# Snapshots of Arts Education in Childhood and Adolescence: Access and Outcomes





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#### CREDITS

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A pottery demonstration by San Antonio Potters Guild during the Centro Cultural Aztlan's El Gran Dia de los Artistas Festival in San Antonio, Texas. Photo courtesy of Centro Cultural Aztlan

Local schools attend Dance Maker Academy's 2023 *The Nutcracker* performances in Pawhuska, Oklahoma. Photo courtesy of Art Maker

Dynasty Smith performs at Accent Pontiac's 2023 End of Year Showcase concert in Pontiac, Michigan. Photo courtesy of Jeff Dunn Photography

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## PREFACE

This report presents summary findings from an analysis of three longitudinal datasets covering children and youth populations in the United States during 2001-2018. Although the data from these sources are now several years old, researchers can use them to examine the trajectory of arts access, arts participation, and related outcomes in early childhood and among elementary and high school students.

As a contribution to the field, the report investigates restricted-use data files holding detailed information about social-emotional, cognitive, and academic performance measures associated with the children participating in these studies.

Although individual researchers have mined the longitudinal datasets in the past to address questions of access and participation in the arts—and to explore relationships between arts participation and student outcomes—such analyses have seldom been presented as a sequence to enable a broader understanding of how and where the arts manifest at critical time-points of a child's development and growth into adulthood.

This report arrives at a time when the arts education community is making noticeable strides toward enhancing and championing data collection efforts, at the state and national level, to support policies and practices in pre-K-12 learning environments. It also follows more than a decade of the National Endowment for the Arts' (NEA)<sup>i</sup> investments in research and data infrastructure for arts education. Some of these projects are described in the space below.

#### Arts Access and Participation

The lack of a consistent and reliable mechanism for collecting and reporting—at the national level—timely data about children's levels of arts engagement in pre-K-12 school settings has long vexed researchers, educators, and arts organizations.

In 2012, the National Center for Education Statistics (NCES) within the U.S. Department of Education released findings from a congressionally mandated survey of access to arts education in public elementary and secondary school settings. As part of the Fast Response Survey System (FRSS),<sup>ii</sup> the study compared results with those from a decade earlier.

A few years previously, the Arts Endowment had released a report based on the Survey of Public Participation in the Arts (SPPA), a nationally representative survey that the Arts Endowment routinely conducts with the U.S. Census Bureau. Although the survey population consists entirely of adults, the report's authors, Nick Rabkin and Eric Hedberg,<sup>iii</sup> examined self-reported data covering several waves of the SPPA, in which participants recalled whether they had experienced in-school arts education as a child.

Such methods were necessitated in the absence of a single national data source about arts education access in pre-K-12 environments. And yet, in the intervening years, states and municipalities, teaming with data consultants and nonprofit arts organizations, have worked to map arts education offerings and participation levels, school by school and district by district. In particular, the advent of state longitudinal data systems has enabled this reporting—creating a need for more organizations to learn how to make the appropriate data requests, perform analyses, and publish the data in a user-friendly format.

Accordingly, in partnership with Education Commission of the States (ECS), the NEA issued in 2020 a suite of resources designed to help states mine and publish data on arts education. The initiative was called the State Data Infrastructure Project for Arts Education;<sup>iv</sup> it resulted in a toolkit, case study reports, a guide to metrics development in arts education, and other technical documents.

More recently, the Arts Endowment has supported an NEA Research Lab at the University of Maryland—the Music and Arts Education Data Lab (MADLab)<sup>v</sup>—which is undertaking studies of access, representation, demography, and inclusion in music and arts education at the K-12 and postsecondary levels. Other NEA grants also have funded state-wide efforts to extract, analyze, and report K-12 school data on arts education.

At the federal level, meanwhile, the NEA has worked with NCES in the U.S. Department of Education to develop and refine arts-related question items for instruments in the Early Childhood Longitudinal Studies (ECLS) program, the Middle Grades Longitudinal Study (MGLS), and the High School & Beyond (HS&B:22) study, the latter of which includes—in a follow-up year of data collection—an NEA-sponsored special module. In early 2025, moreover, results from the NCES School Pulse Panel survey will become publicly available. This survey carries questions designed by the Arts Endowment to measure access to arts education in K-12 schools.

For more information about the breadth of arts education data currently tracked through federal statistical systems—and an analysis of future data collection opportunities—see the report *Arts Education Data and Reporting Initiatives 2024*<sup>vi</sup> from the Arts Education Partnership, an entity supported by the NEA and the U.S. Department of Education.

#### Outcomes for Youth Who Participate in Arts Education

In 2012, the same year that the Department of Education released results from its Fast Response Survey of arts education, the NEA issued *The Arts and Achievement in At-Risk Youth: Findings from Four Longitudinal Studies*.<sup>vii</sup> Authored by the late James Catterall, *et al.*, this report remains one of the most widely downloaded research publications on the NEA website.

Collectively, the datasets included in the Catterall report spanned a period from roughly 1988 to 2008. Based on an analysis of four longitudinal datasets—three from NCES and one from the U.S. Department of Labor—the report showed positive links between intensive arts participation among children and youth and their academic, social, and civic outcomes and attributes. Those associations were recorded especially for students from families of low socioeconomic status.

The Catterall report prompted more inquiry into plausible mechanisms and conditions for realizing cognitive and social-emotional benefits from arts education. Through its Research Awards programs, the NEA incentivized more rigorous studies of arts educational outcomes, with an emphasis on supporting experimental and quasi-experimental designs. Resulting projects included an NEA Research Lab at the University of Arkansas, where Jay Greene and his team investigated the social-emotional benefits of participating in multiple field trips to arts centers.<sup>viii</sup>

In another NEA-funded project, researchers Daniel Bowen and Brian Kisida evaluated an "Arts Access Initiative" for Houston, Texas public school students from third to eighth grade and found that participants experienced higher writing scores, lower rates of disciplinary infractions, and even greater compassion levels than did students who did not take part in the program.<sup>ix</sup>

Alongside these efforts, the NEA's Office of Research & Analysis published a literature review<sup>x</sup> examining the social-emotional benefits of arts participation in early childhood. The review identified, among other exemplars, the work of Eleanor Brown at West Chester University<sup>xi</sup>, which has received multiple NEA research awards to study arts enrichment in Head Start schools. The agency also has supported studies by researchers such as Kenneth Elpus<sup>xii</sup> and Adam Winsler,<sup>xiii</sup> who separately used longitudinal datasets to characterize correlations between arts education access and positive behavioral or cognitive outcomes and attributes.

