



# The art of Head Start: Intensive arts integration associated with advantage in school readiness for economically disadvantaged children<sup>☆</sup>

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## ABSTRACT

The present study examined the impact of intensive arts integration on school readiness for economically disadvantaged children attending Head Start preschool. Participants were 265 children, ages 3–5 years. Of these, 197 attended a fully arts-integrated Head Start, where children received daily music, dance, and visual arts classes in addition to homeroom, and 68 attended a matched comparison program that did not include arts classes. The Bracken Basic Concepts Scale, Third Edition- Receptive (BBCS-3:R) was used to measure children's school readiness at the start and end of a year of preschool attendance. According to a repeated-measures multivariate analysis of covariance (MANCOVA), children at the arts-integrated Head Start showed greater gains in school readiness compared to their peers at the comparison program. Univariate tests revealed that attendance at the arts-integrated preschool was associated with greater gains on a general school readiness composite as well as in specific concept areas of texture/material and self/social awareness. Findings suggest that the arts can add value to Head Start preschool. Implications concern the arts as a vehicle for equalizing educational opportunities for young, economically disadvantaged children.

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## 1. Introduction

Approximately, 42% of children are growing up in poor or low-income households (U.S. Census Bureau, 2016). The results are clear. Economic hardship places children at risk for a host of difficulties in cognitive and social-emotional domains (Brooks-Gunn & Duncan, 1997; Duncan & Brooks-Gunn, 2000). Head Start and related preschool programs promote positive development but fall

short of equalizing educational outcomes for economically disadvantaged children (U.S. Department of Health and Human Services, 2010). Although early childhood programs cannot be expected to erase the power of poverty, it is incumbent upon us to continue to explore how we might promote positive outcomes for children facing economic adversity. The present study examines the impact of arts-integrated preschool programming on the development of school readiness skills for economically disadvantaged children.

### 1.1. Background on the arts and school readiness

The idea that the arts might benefit children's overall cognitive development is not new, but is controversial. The philosopher Nelson Goodman recognized this when he founded Harvard's Project Zero in 1967, noting that the arts and cognition should be studied but that "zero" had been definitively established (Gardner, 2013). Fifty years later, and with considerable study by Goodman and his colleagues such as Howard Gardner, there have been meaningful developments in theory and research (Gardner, 2013), yet questions remain about the benefits of the arts for the development of non-arts competencies (Sala & Gobet, 2017). These questions are particularly important ones to address during an era in which

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expanding access to early childhood education often has been tied to outcomes-based assessment, and preschools have faced increasing pressure to replace music, dance, visual arts, sociodramatic play, and other creative activities with deskwork and drilling on letters, numbers, and other school readiness concepts (Reed, Hirsh-Pasek, & Golinkoff, 2012).

Several strands of theoretical and empirical evidence suggest the potential for the arts to promote the school readiness of children at risk via economic disadvantage, and we will highlight three. The first concerns the diverse learning opportunities afforded by arts education. The second concerns the potential for the arts to promote emotional experiences that facilitate learning. The third focuses on the possibility that arts modalities such as music, dance, and visual arts train cognitive abilities that hold relevance beyond the arts. We will also highlight remaining questions regarding the role of the arts for promoting school readiness. In particular, there are questions about whether intensive arts integration can add value to already well developed programs such as Head Start and further promote the overall school readiness of economically disadvantaged children.

#### 1.1.1. Diverse learning opportunities

Human beings learn best when the body is engaged and events are registered by multiple senses (Sylwester, 1995). This may be particularly true for young children whose experience of the world is sensory in nature (Nutbrown, 2013). Gardner's (1983) theory of multiple intelligences has recognized the importance of varied modalities for processing information, as has the widely respected Reggio Emilia approach to early childhood education (Edwards, Gandini, & Forman, 1998). Accessibility theory suggests that a combination of verbal and nonverbal means for expressing knowledge may be particularly important for promoting the language development of students who are English language learners as well as children with the types of language delays common in poverty circumstances (Darby & Catterall, 1994; Eisner, 1998; Gregoire & Lupinetti, 2005).

