SELECTION INTO, AND ACADEMIC BENEFITS FROM, ARTS-RELATED COURSES IN MIDDLE SCHOOL AMONG LOW-INCOME, ETHNICALLY DIVERSE YOUTH

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Selection Into, and Academic Benefits From, Arts-Related Courses in Middle School Among Low-Income, Ethnically Diverse Youth

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It is critical for research on the effects of arts engagement to identify and carefully control for preexisting selection factors that differentiate those who do and do not get exposure to the arts. We prospectively followed a large and diverse sample of preschool children (n = 31,332; 61% Latino, 32% Black, 55% ELL, 81% free/reduced lunch) until they completed 6th, 7th, and/or 8th grade. School readiness was assessed during pre-K, and archival public-school data were collected in middle school. Overall, 40% of students took some kind of arts elective course (music, dance, drama, visual art) during middle school. Black students, males, students with disabilities, those previously retained, and those not English proficient had reduced odds of taking an arts class. Children with stronger school readiness skills at age 4 and stronger academics in 5th grade were more likely to enroll in arts-related courses. Importantly, controlling for prior variables associated with selection into the arts, including prior academic performance, students with exposure to an arts elective in middle school subsequently had significantly higher GPAs and math and reading scores, and decreased odds of school suspension, compared to students not exposed to the arts.

Keywords: academic achievement, arts education, selection, ethnicity, middle school

Although the arts are clearly valuable for their own sake (National Endowment for the Arts [NEA], 2012; Winner, Goldstein, & Vincent-Lancrin, 2013), researchers and arts educators have claimed for years that active sustained participation in the arts (i.e., music, dance, drama, and visual art) may be helpful for various aspects of children's cognitive, social, emotional, and behavioral development, and can improve student academic performance (Eisner, 1998; Menzer, 2015; Winner et al., 2013). Opportunities for students to take elective courses in the arts in public schools, however, are dwindling, especially in low-income communities where students typically receive fewer opportunities to take arts classes than those in schools with more resources (Parsad, Spiegelman, & Coopersmith, 2012; Rabkin & Hedberg, 2011).

The middle school years may be critical in determining children's long-term trajectories in the arts because although children may have had earlier exposure to the arts at home and perhaps required minimal participation in elementary music programs, 6th–8th grade is the first-time students can choose to take full elective arts courses, and they can still enroll in these arts-related classes with limited skills. Early adolescence is also a sensitive period for brain development, with structures developing at a rapid pace with heightened sensitivity in response to external experiences (Dahl, 2004). Changes that happen in response to arts exposure might enhance students' long-term achievement, motivation, and emotional well-being (Jensen, 2004). Middle school is also when early adolescents importantly experiment with and solidify different identities and possible selves (i.e., "I am a dancer, an artist . . ."), which can influence long-term academic and career choices (Wigfield & Eccles, 2002). So exposure to the arts and related skill development in middle school can be important factors contributing to children's long-term trajectories in the

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arts. In high school, arts participation becomes more of a closed system, with students often needing to have prior arts experience and demonstrate a minimum level of skill and talent to join (i.e., auditions; (McNeal, 1998). Little is known about (a) the factors influencing youth's selection into arts elective courses in middle school, and (b) the "effects" that such arts electives may have on students' academic performance. The current study addresses these gaps in the literature with prospective longitudinal data from 31,332 ethnically diverse children largely in poverty, using statistical analyses that carefully control for selection effects.

The Arts and Academic Achievement

Studies on the potential ancillary benefits of arts participation for child development and academic outcomes fall into one of three types of research designs that vary on the extent to which they allow for causal inference: correlational studies, quasi-experimental studies, and true experimental designs involving random assignment to arts participation groups.

Correlational Studies

There is ample correlational evidence within the U.S. and Canada that participation in the arts—either music (Butzlaff, 2000; Cabanac, Perlovsky, Bonniot-Cabanac, & Cabanac, 2013; Gouzouasis, Guhn, & Kishor, 2007; Vaughn & Winner, 2000; Wetter, Koerner, & Schwaninger, 2009), visual art (Spelke, 2008; Walker, Winner, Hetland, Simmons, & Goldsmith, 2011), dance (Carter, 2005; Minton, 2003), or drama (Barsalou, 1999; Goldstein, 2011; Goldstein & Winner, 2012; Goldstein, Wu, & Winner, 2009)—is associated with stronger cognitive, social, or academic outcomes for students. For example, students who are involved in music do better in either school (Cabanac et al., 2013; Vaughn & Winner, 2000), on a general cognitive/IQ assessment (Corrigall, Schellenberg, & Misura, 2013; Schellenberg, 2011), or on more specific aspects of cognition such as executive functioning (Bialystok & DePape, 2009; Schellenberg, 2011; Zuk, Benjamin, Kenyon, & Gaab, 2014), compared to those who are not. The problem, however, is that one cannot conclude that it is the arts experience that is causing the higher academic or cognitive performance. As has been discussed by others (Fitzpatrick, 2006; Foster & Jenkins, 2017; Schellenberg & Weiss, 2013; Winner & Cooper, 2000), a third-variable confound is almost certainly present, such as family socioeconomic status (SES; parent income and education, family social capital, parental involvement, stimulation, and investment in the child) that is driving both participation in the arts (expensive musical instruments and lessons, ballet classes, and art supplies) and increased student academic performance. Another possibility is reverse causality, that smarter or more capable children are simply the ones who tend to choose arts-related activities (Schellenberg, 2011). In summary, there is much evidence that the arts and student academic outcomes are associated, but other research designs are needed to get at causality, such as quasi-experimental or experimental designs.

Quasi-Experimental Studies

Quasi-experimental studies are those that either (a) introduce an arts experience to children and collect prepost data on participants but without a comparison group of students who did not get the intervention, or (b) examine naturally occurring groups of children who do and do not get a certain arts experience and try to control statistically (with varying degrees of success depending on the quality and number of covariates included and the statistical procedures utilized) for what are called "selection effects," the other ways in which the children who do and do not receive the arts experience are different. Numerous quasi-experimental studies show that the arts are still linked to a variety of positive outcomes for children, after controlling for a number of factors, most typically SES.

The arts domain with the most quasi-experimental (and experimental) evidence of ancillary "effects" on children is music (Gerry, Unrau, & Trainor, 2012; Piro & Ortiz, 2009; Tierney, Krizman, Skoe, Johnston, & Kraus, 2013; Williams, Barrett, Welch, Abad, & Broughton, 2014). Early childhood music classes, for example, give children practice in controlling and regulating their motor behavior through music (i.e., fast–slow; high–low; start–stop), and such experience appears to enhance children's behavioral self-control (Winsler, Ducenne, & Koury, 2011). Several studies from Canada controlling for family income show enhanced child cognitive functioning (IQ) from music instruction (Corrigall et al., 2013; Schellenberg, 2011; Schellenberg & Mankarious, 2012). More specific cognitive gains in the area of executive functioning have also been found in quasi-experimental musical training studies (Schellenberg, 2011; Zuk et al., 2014). Finally, cognitive enhancements from music may translate to enhanced academic performance. Studies controlling for selection factors such as SES and ethnicity show that in-school music instruction is associated with better student standardized test scores in elementary (Southgate & Roscigno, 2009) and high school (dos Santo-Luiz, Mónico, & Almeida, 2016; Miksza, 2010).

Quasi-experimental evidence of ancillary effects for other arts domains, such as drama (Catterall, 2007; Elpus, 2013; Goldstein & Winner, 2012; Klorer & Robb, 2012; Podlozny, 2000), dance (Elpus, 2013; Kim, 2007; McMahon, Rose, & Parks, 2003; Seham, 1997), and visual art (Tishman, MacGillvray, & Palmer, 1999), or for a multiarts composite (E. D. Brown & Sax, 2013; R. Brown & Evans, 2002; Morrissey & Werner-Wilson, 2005), has also been found. Children in art-enriched preschools, for example, show enhanced positive emotion and emotion regulation compared to children in other schools (E. D. Brown & Sax, 2013; R. Brown & Evans, 2002). Beyond enhancing students' academics, the arts can also enhance students' engagement in school. For example, arts programs can incentivize youth to engage in coursework and feel more confident and motivated about learning (Nichols, 2015; Wright, John, Alaggia, & Sheel, 2006). Involvement in the arts during adolescence has also been linked to increases in student graduation rates from high school and college, and reductions in high-school suspension (Elpus, 2013, 2016; Thomas, Singh, & Klopfenstein, 2015).