It is not only the NEA and the U.S. Department of Education, which, in recent years, have expressed interest in measuring outcomes from and attributes of arts participation among children and youth. In December 2023, the NEA cosponsored a National Institutes of Health (NIH) workshop, "Music as Medicine,"<sup>xiv</sup> as part of the Sound Health initiative—a partnership involving both agencies, the John F. Kennedy Center for the Performing Arts, and the soprano Renée Fleming. The workshop included a panel discussion about the role of music education in human development.

The panel and, indeed, the entire workshop, brought together NIH and NEA research grantees who are exploring topics such as the neuroscientific basis of music's effects on the developing brain. As these research topics continue to attract growing attention from other funders and the public in general, support for arts education studies may start to arrive from unexpected quarters.

#### About the Present Study

But for now, we are concerned with the question of what the most current data about arts education can tell us about access and associated outcomes and attributes for children and youth. This report gives highlights from an in-depth analysis of the restricted-use data<sup>xv</sup> from the following NCES datasets, which collectively cover a period from 2001 to 2018: the Early Childhood Longitudinal Study Birth Cohort (ECLS-B);<sup>xvi</sup> the Early Childhood Longitudinal Study, Kindergarten Class of 2010-11 Cohort (ECLS-K:2011);<sup>xvii</sup> and the High School Longitudinal Study of 2009 (HSLS:09).<sup>xviii</sup>

Whereas the Catterall report compared potential benefits of arts-rich experiences among children and youth from different socioeconomic backgrounds, the present report includes regression analysis to better understand the role of demographic and family characteristics in shaping those positive outcomes and attributes.

Also, unlike the previous report, this one explores rates of arts access and arts participation at home, in childcare settings, and in and out of the classroom. Finally, the authors of the present study—RMC Research Corporation (RMC)—obtained access to restricted-use data files from NCES, thus allowing analysis of a wider array of student-level outcomes and attributes than was formerly possible.

A reader of this report should be advised that the dynamics observed within it are entirely free of any consideration of the COVID-19 pandemic, which occurred well after the period tracked by the three NCES datasets. All the same, the study findings about differential access to arts education—by race/ethnicity of the student, or by parental education level, for example—might well have persisted in a climate of competing resources, as schools, districts, and state education agencies struggle to recover lost ground when it comes to student learning during the pandemic.

Another quality of the present report is that, again unlike *The Arts and Achievement in At-Risk Youth*, the researchers here observed special instances when arts engagement has no relationship to student-level outcomes and attributes, and even, at times, an apparently negative relationship.

If inclusion of null or negative findings in a research report of this type is not to be expected, then let it stand for the maturity of contemporary research in the field. We require no proof of the secondary impacts of arts education as a rationale for supporting and making it available to students from all ages and backgrounds. Yet future research can help us discover how and under what conditions those learning opportunities can be fostered, and how any collateral benefits that have been discovered may be extended to all student populations.

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## HOW ARTS ACCESS AND PARTICIPATION ARE DEFINED

Throughout these analyses, definitions of arts participation vary by dataset, respondent type, and the child's age.

• <u>ECLS-B</u>: At multiple points from birth until kindergarten, parents in the study reported the extent to which they engaged their children at home in arts activities such as reading books and talking about them, singing songs, telling stories, and playing with building toys such as blocks. For the purpose of this report, consistent arts-engagement at home is defined as a parent engaging their child in at least one arts activity at least three times per week.

Childcare providers, wrap-around care providers, and kindergarten teachers reported the extent to which arts activities were available to children in their care, not the extent to which the child participated in such activities. Outside the home, consistent access to arts activities is defined as having access to at least one arts activity three or more times per week in childcare, wrap-around care, or classroom settings. Childcare providers, wrap-around care providers, and teachers supplied information about the extent to which children in their care had access to a wide variety of arts activities that were classified into the following broad categories: musical activities, reading/story-time activities, drama activities, arts creation activities, and creative movement activities. In kindergarten classrooms, activities related to reading were classified as academic and not arts activities.

• <u>ECLS-K:2011</u>: During the elementary school years, parents in the study reported the extent to which they engaged their children at home in arts activities such as reading and talking about books, singing songs, telling stories, playing with building or construction toys such as blocks, and helping children do arts and crafts. Parents also reported whether children at home engaged in activities by themselves or with others, such as looking at picture books, playing with drawing or art computer programs, and reading or pretending to read to themselves or to others. For the purpose of this report, the threshold for consistent arts participation at home for these activities is at least three times per week.

In addition to asking parents about the arts activities they engaged in with their child at home, parents were asked if their child took arts classes outside school, such as music lessons, art classes or lessons, drama classes, and participation in an organized performing arts group such as a children's choir, dance program, or theater performance. Parents also reported about their attendance at arts-related activities outside the home with their child. Participation in three types of arts-related activities was reported in kindergarten, 2nd grade, and in 5th grade: visit a library or bookstore; go to a play, concert, or live show; and visit an art gallery, museum, or historic site.

At school, teachers reported on children's access to art areas in kindergarten: reading area with books, listening center, area for playing puzzles or blocks, writing center or area, computer area, art area, dramatic play area or corner, and water or sand area. Teachers reported how often students in their classes had access to different types of arts activities at school, such as music, art, dance/creative movement, and theater/creative dramatics.

• <u>HSLS:09</u>: During both the 9th grade (baseline year) and 11th grade (first follow-up) data collections, both parents and students provided information about the students' participation in arts and cultural activities outside school in the past 12 months. Student reports included whether they visited science museums, or participated in music or dance, visual arts, or theater or drama; parent reports included whether their youth participated in the visual or performing arts, attended a zoo or museum, visited a library, or attended a live performance. For the purpose of this report, a student was considered to have participated in arts and cultural activities if they, or a parent, indicated that the student participated in at least one arts and cultural activity outside school in the past 12 months.

HSLS:09 did not include arts-related items in later data collections focused on post-secondary settings. However, additional information about students and their high school and post-secondary experiences was obtained through the collection of high school and post-secondary transcripts. High school transcripts provide arts-related information such as the number of arts credits taken and students' GPA in those courses, as well as broader academic outcomes and attainment (e.g., high school graduation, and completion of a GED). Information about college majors, including if a student completed an arts-related major, as well as data on academic outcomes and degree completion, were obtained from college transcripts.

### ABOUT THE DATASETS

This report analyzes restricted-use<sup>1</sup> data across the following datasets. For more in-depth information on sample characteristics and national representativeness for each dataset, see the Appendix.

