned worsened effects that formal prekindergarten care has been found to have on the socioemotional development of the general child population.

Gottfried (2014), using the ECLS-K dataset, conducted the most recent study of all articles reviewed on the influence of formal versus informal prekindergarten care the year prior to kindergarten entry on socioemotional school readiness among ELL children. The author focused exclusively on socioemotional measures at the start of kindergarten. For the purposes of this study, ELL status was determined if 1) a student's household language is primarily non-English or 2) if a student received English as a second language (ESL) instruction for any non-English language at school. Other parameters included care type consistent with other studies discussed previously in this review (i.e., center-based care, Head Start, non-center/ non-parental care, and parental care). Five measures of socioemotional skills were utilized, broken out as social skills (i.e. self-control, approaches to learning, and interpersonal skills) as well as problem behaviors (i.e. externalizing and internalizing problems) using teacher-rated scales. Of the 11,240 student observations available in the analytic sample, there were 1,348 ELL children. The author began with OLS to assess the association between care type and socioemotional outcomes, including student, family, and classroom/teacher characteristics to account for selection issues. Then, fixed-effects models were employed to account for unobserved school and school-by-state biases in the data.

There were two findings in the study. First, non-ELL children attending center-based care in the year preceding kindergarten displayed greater problem behaviors and worsened social skills than those that simply had parental care. This is consistent with prior findings, such as Rumberger and Tran (2006) and Crosnoe (2007). The opposite was seen for ELL children, however. ELL children who attended center-based care exhibit higher socioemotional scores on all five measures at the start of kindergarten compared to ELL children who remained in informal care during the year prior to kindergarten. Second, those ELL children who were in center-based care between 15 to 30 hours per week exhibited the greatest socioemotional benefits, as compared to those in 0, 1-15, or 30 or more hours. The author hypothesized the child was in parental care (or a related type of informal care) for the remaining hours of the week. In such instances, these children may be displaying the highest socioemotional scores due to receiving benefits from both formal, pre-school settings and of having in-home opportunities for parental interaction. These two key findings ultimately underscored the importance of formal care on shaping entry outcomes for ELL children.

### Mixed Findings

Finally, Turney and Kao (2009) examined prekindergarten childcare options and their association with parent-rated child behaviors measured at school entry (approaches to learning, self-control, social interaction, sadness/loneliness, and impulsiveness). The study relied on an analytic sample of 10,410 children using the ECLS-K data. As consistent with the other studies in this review using ELCS-K data, prekindergarten care options included center-based care, Head Start, other care (i.e. relative or non-relative care), and parental care. Consistent with Bumgarner and Lin (2014) and Crosnoe (2007), immigrant children were defined as first-generation as well as second-generation children with foreign-born mothers broken out racially as: 280 White, 90 Black, 850 Hispanic, and 450 Asian. The OLS analyses, after controlling for child-level, family-level, and regional characteristics to account for individual differences and selection, largely indicated that attending formal care in the year preceding kindergarten did not consistently correlate with children's behavioral outcomes at the onset of kindergarten. However, there were some positive findings, for instance, Asian and Black children in immigrant families that attended center-based care displayed higher approaches to learning be-

haviors compared to those in parental care; additionally, they scored higher than the White native-born reference group in center-based care. Hispanic children in immigrant families in center-based care also had higher frequencies of social interaction compared to those in informal care options. Moreover, they scored higher than the White native-born reference group in center-based care. Additionally, there was evidence that Asian children in immigrant families had lower self-control in center-based care compared to those in informal care, though they were also less likely to be impulsive when attending Head Start compared to informal care. Findings were not statistically significant for all other outcomes. Therefore, while some of these findings are promising, the lack of an overall consistency in findings in this study may have arisen due to the fact that the authors broke the ECLS-K sample down into small subsets that do not provide sufficient power to detect effects, as the ELCS-K was not necessarily designed to examine student populations in such a refined level of detail as was done in this study. This is a limitation that is commonly noted in many of these studies, as discussed below.