Integrating the arts into preschool education may give young learners varied opportunities for engaging with school and experiencing success (Nevanen, Juvonen, & Ruismäki, 2014). Nevanen et al. (2014) gathered qualitative data from interviews with teachers and visiting artists in the Helsinki project, which involved multi-year collaborative projects in subjects like visual and environmental art, literature and drama, dance, circus art, and architecture. The researchers concluded that the varied opportunities for children to experience success increased their confidence and skill (Nevanen et al., 2014).

Additionally, the arts may enhance the cultural relevance of education for students from socioeconomic and ethnic groups whose cultures and traditions reside at the margins of standard U.S. education. Cultural relevance theory holds that the relevance of education depends on incorporating students' prior cultural knowledge, which for many students from African, Asian, Latin, and Indigenous American backgrounds includes expression through the arts (Boykin, 1991, 1992; Griffin & Miller, 2007; Young, 1990). Integrating the arts may facilitate building on students' prior cultural knowledge as well as allow students to express their individual realities, building bridges between home and school (Allison & Rehm, 2007; Bernhard, Winsler, Bleiker, Ginieniewicz, & Madigan, 2008; Hall, 2007).

#### 1.1.2. Social-emotional experiences that facilitate learning

Second, research suggests the arts may promote social-emotional experiences that facilitate learning, including for economically disadvantaged children (Menzer, 2015). In a prior investigation out of our lab, Brown and Sax (2013) found that children attending an arts-integrated Head Start showed greater

interest, happiness, and pride in music, dance, and visual arts classes compared with regular homeroom. These children also showed greater overall incidence of positive emotions compared with peers at a Head Start that was not fully arts-integrated, and showed significantly greater growth over the course of the school year in their ability to regulate or manage emotions.

An experimental study by Lobo and Winsler (2006) also demonstrated benefits of arts programming for economically disadvantaged children. In this study, children attending a Head Start preschool were randomly assigned to an eight-week dance program or a control group with free playtime. Those in the dance program showed greater growth in terms of social competence as well as internalizing and externalizing behavior as rated by parents and teachers who were not told children's group membership. These researchers noted the opportunities afforded by dance instruction for building self-confidence, social skills, and self-regulatory strategies.

Research with heterogeneous income samples has also demonstrated social-emotional benefits of multiple arts modalities. Multiple studies with children and young adults suggest that drawing can lead to short term mood improvement after the induction of negative mood (Dalebroux, Goldstein, & Winner, 2008; Drake & Winner, 2013). Research has suggested that acting classes may help children to develop empathy (Goldstein & Winner, 2012) and that complex sociodramatic play may enhance self-regulatory skills (Elias & Berk, 2002). Also, Winsler, Ducenne, and Koury (2011) documented an advantage in self-regulation for young children who participated in a music program compared with peers who did not participate and suggested that an increase in self-regulatory private speech might serve as one mechanism of this effect. The self-regulatory benefits of the arts may advantage children's overall acquisition of school readiness skills as well as their specific social-emotional skill development.

#### 1.1.3. Training of cognitive abilities

Arts training may provide a mechanism for training basic cognitive abilities that undergird school success. Schellenberg's (2005) review concluded that childhood music training generally enhances intellectual abilities. The conclusion was qualified in part because of a paucity of experimental studies. One experimental study by Schellenberg (2004) found that children participating in music lessons showed growth in IQ scores over the course of one year. Such growth could be explained by the influence of music training on executive functions such as planning, set-shifting, and inhibitory control; a hypothesis supported by some studies (Dege, Kubicek, & Schwarzer, 2011) but not all (Schellenberg, 2011). Sala and Gobet's (2017) review noted the lack of consistent findings of positive links between music training and IQ and concluded that many positive findings may be attributable to confounding variables.