A quasi-experimental study by Catterall, Dumais, and Hampden-Thompson (2012) examined the benefits associated with children's arts engagement during the school years. They compiled data from four existing longitudinal studies (NELS, ECLS-K, ELS, NLYS) and categorized at-risk (low-income) children into high and low arts engagement during childhood (both in and out of school). Those high in arts exposure reported less boredom during school and watched fewer hours of TV. Students with high levels

of participation in the arts scored higher on science and writing assessments, had higher GPAs in high school, participated more in extracurricular activities, and were more likely to graduate high school and attend college. For several outcomes, low-income children with high levels of arts participation surpassed high-income children without an arts background (Catterall et al., 2012).

Some authors argue that the more rigorous one controls for selection factors, the weaker the effect of the arts tends to be. A recent study used propensity score matching to control for the many family and child covariates available in the Panel Study of Income Dynamics Child Development Supplement (i.e., gender, siblings, race, prior achievement, behavior problems, self-concept, other extracurriculars, health conditions, family structure, parent education and IQ, income, school mobility, parental cognitive stimulation, monitoring, warmth, and educational involvement; Foster & Jenkins, 2017). They showed that after selection effects were accounted for, there was no evidence of a causal influence of music/arts (parent-reported child lessons in music/performing arts and use of a musical instrument in the home) on direct assessments of children's outcomes (math skill, verbal skill, and working memory; parent reports of social skills and behavior; and child-reports of self-concept). However, this study used parent report of musical training in the home, rather than exposure to all art forms in the form of middle school arts courses, and the outcomes were decontextualized researcher-administered tests (i.e., Woodcock Johnson) and parent reports rather than ecologically valid, actual academic performance measures used in the schools.

Experimental Studies

Although rare, because it is difficult to randomly assign children to participate in sustained arts programs (or impossible in the case of in-school electives), there are a few true experimental studies showing clear evidence that arts programs actually cause a variety of positive outcomes for students that would be helpful in the school setting. Studies show that children assigned to receive musical instruction show greater gains in cognitive skills (Gardiner, Fox, Knowles, & Jeffrey, 1996; Schellenberg, 2004), in academic performance in school (Holochwost et al., 2017), and/or in executive functions (Holochwost et al., 2017; Moreno et al., 2011) compared to similar students not assigned to receive the program.

Experimental evidence is also found for other art forms. Children who participated in an in-school drama and dance intervention integrating movement, gesture, and expression into early English literacy lessons showed greater gains in language acquisition and science vocabulary compared to a control group (Greenfader, Brouillette, & Farkas, 2015). In a recent study involving random assignment of teachers to professional development using drama techniques for teaching language arts, enhanced English acquisition among English Language Learners (ELLs) was found compared to regular professional development (Greenfader & Brouillette, 2017). Goldstein and Lerner (2017) assigned low-income 4-year-olds to a program involving repeated dramatic pretend play games and found enhanced emotional self-control for participants compared to controls. Finally, Lobo and Winsler (2006) randomly assigned Head Start preschool children to participate in either a music and movement/dance program or an attention control group. Teachers and parents who were blind to children's group membership reported that the children in the dance group improved significantly in their social competence and behavior compared to children in the comparison group.

In summary, although there is a large body of evidence linking the arts to academic and developmental outcomes for students, the evidence becomes weaker as the rigor of research design allowing for causal inference improves. Some meta-analyses and reviews are optimistic but caution the need for better research. A meta-analysis of 80 quasi-experimental and experimental studies found causal and near-causal evidence that drama education improves children's language skills and vocabulary acquisition through the writing, storytelling, perspective taking, and script reading and memorizing activities that take place during dramatic engagement (Podlozny, 2000). Other reviews conclude that prior research is mixed and has failed to find consistent positive relationships between arts engagement and academic performance (Smithrim & Upitis, 2005). The Reviewing Education and the Arts Project (REAP) meta-analyses examined links between multi-arts, music, drama, and visual art and student academic performance and socioemotional outcomes (Winner et al., 2013). They reported studies showing positive effects but others showing inconsistent, inverse, or no effects of student engagement in multi-arts (in or out of school) on academic achievement (Winner et al., 2013). In the domain of music and academic outcomes, meta-analyses and reviews similarly conclude that there are substantial limitations in that research, such as a failure to generalize findings between studies, the use of small samples, and most importantly, a lack of sufficient control over selection factors (Hallam, 2010; Hetland, 2000; Schellenberg, 2004; Southgate & Roscigno, 2009; Winner & Cooper, 2000).

Indeed, short of conducting randomized control trials (which is not possible for in-school elective coursework), understanding and subsequently controlling for selection factors is the key to advancing the scholarship in this area. Children who have access to the arts and voluntarily sign up for elective arts-related classes in middle school are likely different in many ways from those who do not, even before students get to middle school. Differences in children's early skills (i.e., academic/cognitive, motivation, social skills, school readiness) or family resources (income, parental education, help with homework, presence of a tutor) also contribute to children's later academic performance in middle school. Thus, researchers wanting to examine the benefits of arts-related elective classes in middle school for students (our second research goal) must first be aware of, and statistically control for, the known, preexisting, selection differences that exist between the groups of students who are and are not exposed to the arts in middle school (our first research goal). The issue of preexisting "selection" factors is closely related to the issue of "access." That is, who has access to the arts, who takes arts electives in middle school, and how are they different from those who do not?

Access To and Selection Into the Arts

There has been much interest in integrating arts education into schools (Chappell & Cahnmann-Taylor, 2013). Convinced by the research reviewed above on the benefits of the arts for all students, but especially for those in poverty and from ethnically and linguistically diverse backgrounds, policymakers, advocates, and art educators alike have been trying to increase access to the arts

(Winner et al., 2013). Arts electives give students the opportunity to explore and express their emotions in a creative and productive way. Students living in poverty who struggle with emotional stressors, behavior challenges, and income-related academic skill gaps benefit most from guided arts experiences. Arts classes present students with additional ways to relate and engage in school, which can lead to lower levels of drop-out and criminal activity (Duncan & Murnane, 2011; Elpus, 2013; Wright et al., 2006). In 2012, the President's Committee on the Arts and Humanities launched the Turnaround Arts Initiative designed to implement high-quality arts education to low-income and underperforming school districts (Stoelinga, Joyce, & Silk, 2013). An initial 2-year analysis was positive, revealing that students in Turnaround Arts schools increased in reading and math proficiency compared to students in schools that received similar school improvement grants but allocated funding to non-art-related areas (Stoelinga et al., 2013). The arts are also featured in the recent Every Student Succeeds Act in that providing a "well-rounded education" and "educational equity for all students" are rewarded, and schools can use data on arts offerings and participation rates across groups as evidence of meeting these goals (Jones & Education Commission of the States, 2017).

Despite advocacy for arts education, the creative arts continue to play a relatively minor role in schools with more emphasis placed on "core" classes—language arts, math, and science (Beveridge, 2009; Chappell & Cahnmann-Taylor, 2013; Ruppert, 2006; Winner et al., 2013). Opportunities for students to take the arts in secondary public schools have been decreasing over the last decade (Parsad et al., 2012). With the exception of music, which has been relatively stable at around 91% of schools offering, the availability of the other creative arts (dance, drama, and visual arts) in secondary schools has decreased during the last decade. The availability of in-school dance electives has always been low but decreased between 1999 and 2000 to 2008–2009, from 14% to 12% of secondary schools nationwide offering some type of dance instruction. The accessibility of drama classes among public secondary schools in the U.S. has also decreased three percent (48% to 45%) between 1999 and 2000 to 2008–2009. Visual art classes have also decreased four percent (from 93% of schools to 89%) during the same period (Parsad et al., 2012). More recent data from the National Assessment of Educational Progress (NAEP, 2016) confirm that 42% of 8th graders in the U.S. report taking visual art classes and 33% take either band or chorus (not enough data for drama and dance).

Most concerning, however, is the fact that access to the arts in schools is not equal across different ethnic and socioeconomic groups. It is well documented that children from less-affluent families have fewer opportunities of arts exposure and involvement in arts-related activities, both inside and outside of the public schools (Winner et al., 2013). The availability of drama classes in school, for example, is influenced by the poverty concentration of the school (Parsad et al., 2012). Schools with the highest concentration of students in poverty have less drama instruction (28%) compared to schools with less poverty (41%–56%), and the same is true for visual art classes (Parsad et al., 2012).

At the child level, there are demographic discrepancies between those who do or do not engage in the arts in middle and high school. Students in poverty are much less likely to get arts exposure in schools compared to students from financially advantaged families, and ethnic differences in participation are also found (Catterall, 2009). Child Trends (2015) reported ethnic differences in arts participation in schools favoring White, then Black, then Hispanic students, as well as differential arts access linked to parental education. NAEP (2016) data for 8th-grade students also confirm less arts participation for minority and low-income students. ELL students are also underrepresented in art involvement (Catterall, 2009). Finally, females report higher rates of art involvement compared to males (NEA, 2012; Rabkin & Hedberg, 2011), especially in the domain of dance (Bucknavage & Worrell, 2005; Dumais, 2006).