#### **COMMON LIMITATIONS**

There were several crosscutting limitations identified in these studies. First was the overt inability of these studies to measure aspects of prekindergarten quality (Bumgarner & Lin, 2014; Cannon, Crosnoe, 2007; Gottfried, 2014; Jacknowitz & Karoly, 2012; Magnuson, Lahaie & Waldfogel, 2006; Magnuson et al., 2004; Rumberger & Tran, 2006; Turney & Kao, 2009). While the large datasets allowed for rigorous methodology that addresses self-selection into prekindergarten programs, considered the role of omitted variable biases, and accounted for individual differences, there were few (if any) measures that pertain to quality in any of these large datasets (Karoly & Gonzalez, 2011). Because prekindergarten quality has been directly linked to higher child outcomes, not addressing quality was a noteworthy and perhaps greatest limitation of these studies (Burchinal, 1999; Shonkoff & Phillips, 2000). Therefore without incorporating measures of quality, there remain unaddressed explanations in assessing what about the formal prekindergarten settings leads to changes in school readiness. Note that this is a common limitation in research on prekindergarten effectiveness beyond the scope of evaluating children in immigrant families (Burchinal, Kainz & Cai, 2011; Sabol, Bassok & Pianta, 2011; Zaslow et al., 2006).

Second, there were common limitations on the school readiness measures. As for academic outcomes, one key issue was the assessments might not have fully captured the extent to which children in immigrant families were ready for school entry (Bumgarner & Lin, 2014; Crosnoe, 2007). For instance, there was a difficulty in relying on testing academic subjects in English for children whose primary language is not English (Gottfried, 2014; Karoly & Gonzalez, 2011) or Spanish (Mag-

nuson, Lahaie & Waldfogel, 2006). If children did not speak English proficiently, then taking a test in English would not have fully reflected academic readiness due to language barriers (Gormley, 2008). On the other hand, however, a test of academic subjects in Spanish would not be able to identify English proficiency. Thus, no academic measure fully captured school readiness, which was why Gormley (2008) addressed this issue by examining assessments in both English and Spanish. As for socioemotional outcomes, many of the studies identified biases in that the scales were rated by teachers of the children at kindergarten entry. As an example, some teachers might introduce unintended bias in their ratings when evaluating children from different and potentially unfamiliar cultures (Crosnoe, 2007). Cultural differences aside, there might have been some degree of subjectivity simply due to the fact that these scales are based on teachers' evaluations rather than based on any objective assessment (Gottfried, 2014; Magnuson et al., 2004). This is a difficulty in many socioemotional rating systems, not simply those utilized in these studies. That said, authors do generally support the use of these scales for their reliability and psychometric properties (Crosnoe, 2007).

Third, availability of rich data sources to assess the impacts of prekindergarten was limited. Of the 10 studies that met the inclusion criteria for this synthesis report, nine relied on either the ECLS-B or ECLS-K datasets. As a result, nearly all of the studies encountered similar limitations when it came to their analyses. For example, the datasets utilized in the articles did not fully allow for subgroup analyses beyond very broad classifications (i.e., parents born in the U.S. versus not). Though there are many established benefits to using the datasets in these studies (including nationally-representative conclusions in many instances), often the sampling design limited the ability to conduct subgroup analyses as the sample sizes become extremely small. Several articles highlighted this limitation. For instance Magnuson, Lahaie and Waldfogel (2006) could not analyze children by ethnic origin or region of U.S. residence. Cannon, Jacknowitz and Karoly (2012) could not evaluate children from non-Spanish linguistic origins. Gottfried (2014) could not draw conclusions for children in urban versus other school systems. Finally, Bumgarner & Lin (2014) highlighted that they could not differentiate when the families moved to the U.S. These articles did urge for future data collection, in which collecting data on variety of subsamples within the larger 'children in immigrant families' sample would be a priority. Furthermore, the use of the same datasets may in itself have contributed to the consistent findings among studies regarding the outcomes of prekindergarten on children of immigrant families' academic and socioemotional development.

Fourth, the articles in this review explicitly focused on school readiness – i.e., those skills measured at kindergarten entry – as they are key indicators of the potential for success

as children begin school (Crosnoe, 2007; Karoly & Gonzalez, 2011). However, many studies highlighted that the data were limited, they did not contain longer-term outcomes (Bassok, 2010; Cannon, Jacknowitz & Karoly, 2012), and any outcomes that did extend beyond kindergarten did not continue after elementary school. Therefore, it was recognized as not being possible to identify if gaps between immigrant and non-immigrant children widened or shrank over time as a result of attending formal prekindergarten (Crosnoe, 2007). Cannon, Jacknowitz and Karoly (2012) stress that many socioemotional benefits may not arise until children have matured, and therefore school entry measures of socioemotional development may not identify all benefits of having attended formal prekindergarten.

