

Submitted on December 15 2017 to *Journal of Education for Students Placed at Risk (JESPAR)*

Revision submitted January 21, 2018

SCHOOL ABSENTEEISM THROUGH THE TRANSITION TO KINDERGARTEN

Running Head: Absenteeism through Kindergarten

Word Count: 154 (abstract), 7,368 (main text), 60 (references)

5 Tables, 1 Figure

Arya Ansari
University of Virginia

Kelly M. Purtell
The Ohio State University

* Correspondence concerning this article should be addressed to the first author at the Center for Advanced Study of Teaching and Learning, University of Virginia, PO Box 800784, Charlottesville, VA 22908-0784 (email: aa2zz@eservices.virginia.edu). The lead author was supported by a grant from the Institute of Education Sciences, U.S. Department of Education (R305B130013, University of Virginia). Opinions reflect those of the authors and do not necessarily reflect those of the granting agencies.

Abstract

Using nationally representative data from the Family and Child Experiences Survey 2009 Cohort ($n = 2,798$), this study examined patterns of absenteeism and their consequences through the transition to kindergarten. Overall, children were less likely to be absent in kindergarten than from Head Start at ages 3 and 4. Absenteeism was fairly stable across these early years, but children who experienced two years of Head Start were less likely to be absent in kindergarten than their classmates who only attended the program for one year. Ultimately, absenteeism at both ages 3 and 4 was associated with lower math and literacy achievement. However, children who experienced two years of Head Start and were more frequently absent demonstrated greater language development through the end of kindergarten as compared with children who only attended the program for one year. Policy implications are discussed in light of the complexity of early childhood education attendance in the United States.

Keywords: Academic achievement; absenteeism; Head Start; Kindergarten

School Absenteeism through the Transition to Kindergarten

Decades of educational research has shown that children enter kindergarten more ready to learn as a result of participation in preschool and/or other forms of early care and education (for reviews see: Phillips et al., 2017; Yoshikawa et al., 2013). Despite the increased investments across the country in publicly funded early childhood programs and the potential academic and socioemotional benefits of children's participation (Duncan & Magnuson, 2013), absenteeism in the early childhood years is quite high (Connolly & Olson, 2012; Ehrlich, Gwynne, Pareja, & Allensworth, 2013). These higher rates of absenteeism during the early years are likely fueled in part by the belief among some parents that early care and education programs are not school or are not as important as K-12 schooling (Ehrlich et al., 2013). For these very reasons, it is somewhat surprising that little attention has been paid to children's school attendance patterns prior to the transition to kindergarten (for exceptions see: Ansari & Purtell, 2017a; Connolly & Olson, 2012; Ehrlich et al., 2013; Katz, Adams, & Johnson, 2015).

To better understand the long-term trends in absenteeism requires that we focus on children's experiences with school absences in the early years when these behaviors are initially developed. That is, although we know that children who are more frequently absent are at greater risk for school difficulty during middle childhood and adolescence (e.g., Gershenson Jacknowitz, & Brannegan, 2015; Gottfried, 2009, 2011; Dryfoos, 1990; Johnson, 2005; Miller & Johnson, 2016; Morrissey, Hutchison, & Winsler, 2014; Rumberger, 1995), we know comparatively little about factors that contribute to absenteeism, and its consequences, during the early childhood years. We respond to this gap in the literature by using a nationally representative sample of low-income children and families who were enrolled in Head Start (discussed in more depth below) and participated in the Family and Child Experiences Survey (FACES) 2009 Cohort. Because the

FACES 2009 Cohort follows children and their families across the transition to kindergarten, we can examine questions related to changes in absenteeism across this important transition in schooling, which may represent a window of opportunity to prevent long-term school truancy.

Literature Review

Although absenteeism is of great concern across all years of education, the last decade has seen a rise in interest in absenteeism, particularly in early childhood (Chang & Davis, 2015). This interest stems from two factors. First, many early childhood programs are designed to help children who are at risk for school difficulty to start kindergarten ready to learn and, therefore, any missed time from school during the early years represents a lost opportunity to equalize the opportunity gap when children's development is most malleable (Heckman, 2008). And, second, recent estimates from urban communities across the United States indicates that during the early childhood years children miss up to one month of school (e.g., Connolly & Olson, 2012; Ehlrich et al., 2013; Katz et al., 2015), which is far greater than any other point in children's educational careers. Thus, beyond offering children the opportunity to enroll in preschool, it is equally important that children regularly attend school to reap the maximum benefit.

Understanding these early origins of absenteeism is also of growing importance as preschool enrollment is increasing across the country (Child Trends, 2015). Although much of this increased access is due to state- and local-expansion (Barnett, Carolan, Squires, & Brown, 2013), Head Start is the largest federally funded early childhood program in the United States and serves over one million preschool-aged children per year. Head Start was established in 1965 as a part of President Johnson's War on Poverty and was designed to "promote the school readiness of low-income children by enhancing their cognitive, social, and emotional development" (Head Start Act, 2007). To achieve this goal, the Head Start program provides a

comprehensive set of services (e.g., educational, nutritional, health, and social services) to low-income children and their families and places a strong emphasis on engaging parents' in their children's education (Zigler & Muncheow, 1992). Although there are federal rules that guide the program's implementation, it is delivered through local programs, and its delivery contains substantial heterogeneity. Consequently, recent research has shown that the impact of Head Start on children's school readiness also varies (Bloom & Weiland, 2015). Although Head Start is only one of many preschool opportunities currently available in the United States, it is the beginning of many low-income children's educational experiences, and thus, is potentially critical for their future attendance patterns.

To better understand the consequences of absenteeism, and eventually to develop solutions to reduce it, requires that we also consider *why* children are absent from school. Prior educational studies with older children have revealed that children miss school for a variety of reasons (Chang & Davis, 2015). Despite this variability, the existing literature has also consistently found that children's health and experiences with bullying are two of the primary drivers of absenteeism (Bealing, 1990; deJung & Duckworth, 1986; Harte, 1994; Lehr, Sinclair, & Christenson, 2004; Reid, 1983). Beyond children's health and peer bullying experiences, and their families' valuation of early childhood education, there are other logistical challenges and experiences that contribute to absenteeism that require consideration, including aspects of families' lives (e.g., household size, marital status, socioeconomic status; Ready, 2010; Reid, 1982). For example, family socioeconomic status has been documented as a consistent predictor of absenteeism (Chang & Davis, 2015). Connections between family socioeconomic status and children's absenteeism are multifaceted and likely include the amount of stress and chaos in the household, as these aspects of families' lives may inhibit daily routines that decrease

absenteeism. Families' socioeconomic status is also associated with poor neighborhood conditions and community violence, which make regular preschool and school attendance more challenging for families (Allensworth & Easton, 2007; Chen Jennison, Yang, & Omaye, 2000; Gottfried, 2010).