As seen above, research has explored demographic variables such as ethnicity, gender, and poverty as predictors of selection into the arts for youth, but there are other variables having to do with initial child skill levels that could distinguish between those who do and do not take the arts in middle school. Our study adds to the literature by examining several other factors, including special education status, ELL status, English proficiency, initial school readiness (cognitive, social, behavioral, and motor skills) at kindergarten entry (7 years before middle school), and prior academic performance in elementary school as predictors of participation in middle school arts-related elective courses. It is likely that children who are broadly competent and already doing well in school are the children who chose to take arts electives, so it is important to understand whether that is the case when examining links between the arts and academic performance.

The Present Study

In a 10-year, prospective longitudinal study, we followed over 30,000 low-income, ethnically diverse children from preschool through the end of middle school. We collected official school record data on arts-related elective courses taken in 6th, 7th, and 8th grade as well as children's academic outcomes later in middle school. We first carefully determined the ways children who did and did not take arts classes (a composite of dance, drama, music, or visual art) in middle school differed in terms of demographic variables and prior abilities and achievement. Then, after controlling for all relevant selection factors, we examined whether taking arts-related courses was linked to enhanced academic outcomes in middle school. Given that randomly assigning students to take middle school art classes is impossible, this prospective longitudinal design, which takes into consideration multiple preexisting differences between art exposure groups, is one of the strongest quasi-experimental options available to test for a potential causal connection between arts exposure and later outcomes. Although we acknowledge that it is important to examine more specific links between different types of arts participation (i.e., drama or visual art) and child academic outcomes, it is still beneficial to examine potential effects of overall multi/any arts participation (as we do here) because the policy discussion often takes place at the more general level of "the arts"; thus, we examine a composite of any arts participation (music, drama, dance, and/or visual art) in middle school. We asked the following research questions: (1) What proportion of our sample enrolls in arts-related elective courses during middle school, and what proportion of those who enroll in 6th grade persist into 7th and 8th grade? (2) What are the preexisting selection factors (i.e., demographic variables, school readiness skills at kindergarten entry, and prior elementary school

performance) that predict exposure to arts-related courses in middle school? and (3) Controlling for the selection factors, is exposure to arts-related courses linked to enhanced concurrent and later academic outcomes for students in middle school?

Method

Larger Context/Data Source

We used data from the (Miami School Readiness Project (MSRP: Winsler et al., 2008, 2012)), a large-scale, university–community partnership using a prospective, cohort-sequential, longitudinal design. Five cohorts of ethnically diverse, low-income, 4-year-old children were individually assessed for school readiness in prekindergarten between years 2002–2003 and 2006–2007. Essentially the entire population (92%) of children who received subsidies to help pay for childcare or who attended public school pre-K programs at age 4 participated. Thus, the sample does not include (a) low-income children who were in Head Start programs only, (b) children of any income who received only parental care, or (c) families who paid fully for their own childcare at age 4.

Students who later entered the local school system were followed longitudinally every year as they progressed through school. With the help of the school system, children were carefully matched/linked according to unique IDs and followed longitudinally (even if they moved to another school) as long as they remained in the school district. The research team received de-identified, confidential administrative school record data for children who were still in the school system each year. The five cohorts were progressing through middle school (6th–8th grade) at the time of this study. Attrition (or failure to initially link/match children) from the original pre-K study to 6th grade was 24%. Of more relevance, since arriving to 6th grade was required to be in the study, only 3.75% of children left the school district/study between 6th and 7th grade, and another 3.65% of 7th graders didn't come back to the school district for 8th grade, provided they were old enough (i.e., in an early cohort) to have reached that latter grade. The Miami-Dade County public school system (MDCPS) is a very large, urban school district with 190 different middle schools.

Participants

We had data on 31,332 children who had completed either 6th, 7th, or 8th grade by the academic year 2013–2014. Due to cohort-based attrition (i.e., some of the children were not old enough to have reached 7th or 8th grade by 2014), we had 6th-grade data for all five cohorts, 7th-grade data for four cohorts, and 8th-grade data for three cohorts. Thus, we had 16,392 students with 8th-grade data, 23,788 with 7th-grade data, and 30,413 with 6th-grade data. Table 1 shows the background characteristics, average school readiness, and elementary school performance of our sample. Children were 52% male, and the ethnic breakdown was 61% Latino, 32% Black, 6% White, and .06% Asian/other/mixed. Slightly more than half were considered ELLs by the district in kindergarten but by 5th grade, only 5% were considered limited in English proficiency. The sample was largely in poverty (81% received free/reduced lunch in 6th grade), 16% received special education services in 6th grade, and 12% were retained at some point in elementary school.

Table 1
Demographic Information on the Full Sample

Variable	*N (%)*
Total sample	N = 31,322
Has 6th-grade Data	n = 30,413
Has 7th-grade Data	n = 23,788
Has 8th-grade Data	n = 16,392
Gender	
Male	16,144 (51.8%)
Female	15,021 (48.2%)
Ethnicity	
White/other	1,989 (6.40%)
Hispanic	18,971 (60.90%)
Black	10,000 (32.10%)
Asian/Pacific Islander	185 (.60%)
Poverty status in 6th grade	
Received free/reduced lunch	24,636 (81.00%)
Did not receive free/reduced lunch	5,775 (19.00%)
English Language Learner (ELL) in K	
ELL	17,978 (57.40%)
Not ELL	13,348 (42.60%)
English proficiency 5th grade	
English proficient	28,300 (95%)
Non English proficient	1,477 (5.0%)
Disability status in 6th Grade	
Has a disability	4,921 (16.20%)
Non-disabled	25,502 (83.80%)
Retention	
Retained in elementary school	4,206 (13.40%)
Not retained in elementary school	27,126 (86.60%)
	M (*SD*)
School Readiness Skills (Nat. Percentiles)	
DECA (1–99 scale)	
Social Skills (TPF)	59.40 (*28.00*)
Behavioral Concerns	46.34 (*29.51*)
LAP-D (1–99 scale)	
Fine motor	56.62 (*28.87*)
Gross motor	68.15 (*28.90*)
Cognitive	52.31 (*30.31*)
Language	44.55 (*30.69*)
Fifth-Grade Elementary Academic Achievement	
GPA (5-pt scale)	4.09 (*.57*)
FCAT Math (100–500 scale)	284.95 (*68.69*)
FCAT Reading (100–500 scale)	268.45 (*61.30*)

Procedure

Children's school readiness was assessed directly at age 4 by outside assessors, parents, and teachers (measures and procedures described more below). All data from kindergarten through 8th grade came from student records. The project was approved by both the university's and the school system's IRBs.

Measures

Predictor variables/covariates.

ELL status in kindergarten. English language learner status was acquired from parent-reported home language at kindergarten entry. Those reporting predominantly speaking another language at home were considered ELLs during the kindergarten year by the

school system. The vast majority (95%) of ELLs spoke Spanish at home, but there were a few Haitian and Asian language speakers as well.

English proficiency at the end of elementary school. Students classified as ELL by the district were assessed each year for English proficiency with the (Comprehensive English Learner Assessment (CELLA; Educational Testing Service, 2005) The CELLA assesses aural/oral, writing, and reading skills in English, Students must reach a minimum threshold of performance on the high stakes (English) reading Florida Comprehensive Achievement Test (FCAT; Human Resources Research Organization & Harcourt Assessment, 2007), in addition to reaching ESOL Level 5, to exit the ESOL program (Miami-Dade County Public Schools [MDCPS], 2008; Kim, Curby, & Winsler, 2014). This test measures aural comprehension and oral production, and those students who were determined to be ELLs were provided with English for Speakers of Other Languages (ESOL) instruction. The ESOL levels are marked 1–5, with levels 1 and 2 indicating beginning English learners who still have much difficulty, levels 3 and 4 being advanced stages of English learning, and level 5 is considered sufficiently proficient in English to exit the ESOL program (Kim et al., 2014). We examined students' ESOL level in 5th grade, and those at level 5 (and those never considered ELLs) were considered English proficient (1) and those with a value less than 5 received a 0.

Poverty status in 6th grade. Qualification for free/reduced lunch in 6th grade served as a proxy for poverty status. Children eligible for free or reduced-price lunch (130% of the Federal Poverty Line and 185% of the Federal Poverty Line, respectively) received a 1 for this variable.

Disability status in 6th grade. Students were coded for special education if they had a primary exceptionality code in 6th grade. Codes included the following groups: intellectual disability, speech/language disorder, visually impaired, deaf or hard of hearing, specific learning disabled, dual-sensory impaired, autistic, severely emotionally disturbed, traumatic brain injured, or other health impaired. If any of these codes were present in 6th grade, children were coded a 1 = yes (vs. 0). Gifted students were coded as a 0 as not receiving special education.