#### POLICY & RESEARCH IMPLICATIONS

This review synthesized literature examining the effects of formal versus informal prekindergarten care on a range of academic and socioemotional indicators of school readiness for children in immigrant families. As mentioned in the introduction, there is an increasing share of young children in immigrant families entering into the U.S. school system, with a majority of these children being in families of low SES, parental educational levels, and English proficiency. Given the increased presence of formal prekindergarten care in the U.S., educators, policymakers, and school leaders are invested in understanding how these formal prekindergarten alternatives might boost school readiness for children in immigrant families and ultimately help to close the school readiness gap.

This review found a predominance of positive effects for children in immigrant families attending formal prekindergarten care on both academic and socioemotional school readiness measures. For academic measures of readiness, a majority of the studies found positive effects on English proficiency, reading entry skills, and math entry skills. Only one article found negative effects on school readiness from having attended formal prekindergarten (Crosnoe, 2007), though it should be noted that the study relied on a specific subsample of immigrant children (though it is further noted that Mexican immigrant families represent the largest immigrant group to the U.S.). As for socioemotional outcomes, findings were mostly positive, or could be interpreted as so even with the presence of a null finding for children in immigrant families.

Regardless of which measure of school readiness was evaluated, dataset utilized, or methodology employed, there was a high degree of similarity in the limitations acknowledged in these studies. First, most articles mentioned the inability to measure the quality of prekindergarten care, and they urged for further research in this area. Many of the datasets utilized in these assessments do not contain prekindergarten quality measures; however, this limitation is not necessarily specific to the evaluation of children in immigrant families. Second, it

was highlighted that the school readiness measures themselves may be flawed indictors. Issues were raised with academic tests administered in English, particularly given that the majority of children in immigrant families have limited English proficiency and predominantly speak Spanish at home. There were also concerns regarding socioemotional measures such as rating subjectivity (Crosnoe, 2007; Gottfried, 2014). This issue of subjectivity in socioemotional ratings is a common limitation corroborated by the literature utilizing socioemotional outcomes, both in and out of the field of prekindergarten effectiveness (DiPerna, Lei & Reid, 2007; Galindo & Fuller, 2010). Third, as is common in many quantitative studies using national samples of children, several articles highlighted the difficulty in disaggregating the data into more detailed samples. This included the lack of ability to examine country of origin (Cannon, Jacknowitz & Karoly, 2012) as well as degree of urbanicity (Gottfried, 2014). Smaller subsamples may allow for this evaluation, but with that may come a reduction in statistical power as well as generalizability and national representation. Finally, many studies highlighted that the outcomes focused on school readiness rather than long-term effects. Yet, because these studies focused on school readiness as their key outcomes, this final limitation from the literature should be interpreted as a call for future research, rather than as a criticism of the work that was conducted.

Given the findings in this review, there are several implications for educational research, policy, and practice. First the majority of articles find positive effects for formal prekindergarten care school readiness for children in immigrant families. For instance, Bassok (2010) finds effect sizes of 0.14 to 0.22 (but up to 0.29-0.32 for specifically Head Start participation) in academic performance for each child, Cannon, Jacknowitz and Karoly (2012) identify an effect size of 0.26 in reading scores among isolated children in center versus non-center care and even greater effect sizes when comparing children in center versus home-based care (0.39 for reading scores among isolated children, 0.40 for reading scores among non-isolated children, and 0.39 for math scores among non-isolated children), and Magnuson et al. (2006) find an effect size of 0.22 in proficiency probability for each child. Additional studies include Gormley (2008), which identified universally positive effect sizes for Hispanic children broadly, but with nearly higher effect sizes found for Hispanic children who attended prekindergarten whose primary language spoken in the home is Spanish or whose parents were born in Mexico compared to those that did not attend prekindergarten (with effect sizes ranging from 0.56-1.23 for reading/writing skills and between 0.83-0.87 for math skills). As for social development, Gottfried (2014) finds effect sizes of 0.15 to 0.22 in outcomes for children from immigrant families. Therefore, given that many children in immigrant families begin school at a disadvantage, formal prekindergarten care appears to be one potential option to reduce entry gaps. Impor-

conclusions from this review generally lean towards positive outcomes on both sets of measures. Thus, while acknowledging the need for further research, this review supports public policies that would make formal prekindergarten care more broadly available to children of immigrant families.