Music, dance, and visual and dramatic art forms have also been proposed to train specific non-arts competencies due to the particular skill training embedded in arts programming. Visual arts, for example, might help students to engage with and learn about school readiness concepts related to texture and material and might train symbolic representation important for literacy development (Meiners, 2005). Creative writing and storytelling undoubtedly fosters literacy development (Bernhard et al., 2008). Additionally, robust research has linked music training to phonological awareness (Anvari, Trainor, Woodside, & Levy, 2002), visual-auditory learning (Moreno, Friesen, & Bialystok, 2011), and other language and literacy skills (Corrigan & Trainor, 2011; Forgeard, Winner, Norton, & Schlaug, 2008; Rauscher & Hinton, 2011). A neuroimaging study by Hyde et al. (2009) revealed structural brain changes that may underlie music training's links to auditory skills, and other evi-

dence similarly supports the neurological underpinnings of music's relationship to language skills (Strait & Kraus, 2011).

Research with children in Head Start also suggests benefits of arts programming for children's verbal skill development. In a prior study out of our lab, Brown, Benedett, and Armistead (2010) compared receptive vocabulary for children attending a typical Head Start versus one with daily music, dance, and visual arts classes, and found the children receiving arts classes showed greater vocabulary growth across the school year. These results may have been due to the varied opportunities afforded by the arts classes for introducing and practicing vocabulary skills.

Considerable attention has focused on the arts and visual-spatial and mathematical skill development. Goldsmith et al. (2016) highlighted the connection between the visual-spatial thinking required in drawing and that required in geometric reasoning. Dow (2010) discussed the potential for dance to promote understanding of direction and position because of its focus on elements of movement, space, time, and energy, and its frequent inclusion of prompts such as "March backwards!" or "Leap over the ribbon!" Also, music has been linked to advantages in spatial-temporal and other mathematical skills, including for economically disadvantaged children (Hetland & Winner, 2001; Rauscher, 2003; Rauscher & Hinton, 2011).

In Rauscher's (2003) study, economically disadvantaged children attending Head Start preschool were randomly assigned to receive piano, computer, or no extra instruction for 48 weeks. The music groups showed greater growth on standardized measures of spatial-temporal, visual-spatial, and arithmetic skills. Rauscher (2003) posited that this might be attributable to the part-whole or division concepts embedded in musical notes, tempo, and pitch, and a follow up study provided some support for this hypothesis: Children in Head Start preschool were randomly assigned to receive piano, singing, rhythm, or no instruction, and the rhythm group showed the greatest gains in temporal and arithmetic skills (Rauscher & Hinton, 2011).

### 1.2. Outstanding questions

Although some theory and research suggests the potential for arts-integrated education to provide advantages in terms of overall school readiness as well as particular skill development for economically disadvantaged children at risk, important questions remain. In general, there are more claims about the benefits of arts-integrated education than there are robust research studies to support these claims (Hetland & Winner, 2001; Sala & Gobet, 2017). Many studies have been strictly correlational, such that the demonstrated relations between arts training and academic outcomes might be attributed to selection effects (e.g., smart children are more likely to pursue music lessons; Schellenberg, 2011). Further quasi-experimental and experimental studies are needed to definitively establish the relationship between the arts and non-arts academic outcomes (Hanna, Patterson, Rollins, & Sherman, 2011; Sala & Gobet, 2017).

Questions also remain about whether the potential cognitive benefits of arts modalities such as music might be general (Schellenberg, 2004, 2011), such that arts training might advantage overall school readiness, or specific (Rauscher, 2003; Rauscher & Hinton, 2011), such that the arts might provide a mechanism for teaching particular school readiness concepts. Another issue is that demonstrated relations between the arts and non-arts outcomes may be very specific to children's level and type of engagement with the arts. Tsang and Conrad (2011) found that pitch discrimination, although correlated with phonological awareness, predicted reading ability only in children without formal music training. Also, Young, Cordes, and Winner (2014) found that arts involvement predicted academic achievement only when children had a musical

instrument in their home. We need further information about the level and type of arts involvement necessary for producing cognitive benefits (Schellenberg & Winner, 2011).