Retention in elementary school. We received information about what grade the child was in every year. Four criteria had to be met for a child to be considered retained at some point during elementary school. First, the child had to enter kindergarten (or their first grade in the school system) on time according to their birth date. Second, the child had to complete a grade, as demonstrated by having end-of-year grades for that grade level. Third, the child had to appear in the same grade for a second time the following year. Last, the child had to have final grades for the second, subsequent year in that repeated grade. Children ever retained during elementary school (K–G5) received a 1 (vs. 0).

Fifth-grade GPA. We used 5th-grade GPA as an indicator of prior academic competence. At the end of each academic year, children received grades from their teachers for all subject areas. Fifth-grade subjects include art, science, social studies, music, reading, language arts, English as a second language, math, and physical education, but subjects varied somewhat by student. Grades were changed to a 5-point scale, where 5 = A, 4 = B, 3 = C, 2 = D, 1 = F. Composite scores were created by averaging all grades children received across all subjects in the 5th-grade year, resulting in one overall continuous GPA-type score for 5th grade.

Fifth-grade standardized math and reading test scores. In 5th grade, all students in the state are required to take the high-stakes FCAT test (Human Resources Research Organization & Harcourt Assessment, 2007). The FCAT is a high-stakes standardized test used by the state to assess students' progress in math and reading. Questions are in both multiple-choice and short-answer formats. Total scale scores for math are included in the present study (range = 100–500; Cronbach's alpha = .90; (Human Resources Research Organization & Harcourt Assessment, 2007)). Just math scores were used for multivariate predictor analyses because the math and reading scores were highly correlated (r = .88) and we wanted to avoid multicollinearity in the regression analyses.[1]

Cognitive, language, and motor skills at school entry. Children's cognitive, language, and fine and gross motor skills were measured at age 4 with the Learning Accomplishment Profile—Diagnostic (LAP-D; Nehring, Nehring, Bruni, & Randolph, 1992), a norm-referenced developmental assessment administered individually to children in their pre-K year. Children were assessed once in the beginning (September/October) of the year and at the end (April/May). For some cohorts, 3-year-olds were also assessed in the middle of the year. We used children's latest assessment. For children in subsidized childcare, well-trained, outside, MA-level, bilingual assessors administered the LAP-D assessment in either Spanish or English (whichever was the child's strongest language), and for those in public school pre-K programs, the child's teacher administered the assessment after attending the same rigorous training. Internal consistency reliability for the LAP-D within the overall sample ranged from .92 to .95 (Winsler et al., 2008). National percentiles scores (range = 1–99) were used to increase interpretability.

Social skills and behavior problems at school entry. Children's social–emotional strengths and behavior problems were also measured at the beginning and end of the pre-K year using the Devereux Early Childhood Assessment (DECA: LeBuffe & Naglieri, 1999). The DECA subscales, initiative, self-control, and attachment, are combined and referred to as total socioemotional protective factors, for which larger numbers indicate greater social skills. The DECA behavior concerns scale (higher numbers indicating more behavior problems) was also used. Teachers and parents separately reported (identical forms) the frequency of children's behavior using a 5-point Likert-type scale to indicate how often within the past 4 weeks a child exhibited behaviors in the items (0 = *never*, 1 = *rarely*, 2 = *occasionally*, 3 = *frequently*, and 4 = *very frequently*). Parents and teachers chose whether to complete the form in English or Spanish. Sixteen percent of teachers and 34% of parents completed the Spanish form. National percentiles scores were used (range = 1–99). Internal consistency reliability within this diverse sample was .91 (parent) and .94 (teacher) for total protective factors, and .72 (parent) and .81 (teacher) for behavior concerns, and did not vary as a function of language of form (Spanish, English) or rater (Crane, Mincic, & Winsler, 2011).

[1] We ran the model with reading instead of math and found exactly the same results.

Arts exposure in middle school. Included in the administrative data received each year on each student for all grade levels were all course subjects taken (i.e., math, social studies, science, art) for which an end-of-the-year (or semester) teacher-assigned grade was given. Depending on whether certain course names appeared on the student's final report card each year, we created the following variables denoting whether, when, and for how long students took arts-related elective courses. This variable include the visual arts (Art, Studio Art 1, 2, 3, Creative Photo, Graphic Design, Orientation to Art, Draw & Paint), dance ("Dance 1, 2, 3, or 4, Dance Conditioning 1 or 2), drama (Theater 1, 2, 3, or 4, Comprehensive Theater), or music (band, orchestra, chorus, guitar, keyboard, jazz ensemble, music theory, exploratory music, music techniques). If any of these appeared in 6th, 7th, or 8th grade, the student was flagged as having experienced some kind of arts in the grade (i.e., 6th Grade Arts = Yes (1) vs. No (0)). These were aggregated across all grades to make another variable that indicated yes (1) or no (0) whether the child ever experienced art at least once.

Finally, we made a variable that indicated the length of time (in years) a student took an arts elective. Although only Grades 6, 7, and 8 were included, scores for this variable ranged from 0 to 4 years due to the fact that children could have been retained a year (i.e., repeat 6th grade). Thus, we include both on-time students (those who progressed from 6th to 7th to 8th grade without a hitch) and those who repeated a grade in middle school. Thus, a "2" could be assigned to both an on-time student who took an arts class for two years (i.e., 6th and 7th grades) and a student retained in 6th grade and enrolled in the arts both of his or her 6th-grade years. Those who were in more than one arts-related class went into the 1 category, the same as those who just had 1 arts course, and they were only counted once. It is worth noting that in this school system, all the arts are elective courses in 6th–8th grade—none are required.

Outcome Variables

For each variable, the outcome was recorded for both the concurrent year in which the arts exposure took place (i.e., 6th-grade arts exposure and 6th-grade GPA or retention) and the next year after the arts exposure took place (i.e., 6th-grade arts exposure and 7th-grade outcome).

Retention in middle school. Similar criteria mentioned earlier for elementary school retention were used to define retention in middle school. The student had to complete the middle school year (6th, 7th, or 8th grade) and have end-of-the-year grades for that year in school, and then had to appear the following year a second time in the same grade. Also, the child had to have remained long enough to have final grades at the end of the repeated year.

GPA in middle school. Middle-school subjects included English/language arts/ESOL, mathematics, social science, science, physical education, music/art/theater/arts/dance, foreign language, and career and technical education. We averaged the student's grades across all subject areas to create a continuous GPA score for each grade (6th, 7th, and 8th) on a 5-point scale (5 = A, 4 = B, 3 = C, 2 = D, 1 = F).

Standardized FCAT math and reading test scores. Students in the state are required to take the high-stakes FCAT (Human Resources Research Organization & Harcourt Assessment, 2007) in both math and reading each year in middle school. The FCAT is a high-stakes standardized test used by the state to assess students' progress in math and reading. Questions are in both multiple-choice and short-answer formats. Total scale scores are included in the present study (range = 100–500; Cronbach's alpha = .90).

Attendance. Student school attendance was collected from school records each year. Teachers submitted active attendance reports daily, and administrative records listed the total number of days absent. These represent a combination of both excused and unexcused absences.

School suspension. Administrative records also listed the total number of days a student was suspended for a behavioral offense each year in school. This is a combination of indoor and outdoor suspensions. We categorized this as a dichotomous outcome for analyses—indicating yes/no whether the child was suspended at least once during each grade.

Analysis Strategy

The first research question on how many students are taking the arts was examined descriptively. For research question 2 on differences between those that do and do not take arts-related electives in middle school, we first examined in a bivariate fashion by running chi-square analyses for categorical predictors, and independent samples *t* tests for continuous predictors. Given the large sample size and number of tests run, for the univariate analyses, we chose the conservative alpha value of $p < .001$. We also report Pearson correlations between our predictors and the number of years that students were involved in the arts, for those who ever got exposed. Then, we tested a series of developmentally informative, hierarchical, multivariate, logistic regression analyses to predict arts engagement in middle school entering all predictors. For our final research question about academic outcomes associated with arts engagement, we ran multiple regression models (logistic regressions when the outcome was categorical) predicting concurrent and future outcomes as a function of arts exposure, carefully controlling for each of the selection factors that were significantly associated with taking the arts in the first place, by entering those variables in the model as covariates. Although children are nested within schools, given (a) the Intra-Class Correlations for these outcomes in our prior work with this sample tended to be low (about 8%–11% of the variance found at the school level), (b) with our huge sample size, adjustment of standard errors for nesting rarely makes a difference, and (c) the desire to more closely compare our findings to that in the field, we did not feel it necessary to do multilevel models.

Results

RQ1: What Proportion of Our Sample Enrolls in Arts-Related Elective Courses During Middle School, and What Proportion of Those Who Enroll in 6th Grade Persist into 7th and 8th Grade?