In addition to families' socioeconomic status and broader community systems, preschool programs, like Head Start, may also influence children's school absences. Developmental theory posits that these early educational experiences help ease the transition to kindergarten by developing children's school outlook and routines (Ladd & Price, 1987), which in turn, are linked with fewer school absences (Ekstrom, Goertz, Pollak, & Rock, 1986; Newmann, 1981). In support of these very points, a prior study by Gottfried (2015) found that participation in center-based care at age 4 reduced the frequency with which children were absent from kindergarten. And while this work by Gottfried (2015) has certainly provided greater understanding of the role of early childhood programs in facilitating children's school attendance, there has been no examination of the benefits of multiple years in early childhood programs. Expanding to a multi-year approach is necessary as a growing number of children across the country have access to preschool at younger ages and, thus, more and more children experience at least two years of preschool education (Barnett et al., 2013). Put another way, whether a second year of preschool matters for later school absenteeism is unknown. Perhaps one year of preschool is all that is necessary to help develop children's school outlook and routines for kindergarten, such that no differences emerge in children's absenteeism as a function of one versus two years of enrollment. It could also be that a second year in the same preschool program results in repetition of instructional content and, therefore, disengagement from school such that two years in the same program results in greater school absences. Given that no study has considered the role of

multiple years of preschool education for children's school absenteeism, there is no evidence to suggest either direction to be more likely than the other.

There have also been very few studies that have considered the associations between school absences during the early years for children's academic achievement. That is, in addition to understanding *why* children are absent from school, we must also understand the implications of school absenteeism during the early childhood years for children's school success. A small but growing number of studies have shown that missing school during the early years reduces children's opportunities to learn (e.g., Ansari & Purtell, 2017a; Connolly & Olson, 2012; Ehlich et al., 2013; Katz et al., 2015). However, most of these studies focus on a single year of schooling and do not examine whether associations between absenteeism and student learning vary across years in preschool or elementary school. For example, even though children's academic skills develop during the preschool years, these skills may be more influenced by absenteeism patterns in kindergarten than in either year of preschool, as kindergarten classrooms typically involve more academic and teacher-directed instruction (Ansari & Purtell, 2017b; Chien et al., 2010; Early et al., 2010). Another possibility is that the associations between absenteeism and children's early learning and development in kindergarten may be conditional on children's preschool experiences. That is, children who have experienced two years of preschool may have more familiarity with the instructional content they receive in kindergarten and, thus, may be less affected by missing time from school (Engel, Claessens, Watts, & Farkas, 2016).

Ultimately, the skills children bring into kindergarten has a direct effect on their future school performance and well-being (Duncan et al., 2007; Jones, Greenberg, & Crowley, 2015). For these reasons, understanding the predictors and consequences of absenteeism across the

transition to kindergarten is critical to understanding how to promote children's school success in the long-term. The current investigation sought to fill in the above gaps in knowledge and push the early childhood field forward by addressing the following research questions:

1. How frequently are children absent from Head Start, both at ages 3 and 4, and do children miss a comparable amount of time from school during the kindergarten year?
2. Do family and preschool factors predict changes in school absenteeism over time?
3. To what degree is absenteeism at ages 3, 4, and 5 associated with children's math, literacy, and language development?
4. With respect to children's academic achievement, does a second year of Head Start alter the implications of absenteeism?

Given the notion that early care and education programs are considered "not" school among many families (Ehlich et al., 2013), we expected that absenteeism would be more frequent in Head Start than in kindergarten. However, given the largely exploratory nature of our second research objective we did not make directional hypotheses. With regard to our third research question, we expected that children would perform less well over time in areas of academics when they were more frequently absent from Head Start and kindergarten, but we did not make directional hypotheses regarding the implications of two years of Head Start (i.e., research question 4).

Method

The FACES 2009 cohort recruited a nationally representative sample of 3,349 children enrolled in 486 Head Start classrooms across all 50 states and the District of Columbia (see Malone et al., 2013 for more sampling information). The study's target population included 3- and 4-year-olds who were attending Head Start for the first time in the fall of 2009. These

children and their families were regularly followed through the end of the kindergarten year, but children who entered Head Start at age 3 were *only* followed up over time if they remained in Head Start for both years (i.e., 3-year-olds who did not to return to Head Start for a second year were no longer included in the sampling design). For children who entered Head Start at age 3, this meant that data were collected at four different time points, namely: the fall and spring of their 3-year-old year (fall of 2009 and spring of 2010); the spring of their 4-year-old year (spring of 2011); and the spring of their kindergarten year (spring of 2012). In contrast, children who entered the Head Start program for the first time at age 4 only had three waves of data collected: the fall and spring of their 4-year-old year (fall of 2009 and spring of 2010) and the spring of their kindergarten year (spring of 2011). As part of the FACES study, data were collected from multiple informants including parents, teachers, and center directors, and direct assessments of children's early academic skills were also captured at each wave of data collection.

For the purposes of the current investigation, we restructured the data by age/grade (i.e., 3-year-old year, 4-year-old year, and kindergarten year) rather than time (i.e., 2009, 2010, 2011, 2012; see Table 1 for an illustration). We also excluded: (a) 466 children who did not have a valid weight, which was required for our analyses (discussed in more depth below); (b) 63 children who were in a home-based program in year one of Head Start; and (c) 22 children who either transitioned to a home-based program in year two of Head Start or entered kindergarten a year early (or late). The above exclusion criteria resulted in a final analytic sample of 2,798 children who were, on average, 3.84 years of age upon Head Start entry ($SD = 0.56$) and came

from a diverse set of backgrounds (36% Latino, 34% Black, 21% White, 8% Asian or other). For weighted sample descriptives, separated by age of Head Start entry, see Table 2.¹

Table 1.

Summary of Data Collection for 3- and 4- Year- Old Cohorts, by Age and Year.

	Fall of Age 3	Spring of Age 3	Fall of Age 4	Spring of Age 4	Spring of Age 5
Entered Head Start at Age 3	2009	2010	n/a	2011	2012
Entered Head Start at Age 4	n/a	n/a	2009	2010	2011

Notes. n/a = not applicable

Measures

Weighted descriptive statistics for all study variables are provided in Tables 2 and 3.

Absenteeism. During the spring semester of each school year, the parents of participating children were asked, “Approximately how many days has [CHILD] been absent since the beginning of the school year?” Parents’ responses were continuously measured and ranged from 0 to 90. It is important to note that: (a) not all parents were administered the surveys at the same time point (parent surveys occurred between February and May of each year); and (b) some Head Start programs operated for four rather than five days per week. To address these differences, we created an indicator of the proportion of days missed as a fraction of the days children were enrolled in school. To do so, we first used parents’ date of interview during the spring term to measure how long children were enrolled in school and divided the number of days children were absent by the number of months they were enrolled in school. This measure provided us with the number of days children were absent per month, which we multiplied by nine (i.e., the months of the school year). Finally, we divided this estimate by the number of days

¹ Because our analyses apply different weights based on the outcome of interest, the sample sizes for the analyses discussed below range from 1,631 to 2,251, but the total number of children who participated in the first year of Head Start (i.e., the 3-year-old year for 3-year-olds and the prekindergarten year for 4-year-olds) corresponds to 2,798 children.

the program was in operation, which provided us with the proportion of the school year children were absent. A similar approach was taken for generating estimates of kindergarten absences. As a result of skew during the later years, we top coded absenteeism at 25% across each school year.