- <u>The Early Childhood Longitudinal Study-Birth Cohort (ECLS-B)</u>, conducted from 2001 through 2008. The ECLS-B assessed a wide range of outcomes for a nationally representative cohort of 10,700 children born in 2001. Data collection began at nine months and extended through kindergarten.
- <u>The Early Childhood Longitudinal Study-Kindergarten 2011 Cohort (ECLS-K:2011)</u>. The ECLS-K:2011 collected data from a nationally representative sample of 18,150 children enrolled in kindergarten during the 2010/11 school year. ECLS-K:2011 was conducted from fall 2010 through spring 2016 and focused on children's experiences from kindergarten through 5th grade.
- <u>The High School Longitudinal Study (HSLS:09)</u>, conducted from 2009 through 2021. The HSLS assessed a wide range of outcomes for a nationally representative cohort of 25,206 students, beginning in 9th grade and extending several years after high school. The data analyzed in this report cover 2009 through 2018 (four years of post-secondary education for all students who pursued it).

### **KEY FINDINGS**

This section is divided into two halves. One focuses on the longitudinal and differential rates of access to the arts among toddlers, preschoolers, kindergarteners, and elementary and high school students. The second half explores the relationships between arts engagement and academic and cognitive outcomes and social-emotional attributes for the same student populations.

Each finding presented in these sections uses only one study's data, whether the ECLS-B, ECLS-K:2011, or HSLS:09. For findings using the ECLS-B, "toddlers" and "preschoolers" refer to children born in the United States in 2001 who—at the time of data collection—were either two years old or preschool age, respectively. For findings using the ECLS-K:2011, "5th-graders" refer to children in the kindergarten class of 2010-2011 when they were in 5th grade. For findings using the HSLS:09, "high schoolers" refers to students who began 9th grade in 2009 and completed high school in 2013. For in-depth information on the sample characteristics and national representativeness of each dataset, see the Appendix.

#### I. ANALYZING ACCESS AND PARTICIPATION: 2001-2018

Summary:

- Toddlers and preschoolers had consistent access to the arts at home or in childcare settings, but the prevalence of specific types of arts activity varied by the race/ethnicity of the children.
- Children's access to in-school arts activities diminished between their kindergarten and fifth-grade years. Conversely, out-of-school arts learning grew with each elementary school grade level, though racial/ethnic differences in student participation were again noted.
- A large majority of high schoolers had taken at least one arts credit between 9th grade and graduation. Out-of-school participation in the arts was slightly greater for high schoolers in 9th grade than in 11th grade. Both race/ethnicity and family characteristics were associated with varying levels of student arts participation in high school.

#### A. At Home or in Childcare or Wrap-Around Care Settings for Arts Participation

Toddlers and preschoolers had consistent access to the arts at home or in childcare settings, but the prevalence of specific types of arts activity varied by the race/ethnicity of the children.<sup>xix</sup>

1) Most parents (95 percent) reported that they engaged their child in art activities consistently—i.e., at least three times a week—when their children were preschool age or younger.

- The most common arts activity was reading to their child; telling stories was the least common.
  - 92 percent of parents reported that they consistently sang to their child when their child was nine months old; however, by the time their child was in kindergarten, that share had dropped to 63 percent.
  - Book-reading increased—from 60 percent of parents who reported reading to their child at nine months, to 71-76 percent when their child was in their first year in kindergarten.
  - Throughout the entire study, between 49 percent and 64 percent of parents reported that they told stories to their child.
- 2) Nearly all (94-98 percent) children in childcare and wrap-around care settings had consistent access to at least one type of arts activity, as reported by childcare and wrap-around care providers. In contrast, approximately 60 percent of children had consistent access in their kindergarten classrooms.
  - In this study, "wrap-around care" refers to non-parental care provided before and/or after school for kindergarteners at least five hours per week.
  - Children had consistent access to music activities across settings (childcare, wraparound settings, and kindergarten), with the most access provided in childcare (88-92 percent).
  - Across settings, creative movement was the activity to which children had the least access (25-68 percent of children).
  - In a study subsample of children's childcare settings that were observed and rated, children attended fewer than 7 percent of childcare centers and fewer than 4 percent of home-based care settings that were rated by researchers as "good" or above, in terms of the quality of most of the arts resources. Such resources may have included musical toys and activities, pretend/dramatic play materials, art materials, books and pictures, and blocks.
- 3) Most children who experienced the arts at home did so through parents singing to them when they were between nine months and two years old, as reported by parents. By the time the children were preschool-age, however, racial/ethnic differences in arts access started to emerge.
  - At home, preschool-age children who were White, multi-racial, or Asian/Native Hawaiian/Pacific Islander were the most likely racial/ethnic groups to be engaged in the arts through having books read to them.

- At home, Black or African American, Hispanic, and American Indian or Alaska Native preschool-aged children were the most likely racial/ethnic groups to be engaged in the arts through singing.
- In childcare settings, more than 95 percent of all children had consistent access to at least one arts activity at two years old and at preschool-age. Yet 88 percent and 90 percent of Hispanic children at those respective ages had a comparable level of arts access in childcare settings.
- Greater proportions of Black or African American (40 percent) and American Indian or Alaska Native (41 percent) preschool-age children in childcare settings had consistent access to creative movement activities than did Hispanic (29 percent), multi-racial (26 percent), and White (21 percent) preschool age children.
- In wrap-around care settings, arts creation<sup>xx</sup> was the most common arts activity to which White or Asian/Native Hawaiian/Pacific Islander children of kindergarten-age had consistent access. For Hispanic and American Indian/Alaska Native children of kindergarten-age in wrap-around settings, it was reading.

#### B. Arts Access and Participation in and out of K-5 School Settings

*Children's access to in-school arts activities diminished between their kindergarten and fifthgrade years. Conversely, out-of-school arts learning grew with each elementary school grade level, though racial/ethnic differences in student participation were again noted.*<sup>xxi</sup>

- 4) Most kindergarten students had teachers who reported providing access to arts spaces in school. But, again, there were differences in such access by students' race/ethnicity.
  - White, American Indian/Alaska Native, and multi-racial children had access to the greatest number of arts spaces in their kindergarten classrooms.
  - Multi-racial, White, and Black or African American kindergarteners were most likely to have access to a writing center, compared with other racial/ethnic groups.
  - Black or African American children were more likely than kindergarteners of other racial/ethnic groups to have access to a computer area, but had the least access to other arts spaces, including playing with puzzles or blocks, a visual art area, a dramatic play area or corner, or a water or sand area.

- 5) Kindergarteners had teachers who reported providing access to 1-2 arts-related activities in school at least twice per week, on average. When these students were in 1st through 5th grades, however, they had access to arts-related activities in school less often.
  - More than half (52 percent) of students had kindergarten teachers who reported that their students had access to music activities at least two days a week. By 5th grade, 35 percent of the students had teachers who reported such access for their students.
  - Forty-four percent of students had kindergarten teachers who reported that their students had access to (visual) art activities at least two days a week. By 5th grade, this share dropped to 15 percent.
  - Thirty-one percent and 11 percent of students had kindergarten teachers reported that their students had access to creative movement/dance or theater/drama activities, respectively. By 5th grade, the corresponding shares were 5 percent and 2 percent.