Exposure. The 31,332 students in our sample attended 190 different schools serving 6th-8th graders in the county. Almost all of the schools (94%) in our sample offered some type of creative

art elective course (dance, drama, music, and/or visual art) in 6th, 7th, or 8th grade. At the student level, nearly the entire sample of students (96.9%) went to a school that offered some type of art elective. Table 2 shows the number and proportion of our sample that took any type of arts-related elective course ever in middle school, and broken down by grade. Of the 31,332 adolescents with data, 12,638, (40%) took an arts elective course (dance, drama, music, and/or visual art) at least once at some point during middle school. Examined separately by grade level, we see that 24.5% of students enrolled in some kind of arts elective in 6th grade, a bit more (28.2%) in 7th grade, and 25.8% in 8th grade. Thus, about a quarter of all students had exposure to some kind of arts elective class each year in middle school. Table 2 also shows that of those who took an arts class at least once, a clear majority (65%) was exposed to an arts-based elective for only one year, about 24% took an arts elective for two years, and only 11% of students were exposed to arts-related courses for all three years. Interestingly, one student who repeated 8th grade took an arts-related class for all four of his middle school years.

Persistence. Table 3 shows the number of students who started arts in 6th grade and either persisted in taking some type of arts throughout middle school or quit. Importantly, almost half (44%) of students who took an arts elective in 6th grade quit/did not reenroll in the arts again in 7th grade. A similar 44% who took an arts class in 7th grade did not reenroll for 8th grade (not tabled). Less than half (47.7%) of those students who started middle school with an arts class in 6th grade persisted with the arts through 8th grade. Of related concern was that students rarely entered into arts courses later if they did not sign up in 6th grade. Only 20% of students not enrolled in the arts in 6th grade started to take an arts-related elective in 7th grade. Similarly, only 15% of students not enrolled in 7th grade enrolled in the arts in 8th grade (not tabled).

RQ2: What Are the Preexisting Selection Factors That Predict Exposure to Arts-Related Courses in Middle school?

Bivariate analyses. We first addressed this via *t* tests (continuous predictors) and chi-square analyses (categorical predictors). Table 4 shows how the categorical variables (gender, ethnicity, poverty, disability, ELL status, English proficiency, and retention status in elementary school) differed depending on whether the student took arts in middle school. There were gender differences favoring girls in overall arts exposure. For males, 34% took some kind of creative art elective during middle school compared to 47.2% for females, $\chi^2(1) = 552.40$, $p < .001$. Ethnic differences were more noticeable. Although White and Asian students had practically equal rates of exposure (50.3% and 49.7%, respectively), Latino (43.9%) and Black students (31.6%) were underrepresented in arts courses in middle school, $\chi^2(3) = 503.87$, $p < .001$.

Students who did not receive free/reduced lunch in 6th grade were more likely to have an arts elective (46.2%), compared to those in poverty (39.6%), $\chi^2(1) = 82.48$, $p < .001$. Significant disparities in arts access were found as a function of disability status. Students without disabilities enrolled in arts courses at nearly double the rate of students receiving special education (44.2% vs. 23.7%), $\chi^2(1) = 719.38$, $p < .001$. ELLs showed slightly higher in-school arts involvement (42.4%) compared to native English speakers (38.1%), $\chi^2(1) = 47.77$, $p < .001$, and children who were not yet fully English proficient in 5th grade were very unlikely to enroll in arts courses (18.4%) compared to ELLs proficient in English and native speakers (42.4%), $\chi^2(1) = 334.00$, $p < .001$. Finally, those who struggled in elementary school as indicated by having been retained at least once by 5th grade were much less likely (26.1%) to later take a middle-school arts elective course compared to those never retained (42.5%), $\chi^2(1) = 408.78$, $p < .001$.

Table 4 also shows how students who took arts-related courses in middle school were different from those who did not on our continuous predictor variables (social skills, behavior problems, cognitive, language, motor skills at school entry, GPA and math and reading scores in 5th grade) years before they arrived at middle school. At age 4, before children even started elementary school, those who later went on to take arts-related elective classes 7 years later in middle school were already scoring higher on teacher-rated social skills compared to students who never took an arts elective ($t(24{,}013.60)^2 = -17.16$, $p < .001$, $d = .21$). Children who later took arts electives during middle school also showed better behavior as reported by preschool teachers at age 4 compared to children who did not ($t(23{,}738.87) = 16.30$, $p < .001$ $d = .20$). Similarly, even before kindergarten entry, children who later enrolled in arts electives in middle school had stronger skills in the fine motor ($t(18{,}878.87) = -17.74$, $p < .001$, $d = .25$), cognitive ($t(18{,}487.31) = -18.44$, $p < .001$, $d = .26$), and language domains ($t(18{,}094.60) = -14.59$, $p < .001$, $d = .21$). No group difference was found in gross motor skills at school entry. Similarly, students later exposed to the arts in 6th, 7th, or 8th grade were already performing better academically in 5th grade than those who did not. Children who took some type of arts in middle school had better 5th-grade GPAs, $t(28{,}045.59) = -37.66$, $p < .001$, $d = .44$, and higher math ($t(26{,}099.40) = -28.11$, $p < .001$, $d = .34$), and reading scores $t(25{,}770.92) = -34.94$, $p < .001$, $d = .42$) compared to students who did not enroll in arts in middle school.

Correlates of total number of years of exposure. Table 5 shows, for those students who took at least one arts-related course,

Table 2
Proportion of Middle School Students Enrolled in an Arts Class by Grade Level and Number of Years

Grade or Years Enrolled	Total *N*	Enrolled in Any Arts	
		N	Percent
Grade			
Sixth	30,413	7,446	24.50%
Seventh	23,788	6,718	28.20%
Eighth	16,392	4,234	25.80%
Ever	31,332	12,638	40.30%
Years enrolled			
1	12,638	8,227	65.10%
2	12,638	3,021	23.90%
3	12,638	1,389	.11%
4	12,638	1	.01%

[2] Equal variances were not assumed.

Table 3
Persistence in Enrollment in the Arts From Sixth to Seventh, and from Sixth to Eighth, Grades

	Seventh Grade			Eighth Grade		
Any Arts	Not Enrolled	Enrolled	Total	Not Enrolled	Enrolled	Total
Sixth Grade						
Not Enrolled (%)	14,220 (79.8%)	3,500 (20.2%)	17,820	9,597 (80.4%)	2,333 (19.6%)	11,930
Enrolled (%)	2,370 (44.1%)	3,010 (55.9%)	5,380	1,951 (52.3%)	1,781 (47.7%)	3,732
Total	16,590	6,610	23,200	11,548	4,114	15,662

continuous predictor variables associated with taking more years of arts classes. Pearson correlations show that each of the school readiness skills at age 4 and 5th-grade academic achievement variables were significantly associated with how many years students took arts electives in middle school. Although associations were small (rs = .04–.12), students rated by their teachers at age 4 as having greater social skills and better behavior, and children who showed stronger motor, cognitive, and language skills at age 4, persisted for more years of arts exposure. Academic performance in 5th grade was more strongly associated (rs = .11–.38) with years of arts enrollment. Those with higher 5th-grade GPAs and math and reading scores took more years of arts electives than those who did not do as well in elementary school. Thus, early child competence not only predicts the dichotomous arts exposure

Table 4
Differences in Categorical and Continuous Variables in Arts Enrollment in Middle School

	Enrolled	
Variable	*n*	%
Gender**		
Male	5,503	34.10%
Female	7,084	47.20%
Ethnicity**		
White/other	1,000	50.30%
Hispanic	8,328	43.90%
Black	3,162	31.60%
Asian/Pacific Islander	92	49.70%
Poverty Status**		
No free/reduced lunch	2,666	46.20%
Free/reduced lunch	9,765	39.60%
Disability Status**		
Non-Disabled	11,273	44.20%
Disability	1,163	23.70%
English Language Learner**		
Non-ELL	5,087	38.10%
ELL	7,548	42.00%
English Proficiency (ESOL)**		
English proficient	12,007	42.40%
Not English proficient	272	18.40%
Prior Retention**		
Not-retained	11,540	42.50%
Retained	1,098	26.10%

	Enrolled			Not Enrolled			
	n	*M*	*SD*	*n*	*M*	*SD*	*d*
School Readiness at Age 4							
Social skills*	10,825	62.87	26.95	15,161	56.92	28.4	.21
Behavioral concerns*	10,825	42.85	28.83	15,161	48.84	29.74	.20
Gross motor skills	7,510	68.1	28.51	9,924	68.19	30.38	.003
Fine motor skills*	8,499	60.75	27.58	11,312	53.52	29.43	.25
Cognitive skills*	8,470	56.85	29.61	11,325	48.92	30.39	.26
Language skills*	8,455	48.21	30.73	11,252	41.79	30.38	.21
Academic Performance							
Fifth-grade GPA*	12,113	4.23	.51	16,841	3.99	.59	.44
Standardized Test Scores							
Fifth-grade FCAT math*	12,104	298.09	67.71	16,469	275.29	67.8	.34
Fifth-grade FCAT reading*	12,126	282.96	60.84	16,490	257.78	59.41	.42

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

Table 5
Pearson Correlations Between Early Academic Skills and Number of Years of Arts Electives (for Those Who Were Ever Exposed, N = 12,638)

Variable	Years of Taking Arts
School Readiness	
Total protective factors	.07***
Behavioral concerns	−.08***
Gross motor skills	.04**
Fine motor skills	.11***
Cognitive skills	.12***
Language skills	.11***
Elementary School Performance	
Fifth-grade GPA	.18***
Fifth-grade FCAT math	.37***
Fifth-grade FCAT reading	.38***

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

distinction, but also, for those who are exposed, how long they persist with arts in middle school.