Table 2.
Weighted Descriptive Statistics for Study Variables

	Entered Head Start at...	
	Age 3	Age 4
Child is male	0.50	0.49
Child race		
White	0.21	0.22
Black	0.38	0.30
Latino	0.32	0.41
Asian/other	0.09	0.07
Child health	4.33 (0.88)	4.24 (0.92)
Mothers' marital status		
Married	0.30	0.28
Single	0.18	0.18
Not two parent household	0.52	0.54
Mothers' years of education	12.13 (1.86)	11.85 (1.81)
Mothers' age	28.78 (5.99)	28.90 (5.77)
Mothers' health	3.59 (1.08)	3.56 (1.06)
Number of adults in home	1.98 (0.92)	2.02 (0.99)
Number of children in home	2.60 (1.25)	2.61 (1.21)
Mothers' employment		
Full time	0.27	0.27
Part time	0.20	0.22
Unemployed	0.53	0.51
Mothers' depressive symptoms	4.96 (5.90)	4.76 (5.62)
Ratio of income to poverty	2.56 (1.38)	2.49 (1.35)
Number of moves in the last 12 months	0.46 (0.81)	0.54 (0.85)
Cognitive stimulation	0.80 (0.15)	0.78 (0.16)
Frequency parent spanked child	0.76 (1.34)	0.56 (1.15)
Non-English household language	0.21	0.28
Sample size	1,631	1,167

Table 3.
Weighted Descriptive Statistics for the Focal Predictors and Outcomes

	Entered Head Start at...	
	Age 3	Age 4
Children's outcomes for those who entered Head Start at age 3		
Percent of days absent during...		
The 3-year-old year (2009-2010)	5.19 (4.10)	---
The 4-year-old year (2009-2010 or 2010-2011)	5.60 (4.76)	5.54 (4.21)
Kindergarten (2010-2011 or 2011-2012)	2.73 (2.77)	3.46 (3.34)
Language		
Fall age 3 (2009)	82.30 (18.57)	---
Spring age 3 (2010)	85.96 (16.22)	---
Fall of age 4 (2009)	---	80.83 (21.10)
Spring of age 4 (2010 or 2011)	89.51 (15.23)	86.29 (17.65)
Spring of kindergarten (2011 or 2012)	91.62 (13.20)	90.29 (13.48)
Letter-word identification		
Fall age 3 (2009)	299.41 (22.24)	---
Spring age 3 (2010)	315.70 (25.90)	---
Fall of age 4 (2009)	---	311.87 (25.18)
Spring of age 4 (2010 or 2011)	338.68 (25.94)	331.87 (27.55)
Spring of kindergarten (2011 or 2012)	392.97 (30.90)	386.24 (29.46)
Spelling		
Fall age 3 (2009)	331.46 (25.91)	---
Spring age 3 (2010)	351.05 (26.95)	---
Fall of age 4 (2009)	---	359.59 (25.70)
Spring of age 4 (2010 or 2011)	381.70 (28.15)	378.85 (27.55)
Spring of kindergarten (2011 or 2012)	426.61 (23.45)	421.06 (25.33)
Math		
Fall age 3 (2009)	363.63 (23.71)	---
Spring age 3 (2010)	378.58 (22.89)	---
Fall of age 4 (2009)	---	384.35 (23.42)
Spring of age 4 (2010 or 2011)	399.40 (21.51)	396.85 (23.26)
Spring of kindergarten (2011 or 2012)	426.72 (20.51)	420.96 (22.57)
Language of assessment (English)		
Fall age 3 (2009)	0.80	---
Spring age 3 (2010)	0.91	---
Fall of age 4 (2009)	---	0.84
Spring of age 4 (2010 or 2011)	0.98	0.93
Spring of kindergarten (2011 or 2012)	0.99	0.99

Academic achievement. Three dimensions of children's academic achievement were assessed at each wave of data collection. Children's *language skills* were measured with the Peabody Picture Vocabulary Test (PPVT, Dunn & Dunn, 1997; α 's = .91-.97). As part of this

assessment, trained assessors asked children to point to one of four pictures that best illustrated the meaning of a word that was said aloud by the assessor. Because the W scores for the PPVT were not available for the Spanish assessments, we used the standard scores. Next, two subscales from the Woodcock-Johnson (Woodcock, McGrew, & Mather, 2001), the Letter Word Identification (α 's = .85-.93) and Spelling Word (α = .79-.87), were administered to children to capture their *literacy skills*. These assessments captured children's ability to identify and write upper or lower case letters. We created an overall composite of literacy achievement using the W scores from both subscales, allowing us to assess change over time. Finally, children's *math skills* were directly assessed with the Woodcock-Johnson Applied Problems subscale (Woodcock et al., 2001; α = .87-.90). We used the W score for this assessment, which captured changes in children's ability to analyze and solve simple math problems.

For each of the above assessments, children who came from non-English speaking homes were assessed with a language screener (PreLAS; Duncan & De Avila, 1998), and those who failed the test (and spoke Spanish at home) were assessed in Spanish. For these children, we used their scores on the Spanish assessments, which demonstrated similar levels of internal consistency as the English measures (for more information on the Spanish and English assessments see: Malone et al., 2013). As discussed in more depth below, all analyses included an indicator of children's assessment language at each wave of data collection.

Covariates and predictors of absenteeism. To reduce the possibility of spurious associations and as part of our predictors of absenteeism, all of our statistical models included a full set of child and family demographic characteristics that were derived from Head Start entry. These covariates were informed by the existing literature on parents preschool decision making (e.g., Crosnoe, Purtell, Davis-Kean, Ansari, & Benner, 2016; Coley, Votruba-Drzal, Collins, &

Miller, 2014) and prior studies that have looked at the correlates of absenteeism (e.g., Chang & Davis, 2015; Gottfried, 2015). These variables included: child gender, home language (English or non-English), language of assessments (English or Spanish), race/ethnicity (White, Black, Latino, Asian/other), parent report of child health (1= *poor*, 5 = *excellent*), years enrolled in Head Start (one or two), mothers' years of education, number of children and adults in the household, mothers' depressive symptoms (measured with the Center for Epidemiological Studies Depression Scale; Radloff, 1977), parents' age, parents' health (1= *poor*, 5 = *excellent*), poverty ratio (1 = < 50% of the federal poverty line, 6= > 200% of the federal poverty line), mothers' employment status (full time, part time, unemployed), marital status (married, single, not a two parent household), parents' engagement in cognitive stimulation (e.g., taught child letters, words, or numbers; played counting games; played with blocks; told a story), frequency parents spanked their child, and residential instability.