Moreover, theory suggests that economically disadvantaged children at risk for school difficulties might particularly benefit from intensive arts education (Gregoire & Lupinetti, 2005; Nutbrown, 2013), and some correlational studies with older children and youth have suggested academic benefits for children from low-income as well as middle-income families (Catterall, Dumais, & Hampden-Thompson, 2012). Yet few robust studies of arts' impact focus on young, economically disadvantaged children (Bernhard et al., 2008; Brown et al., 2010; Brown & Sax, 2013; Lobo & Winsler, 2006; Rauscher, 2003), and none of the published studies to date have employed a broad, standardized child assessment measure that taps pre-academic as well as social-emotional aspects of school readiness.

Given the risk facing economically disadvantaged children, the comparative value of arts education is an important consideration: Although intensive arts instruction may advantage particular skill development for economically disadvantaged children, other types of instruction might also offer important benefits. Schellenberg (2011) concluded that, for heterogeneous income and samples of children and youth, cognitive benefits are apparent for those who study music on top of everything else rather than instead of something else. Also, for children attending Head Start preschool, Rauscher (2003) found that, although children who received music instruction showed advantages in spatial and mathematical skills, those who received computer training showed advantages in certain verbal skills. Few studies have compared school readiness outcomes for Head Start programs that include intensive arts instruction versus more traditional ones. Understanding whether the arts can be intensively integrated into Head Start in ways that add value to typical curricular models rather than trading one set of advantages for another matters critically to policy decisions.

### 1.3. Present study

The present study employed a quasi-experimental design to examine the impact of intensive arts programming on the school readiness of economically disadvantaged children attending Head Start preschool. This study built on our research team's prior investigations of intensive arts programming in relation to specific school readiness outcomes such as vocabulary (Brown et al., 2010) and emotion expression and regulation (Brown & Sax, 2013) for children attending Head Start preschool. These prior studies, as well as the current investigation, focused on the arts as integrated into Settlement Music School's Kaleidoscope Preschool Arts Enrichment Program.

Participants in the present study included children attending Settlement's arts-integrated Head Start and those attending a matched comparison Head Start preschool that was not fully arts-integrated. Both preschools were NAEYC-accredited and used the Creative Curriculum (Dodge & Colker, 1992), which prescribes some integration of the arts into regular homeroom classes. When Nardo, Custodero, Persellin, and Fox (2006) surveyed teachers in NAEYC-accredited preschools, a majority reported arts components such as music for a small amount of time and primarily to enrich the classroom environment. According to this survey, the limited use of the arts to promote pre-academic skill development might include a song to teach days of the week or a dance to teach following directions.

The Nardo et al. (2006) findings were consistent with how the arts were integrated into homeroom classes at Settlement preschool and the comparison site. In homeroom classes at both preschools, for example, children were observed to engage in arts activities like music, as they sang hello to their classmates during

morning circle; dance, as the teacher played music while setting up snack; or drawing, as they engaged in making journals. Occasionally, the homeroom classes were observed to sing the alphabet song, or engage in another arts activity intentionally designed to promote pre-academic skill development. Primarily, however, the homeroom classes used arts components to enhance classroom activities rather than as a focus of pre-academic or artistic skill development. The arts activities comprised a small portion of the overall homeroom class time (for example 5 min of singing during a 45-min homeroom period).

Although the homeroom classes at both preschools were similar in their inclusion of the arts, Settlement's preschool was unique in its additional inclusion of multiple music, dance, and visual arts classes in the daily schedule. Content and skill development was linked and repeated across the homeroom and arts classes, which were used to promote the development of not only artistic skills, but also other school readiness competencies, in typical early learning domains such as language, literacy, mathematics, and social/cultural learning. Like most Head Starts, Settlement and the comparison site both organized instruction around early learning themes. Settlement was unique, however, in teaching children about these themes not only via homeroom but also via music, dance, and visual arts classes.

For the theme of "Self Expression," a typical Head Start might give children opportunities in homeroom to practice labeling facial expressions of emotions as well as express themselves and change their emotional state by creating journals. At Settlement, children received additional opportunities to explore the theme in arts classes. The visual arts class allowed children to express themselves through media such as painting or collage, for example, and to discuss how pieces of visual art made them feel. In music, children used their voices and other instruments to reproduce sounds that humans and other animals make to express emotions. Also, in dance, children used creative movement to perform different emotions for their classmates to identify. In the various arts classes, children participated in guided exploration of how to use sound, movement, and visual media, respectively, to express and change their emotional state.