Multivariate analyses. The above analyses were conducted in a bivariate fashion, one predictor variable at a time. Here we report the results of developmentally informative, hierarchical, multivariate, logistic regression analyses that predict arts engagement during middle school (yes/no) from the combination of all of our preexisting selection and predictor variables. Importantly, these models control for the intercorrelations among the predictor variables and tell us their unique and combined effects on arts exposure. The first block of the regression model examined the contributions of child/family demographic variables (ethnicity, gender, free/reduced lunch, disability status, ELL status, English proficiency) and initial child school readiness skills at age 4 as they come together to predict arts enrollment. Next, elementary school academic performance indicators (5th-grade GPA and math scores, retention status) were entered into block 2. Block 2 informs us not only as to whether 5th-grade achievement is related to middle school arts engagement, controlling for all earlier child competence and demographic variables, but also whether the variables in block 1 remain associated with arts enrollment after 5th-grade achievement is entered. That is, if the coefficient for a demographic variable is no longer significant after children's academic performance is included in the model, it would suggest that that variable was only indirectly related to middle-school arts engagement and its effect is better explained by academic competence. Note that we did not include reading in block 2 because it was too highly correlated with math ($r = .88$) to avoid multicollinearity.

Step 1. Table 6 shows the results of the logistic regression models for selection into the arts in middle school. When demographic and school readiness variables were entered to predict middle-school arts enrollment, ethnicity, gender, poverty status, disability, English proficiency, and gross motor and cognitive skills were significant unique predictors of who did or did not take an arts elective during middle school. Odds ratios (ORs) are provided that indicate the extent to which the odds of taking an arts elective course anytime in middle school increase (greater than "1") or decrease (less than "1") as a function of being one level of the variable (i.e., male) compared to the other (female). For the continuous predictors, the OR indicates how much the odds of the outcome (arts exposure) increase/decrease with a 1-point increase in the predictor (i.e., moving from the 39th to the 40th percentile in cognitive skills).

Black students had less than half the odds of taking an arts course compared to both White and Latino students. Males had 35% fewer odds of enrolling in some type of arts elective compared to females. Students in poverty had significantly reduced odds (a reduction of 20%) of taking a middle-school arts class than those not in poverty, and those with disabilities had 36% less odds of taking an arts elective than typically developing children. Lastly, students who were proficient in English by 5th grade were more than three times likely to enroll in an arts elective compared to those not yet English proficient. It is important to point out that these are all adjusted effects after controlling for all other variables. Thus, for example, even controlling for poverty status and school readiness, Black students are still less likely to get exposure to the arts.

As seen in the lower portion of Table 6, children's cognitive and gross motor skills at age 4 also uniquely predicted taking the arts 7 years later in middle school. For each 1-point increase in cognitive skills, the odds of taking arts in middle school increased by .004. So, for example, a child at the 75th percentile in school entry cognitive skills compared to a child at the 25th percentile (a difference of 50 points) has a 20% increased chance (50 x .004) of taking the arts 7 years later. Interestingly, children with greater gross motor skills at age 4 actually had slightly reduced odds (1% for each percentile point difference in gross motor skills) of enrolling in an arts elective course compared to those with poorer gross motor skills.

Step 2. In the second step, when children's 5th-grade academic performance was entered, controlling for all other covariates, we see that each of the achievement measures was strongly associated with taking an arts elective later during middle school. Students who were retained at some point before 6th grade had 23% less odds of taking an arts elective in middle school than those never retained. A 1-point increase in GPA (i.e., moving from a "B" to an "A") is associated with a sizable 60% increase in the odds of taking the arts in middle school. Similarly, a 1-point increase in math is associated with .002% increase in the odds of getting exposure to the arts (i.e., a 100-point increase on the 500-point scale would mean 20% increased odds of taking the arts).

The ethnic, gender, disability, English proficiency, and early cognitive skill effects remained significant predictors of arts enrollment in middle school after adding the 5th-grade performance measures. Early gross motor skills and poverty status (significant effects in Step 1) were no longer related to arts engagement after factoring in elementary school academic performance in Step 2. Again, these are partial coefficients controlling for the other variables in the model. So it is important to point out, for example, that Black students remained significantly underrepresented in the arts even after controlling for academic performance. This means, for example, that even high-achieving Black students, not in poverty, without disabilities, and with strong cognitive skills, have less access to the arts than similar White and Latino students.

Table 6
Multiple Regression Predicting Selection Into an Arts-Elective Course

Variable	Step 1		Step 2	
	Odds Ratio	*SE*(*B*)	Odds Ratio	*SE*(*B*)
Demographics				
Hispanic/White	.91	.08	.96	.08
Black/White	.52***	.08	.60***	.08
Asian/White	.91	.25	.85	.25
Black/Hispanic	.57***	.05	.62***	.05
Asian/Hispanic	1.001	.24	.89	.24
Male	.65***	.04	.68***	.04
Free/reduced lunch G6	.81***	.05	.92	.05
Disability G6	.64***	.07	.83**	.07
ELL status in K	.98	.05	.94	.05
English proficient	3.10***	.16	2.39***	.12
School Readiness at Age 4				
Social skills	1.001	.001	1.00	.001
Behavioral concerns	1.00	.001	1.001	.001
Gross motor skills	.99*	.001	.99	.001
Fine motor skills	1.001	.001	1.00	.001
Cognitive skills	1.004***	.001	1.003**	.001
Language skills	1.00	.001	1.00	.001
Elementary Academic Performance				
Retention in elementary school			.77***	.06
GPA in 5th grade			1.59***	.04
FCAT math score in 5th grade			1.002***	.23

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

RQ3: Controlling for the selection factors, is exposure to arts-related courses linked to enhanced concurrent and later academic outcomes for students in middle school?

Now that we know about the many preexisting differences between those who do and do not select into middle school arts courses, we wanted to control for these variables to see whether the arts classes are associated with better concurrent and later outcomes in middle school. Thus, we ran multiple regression analyses, including each time the relevant selection factors associated with taking the arts (from Step 2 of the selection regressions reported above), with exposure to the art form as the main predictor of interest. We ran models both for concurrent outcomes during the same year that the arts class was taken, and for the subsequent year—the year after the arts class was taken. Table 7 reports the results for concurrent and subsequent-year outcomes (for continuous outcome variables) for having taken various arts-related elective classes in 6th grade. It is worth noting that prior performance on the outcome variable (i.e., 5th-grade GPA/math/reading) is one of the covariates included that importantly leaves relatively little variance left to explain.

Sixth grade. The top part of Table 7 shows the effect of taking an arts course in 6th grade. Controlling for prior achievement and other selection factors distinguishing those who do and do not take the arts, taking an arts class in 6th grade was associated with greater 6th-grade and 7th-grade performance in terms of GPA. There was no effect of taking the arts in 6th grade and reading performance, nor on days absent in school for either grade. Interestingly, taking an arts-related elective course was associated with slightly lower math test scores in 6th grade.

Table 7 also shows the results for the academic outcomes in 6th and 7th grade that were categorical in nature (retention, suspension) as a function of taking an arts-related elective course in 6th grade. There were no effects observed for getting suspended, but those who took some type of arts course in 6th grade were more likely to be retained in 6th grade, although this was not true for the following year in 7th grade.