In addition to the above child and family characteristics, we also accounted for lagged dependent variables, which is recognized as one of the strongest adjustments for omitted variable bias (for further discussion see: National Institute of Child Health and Human Development Early Child Care Research Network & Duncan, 2003). Put another way, these models captured the extent to which the various predictors were associated with *changes* in children's academic achievement and absenteeism as opposed to level of performance.

Analysis Plan

All focal analyses were estimated within *Stata* (version 14; StataCorp, 2009) and *Mplus* (version 7; Muthén & Muthén, 1998-2013). In order to present a snapshot of absenteeism during the early years, we estimated weighted descriptive statistics (i.e., means and standard deviations) in *Stata*. All multivariate models were then estimated within a regression framework using

Mplus. For these multivariate analyses, we first estimated models that predicted changes in children's rates of absenteeism between Head Start and kindergarten. After establishing the predictors of absenteeism, we then estimated a series of regression models that looked at the implications of absenteeism at ages 3 and 4 and then again in kindergarten for children's academic achievement in any given school year (e.g., absenteeism at age 3 as a predictor of age 3 academic performance). To test for moderation as a function of children's years in Head Start, we also estimated a series of models that included interaction terms between absenteeism and years in Head Start to predict the outcomes of interest. If there was statistical evidence for moderation, we interpreted the interaction by calculating the predicted outcome scores for different combinations of absenteeism for those children who had participated for one or two years in the Head Start program.

It is also important to note that all of our statistical models accounted for missing data with full information maximum likelihood estimation (FIML; Schafer & Graham, 2002) and because observations were not independent (e.g., children in the same center were more likely to share characteristics) we used clustered standard errors that accounted for the sampling strata and the primary sampling units. We weighted our analyses using the study-supplied longitudinal survey weights, which included an adjustment for probability of selection into the sample as well as for non-response and ensured that our generated estimates were nationally representative (for further discussion of weight see: Malone et al., 2013). The exact weights that were used depended on the outcome of interest and wave of the study. As a precaution, we also estimated additional models that used the most inclusive survey weight coupled with FIML for each of our analyses and our results did not change significantly (results available from authors). Finally, it is important to note that all continuous variables have been standardized to have a mean of zero and

standard deviation of one and, thus, all estimates reported below can be interpreted as effect sizes (i.e., similar to a Cohen's *d*).

Results

Descriptives and Predictors of Absenteeism

At ages 3 and 4, children enrolled in Head Start missed roughly 5-6% of the school year (standard deviations = 4-5%; see Table 3). When converted to days of school missed based on a 152-day calendar year (the average number of days Head Start programs in the sample were in operation), these estimates indicate that, on average, children in Head Start missed a little over eight days of school per year. Although absenteeism was fairly comparable at ages 3 and 4, children were absent less frequently once they transitioned to kindergarten ($\Delta = \downarrow 2\%$, $ps < .001$), where they missed a little over 3% of the school year on average (standard deviation = 3%). When projected across a 180-day calendar year (the average number of days kindergarten programs were in operation) this estimate translates to roughly six days of kindergarten missed. Despite these relatively low levels of absenteeism in kindergarten, there was considerable variation in absenteeism, as evidenced by a standard deviation of 3% of the school year.

Even though *all* children, on average, were less likely to be absent in kindergarten than during the Head Start years, children who attended Head Start for two years displayed a sharper drop in kindergarten absences than did one-year Head Start attendees (effect size = 37% of a standard deviation, $p < .001$; see Table 4). Put another way, starting Head Start a year earlier was associated with improvements in children's kindergarten school attendance. A number of child and family characteristics were also associated with changes in absenteeism across the transition to kindergarten. Black children (vs. White children), Spanish-speaking children (vs. English speaking children), children with stronger literacy skills at Head Start entry, and children with

siblings were all more likely to experience decreases in absenteeism over time (effect sizes = 10-40% of a standard deviation, $ps < .05$). In contrast, children whose mothers engaged in more cognitive stimulation at home experienced an increase in absenteeism through the end of kindergarten as compared with children whose mothers engaged in less cognitive stimulation (effect size = 6% of a standard deviation, $p < .05$).

Table 4.
Predictors of absenteeism in kindergarten.

	Absenteeism in kindergarten
Focal predictors	
Absenteeism in Head Start	0.40 (0.05) ***
Child attended two years of Head Start	-0.37 (0.06) ***
Child characteristics	
Child is male	-0.03 (0.06)
Child is Black (vs. White)	-0.21 (0.09) *
Child is Latino (vs. White)	0.10 (0.12)
Child is Asian/other (vs. White)	0.07 (0.13)
Child health	-0.02 (0.02)
Child literacy skills	-0.09 (0.03) **
Child language skills	0.02 (0.04)
Child math skills	-0.06 (0.04)
Family and household characteristics	
Mother married (vs. not two parent HH)	0.01 (0.06)
Mother single (vs. not two parent HH)	0.08 (0.07)
Mothers' years of education	-0.01 (0.03)
Mothers' age	0.02 (0.02)
Mothers' health	-0.05 (0.03)
Number of adults in household	0.00 (0.02)
Number of children in household	-0.06 (0.03) *
Mother employed full time (vs. unemployed)	-0.08 (0.06)
Mother employed part time (vs. unemployed)	-0.06 (0.05)
Mothers' depressive symptoms	0.03 (0.02)
Ratio of income to poverty	-0.02 (0.03)
Number of moves in the last 12 months	0.00 (0.02)
Cognitive stimulation	0.06 (0.02) *
Frequency parent spanked child	0.05 (0.05)
Non-English household language	-0.40 (0.12) ***
R^2	0.24

Notes. All continuous variables have been standardized to have a mean of zero and standard deviation of one and, thus, all estimates correspond to effect sizes. Estimates in brackets are standard errors.

*** $p < .001$. ** $p < .01$. * $p < .05$.

Despite these trends and changes in absenteeism through the transition to kindergarten, it is important to acknowledge that children’s experiences with absenteeism was somewhat stable: earlier patterns of absenteeism alone explained between 12-24% of the variance in future absenteeism ($ps < .001$; see Table 4). Thus, when taken together, these descriptive statistics reveal that children were not frequently absent during the early years, but: (a) one of the strongest predictors of future absences was earlier patterns of absenteeism; (b) there was a significant drop in absenteeism after kindergarten entry; and (c) some children were more likely to show improvements in their school attendance through the transition to kindergarten.