#### 6) With each grade level, parents were more likely to report their elementary schoolage children taking arts classes or lessons outside school.

- When students became 1st-graders, 29 percent of their parents reported their child participating in different types of arts classes or lessons outside school. By 5th grade, 44 percent of parents reported their child doing this.
  - Fifteen percent of parents whose children were in kindergarten reported their child participating in an organized performing arts group; by 5th grade, the rate was 23 percent.
  - Among parents of kindergarteners, 10 percent reported that their child took music lessons—a rate that climbed to 26 percent by 5th grade.
  - Nine percent of parents whose children were in kindergarten said their child was taking (visual) art classes or lessons and two percent said their child was taking drama classes. By 5th grade, the corresponding rates were 12 percent and 7 percent, respectively.

- Across all grade levels, parents of Asian children reported the highest rates of participation in any arts classes or lessons. Forty-six percent of these parents said their child took at least one arts class.
  - Further, across all grade levels, greater percentages of Asian children compared with parents of children from other racial/ethnic backgrounds reported taking their child to visit arts and cultural spaces outside school (e.g., libraries, art galleries, museums, or historic sites).<sup>xxii</sup>

#### C. High School Student Arts Participation

A large majority of high schoolers had taken at least one arts credit between 9th grade and graduation. Out-of-school participation in the arts was slightly greater for high schoolers in 9th grade than in 11th grade. Both race/ethnicity and family characteristics were associated with varying levels of student arts participation in high school.<sup>xxiii</sup>

#### 7) Most high school students took least one fine arts class between 9th and 11th grade.

- Fine arts classes may have included music history, visual arts or drawing, architectural design, photography, chorus, theater arts, concert band, or orchestra.
- Nearly 82 percent of high school students had earned at least a half-credit in the fine arts by the time of graduation; 73 percent earned at least one credit; 40 percent, at least two credits; and 23 percent, at least three credits.
  - Higher percentages of Asian/Native American/Pacific Islander, White, and multi-racial students completed at least three fine arts credits in high school than did other students.
  - Students from higher-income families earned, on average, slightly more fine arts credits than did students from families in the lowest income brackets. Similarly, students with parents of higher levels of education tended to earn more credits in the fine arts.
- On average, students' GPAs in fine arts courses was high (mean = 3.14).
  - Asian and White students attained higher GPAs in the fine arts than did students of other racial/ethnic groups.
  - High schoolers with families in the highest income bracket, those with at least one parent who had completed a bachelor's degree or higher, or those with at least one parent working, earned higher fine-arts GPAs than their peers.

- 8) Nearly half (47 percent) of all parents of high schoolers reported that their child visited libraries and attended live performing arts events, when their child was in 9th and 11th grade.
  - In general, arts participation outside school was higher in 9th than in 11th grade.
    - In 9th grade, 59 percent of students visited a library and 55 percent attended live arts performances. The corresponding 11th-grade rates were 52 percent and 47 percent.

#### 9) For high schoolers, arts participation habits outside school varied by race/ethnicity.

- Across nearly all racial/ethnic groups, when in 9th grade, high schoolers were more likely to visit the library than participate in other types of arts and cultural activities. The exception was White 9th-graders, who were more likely to go to a live arts performance than participate in other arts activities.
  - Attending live arts performances was the second most frequent out-ofschool arts activity for 9th-graders who were American Indian/Alaska Native, Asian, Black or African American, or multi-racial.
  - Among Native Hawaiian/Pacific Islander 9th-graders as well as Hispanic ninth-graders, going to a zoo or museum was the second most frequent arts and cultural activity.
- Among 11th-graders, visiting the library and going to a live arts performance were the two most frequent arts and cultural activities of most racial/ethnic groups.
  - Asian, Black or African American, and Hispanic 11th-graders were more likely to visit a library than participate in other arts and cultural activities. White, multi-racial, Native Hawaiian/Pacific Islander, and American Indian/Alaska Native 11th-graders were more likely to go to a live arts performance than participate in other arts and cultural activities.
  - For 11th-graders who were American Indian/Alaska Native, the second most frequent arts activity was going to an art museum or exhibit.

## 10) Family characteristics such as family income and parental employment were positively associated with students' arts participation habits when in both 9th and 11th grades.

• As 9th-graders, high schoolers were generally more likely to have attended a live arts performance, visited a zoo or museum, or participated in visual or performing

arts creation if one of the following conditions were met: a) their family was in the highest income bracket; b) both parents were employed; c) at least one of their parents had an arts-related job; or d) one of their parents had a post-graduate degree.

- They were also more likely to have visited a library if at least one of their parents had a post-graduate degree, but not if the family was in the highest income bracket.
- As when students were 9th-graders, when they were 11th-graders they were more likely to attend a live arts performance or an art museum or exhibit if one of the following conditions were met: a) their family was in the highest income bracket, b) both parents were employed, c) at least one of their parents had an arts-related job, or d) one of their parents had a post-graduate degree.
  - However, the likelihood of the students participating in visual art activities did not vary based on most of those factors, *except* for parental employment in an arts-related job—i.e., youth of parents with an artsrelated job were more likely to have participated than those of parents working in other types of jobs.
  - Among 11th-graders, as with 9th-graders, library usage was reported more frequently for youth with parents of the highest education level.

## II. EXPLORING OUTCOMES FOR YOUTH WHO PARTICIPATE IN ARTS EDUCATION: 2001-2018

Summary:

- At-home arts engagement of toddlers, preschoolers, and kindergarteners was positively correlated with a variety of social-emotional attributes and cognitive outcomes.
- Participation in out-of-school arts activities was positively correlated with many social-emotional attributes and academic outcomes for children from kindergarten through 5th grade.
- Among high schoolers, arts participation was positively correlated with socialemotional attributes during 9th grade, while arts course completion was linked with greater academic achievement, high school graduation, and post-graduation outcomes.