Also in common with most Head Starts, Settlement incorporated varied cultural traditions and provided opportunities for skill development in core early childhood domains of math, science, language, literacy, and social and cultural learning. Again, however, Settlement was unique in using multiple arts as well as homeroom classes to accomplish these goals. In autumn, Indian cultural traditions often are introduced as children learn about Diwali, the "Festival of Lights." At Settlement, children developed language and literacy skills such as vocabulary, by learning Hindi words in early learning classes; writing prerequisites, by copying Indian mandala designs in visual arts; and reading prerequisites, by following Indian song-stories in music and dance, singing and moving in response to pictorial cues. To develop math skills, children learned about patterns by repeating their mandala designs with variation in visual arts, as well as clapping and moving to the beat in music and dance. As such, core skills are practiced through multiple modes.

The present quasi-experimental study was designed to investigate the impact of intensive arts integration on the school readiness of young children attending Head Start preschool. We examined school readiness at the start and end of a year of Head Start preschool at Settlement's arts-integrated program versus the matched comparison site that was not fully arts-integrated. We used the Bracken Basic Concepts Scale (BBCS-3:R; [Bracken, 2006](#)) to measure school readiness. This test is widely used to measure school readiness outcomes including in Head Start preschools and provides a general school readiness composite score that indexes knowledge of core concepts of colors, letters, numbers, shapes, and sizes, as well as subtest scores tapping additional knowl-

edge of direction/position, self/social awareness, texture/material, quantity, and time/sequence. We controlled for key demographic variables of child age, gender, racial/ethnic minority status, and family income-to-needs, which hold demonstrated relations to school readiness outcomes. We hypothesized that, compared with children at the typical Head Start, children attending Settlement's arts-integrated preschool would show greater growth over the course of the school year on the general and specific indicators of school readiness.

## 2. Method

### 2.1. Participants

This study included 265 participants and their primary caregivers. The participants were children who attended one of two Head Start preschools in a large city on the East Coast of the United States in one of three cohorts. The first cohort attended the preschools during the 2009–2010 school year, the second, during the 2010–2011 school year, and the third, during the 2011–2012 school year. The first of these cohorts was also included in our lab's prior published study of arts-integrated preschool that focused on child emotion outcomes ([Brown & Sax, 2013](#)).

In total, 197 children in the present study attended Settlement's Kaleidoscope Preschool Arts Enrichment Program and 68 attended the comparison site, which was smaller. Rates of participation were near 90% at both preschools. An additional 12 children at Settlement and 5 children at the comparison program were enrolled in the present study but did not complete it because they stopped attending the respective preschool. In all but two cases (both at Settlement: one related to a parental decision to keep the child home, and another related to the child's qualification for more intensive support services for special needs), the reported reasons related to family or child relocation. The families who were not included did not differ significantly from those included in the present study on measured demographic variables.

Across both preschools, of the primary caregivers who completed the interviews, approximately 86.9% were biological mothers of the children, 7.6% biological fathers, and 5.6% other biological relatives. Of the children, 50.4% were female, and 59.6% African American, 10.5% Latino or Hispanic American, 9.4% Asian American, and 20.2% Caucasian or European American. The mean age of the children was 4 years, 1 month ( $SD=6.51$  months, range=31 months). Mean family size was 2 adults (range=1–6,  $SD=0.85$ ) and 2 children (range=1–6,  $SD=1.12$ ). Mean family annual income was \$15,170 (range=0–75,000,  $SD=13,590$ ). Information about income and family size was combined to compute income-to-needs ratios, which were compared to federal poverty guidelines for the appropriate years: 79.8% of the families were poor and an additional 18.8% were low-income, with income-to-needs ratios less than two times the poverty threshold.