Table 5.
Multivariate Results of Children’s Academic Achievement as a Function of Absenteeism

	Child outcomes		
	Language	Literacy	Math
Three-year-old year outcomes			
Absenteeism at age 3	0.02 (0.02)	-0.08 ** (0.02)	-0.08 * (0.03)
Four-year-old year outcomes			
Absenteeism at age 4	0.03 (0.02)	-0.04 * (0.02)	-0.05 * (0.02)
Absenteeism X years in Head Start	0.10 ** (0.04)	0.03 (0.04)	0.05 (0.05)
Kindergarten year outcomes			
Absenteeism in kindergarten	0.03 (0.02)	-0.05 * (0.02)	0.05 ** (0.02)
Absenteeism X years in Head Start	0.09 † (0.05)	-0.05 (0.05)	0.02 (0.05)

Notes. All continuous variables have been standardized to have a mean of zero and standard deviation of one and, thus, all estimates correspond to effect sizes. Estimates in brackets are standard errors. Three-year-old outcomes ($n = 1,631$); Pre-kindergarten outcomes ($n = 2,251$); Kindergarten outcomes ($n = 2,000$).
*** $p < .001$. ** $p < .01$. * $p < .05$. † $p < .10$.

Absenteeism and Children’s Early Achievement

Our final set of analyses examined the associations between school absences and children’s early academic achievement at ages 3 and 4 and then, again, in kindergarten. Results

from the first set of analyses suggested that absenteeism in Head Start at age 3 was associated with fewer gains in literacy and math (but not language) skills during the school year, with effect sizes equivalent to roughly 8% of a standard deviation (see Table 5). Similar patterns were documented for absenteeism at age 4, with effect sizes corresponding to 4-5% of a standard deviation. Finally, when looking at absenteeism during the kindergarten year, we found that children who missed more time from kindergarten demonstrated fewer gains in literacy (but not language) skills, with effect sizes that corresponded to roughly 5% of a standard deviation. Somewhat surprisingly, however, absenteeism in kindergarten was associated with slightly *greater* gains in math achievement (effect size = 5% of a standard deviation, $p < .01$).

There was no evidence of moderation as a function of the years children attended Head Start for children's math and literacy achievement (see Table 5). That is, the above associations generalized to all Head Start attendees regardless of their prior history with Head Start. Despite the lack of main effects of absenteeism for children's language development, there was evidence of moderation. More specifically, children who entered Head Start at age 3 and who were in their second year in the program demonstrated *greater* gains in language skills when they missed more time from school during their second year in the program as compared with children who only experienced one year of the program (see Figure 1). Similar, albeit marginally significant, interactions were also documented in kindergarten.

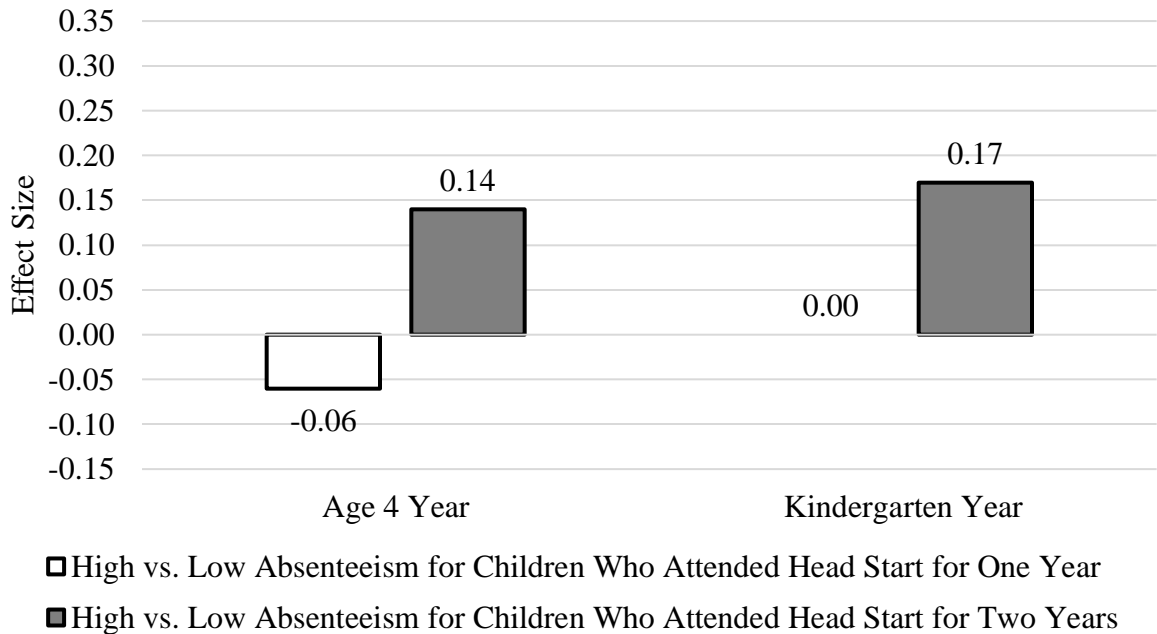


Figure 1. Illustration of high (+1 standard deviation) versus low (-1 standard deviation) absenteeism for children’s language development at age 4 and kindergarten as a function of the years they attended Head Start.

Finally, given the longitudinal nature of the data, we also estimated models that looked at the implications of absenteeism from Head Start during the pre-kindergarten year for children’s academic achievement in kindergarten. Results from these analyses revealed that absenteeism in Head Start was *not* associated with children’s language, literacy, or math achievement during the following year (effect sizes of 1-4% of a standard deviation). However, because of the stability in absenteeism across school years, a series of mediational models revealed an indirect pattern: children who were *more* frequently absent at age 4 performed *less* well in areas of literacy in kindergarten because they were *more* likely to be absent in kindergarten (indirect effect size = 3% of a standard deviation, $p < .05$). And, for these very reasons, children who were more frequently absent in preschool also demonstrated somewhat stronger math skills in kindergarten

(i.e., more frequently absent in preschool → more frequently absent in kindergarten → greater math skills; indirect effect size = 2% of a standard deviation, $p < .05$).

Discussion

The current investigation sought to provide new insight to the educational and early childhood literatures by exploring the associations between school absenteeism in the early years and children's early academic achievement. While previous research in this area has considered the implications of absenteeism in the first year of Head Start for children's academic learning (Ansari & Purtell, 2017a), ours is the first to examine absenteeism across the first three years of formal schooling. Our work: (a) provides an understanding of the trends in absenteeism among a sample of low-income children both *before* and *after* the transition to kindergarten; and (b) underscores the potential complexity of absenteeism during the early childhood years, especially among children who have extensive experience in early childhood education. When taken together, there are several noteworthy findings from our investigation, which we discuss below.

To begin, descriptives from the FACES 2009 Cohort indicate that children, on average, missed approximately eight days of Head Start. For those children who attended Head Start for two years, this meant that they missed roughly 16 days of school before kindergarten entry. Even with the relatively steady rates of absenteeism during the Head Start years, parents reported that their children were roughly two percentage points *less* likely to be absent in kindergarten than in preschool. In fact, similar to other national estimates of absenteeism in kindergarten between 2010-2011 (e.g., Gottfried, Egalite, Kirksey, 2016), we found that children in this low-income sample missed roughly six days of school during the kindergarten year. Given that the existing literature often finds that absenteeism peaks in the early elementary school years and not in the older grades (Balfanz & Byrnes, 2012; Romero & Lee, 2007), these findings underscore the

importance of studying absenteeism *before* the transition to kindergarten. These general patterns are not surprising in light of other work that has shown that parents may hold the beliefs that early care and education programs are less important than K-12 education (Ehrlich et al., 2013).