A second implication builds on this last point. In determining the role of formal prekindergarten care on the outcomes for children in immigrant families, future research might develop a greater level of detail in this assessment. For instance, it appears that little is known about the moderating effects of quality in studies examining formal versus informal care options or how the relationships differ for various demographic categories within the immigrant population, such as by SES. Therefore, knowing what factors of formal prekindergarten care are critical in boosting outcomes (and for whom) will help policy makers to develop and replicate more effective programs as well as target those children in immigrant families who might benefit the most from attending formal prekindergarten care. Moreover, it is critical to compare quality not simply within formal schooling options (i.e., English only versus bilingual center-based programs) but also between formal and informal care alternatives, as it was done in the studies described in this review. This way, even for those immigrant families who choose informal care, it might be possible for policy makers to encourage or induce informal caretakers to adopt some of the specific practices exhibited in formal care settings. But, without further detail on quality, making these assessments and promoting these practices is difficult.

Finally, putting the issue of measuring quality aside, this review highlights the importance of relying on studies that utilize large-scale datasets and employ rigorous empirical methods in order to draw conclusions. As for the importance of largescale data, national survey datasets have been designed specifically to capture the experiences of children from multiple perspectives, including parent responses and teacher assessments. These datasets also contain information pertaining to multiple child contexts, including home, neighborhood, classroom, and school. Triangulating data from multiple sources and for multiple contexts is critical, as it allows for researchers to inform policy based on having an enormous level of detail characterizing educational experiences. By documenting these patterns more precisely rather than relying on small samples or samples of convenience which is often the case in research on children draw more accurate conclusions with large data. Additionally,

tantly, the evidence is fairly consistent across multiple domains the studies in this review highlight the necessity of a rigorous of school readiness indicators - both academic and socioemo- research design, even in the absence of true randomization. Oftional. Unlike the research on prekindergarten effectiveness ten experiments are not possible or too costly to implement; this for the general child population in which there is some dereview demonstrates that even so, it is possible to approximate gree of tension between the positive findings on achievement causality through such methods as HLM, fixed effects, and reand the negative findings on socioemotional development, the gression discontinuity. It is noteworthy that even though these studies relied on a diverse set of data and methods, they generally arrived at similar conclusions.

### **CONCLUSIONS & FUTURE DIRECTIONS**

This review provides evidence from the field that children in immigrant families may experience both academic and socioemotional benefits from attending formal prekindergarten care in the year prior to kindergarten entry. As research continues to be developed and as policy continues to be revised to address the needs of this growing segment of the U.S. schooling population, formal prekindergarten care may serve as one effective strategy to improve readiness and reduce entry gaps.

There are some limitations in this present review that can be used to guide future endeavors in research and policy. First, as mentioned in the introduction, there is no single definition, term, or label of the group of children evaluated in this review. The term 'children in immigrant families' was selected as it was quite broad and does not have a deficit-based connotation that other terms might; that said, all studies did not identify children by such terminology, as exemplified by the use of 'English language learners.' Thus, identifying the children in immigrant families was not as straightforward as it would be in other reviews, such as those about child gender or age. Consequently, in this study, a broadened literature search to include a larger list of group names was required. Additionally, all definitions and terms used to identify this group had to be carefully delineated when assessing, reviewing, and describing each individual article. While this issue of terminology is not easily rectified, this review does urge future research and policy to take into consideration the nuances of the terms defining this group of children.

Second, this review included quantitative literature based on the search guidelines set forth in the Method section; qualitative studies were not considered in this review. Quantitative studies using large-scale data do provide evidence to approximate an effect and certainly holds value in that it aids in the development and conceptualization of the mechanisms driving differences across care settings. Indeed, it may be through qualitative research where the notion of quality is further fleshed-out. Assessing qualitative data in conjunction with the findings from this current study will lead to an even greater understanding of the influence of prekindergarten on school readiness for children in immigrant families.

Finally, this review focused on the role of formal versus in immigrant families (Farver et al., 2009), policymakers can informal prekindergarten care on the outcomes of immigrant children themselves. This is critical, as the amassed findings can

help to develop policy efforts targeting a highly disadvantaged, yet growing, subset of the U.S. schooling population. There may also be other effects of immigrant children attending formal care (and hence being better prepared to start school) on other outcomes as well, such as parental employment, peer effects, kindergarten teacher effectiveness, and school attitudes and perceptions. This review did not consider these externalities but would urge future research to do so as a way of developing a more comprehensive depiction of the role that formal prekindergarten care may have on influencing the child as well as other key aspects of family and education.

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## Bacon Public Lectureship & White Paper

# Improving School Readiness: Formal versus Informal Pre-Kindergartern and Children in Immigrant Families

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