### 2.2. Preschools

The two preschools selected for the present study were located in demographically similar and nearby neighborhoods in a large city on the East Coast of the United States. Both were Head Start sites and NAEYC accredited, and had the same requirements for teacher-to-child ratio (1:10) and teacher education and credentials. Lead homeroom teachers at both preschools held bachelor's degrees and certification in early childhood education. Like most Head Starts, these preschools were designed to serve their respective, surrounding neighborhoods. Both had excellent reputations and administrators in the programs reported that, of the two

preschools, families tended to choose the one closest to their place of residence.

Both preschools included some integration of the arts into homeroom classes. This was prescribed by the U.S. Department of Health and Human Services (2011) Head Start curriculum framework as well as by the Creative Curriculum (Dodge & Colker, 1992), which is widely used in Head Start preschools including the two in the present study. Settlement's preschool was unique, however, in its full integration of the arts. In addition to homeroom classes based on the Creative Curriculum, children at Settlement's preschool received multiple arts classes each day, whereas children at the comparison site did not receive arts classes.

The arts classes were each 45 min in length and children received one to three arts classes each day, for a total of 12 arts classes per week. They were taught in fully equipped artist studios by credentialed artist teachers for music, dance, and visual arts, who held similar qualifications as the homeroom teachers: bachelor's degrees in their respective arts areas and certification in either arts or early childhood education, with the exception of the visual arts teacher who had a master's degree. Either the lead or assistant homeroom teacher accompanied the children to the arts classes, such that the teacher-to-child ratio remained constant. The arts classes were designed to foster skill development in the arts as well as in other Head Start domains such as language, mathematics, and science.

### 2.3. Procedure

Ethical standards were followed in the conduct of this study, which was part of a broader investigation of children's learning and emotions. All procedures were approved by the appropriate institutional review boards. The research team included the primary investigators as well as graduate and undergraduate students in psychology, who were trained to ethically and competently carry out study procedures. Graduate students played the leading roles in data collection at the preschools, and administered the standardized child assessment measure. Graduate students also supervised undergraduate students to help with tasks such as recruiting participants, obtaining informed consent, and conducting parent demographic interviews.

Recruitment took place in September, at the start of the preschool year. Parents or caregivers of children enrolling in preschool for the first time were provided a description of the study as part of their preschool orientation, and were given the opportunity to ask questions of a trained research assistant as well as sign letters of informed consent. The description stated: "The purpose of the study is to understand children's learning and emotions and to understand how this preschool helps children." The same description was provided to student research assistants and preschool teachers. Specific hypotheses about the arts' impact were not disclosed, nor was the specific content of the focal measure of school readiness (BBCS; Bracken, 2006).

The first study component involved a demographic interview with parents or caregivers, conducted at the preschool by trained graduate and undergraduate research assistants in September, at the start of the preschool year. Parents were provided multiple opportunities to complete these interviews, including during preschool orientation and adjacent to school drop-off and pick-up times during the first several weeks of the school year.

The second study component involved standardized, individual assessments of child school readiness, completed by the trained graduate student research assistants at the start (September and October) and end (April and May) of the preschool year.

### 2.4. Measures

#### 2.4.1. Demographics

A demographic interview for caregivers provided information about standard indicators such as child age, gender, race/ethnicity, family size, and family income.

#### 2.4.2. School readiness

The Bracken Basic Concepts Scale-Third Edition, Receptive (BBCS-3:R) measured child school readiness (Bracken, 2006). This standardized assessment was developed based on educational standards used in each state in the US and was designed to test concepts necessary for children to effectively communicate about their world, follow directions, and succeed in formal schooling. The normative sample included children ages 3 years, 0 months through 6 years, 11 months from across the continental US who were of varying racial and ethnic backgrounds, spoke English, and had not previously been diagnosed with any learning, hearing, or language impairments. The test shows excellent content validity and internal consistency, and acceptable test-retest reliability. It shows moderate to high correlations with widely used intelligence tests and moderate correlations with widely used achievement tests. Evidence suggests its validity for identifying children with cognitive and language delays (Bracken, 2006).