Our results also revealed factors associated with changes in absenteeism through the transition to kindergarten. In general, Black children, children from non-English speaking homes, children with stronger literacy skills, and children who had a greater number of siblings, all demonstrated a decrease in absenteeism from school through the transition to kindergarten. Somewhat surprisingly, however, children who experienced greater cognitive stimulation at home showed an increase in absenteeism through the end of kindergarten. Although there is no prior empirical evidence to explain this latter finding, it is plausible that parents who engage in more cognitive stimulation at home might be more willing to accommodate a school absence, under the assumption that they can “make up” school time at home. Whether parents are able to “make up” school time is unclear and, therefore, this possibility—and the reasons why these children miss more time from school—requires much closer empirical attention. This type of inquiry is much needed because, from a prevention and intervention point of view, it is this type of descriptive work that can help researchers and policymakers develop the tools necessary to combat absenteeism in the future. At the same time, however, it is important to emphasize that absenteeism was somewhat stable: 16% of the variance in kindergarten absenteeism was attributed to children’s patterns of school attendance during the Head Start years. Thus, if the policy goal is to reduce absenteeism in the elementary grades, then we must pay closer attention to children’s experiences with absenteeism in preschool, as these patterns are set, at least in part, before children enter kindergarten.

To this very point, our third take home message centers around the potential benefits of two years of Head Start. As discussed above, very few studies have examined the benefits (broadly defined) of one versus two years of preschool education and the studies that do exist have generally examined children's early learning and development as outcomes of interest (for an overview see: Yoshikawa et al., 2013). What this literature suggests is that more years of preschool are generally better, but the added academic benefits of each additional year of preschool tends to diminish. As part of the current study we move beyond the potential academic and socioemotional benefits of multiple years of preschool education and, in doing so, what our results make clear is that children who experienced two years of Head Start were *less* likely to be absent in kindergarten than their classmates who only attended the program for one year. Developmental theory suggests that these early educational experiences can (and do) help ease the transition to kindergarten by developing children's school outlook and routines (Ladd & Price, 1987), both of which are linked with fewer instances of school absences (Gottfried, 2015; Ekstrom et al., 1986; Newmann, 1981). Accordingly, when evaluating the potential benefits of preschool programs, it is increasingly necessary that we move beyond test score data as our benchmarks and consider the other ways in which preschool—and by extension, multiple years of preschool—can help children through the transition to kindergarten.

Finally, the results of this study also highlight the extent to which school absences in the early years are associated with children's opportunities to learn and how these opportunities are shaped by children's early educational histories. Similar to Ansari and Purtell (2017a), we found that children who were more frequently absent during their initial year of Head Start performed less well academically. Our results build on these findings by showing that: (a) absenteeism at both ages 3 and 4 was associated with children's math and literacy achievement (but not

language skills); and (b) absenteeism in both the first and second year of Head Start was equally harmful for children's math and literacy performance. Thus, although children were not frequently absent during these early years, the few days they did miss mattered for their progress in school.

Our findings were not as clear-cut when looking at children's academic outcomes in kindergarten and when considering the language development of children who experienced two years of Head Start. On the one hand, children who missed more days of kindergarten also demonstrated *less* optimal literacy achievement; on the other, children who missed more time from kindergarten demonstrated *more* optimal math skills. Also contrary to our expectations, we found that children who experienced two years of Head Start demonstrated *more* optimal language skills in both pre-kindergarten and kindergarten when they were more frequently absent, which was not the case for children who only attended Head Start for one year.

While these latter findings are certainly contrary to our hypotheses, prior studies have shown that preschool programs are not linked with improvements in children's language skills (National Early Literacy Panel, 2008). A separate but related body of literature on kindergarten classrooms has also found that math activities occur far more infrequently than literacy instruction (Ansari, 2017) and the limited mathematics content that is covered is frequently targeted at basic skills (Engel et al., 2016), which are skills that children with prior preschool experience may have already mastered. Consequently, if there is any misalignment between the materials taught in each grade, such that kindergarten teachers are *not* building on the skills that children have learned previously, then it is plausible that children become disengaged and, as a result, benefit less from these early learning environments (Abry, Latham, Bassok, LoCasale-Crouch, 2015). And if parents are more likely to provide their children with greater learning

opportunities at home—as seen in our predictive models—then it may very well be that the opportunities parents provide children at home are better aligned with their needs than the limited time children have to learn math (and language skills) in the classroom.

Even though the above possibilities are speculative, it is clear that children’s experiences with absenteeism cannot be viewed in isolation from their prior educational experiences. Unfortunately, however, there have only been a handful of educational studies that have considered children’s school attendance during the early childhood years (e.g., Ansari & Purtell, 2017a; Connolly & Olson, 2012; Ehrlich et al., 2013; Katz et al., 2015), and there are even fewer studies that have considered these longitudinal experiences among children with more extensive preschool experience. In order to push the early childhood field forward we need to better understand the alignment (or lack thereof) between the educational systems that serve our nation’s youngest children. Then, and only then, can we begin to understand why some children appear to be doing better when they miss more time from school.

As part of this effort, researchers must also consider absenteeism patterns in other types of preschool programs (e.g., state-funded pre-K or private center-based programs) as absenteeism in these other contexts may be differentially linked to children’s early learning and development. This is an important area of future research because Head Start is distinct from other state-funded pre-K and private center-based programs. For example, Head Start has an explicit two-generational focus and connects children and families to services that may reduce absenteeism (Zigler & Muenchow, 1992). The children served by Head Start also differ in some notable ways from national samples of low-income preschool participants more generally. For example, in our calculations with Early Childhood Longitudinal Study Kindergarten Cohort of 2010-2011 (Tourangeau et al., 2014), we find that a larger portion of low-income preschool

participants in 2009 were White (39%) and had mothers who were married (53%), employed full time (33%), and slightly more educated (12.75 years of education). These estimates, thus, confirm that our findings are unlikely to generalize to the full population of preschool attendees, which is why continued attention on other educational contexts is needed.

Despite these contributions to the educational literature, a few limitations require attention. Specifically, although our statistical models controlled for a rich set of child and family covariates, including children's academic skills at Head Start entry, caution is warranted when interpreting our results because the FACES 2009 Cohort was not a randomized control trial and, thus, we cannot completely account for omitted variables. At the same time, however, it is important to emphasize that some aspects of human behavior—including school attendance—do not readily lend themselves to randomization and, therefore, correlational data and quasi-experimental methods are necessary to broaden our understanding of the consequences of absenteeism in the early years. And while there are other ways in which we could derive stronger assessments of these associations, such as the inclusion of state fixed effects, the information necessary to do so was not available. But this limitation speaks to an important future direction: understanding absenteeism across differing policy contexts and states. This type of inquiry is particularly important because, even though children have access to Head Start at both ages 3 and 4 across all states, there is variation in the implementation of state-funded pre-K which may have ramifications for Head Start. For example, to the extent that a second year of Head Start means that children are exposed to the same activities, then access to state-funded pre-K might prove more effective for these children (e.g., Jenkins, Farkas, Duncan, Burchinal, & Vandell, 2016), which has implications for the study of absenteeism. Perhaps in other contexts, where children are exposed to increasingly complex and new learning opportunities across years,

absenteeism in the second year of preschool would be harmful. Unfortunately, we could not explore such possibilities because 3-year-olds who did *not* return to Head Start for a second year were *not* followed up as part of the FACES study design.