#### A. From Nine Months Old to Kindergarten-Age

*At-home arts engagement of toddlers, preschoolers, and kindergarteners was positively correlated with a variety of social-emotional attributes and cognitive outcomes.*<sup>xxiv</sup>

- 1) Parents' consistent engagement of their children in arts activities—i.e., at least three times a week—was positively associated with social-emotional learning benefits in home settings.
  - Social-emotional benefits at home were assessed when children were nine months old, two years old, and preschool-age.
    - In models that controlled for demographic characteristics including race and ethnicity, income level, parental education, and home language, consistent engagement in at-home arts activities continued to be predictors of developing a secure attachment style between parents and children.
  - Parents who consistently sang songs and read books to their infants were more likely to interact with them in ways that supported the development of social competence, secure attachment, and cognitive skills—compared with parents who did not engage in those arts activities.
  - Among toddlers, arts engagement was related to stronger parent-child relationships, as evidenced by the child's sense of security, by the engagement of parents and by the child's sustained attention during play, and by the parents' overall supportiveness.
    - Consistent engagement in arts activities was also linked with toddlers being 15 percent less likely to display behaviors associated with having an anxious or resistant attachment style—compared with other toddlers—and being 28 percent less likely to display behavior associated with having a disorganized attachment style.
  - During preschool age, children whose parents consistently told them stories were more engaged with their parents and scored higher ratings of sustained attention during play.
    - For children of pre-school age, consistent book-reading to them was also positively associated with experiencing a supportive parent-child relationship.
- 2) Social-emotional benefits of consistent arts engagement persisted when children were toddlers, preschoolers, and kindergarteners.

- A positive relationship was found between parents who reported consistently telling stories to their preschool-aged children at home and prosocial behavior as rated by childcare providers when the children were preschool-age.
  - This relationship held steady when accounting for the racial/ethnic group of the student, but not when accounting for other family characteristics, such as income level, parental education, and home language.
- Kindergarteners' prosocial behavior, as reported by kindergarten teachers, was positively related to any consistent engagement in at-home arts activities.
  - This relationship persisted even when adjusting for the child's race/ethnicity, the family's income level, and the home language.
- **3)** There was a positive relationship between consistent arts engagement at home and children's cognitive and academic outcomes. The relationship was observed among children when they were infants, toddlers, preschoolers, and kindergarteners.
  - Among infants and toddlers, consistent engagement in specific arts activities was related to higher scores on cognitive assessments.
    - The strongest relationships between arts engagement and cognitive assessment scores occurred when parents reported consistently reading to their child at nine months and two years old, and consistently telling stories to their children at two years old.
  - Preschool-age children who were consistently engaged in any type of arts activity had higher scores on academic assessments (reading, math, and language) than children not engaged in arts activities.
    - In particular, those who were consistently engaged with the arts through reading, singing songs, and telling stories scored higher on all academic assessments than preschool-age children not engaged in the arts through these activities.
  - In kindergarten, both reading books and doing any arts activities consistently at home were positively related to reading, math, and language scores.

- After controlling for demographic and family characteristics such as race and ethnicity, income level, parent education, and home language, consistent engagement in arts activities at home continued to be a predictor of academic outcomes in reading, math, and language.
- 4) Among nine-month-old children, cognitive outcomes were positively associated with consistent arts engagement in childcare settings. But when children were preschool- and kindergarten-age, the results were mixed.
  - In childcare settings, consistent access to arts activities—particularly music and reading—was positively linked to cognitive outcomes at two years old.
  - Starting at preschool-age, the relationships between arts access outside the home and cognitive outcomes—in this case, measured by academic performance—proved inconsistent.
    - Among preschool-age children, consistent access to any arts activity in childcare was not related to academic performance.
    - Consistent access to creative movement activities in childcare was negatively related to academic performance, though it is unclear why.
- When children were kindergarten-age, access to arts creation activities in childcare and wrap-around care settings was positively related to all academic outcomes; however, these relationships held only for children in wrap-around care.
  - Results were similarly mixed in terms of the relationship between consistent arts engagement in the kindergarten classroom and math and language scores.
  - In models that controlled for demographic characteristics including race and ethnicity, income level, parent education, and home language, consistent engagement in arts activities at home continued to be a predictor of academic outcomes in reading, math, and language.

#### B. From Kindergarten through Fifth Grade

Participation in out-of-school arts activities was positively correlated with many socialemotional attributes and academic outcomes for children from kindergarten through 5th grade.<sup>xxv</sup>

## 5) Out-of-school arts participation was positively associated with in-school student engagement.

- Across grade levels, children's participation in out-of-school arts activities (e.g., taking an arts class or lesson or attending a concert, play, or show) was positively associated with the following social-emotional attributes as reported by teachers:
  - Positive approaches to learning
  - Greater interpersonal skills
  - o Lower rates of exhibiting internalized or externalized problem behaviors
- Among 4th- and 5th-graders, reports of the students' own behavioral engagement (i.e., student's effort, attention, and persistence while initiating and partaking of learning activities) in school were positively related to all types of out-of-school arts participation.
  - No relationships were observed between out-of-school arts participation and student ratings of grit (i.e., student's perseverance over the long-term pursuit of a goal) and peer social support (i.e., student's perception of acceptance and support by their peers).
- All the positive relationships described above were generally consistent in statistical models that controlled for demographic and family characteristics.

## 6) In-school arts access was associated with positive student reports<sup>xxvi</sup> on a variety of social-emotional attributes.

- Among 5th-graders, access to any arts classes in school was associated with higher ratings of school belonging compared to 5th-graders who did not access arts classes.
  - Having music classes in school two or more times per week was linked with higher ratings of school belonging.

- Access to theater or creative dramatics classes was associated with higher ratings of peer social support.
  - Access to theater or creative dramatics classes two or more times per week was associated with higher ratings of grit.
  - The findings related to peer social support and grit were generally consistent after controlling for demographic and family characteristics.
- 7) Arts participation outside the home and outside school was positively related with academic outcomes when students were in elementary school. However, at-home arts engagement was linked to positive academic outcomes only during kindergarten.
  - At every grade level, taking arts classes outside school was positively associated with reading, math, and science scores in K-5th grades.
    - Yet when controlling for demographic and family characteristics especially parental education level—these relationships proved inconsistent for some academic outcomes and grade levels.<sup>xxvii</sup>
  - Kindergarteners who had experienced at-home arts engagement also showed positive academic outcomes in math, reading, and science at that grade level.
    - As with out-of-school arts participation and academic outcomes, the relationships between at-home arts engagement and kindergarteners' math, science, and reading scores varied when researchers controlled for demographic and family characteristics.<sup>xxviii</sup>

## 8) In-school arts participation was related to positive academic outcomes only when children were in the upper grade levels of elementary school.<sup>xxix</sup>

• A positive relationship between in-school arts participation and reading scores was observed only when children where in 4th and 5th grades.

- Positive relationships were mostly observed only among children when they were in 3rd-5th-grade—in terms of in-school arts participation and math and science scores.
- In general, these relationships were inconsistent after researchers controlled for demographic and family characteristics.

#### C. From High School to Post-Graduation

Among high schoolers, arts participation was positively correlated with social-emotional attributes during 9th grade, while arts course completion was linked with greater academic achievement, high school graduation, and post-graduation outcomes.<sup>xxx</sup>

## 9) As 9th-graders, students were more likely than as 11th-graders to demonstrate positive social-emotional attributes associated with their arts participation habits.