Seventh grade. Table 8 shows the effect of taking an arts-related course in 7th grade on both 7th- and 8th-grade outcomes. Effects were even more positive for arts taken in 7th grade (compared to 6th grade). Controlling for all ways that students who do and do not take the arts in 7th grade were initially different, those who participated in the arts had stronger grades in both 7th and 8th grade and stronger math and reading test scores in both grades. There was no difference for those exposed and not in terms of attendance. Table 8 also shows the results for the (categorical) academic outcomes in 7th and 8th grade. No effects were observed on being retained in grade, but effects were found for school

Table 7
Concurrent and Subsequent-Year Outcomes From Taking Arts in Sixth Grade

Outcome	Sixth Grade		Seventh Grade	
	B	*SE*	*B*	*SE*
GPA	.035***	.005	.02**	.006
FCAT math	−.013**	.005	.008	.007
FCAT reading	.002	.005	.012	.007
Days absent	0	.006	−.005	.007
	OR	*SE*(*B*)	*OR*	*SE*(*B*)
Retention	1.68**	.18	.79	.29
Suspension	.99	.05	1.03	.05

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

Table 8
Concurrent and Subsequent Outcomes From Taking Arts Courses in Seventh Grade

	Seventh Grade		Eighth Grade	
Outcome	*B*	*SE*	*B*	*SE*
GPA	.038***	.006	.029***	.007
FCAT math	.018**	.007	.029***	.007
FCAT reading	.016*	.007	.046***	.006
Days absent	−.008	.007	−.003	.009
	OR	*SE*(*B*)	*OR*	*SE*(*B*)
Retention	1.45	.23	1.17	.33
Suspension	.88*	.05	.82**	.07

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

suspension. Those who took some type of arts course in 7th grade had about 20% less odds of being suspended in 7th and 8th grade.

Eighth grade. Table 9 shows the effect of taking any art course in 8th grade on 8th-grade outcomes. Controlling for all ways that those who do and do not take the arts in 8th grade are different, those who participated in the arts had stronger grades in 8th grade and stronger math and reading test scores in 8th grade. There was no difference for those exposed and not for attendance. Table 9 also shows the results for the categorical outcomes. No effects were observed on being retained in 8th grade, but an effect was found for suspension. Those who took some type of arts course in 8th grade had about 23% less odds of being suspended in 8th grade.

Discussion

With a prospective, longitudinal design, we followed a large ($n = 31{,}332$) ethnically and linguistically diverse group of children largely in poverty. Children were assessed for school readiness at age four and followed through their middle school years (6th–8th grade). We report on the proportion of students who take arts-related elective classes (a combination of dance, drama, music, and/or visual art) in 6th, 7th, and 8th grade, and examine how those that do and do not take such courses are initially different in terms of school readiness skills at entry to kindergarten, academic performance in 5th grade, and demographic variables (gender, ethnicity, special education, poverty, and ELL status). Then, we examined whether, after carefully controlling for those significant selection factors, students with exposure to arts-related courses showed enhanced concurrent and later academic performance (GPA, retention, suspension, standardized math and reading test scores, and attendance) in middle school compared to children who did not get arts exposure in school.

This work extends the existing literature in numerous ways, including (a) the use of a large, low-income, ethnically and linguistically diverse, predominantly Latino sample of students—a critically understudied population (R. Brown & Evans, 2002; Garcia & Jensen, 2009), (b) the focus on specifically in-school engagement in the form of courses taken (rather than an unclear combination of in-school and out-of-school engagement), (c) the use of school records to document arts classes taken, rather than reliance on student/parent retrospective self-report, (d) the exploration of persistence or discontinuation of engagement in the arts from 6th through 8th grade, (e) the inclusion of more selection factors than in prior work, including school readiness 7 years earlier and prior academic performance in school, and (f) the inclusion of multiple authentic and ecologically valid measures of academic outcomes for students (i.e., grades, retention, standardized math and reading scores, suspension, attendance).

Overall, 40% of this predominantly low-income and ethnically diverse sample of students took some type of arts-based elective in 6th, 7th, or 8th grade, with about 25% exposed to the arts in any given grade (6th, 7th, or 8th). Our proportion of teens who enrolled in an arts elective at some point during middle school is comparable, although slightly smaller, than the national proportion of 8th graders who participated in a school music or performing arts activity (48.2%; Child Trends, 2015). Furthermore, nationally, the proportion of students who enroll in music or performing arts activities decreases as teens progress through 8th, 10th, and 12th grade, especially for males (Child Trends, 2015). In line with our present findings, the majority (65%) of those who took an arts class only did so for one year. It is important to point out that ours is a predominantly low-income, ethnically diverse sample, which also helps explain the lower rate of participation. It is likely that school district averages are higher as they include the entire population of students. Recall as well that these participation figures reflect only full elective courses in the arts in school, so they do not include extracurricular arts participation (being in the school play) nor arts activities that happen after school or at home.

The fact that only 25% of our largely low-income sample were engaged in arts electives in 6th grade brings up the larger question of how one could increase arts participation. Obviously, schools would have to have many more resources and qualified arts teachers to increase course offerings, but just the existence of arts programs in schools does not guarantee student enrollment (Melnick, Witmer, & Strickland, 2011). Factors that enhance youth commitment to organized activities including the arts are found within the individual, peers, home, school, and community (Fredricks et al., 2002). Peers play a role in continued involvement in the arts, giving opportunities to make new friends and receive social support (Patrick et al., 1999). For adolescents to sustain their involvement, the artistic activity has to show the prospect of challenge with room to acquire new skills (Fredricks et al., 2002; Patrick et al., 1999). Parental support early on for the arts is

Table 9
Concurrent Year Outcomes From Taking Arts Courses in Eighth Grade

	Eighth Grade	
Outcome	*B*	*SE*
GPA	.043***	.007
FCAT math	.019*	.007
FCAT reading	.065***	.006
Days absent	−.009	.009
	OR	*SE*(*B*)
Retention	1.62	.31
Suspension	.77***	.07

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

critical—engaging youth in the arts during early childhood, and having artistic resources at home (e.g., dance attire or musical instruments), and parent–child attendance at arts events predict the extent to which adolescents will persist or quit in a given art form (Fredricks et al., 2002; Foster & Jenkins, 2017; Martin et al., 2013). However, sustaining youth participation in arts courses also depends on community-wide support and school partnerships with arts education agencies, private funders, or higher education institutions (Bodilly, Augustine, & Zakaras, 2008).

It is clear from our data that if the goal is to get students into arts electives and to keep them there, then the focus should be on having them start taking the arts in 6th grade and work on retention in the arts as they move forward through middle school. Almost half (44%) of students who took an arts elective in 6th grade quit and did not reenroll in any of the arts in 7th grade. Of related concern, students rarely entered into arts courses later if they did not sign up in 6th grade. Only 20% of students not enrolled in the arts in 6th grade started to take an arts-related elective in 7th grade. It appears that the 6th-grade year is critical for getting middle-school students in poverty engaged in the arts perhaps, because skill level expectations are still low. This observed decrease in arts involvement (and decreased likelihood of later entry) as children progress through middle school supports McNeal's (1998) concept of viewing fine-arts involvement through an open- versus closed-structure lens. Closed-structure activities are activities in which prior experience or acquired foundational skills increase the likelihood of continued engagement. The arts might be becoming more closed as the grades progress. Arts educators and advocates should not only try to increase the percentage of low-income 6th graders involved in the arts, but also try to prevent attrition out of the arts after 6th grade. Future work should perhaps explore predictors of student drop-out of the arts in middle and high school. If we can identify which types of students are at risk for quitting the arts, we might be able to target them for retention interventions.

Arts disengagement may be partly explained by schools' emphasis on traditional core subjects such as reading, math, and science (Ruppert, 2006), or community influences such as the accessibility of the arts in specific schools. Lack of family resources (i.e., money to buy dance shoes or rent instruments), or loss of motivation related to the expectancies and values students' project onto their involvement in the arts, may also be explanations for decreased engagement over time (Fredricks et al., 2002).

Selection Effects

A central goal here was to determine the many ways that students who take arts elective courses in middle school are different from those who do not. Indeed, results from both bivariate and multivariate regression analyses revealed that students who end up taking the arts in middle school are systematically different from those who do not many years earlier in terms of both demographic variables (ethnicity, gender, ELL, and disability status) and child prior competence (school readiness skills prior to kindergarten, and elementary school academic performance). Access to the arts in middle school is far from equal—certain groups and types of children are more likely to select themselves into the arts than others.

Black students in our sample were considerably less likely to take an arts elective course compared to both White and Latino students. It is possible that Black students in our sample were less likely to attend a school that offered the more rare forms of the arts (dance, drama), but this appears to be an issue of active selection rather than (or in addition to) access since 97% of students in our sample attended a school that offered some kind of arts elective (most likely music). This means that even when the courses are available, for whatever reason, Black students are actively choosing arts electives less often in middle school than White and Latino students.