With these limitations and future directions in mind, the results of the present investigation begin to provide much needed insight into patterns and rates of absenteeism both before and after the transition to kindergarten among a sample of low-income children. And, in doing so, the results of this study also underscore the complexity of absenteeism during the early years and suggest that continued effort is necessary to understand the implications of missing school during transitions points along with the degree to which the academic effects of absenteeism are more or less dramatic for different subgroups of students. In the meantime, however, it is clear that early childhood programs must more carefully track children's school absences and engage parents in understanding that missing school, even during the early years, matters for children's school success.

References

- Abry, T., Latham, S., Bassok, D., & LoCasale-Crouch, J. (2015). Preschool and kindergarten teachers' beliefs about early school competencies: Misalignment matters for kindergarten adjustment. *Early Childhood Research Quarterly, 31*, 78-88. doi: 10.1016/j.ecresq.2015.01.001
- Allensworth, E. M., & Easton, J. Q. (2007). *What matters for staying on track and graduating in Chicago Public High Schools*. Chicago, IL: Consortium on Chicago School Research.
- Ansari, A., & Purtell, K. M. (2017a). Head Start absenteeism and children's academic learning. *Child Development*. Advance online publication. doi: 10.1111/cdev.12800
- Ansari, A., & Purtell, K. M. (2017b). Activity settings in full-day kindergarten classrooms and children's early learning. *Early Childhood Research Quarterly, 38*, 23-32. doi: 10.1016/j.ecresq.2016.09.003
- Ansari, A. (2017). Multigrade kindergarten classrooms and children's academic achievement, executive function, and socioemotional development. *Infant and Child Development, 26*, e02036. doi: 10.1002/icd.2036
- Balfanz, R., & Byrnes, V. (2012). *The importance of being in school: A report on absenteeism in the nation's public schools*. Baltimore, MD: Johns Hopkins University Center for Social Organization of Schools.
- Barnett, W. S., Carolan, M., Squires, J., & Brown, K. (2013). *The state of preschool 2013*. New Brunswick, NJ: National Institute for Early Education Research. Retrieved from <http://nieer.org/sites/nieer/files/yearbook2013.pdf>
- Bealing, V. (1990). Pupil perception of absenteeism in the secondary school. *Maladjustment and Therapeutic Education, 8*, 19-34.

Bloom, H. S., & Weiland, C. (2015). *Quantifying variation in Head Start effects on young children's cognitive and socio-emotional skills using data from the National Head Start Impact Study*. New York, NY: MDRC.

Chang, H. N., & Davis, R. (2015). *Mapping the early attendance gap*. San Francisco, CA: Attendance Works

Chen, L., Jennison, B. L., Yang, W., & Omaye, S. T. (2000). Elementary school absenteeism and air pollution. *Inhalation Toxicology*, *12*, 997-1016.

Chien, N. C., Howes, C., Burchinal, M., Pianta, R. C., Ritchie, S., Bryant, D. M., ... & Barbarin, O. A. (2010). Children's classroom engagement and school readiness gains in prekindergarten. *Child Development*, *81*, 1534-1549. doi: 10.1111/j.1467-8624.2010.01490.x

Child Trends. (2015). *Preschool and prekindergarten*. Bethesda, MD. Retrieved from: <https://www.childtrends.org/indicators/preschool-and-prekindergarten/>

Coley, R. L., Votruba-Drzal, E., Collins, M., & Miller, P. (2014). Selection into early education and care settings: Differences by developmental period. *Early Childhood Research Quarterly*, *29*, 319–332. doi: 10.1016/j.ecresq.2014.03.006

Connolly, F., & Olson, L.S. (2012). *Early elementary performance and attendance in Baltimore city schools pre-kindergarten and kindergarten*. Baltimore, MD: Baltimore Education Research Consortium.

Crosnoe, R., Purtell, K. M., Davis-Kean, P., Ansari, A., & Benner, A. D. (2016). The selection of children from low-income families into pre-K. *Developmental Psychology*, *52*, 599-612. doi: 10.1037/dev0000101

De Jung, J. E., & Duckworth, K. (1986). *Measuring student absences in the high schools*. Washington DC: National Institute of Education.

- Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., ... & Sexton, H. (2007). School readiness and later achievement. *Developmental Psychology, 43*, 1428-1446. doi: 10.1037/0012-1649.43.6.1428
- Duncan, G. J., & Magnuson, K. A. (2013). Investing in preschool programs. *Journal of Economic Perspectives, 27*, 109-132. doi: 10.1257/jep.27.2.109
- Duncan, S. E., & De Avila, E. A. (1998). PreLAS 2000. *Monterey, CA: CTB/McGraw-Hill*.
- Dunn, L. M., & Dunn, L.M. (1997). *Peabody Picture and Vocabulary Test, Third Edition. Examiner's Manual and Norms Booklet*. Circle Pines, MN: American Guidance Service.
- Dryfoos, J. G. (1990). *Adolescents at risk: Prevalence and prevention*. New York, NY: Oxford University Press.
- Early, D. M., Iruka, I. U., Ritchie, S., Barbarin, O. A., Winn, D. M. C., Crawford, G. M., ... & Bryant, D. M. (2010). How do pre-kindergarteners spend their time? Gender, ethnicity, and income as predictors of experiences in pre-kindergarten classrooms. *Early Childhood Research Quarterly, 25*, 177-193. doi: 10.1016/j.ecresq.2009.10.003
- Ehrlich, S. B., Gwynne, J. A., Pareja, A. S., & Allensworth, E. M. (2013). *Preschool attendance in Chicago public schools: Relationships with learning outcomes and reasons for absences*. Chicago, IL: University of Chicago Consortium on Chicago School Research.
- Ekstrom, R. B. Goertz, M. E., Pollak, J. M., & Rock, D. A. (1986). Who drops out of high school and why? Findings from a national study. *Teachers College Record, 87*, 356-373.
- Engel, M., Claessens, A., Watts, T., & Farkas, G. (2016). Mathematics content coverage and student learning in kindergarten. *Educational Researcher, 45*, 293-300. doi: 10.3102/0013189X16656841
- Gershenson, S., Jackowitz, A., & Brannegan, A. (2015). *Are student absences worth the worry*

in US primary schools? IZA Discussion Papers. Retrieved from <http://ftp.iza.org/dp9558.pdf>

Gottfried, M. A. (2009). Excused versus unexcused: How student absences in elementary school affect academic achievement. *Educational Evaluation and Policy Analysis, 31*, 392–419. doi:10.3102/0162373709342467

Gottfried, M. A. (2011). The detrimental effects of missing school: Evidence from urban siblings. *American Journal of Education, 117*, 147–182.