- Participation in a wide range of arts and cultural activities was positively related to high schoolers' ratings of sense of belonging, engagement, math self-efficacy, and science self-efficacy when they were in 9th grade.
  - By contrast, only participation in music or dance in 11th grade was positively related to students' ratings of motivation and science self-efficacy.
  - When researchers examined out-of-school participation in specific arts activities, however, these relationships were inconsistent after controlling for demographics and family characteristics.

## 10) High school participation in arts activities was generally associated with positive outcomes as recorded by math scores, high school GPAs, high school graduation, and college GPAs.

- Participation in a wide range of arts and cultural activities was positively correlated with students' math assessment scores when they were in 9th grade.
  - By the 11th grade, however, this correlation was observed only among those who had participated in music or dance, theater or drama, or had attended live performing arts events.
  - Most of these positive relationships held steady even after controlling for demographic and family characteristics.<sup>xxxi</sup>

- 11) Completion of fine arts credits in high school was related to higher cumulative GPAs in all core content areas (i.e., English Language Arts, Math, Science, Social Studies) in high school.
- This relationship persisted even when controlling for racial/ethnic group differences.
- **12)** Fine arts credits completion was also related to a lower likelihood of dropping out of high school. This relationship persisted even after controlling for the race and ethnicity of the student.
  - For every arts credit accrued, a high schooler was 39 percent less likely to drop out.
  - In the case of the visual arts, credit completion in the 11th grade was positively correlated with dropping out: i.e., taking visual arts courses was associated with a higher likelihood of dropping out of high school. Reasons for this unexpected finding warrant close examination.

#### 13) The number of fine arts credits completed was associated with a far higher likelihood of obtaining a high school diploma or GED—131 percent greater, compared with the likelihood of students who did not complete any arts credits.

• Again, this relationship persisted when researchers controlled for the student's race or ethnicity.

## 14) A positive relationship was observed between the number of fine arts credits completed in high school and higher first-year college GPAs.

• This relationship held steady despite controlling for racial/ethnic group differences.

### CONCLUSIONS

Findings from the ECLS-B,<sup>xxxii</sup> ECLS-K:2011,<sup>xxxiii</sup> and HSLS:09<sup>xxxiv</sup> continue to point the way to actions that parents, caregivers, and educators can take to enhance youths' learning and development. By reporting children's engagement in, and access to, the arts from infancy through high school and across a range of settings (e.g., at home, in the community, in childcare, and in school), these data reveal patterns in children's experiences with the arts and the potential impacts of these experiences on child learning and social-emotional development.

Findings from the ECLS-B suggest that during early childhood, children have ample access to arts activities, but once they reach kindergarten, they experience less access. Since exposure to the arts is related to higher academic and cognitive outcomes, and positive social-emotional

attributes, it is important to consider how to increase consistent access and engagement both outside and within formal settings over time—as children move from childcare through preschool and into kindergarten.

Findings from the ECLS-K:2011 reinforce assumptions about the overall positive role that arts engagement plays in a well-rounded education; but the study also highlights disparities that continue to exist for some groups of children, in terms of opportunities to engage with different art forms. During the elementary years, children may have access to arts activities at home, at school, and in out-of-school settings. All three can provide experiences that are generally positively related to academic outcomes and social-emotional attributes in the elementary grades.

Analysis of HSLS:09 data, likewise, reveals generally positive relationships between arts engagement among high school students and educational outcomes and social-emotional attributes. These relationships often, but not universally, persist even after considering other background factors. Nevertheless, there are differences in arts engagement based on family income and parental education—differences that may limit student outcomes. Additionally, gaps in access to arts opportunities outside school underscore the complexities in ensuring equitable arts opportunities for all students;<sup>xxxv</sup> these findings also elevate the importance of school-provided arts experiences. At minimum, the data suggest the need to consider the extent to which different types of students may require access to community-based opportunities facilitated through schools as a supplement to in-school arts offerings.

## **APPENDIX: SAMPLE CHARACTERISTICS**

#### I. ECLS-B

Data for the ECLS-B were collected over five data collection waves that generally aligned with age or expected level of schooling of the child. The age-based data collection waves (at nine months and two years) were conducted to coincide with the time when the child would be the target age; the ECLS-B is nationally representative only at the child-level for the nine-month data collection wave. Data collection for the preschool, kindergarten (2006), and kindergarten (2007) waves were conducted to coincide with when the majority of participating children would enter preschool (four years old) and kindergarten (five years old). The second kindergarten wave captures data for children who were not yet in kindergarten in 2006 as well as those who repeated kindergarten in 2007. Both kindergarten waves are included in the analyses reported in this brief. Information was gathered directly from parents and children during all data collection waves and from childcare providers during the 2-year, preschool, and fall 2006 data collections and from wrap-around care providers and kindergarten teachers in fall 2006 and fall 2007.

The ECLS-B included a diverse sample of approximately 14,000 babies born in the United States in 2001 who were invited to participate in the ECLS-B study. Data were collected for approximately 10,700 children during the nine-month data collection wave, 9,850 during the two-year data collection wave, 8,950 during the preschool data collection wave, 7,000 during the 2006 kindergarten data collection wave, and 1,900 children during the 2007 kindergarten data collection wave. More than half of participating children were White, a quarter identified as Hispanic, and almost 12 percent were Black or African American.<sup>xxxvi</sup>

#### II. ECLS-K:2011

Data for the ECLS-K:2011 were collected at nine timepoints over the course of six years that generally aligned with the expected level of schooling of the child. Children were followed from kindergarten through 5th grade, with fall and spring data collection activities from kindergarten through 2nd grade, and only spring data collection activities in 3rd through 5th grade. Information was gathered directly from parents, children, and teachers during all data collection waves. In addition, special education teachers responded to questionnaires in the spring of each year, before and after school childcare providers were interviewed during the spring kindergarten (2011) data collection, and additional data was collected from English Language Arts (ELA), Math, and Science teachers during the 4th- and 5th-grade data collections. Data were collected from multiple sources for each child during each school year, such as from before- and after-school care providers and/or kindergarten teachers.