The BBCS-3:R includes ten subtests. The first five measure colors, letters, numbers, shapes, and sizes, respectively, and are used to form a general school readiness composite (SRC). The remaining subtests focus on self/social awareness, texture/material, quantity, and time/sequence, respectively. Administration requires 30–40 min, depending on the age and ability of the child participating, and includes trial items designed to ensure the child understands the task at hand, as well as test items that contribute to the final score. For trial and test items, the administrator shows the child a stimulus book and says, "Look at all the pictures. Show me..." followed by the target that the child is asked to identify. The raw score for the school readiness composite (subtests 1–5) determines the starting point for subtests 6–10.

Subtest 6, Direction/Position, includes items such as "Show me which child is close to the ball," and "Show me which fence is tall." Subtest 7, Self/Social Awareness, includes items such as "Show me which one is the mother," and "Show me which child is happy." Subtest 8, Texture/Material, includes "Show me which one is rough," and the picture that is the correct answer shows splintered wood. Subtest 9, Quantity, includes items such as "Show me which tree has many apples," and "Show me which child has taken the last apple." Finally, Subtest 10, Time/Sequence, includes items such as "Show me which shoe is new," and "Show me where it is daytime."

Raw scores for the BBCS-3:R can be converted to scaled or standardized scores, percentile ranks, and descriptive classifications. Standardized scores were used for core analyses in the present study. These scores reflected the child's performance relative to peers in the normative sample who fell within the same three-month age interval.

### 3. Results

Table 1 shows correlations among demographic and school readiness variables and Tables 2 and 3 show respective means and standard deviations by preschool type. To evaluate demographic differences between the preschools, we used chi-square analyses for the dichotomous variables of child gender (*male* = 1), race/ethnicity (*minority group member* = 1), and race/ethnicity subcategories (e.g., *Black/African American* = 1) and independent samples *t*-tests for child age and family income-to-needs (see Table 2). Results indicated a significant ( $p = 0.010$ ) difference in

**Table 1**  
Zero-Order Correlations among School Readiness Variables and Demographic Covariates (N = 265).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Child Age	–															
2. Male Gender	–0.02	–														
3. Racial/Ethnic Minority	–0.04	–0.06	–													
4. Income-to-Needs Ratio	0.12*	–0.05	0.04	–												
5. Fall School Readiness Comp	0.09	–0.05	–0.29**	0.09	–											
6. Fall Direction/Position	0.23**	–0.06	–0.30**	0.12*	0.67**	–										
7. Fall Self/Social Awareness	0.18**	–0.12	–0.25**	0.07	0.59**	0.72**	–									
8. Fall Texture//Material	0.16*	–0.00	–0.39**	0.09	0.58**	0.70**	0.69**	–								
9. Fall Quantity	–0.01	–0.08	–0.16*	0.06	0.29**	0.39**	0.31**	0.30**	–							
10. Fall Time/Sequence	0.16*	–0.04	–0.24**	0.12	0.44**	0.62**	0.62**	0.58**	0.26**	–						
11. Spring School Readiness Comp	–0.08	–0.04	–0.23**	–0.06	0.76**	0.53**	0.47**	0.49**	0.30**	0.37**	–					
12. Spring Direction/Position	0.15*	–0.05	–0.28**	0.08	0.59**	0.64**	0.59**	0.57**	0.32**	0.54**	0.63**	–				
13. Spring Self/Social Awareness	0.07	–0.10	–0.29**	0.01	0.56**	0.55**	0.60**	0.56**	0.31**	0.52**	0.62**	0.64**	–			
14. Spring Texture//Material	0.07	–0.07	–0.33**	0.08	0.53**	0.60**	0.56**	0.57**	0.34**	0.45**	0.59**	0.64**	0.65**	–		
15. Spring Quantity	0.06	0.02	–0.27**	0.08	0.34**	0.37**	0.29**	0.27**	0.14*	0.22**	0.32**	0.32**	0.31**	0.33**	–	
16. Spring Time/Sequence	0.03	0.01	–0.23**	0.06	0.24**	0.28**	0.23**	0.18**	0.09	0.18**	0.22**	0.24**	0.24**	0.22**	0.93**	–