Gottfried, M. A. (2015). Can center-based childcare reduce the odds of early chronic absenteeism? *Early Childhood Research Quarterly, 32*, 160–173. doi:10.1016/j.ecresq.2015.04.002.

Gottfried, M. A., Egalite, A., & Kirksey, J. J. (2016). Does the presence of a classmate with emotional/behavioral disabilities link to other students' absences in kindergarten?. *Early Childhood Research Quarterly, 36*, 506-520. doi: 10.1016/j.ecresq.2016.02.002

Harte, A. J. (1994). *Improving school attendance: Responsibility and challenge*. Toronto, Canada: Canadian Education Associate.

Head Start Act, (2007). *Head Start for School Readiness Act of 2007, Public Law 110-134, 121 Stat. 1363*. Retrieved from: https://eclkc.ohs.acf.hhs.gov/hslc/standards/law/HS_ACT_PL_110-134.pdf

Heckman, J. J. (2008). Schools, skills, and synapses. *Economic Inquiry, 46*, 289-324. doi: 10.1111/j.1465-7295.2008.00163.x

Jenkins, J. M., Farkas, G., Duncan, G. J., Burchinal, M., & Vandell, D. L. (2016). Head Start at ages 3 and 4 versus Head Start followed by state pre-k: Which is more effective?. *Educational Evaluation and Policy Analysis, 38*, 88-112. doi:

10.3102/0162373715587965

- Johnson, G. M. (2005). Student alienation, academic achievement, and WebCT use. *Education Technology and Society*, 8, 179–189.
- Jones, D. E., Greenberg, M., & Crowley, M. (2015). Early social-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. *American Journal of Public Health*, e1–e8. doi:10.2105/AJPH.2015.302630
- Katz, M., Johnson, M. C., & Adams, G. (2015). *Improving prekindergarten attendance: School-level strategies for messaging, engaging parents, and responding to absences in four DC public schools*. Washington, DC: Urban Institute.
- Ladd, G. W., & Price, J. M. (1987). Predicting children's social and school adjustment following the transition from preschool to kindergarten. *Child Development*, 1168-1189. doi: 10.2307/1130613
- Lehr, C. A., Sinclair, M. F., & Christenson, S. L. (2004). Addressing student engagement and truancy prevention during the elementary school years: A replication study of the check & connect model. *Journal of Education for Students Placed at Risk*, 9, 279-301. doi: 10.1207/s15327671espr0903_4
- Malone, L., Carlson, B. L., Aikens, N., Moiduddin, E., Klein, A. K., West, J., ... & Rall, K. (2015). *Head Start Family and Child Experiences Survey (FACES): 2009 Cohort User Guide*. Washington, DC: Mathematica Policy Research.
- Miller, L. C., & Johnson, A. (2016). *Chronic absenteeism in Virginia and the challenged school divisions: A descriptive analysis of patterns and correlates*. Charlottesville, VA: EdPolicyWorks. Retrieved from: <http://www.attendanceworks.org/wp-content/uploads/2017/09/Chronic-Absenteeism-in-Virginia.pdf>

- Morrissey, T. W., Hutchison, L., & Winsler, A. (2014). Family income, school attendance, and academic achievement in elementary school. *Developmental Psychology, 50*, 741–753. doi: 10.1037/a0033848
- Muthén, L. K., & Muthén, B. O. (1998-2013). *Mplus user's guide. Sixth edition*. Los Angeles, CA: Authors.
- National Early Literacy Panel (2008). *Developing early literacy: A scientific synthesis of early literacy development and implications for intervention*. Jessup, MD: National Institute for Literacy and National Center for Family Literacy.
- National Institute of Child Health and Human Development Early Child Care Research Network & Duncan, G. J. (2003). Modeling the impacts of child care quality on children's preschool cognitive development. *Child Development, 74*, 1454-1475. doi: 10.1111/1467-8624.00617
- Newmann, F. (1981). Reducing student alienation in high schools: Implications of theory. *Harvard Educational Review, 51*, 546-564. doi: 10.17763/haer.51.4.xj67887u8715t66t
- Phillips, D., Lipsey, M. W., Dodge, K.A., Haskins, R., Bassok, D., Burchinal, M. R., Duncan, G. J... Weiland, C. (2017). *Puzzling it out: The current state of scientific knowledge on pre-Kindergarten effects. A consensus statement*. Washington, DC: Brookings Institution.
- Radloff, L.S. (1977). The CESD scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.
doi:10.1177/014662167700100306
- Ready, D. D. (2010). Socioeconomic disadvantage, school attendance, and early cognitive development: The differential effects of school exposure. *Sociology of Education, 83*, 271–286. doi: 10.1177/0038040710383520
- Reid, K. (1982). The self-concept and persistent school absenteeism. *British Journal of*

- Educational Psychology*, 52, 179–187. doi: 10.1111/j.2044-8279.1982.tb00824.x
- Reid, K. (1983). Institutional factors and persistent school absenteeism. *Educational Management Administration & Leadership*, 11, 17–27. doi: 10.1177/174114328301100103
- Romero, M., & Lee, Y. S. (2007). *A national portrait of chronic absenteeism in the early grades*. New York, NY: National Center for Children in Poverty, Columbia University, Mailman School of Public Health.
- Rumberger, R. W. (1995). Dropping out of middle school: A multilevel analysis of students and schools. *American Educational Research Journal*, 32, 583–625. doi: 10.3102/00028312032003583
- Schafer, J. L., & Graham, J. W. (2002). Missing data: our view of the state of the art. *Psychological Methods*, 7, 147–177. doi: 10.1037/1082-989X.7.2.147
- StataCorp. (2009). *Stata User's Guide, Release 11*. College Station, TX: Stata Press.
- Tourangeau, K., Nord, C., Lê, T., Sorongon, A.G., Hagedorn, M.C., Daly, P., and Najarian, M. (2014). *Early Childhood Longitudinal Study, Kindergarten Class of 2010-11 (ECLS-K:2011), User's Manual for the ECLS-K:2011 Kindergarten Data Files and Electronic Codebook*. Washington, DC: National Center for Education Statistics.
- Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III tests of achievement*. Itasca, IL: Riverside Publishing.
- Yoshikawa, H., Weiland, C., Brooks-Gunn, J., Burchinal, M. R., Espinosa, L. M., Gormley, W. T., . . . Zaslou, M. J. (2013). *Investing in our future: The evidence base on preschool education*. Washington, DC: Society for Research in Child Development & Foundation for Child Development.

Zigler, E., & Muenchow, S. (1992). *Head Start: The inside story of America's most successful educational experiment*. New York, NY: Basic Books.