The ECLS-K:2011 included a diverse sample of kindergarten students sampled from 1,352 schools (i.e., 1,052 public schools, 300 private schools). More than 31 percent of the sampled schools were in cities, 39 percent were in suburbs, 8 percent in towns, and 22 percent in rural areas. In nearly 35 percent of the sampled schools, 25 percent or fewer students qualified for free lunch; in 20 percent of schools between 26 and 50 percent qualified; in 14 percent of schools, between 51 and 75 percent qualified; and in 9 percent of schools, over 75 percent of students qualified for free lunch. Within these schools, 20,234 students who were in kindergarten in the fall of 2010 were invited to participate in the ECLS-K:2011 study. Data were collected for

approximately 18,150 children during the 2010/11 (kindergarten) school year, 15,650 during the 2011/12 (1st grade) school year, 14,450 during the 2012/13 school year (2nd grade), 13,600 during the 2013/14 school year (third grade), 12,900 during the 2014/15 school year (4th grade), and 12,350 children participated during the 2015/16 school year (5th grade) data collection activities.<sup>xxxvii</sup> Over half of participating children were White, a quarter identified as Hispanic, and nearly14 percent were Black or African American.<sup>xxxviii</sup>

#### III. HSLS:09

Data for the HSLS:09 were collected over six data collection waves that generally aligned with the expected level of schooling of the student. The HSLS:09 collected data directly from participants four timepoints and collected administrative records twice from 2009 through 2017/18. Baseline data were collected in the fall of students' 9th-grade year (Base Year; Fall, 2009), with follow-up data collection activities occurring during the spring of their 11th grade year (First Follow-up; Spring 2012), a post-secondary status update collected in the summer and fall of 2013 after most had completed high school (2013 Update), and a second follow-up collected after students would have completed three years of postsecondary education (Second Follow-up; 2016-2017). High school transcript data were collected during the 2013/14 school year (High School Transcript Study) and postsecondary transcript data collected in 2017/18 (Postsecondary Education Transcript Study).<sup>xxxix</sup> Information was gathered directly from parents and students using questionnaires during the baseline and the first follow-up period, from either the parent or the student during the postsecondary update collected in 2013, and from the student during the second follow-up data collection. Math assessments were administered to students during the baseline and first follow-up data collections. School administrator and counselor questionnaires were collected at both baseline and first follow-up, and Math and Science teachers completed a survey during the baseline year.

The HSLS:09 included a diverse sample of 25,206 students who were in 9th grade in Fall 2009. Data were collected for 21,444 students during the baseline data collection, for 20,594 during the first follow-up period when most students were in the spring of 11th grade, and for 18,558 during the 2013 postsecondary status update when most students had graduated high school. Also, 21,928 high school transcripts were collected in 2013/14, data were collected from 17,335 students during the second follow-up period in 2016/17 when most students had completed three years of postsecondary education, and 13,160 postsecondary transcripts were collected in 2017/18. Over half of participating youth were White, a 22% identified as Hispanic, and nearly 14 percent were Black or African American.<sup>x1</sup>

### **ENDNOTES**

<sup>i</sup> In this report, the National Endowment for the Arts will be referred to interchangeably as "Arts Endowment" or "NEA."

<sup>ii</sup> For more information on the Fast Response Survey System (FRSS), see https://nces.ed.gov/surveys/frss.

<sup>III</sup> Rabkin, N., & Hedberg, E. C. (2011). *U.S. Trends in Arts Attendance and Literary Reading: 2002–2017*. Washington, DC: National Endowment for the Arts. https://www.arts.gov/impact/research/publications/arts-education-america-what-declines-mean-arts-participation.

<sup>iv</sup> For more information about State Data Infrastructure Project for Arts Education, visit their website on the Education Commission of the States' website at https://www.ecs.org/initiatives-projects/state-data-infrastructure-project-for-arts-education.

<sup>v</sup> For more information about this NEA Research Lab, visit their website at https://madlab.umd.edu.

<sup>vi</sup> Arts Education Partnership. (2024). *Arts Education Data and Reporting Initiatives 2024*. https://www.aeparts.org/arts-education-data-and-reporting-initiatives/.

<sup>vii</sup> Catterall, J. S., Dumais, S. A., & Hampden-Thompson, G. (2012). *The Arts and Achievement in At-Risk Youth: Findings from Four Longitudinal Studies*. Washington, DC: National Endowment for the Arts. https://www.arts.gov/impact/research/publications/arts-and-achievement-risk-youth-findings-fourlongitudinal-studies.

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<sup>x</sup> Menzer, M. (2015). *The Arts in Early Childhood: Social and Emotional Benefits of Arts Participation: A Literature Review and Gap-Analysis (2000-2015)*. Washington, DC: National Endowment for the Arts. https://www.arts.gov/impact/research/publications/arts-early-childhood-social-and-emotional-benefits-arts-participation.

<sup>xi</sup> (1) Brown, E. D., Garnett, M. L., Anderson, K. E., & Laurenceau, J. P. (2017). Can the arts get under the skin? Arts and cortisol for economically disadvantaged children. *Child Development, 88*, 1368-1381. https://doi.org/10.1111/cdev.12652. (2) Brown, E. D., Garnett, M. L., Velazquez-Martin, B. M., & Mellor, T. J. (2018). The art of Head Start: Intensive arts integration associated with advantage in school readiness for economically disadvantaged children. *Early Childhood Research Quarterly, 45*, 204-214. https://doi.org/10.1016/j.ecresq.2017.12.002. (3) Brown, E. D., Holochwost, S. J., Laurenceau, J. P., Garnett, M. L., & Anderson, K. E. (2021). Deconstructing cumulative risk: Poverty and aspects of instability relate uniquely to young children's basal cortisol. *Child Development, 92*, 1067-1082. https://10.1111/cdev.13512.
(4) Brown, E. D., Weaver, Z., Streich, M., Shivde, G., & Garnett, M. (2023). Cortisol across preschool day relates to teacher ratings of executive functioning for children facing economic hardship. *Early Childhood Research Quarterly, 62,* 31-40. https://doi.org/10.1016/j.ecresq.2022.07.006. (5) Brown, E. D., Holochwost, S. J., Palmer Wolf, D., Allen, A. A., Garnett, M. L., Velazquez-Martin, B., ... & Malatesta, J. L. (2024). Music education and neurophysiological regulation in early childhood: Should teachers guide or get out of the way?. *Mind, Brain, and Education, 18,* 360-372. https://doi.org/10.1111/mbe.12370.

<sup>xii</sup> (1) Elpus, K. (2016). Estimating the effect of music and arts coursework on college admissions outcomes. Arts Education Policy Review, 119, 111–123. https://doi.org/10.1080/10632913.2016.1201030. (2) Elpus, K. (2018). Music education promotes lifelong engagement with the arts. Psychology of Music, 46, 155-173. https://doi.org/10.1177/0305735617697508. (3) Elpus, K. (2020). Access to arts education in America: The availability of visual art, music, dance, and theater courses in U.S. high schools. Arts Education Policy Review, 123, 50–69. https://doi.org/10.1080/10632913.2020.1773365. (4) Elpus, K. (2022). School music and the transition to college. Journal of Research in Music Education, 69, 402-424.