It is important to note that these ethnic differences were still observed even after controlling for SES (free or reduced lunch [FRL]) and academic competence. Thus, it is not the case that the ethnic differences in arts participation can be explained by Black students being more likely to be in poverty and/or subsequently having lower academic skills. Black students remain significantly underrepresented in the arts in middle school even after controlling for academic performance. This means that even high-achieving Black students, those not in poverty, without disabilities, and with strong cognitive skills have less exposure to the arts in school than similar White and Latino students. Although our finding replicates prior research showing reduced arts participation among Black compared to White students (Chappell & Cahnmann-Taylor, 2013, NEA, 2012), we included more control variables (i.e., poverty, academic competence, disability status), which gives more of an indication that active selection or exclusion is involved here rather than it just being an issue of access to schools with arts programs. Additional efforts, other than simply offering the courses, will be needed if the goal is to increase Black student participation in the arts to the level seen for other students in middle school. Future research, perhaps with qualitative methods, should explore why Black students are choosing the arts less than other groups when they are available. Is it because the arts are seen as less "cool," or because they feel less welcomed in those settings, or perhaps course schedules and requirements are different? Art education curriculum in schools often follows a Western historical canon that can be seen as culturally irrelevant to Black youth (Acuff, Hirak, & Nangah, 2012). Future research should also clarify whether the ethnic differences observed here for arts participation are true for each of the different types of art (i.e., dance, visual art, music, and drama).

Gender differences in arts access and selection were also observed—males were less likely to be enrolled compared to females. This is consistent with prior research examining gender and arts participation (Bucknavage & Worrell, 2005; Dumais, 2006; NEA, 2012; Rabkin & Hedberg, 2011), however, gender differences in participation are also likely to vary depending on the type of art involved (music, visual art, drama, dance, and even within different types of music—band, choir, guitar, etc.). NAEP (2016) survey data, for example, show that males are slightly overrepresented in band but underrepresented in visual art and chorus classes in 8th grade. A limitation of the current work is that all forms of arts were combined. Future work should examine each art form separately.

Even within our sample, which was predominantly low income to begin with, students whose family incomes were low enough to qualify for free or reduced lunch (FRL) had significantly less odds of taking middle-school arts classes than those with more economic resources. It is notable, however, that when children's performance in elementary school was entered in block 2 of the

multivariate model, the difference for FRL was no longer significant. This is not surprising given that the sample was predominantly low-income in composition. Other studies that include the full range of family income clearly show increased access to all forms of the arts for those with more resources (Catterall et al., 2012). This also suggests, however, that the reason why poverty is linked to less arts participation is because those in poverty acquire fewer academic skills and do not do as well in school. Once one factors in student academic competence (as we did), poverty influences on arts participation are reduced.

This study was one of the first to examine the effect of child disability status on access to the arts in schools. Students with disabilities were considerably less likely to take an arts elective than were children who were typically developing. The NAEP (2016) also found less participation for those with disabilities in band, chorus, and visual art classes in 8th grade. This suggests that special efforts may need to be taken to make the arts more available to students with disabilities. It is well known that music and art therapy is helpful for students with various types of psychopathology (Klorer & Robb, 2012; Smagorinsky, 2010; Spier, 2010), and school systems may be missing an important opportunity to help students with disabilities to make gains socially, cognitively, and emotionally through access to the arts.

We were also one of the first to study whether ELL status and English proficiency were linked to arts participation in middle schools. National 8th-grade survey data from the NAEP (2016) showed that ELLs were less likely to take chorus, band, and visual art compared to native English speakers. Controlling for other background differences, in our sample, ELLs compared to native speakers of English were equally likely to take arts electives in middle school. ELLs, however, vary in how strong their English skills are by the time they get to 6th grade, with some being fully proficient in English and others still developing their English proficiency. English proficiency was a much stronger predictor of access to the arts than ELL status. Students who were proficient in English by 5th grade were significantly more likely (compared to those not proficient) to take arts electives in middle school. Art educators may wish to explore effective recruitment techniques that systematically target students not yet fully proficient in English, if equitable access to all art forms in schools is the goal. A critical question, for example, is whether there are structural barriers for those with limited English proficiency, and for children with disabilities—for example, requirements for such students to take additional remedial coursework that leave no room for arts electives.

Perhaps the most robust and important finding from our selection analyses was the powerful effect of prior student competence. The students who signed up for arts-related electives in middle school not only had better grades and stronger math and reading skills in elementary school, but they also showed stronger social, behavioral, language, motor, and cognitive skills 7 years earlier in preschool, compared to students who did not take arts electives. This finding supports Fredricks and colleagues' (2002) argument that participation in secondary school arts activities likely begins with early exposure, opportunity, and support from parents during childhood, both financial and otherwise. This increased capital and support can also lead to enhanced academic development through increased parent–child scaffolding, learning activities, and educational involvement and investment. Another possibility, however, is that the students who selected into arts elective courses in middle school had already been dancing or taking music lessons (or whatever artistic activities they may be doing) since age 4, and it was the early exposure to music or the arts that actually had a causal effect on improving children's elementary school academic performance, allowing us to see enhanced academic performance in 5th grade. It is unfortunate that we do not have more detailed information about when the students in our sample began their artistic experiences at home and outside of school. Future longitudinal research should address such potential bidirectional effects and exposure to the arts and academic/cognitive development.

The finding that arts students are initially more advanced academically is critical to keep in mind for researchers attempting to show positive effects of arts participation on student performance. Unless there is random assignment to arts participation groups, there are likely to be strong selection effects present making the groups who do and do not get the arts experience already different (and favoring the arts group). So simple comparisons on students' later academic performance for those who naturally do and do not take music, for example, showing that those with exposure to music are doing better academically than those who not do not, do not show a causal effect of music on academic skill. The students were likely already better off academically before the music experience even happened. The current study showing strong selection effects and many differences between those who do and do not get arts exposure in middle school clearly shows the importance of measuring and statistically controlling for selection factors (as we do here, and discuss next) when examining the potential "effects" of arts participation on students.

Effects of Arts-Elective Courses on Academic Performance

Our ultimate goal was to see if taking arts courses in 6th, 7th, or 8th grade was associated with enhanced academic performance later in middle school. It is important to note that our research design does not allow us to make causal claims between arts participation and student academic performance. However, in the absence of a randomized control trial with random assignment of individuals to arts participation groups, our large-scale, prospective, longitudinal, quasi-experimental design with strong statistical controls in place for multiple, known, preexisting selection factors is among the next best methodological options for establishing causal links between variables (Shadish, Cook, & Campbell, 2002). Our study is definitely more methodologically rigorous than most of the research articles to date on the effects of arts participation, except of course those that have used random assignment (i.e., Lobo & Winsler, 2006; Schellenberg, 2004), which makes the current work a strong addition to the literature.

Controlling for all the ways that students who did and did not take the arts in middle school were initially different, taking arts-related elective courses in middle school was clearly linked to multiple positive academic outcomes for students in their concurrent academic year and in the following year. Those who experienced arts electives in middle school went on to earn significantly higher GPAs and higher standardized math and reading scores, and were less likely to get suspended from school compared to students who were not exposed to arts classes. This was seen for taking arts in 6th grade and concurrent outcomes in 6th grade and then

subsequent outcomes in 7th, for taking the arts in 7th grade looking at outcomes in both 7th and 8th grade, and for concurrent outcomes in 8th grade. It is worth pointing out that these are meaningful, important, and ecologically valid measures of actual student performance in their own schools in the present study, as opposed to out-of-context, researcher-administered surveys or tests that are prevalent in the existing literature.

Limitations

Although the current study has many strengths (large, longitudinal sample, ethnically diverse sample including Latino/a students, school record data rather than self-report, ecologically valid academic outcomes), there are limitations to be considered. First, we know nothing about the quality of the arts education that occurred, only that the student had an arts elective class. Future qualitative work should also examine more closely what is going on in middle-school arts classrooms, what is working, and what might not be working well for certain groups of students. Second, we had no information on prior arts involvement either at home or in school. Longitudinal studies that can examine bidirectional relations between diverse types of arts participation and child development are needed. Finally, not all of our sample had reached 8th grade before data collection ended, and we only examined overall multi-arts classes, as opposed to examining potential differential patterns for different art forms (i.e., drama, vs. dance, music, and visual art). Future work from our research group will examine this.

Implications/Conclusions

The present study has numerous important implications for educational practice and for arts education. First, we show that exposure to the arts in public middle schools is not equitable, certain groups are underrepresented—Black students, males, those with disabilities, those in poverty, and those not yet fully proficient in English are not getting the same opportunities for exposure to the arts in public middle schools as are other groups. Given what is known about the positive effects of the arts for individuals and for society (NEA, 2012), this can be seen as an issue of social justice. Policymakers, school administrators, and art educators may wish to enhance their efforts in getting more access to the arts for these groups of students in 6th, 7th, and 8th grade in this community, and likely in other communities as well. This study also showed that those who do take arts-related elective courses in middle school are already more advantaged socioeconomically and academically many years before they get to middle school, and this is critical for researchers to understand so they can control for such selection effects when examining potential benefits of artistic experiences on youth. Finally, we showed, with a methodologically rigorous quasi-experimental design, that taking arts-related elective courses in middle school is beneficial for the academic performance of our sample of mostly low-income, ethnically diverse students. These data suggest we need to protect and enhance the opportunities that students have in public middle schools to participate in the visual and performing arts.

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