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<sup>xiv</sup> For more information and the video recordings of the proceedings, see https://www.nccih.nih.gov/news/events/music-as-medicine-the-science-and-clinical-practice.

<sup>xv</sup> Restricted-use data refers to data that contains individually identifiable information, which is confidential and protected by federal law. The Department of Education grants qualified organizations in the United States access to restricted-use data using a strict licensing process. For more information on restricted-use data and policies and procedures to access restricted-use data see https://nces.ed.gov/pubsearch/licenses.asp.

<sup>xvi</sup> For more information on the ECLS-B see https://nces.ed.gov/ecls/Birth.asp.

xvii For more information on the ECLS-K:2011 see https://nces.ed.gov/ecls/kindergarten2011.asp.

xviii For more information on the HSLS:09 see https://nces.ed.gov/surveys/hsls09.

xix SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), nine-month (2001-02), two-year (2003-04), preschool (2005-06), kindergarten 2006 (2006-07), and/or kindergarten 2007 (2007-08) restricted-use data collections. See the Appendix for more details, such as demographic characteristics and national representativeness of the sample.

<sup>xx</sup> Arts creation included creative arts or crafts such as painting, sewing, or carpentry, construction or building with hollow blocks, Lego, or sand, art, and using computers to create art.

<sup>xxi</sup> SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 2010-11 (ECLS-K:2011), Kindergarten – Fifth-Grade Restricted-use Data File. See the Appendix for more details, including demographic characteristics and national representativeness of the sample.

<sup>xxii</sup> In 5th grade, there was one exception where American Indian or Alaska Native students had the highest levels of attendance.

<sup>xxiii</sup> SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009, (HSLS:09) Base Year, First Follow-up, 2013 Update, High School Transcript Study, Second Follow-up, and Postsecondary Education Transcript Study restricted-use data collections. See the Appendix for more details, including demographic characteristics and national representativeness of the sample.

<sup>xviv</sup> SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), nine-month (2001-02), two-year (2003-04), preschool (2005-06), kindergarten 2006 (2006-07), and/or kindergarten 2007 (2007-08) restricted-use data collections. See the Appendix for more details, including demographic characteristics and national representativeness of the sample.

<sup>xvv</sup> Although many positive social-emotional attributes and academic outcomes were linked with in-school arts participation, this relationship exhibited only in the upper grade levels for academic outcomes. As for social-emotional attributes, meanwhile, only data collected directly from students were analyzed; such data were available only for students in the upper-grade levels (4th and 5th grade).

xxvi Student reports on social-emotional attributes were collected only in 4th and 5th grades.

<sup>xxvii</sup> These relationships were complex and are explained in ECLS-K:2011 technical report and appendices that will be published by the NEA in 2025.

<sup>xxviii</sup> These relationships were complex and are explained in ECLS-K:2011 technical report and appendices that will be published by the NEA in 2025.

<sup>xxix</sup> In kindergarten through 2nd grade, no relationship was observed between arts participation at school and reading scores. While there was no evidence that arts participation in general in kindergarten through 2nd grade was related to math scores, arts participation was positively related to scores in the later grade levels.

<sup>xxx</sup>SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009, (HSLS:09) Base Year, First Follow-up, 2013 Update, High School Transcript Study, Second Follow-up, and Postsecondary Education Transcript Study restricted-use data collections. See the Appendix for more details, including demographic characteristics and national representativeness of the sample.

<sup>xxxi</sup> This information was collected after students had completed high school; no information about family characteristics was collected at that time. Given that the family characteristics included in this report are not

static, the family characteristics reported in 11th grade were not included in analytic models examining attainment outcomes collected after 11th grade.

<sup>xoxii</sup> SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B), 9-month (2001-02), 2-year (2003-04), preschool (2005-06), kindergarten 2006 (2006-07), and/or kindergarten 2007 (2007-08) restricted-use data collections. Findings reported in this brief derive from previously unpublished tabulations (August 2024). For more information on the ECLS-B see https://nces.ed.gov/ecls/Birth.asp.

<sup>xoxiii</sup> SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 2010-11 (ECLS-K:2011), Kindergarten – Fifth Grade Restricted-use Data File. Findings reported in this brief derive from previously unpublished tabulations (August 2024). For more information on the ECLS-K:2011 see https://nces.ed.gov/ecls/kindergarten2011.asp.

<sup>xxxiv</sup> SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009, (HSLS:09) Base Year, First Follow-up, 2013 Update, High School Transcript Study, Second Follow-up, and Postsecondary Education Transcript Study restricted-use data collections. Findings reported in this brief derive from previously unpublished tabulations (August 2024). For more information on the HSLS:09 see https://nces.ed.gov/surveys/hsls09/.

<sup>xoxv</sup> Thomas, M. K., Singh, P., Klopfenstein, K., & Henry, T. (2013). Access to high school arts education: Why student participation matters as much as course availability. *Education Policy Analysis Archives, 21*. http://epaa.asu.edu/ojs/article/view/1224/1166.

<sup>xoxvi</sup> Detailed Race and Ethnicity information was collected for all children and aggregated into groups for each of the studies (ECLS-B, ECLS-K:2011, HSLS:09). The Race and Ethnicity groups used for analyses were the following mutually exclusive categories: White (non-Hispanic), Black or African American (non-Hispanic), Hispanic (includes those who did and did not have a specified Race), Asian, Native Hawaiian, or other Pacific Islander (non-Hispanic), American Indian or Alaska Native (non-Hispanic), and multi-racial (two or more races, non-Hispanic).

xxxvii Sample sizes rounded to the nearest 50.

<sup>xoxviii</sup> Detailed Race and Ethnicity information was collected for all students and aggregated into groups. The race and ethnicity groups used for analyses were the following mutually exclusive categories: White (non-Hispanic), Black or African American (non-Hispanic), Hispanic (includes those who did and did not have a specified race), Asian (non-Hispanic), Native Hawaiian or other Pacific Islander (non-Hispanic), American Indian or Alaska Native (non-Hispanic), and multi-racial (two or more races, non-Hispanic).

xxxix Postsecondary transcript data covered coursework taken through December 31, 2016.

<sup>x1</sup> Detailed Race and Ethnicity information was collected for all students and aggregated into groups. The race and ethnicity groups used for analyses were the following mutually exclusive categories: White (non-Hispanic), Black or African American (non-Hispanic), Hispanic (includes those who did and did not have a specified race), Asian (non-Hispanic), Native Hawaiian or other Pacific Islander (non-Hispanic), American Indian or Alaska Native (non-Hispanic), and multi-racial (two or more races, non-Hispanic).