Note: Comp = composite.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

**Table 2**  
Means and Standard Deviations for Demographic Variables by Preschool (N = 265).

Variable	Arts-Integrated n = 197	Comparison n = 68	$\chi^2$ df = 1	p-value
Child Age in Months	48.82 (6.81)	49.28 (5.57)	0.505 <sup>a</sup>	0.614
Male Gender	0.46 (0.50)	0.55 (0.50)	1.65	0.199
Racial/Ethnic Minority	0.79 (0.41)	0.77 (0.43)	0.479	0.489
Black/African American	0.59 (0.49)	0.60 (0.49)	0.047	0.828
Latino/Hispanic American	0.11 (0.31)	0.10 (0.31)	0.030	0.862
Asian American	0.11 (0.31)	0.06 (0.24)	1.30	0.254
Income-to-Needs Ratio	0.59 (0.70)	0.83 (0.63)	2.58 <sup>a</sup>	0.010 <sup>c</sup>

Note. Standard deviations listed in parentheses.

<sup>a</sup> t statistic reported with df = 263.

\*  $p < 0.05$ .

income-to-needs ratios: Compared to their peers, children at the arts-integrated Head Start, tended to have smaller family income-to-needs ratios, reflecting less income relative to family size. Results indicated no other significant differences for the demographic variables ( $p > 0.05$ ).

To evaluate differences in school readiness scores from fall to spring within each of the two preschools, we used dependent samples t-tests. We used standardized or scaled scores. These scores reflect performance relative to same-age peers in the (mostly middle-income) normative sample, and significant t-values indi-

cate that the change demonstrated by the present subsample from fall to spring is significantly different from the change that would be expected for the normative sample. Children at the arts-integrated Head Start showed significantly greater growth than would be expected for the normative sample in overall school readiness ( $p < 0.000$ ), understanding of direction/position ( $p = 0.003$ ), and self/social awareness ( $p = 0.032$ ). Children at the comparison preschool showed significantly less growth than would be expected for the normative sample in self/social-awareness ( $p = 0.026$ ), understanding of texture/material ( $p = 0.031$ ), and understanding of time/sequence ( $p = 0.002$ ). Change for other indicators of school readiness was not significantly different than would be expected for the normative sample ( $p > 0.05$ ).

We conducted a repeated measures multivariate analysis of covariance (MANCOVA) to examine the impact of time and preschool type on school readiness skills. All assumptions necessary for this analysis were met. Child age, gender (1 = male), race/ethnicity (1 = minority status), and family income-to-needs ratio were entered into the model as covariates.

Multivariate tests ( $df = 6, 254$ ) revealed a significant main effect for time (Wilks' Lambda = 0.93,  $F = 2.98$ ,  $p = 0.008$ ,  $\eta^2 = 0.07$ , power = 0.90) as well as for covariates of child age (Wilks' Lambda = 0.92,  $F = 3.77$ ,  $p = 0.001$ ,  $\eta^2 = 0.08$ , power = 0.96) and racial/ethnic minority status (Wilks' Lambda = 0.81,  $F = 10.00$ ,

**Table 3**  
Comparison of Mean Fall and Spring School Readiness Scores by Preschool (N = 265).

Variable	Arts-Integrated (n = 197)				Comparison (n = 68)			
	Fall M (SD)	Spring M (SD)	t-value (p)	Cohen's d	Fall M (SD)	Spring M (SD)	t-value (p)	Cohen's d
School Readiness Comp								
Standardized	9.99 (3.59)	10.93 (3.14)	5.41 (0.000)***	0.28	9.90 (3.58)	9.57 (3.45)	–1.44 (0.154)	0.10
Direction/Position								
Standardized	9.40 (3.67)	10.00 (3.50)	2.97 (0.003)**	0.18	8.94 (3.66)	9.22 (3.09)	0.78 (0.438)	0.08
Self/Social Awareness								
Standardized	9.39 (3.76)	9.82 (3.18)	2.164 (0.032)*	0.14	9.32 (3.37)	8.57 (2.99)	–2.27 (0.026)*	0.24
Texture/Material								
Standardized	9.39 (3.83)	9.58 (3.04)	0.95 (0.341)	0.06	9.68 (3.16)	8.80 (3.43)	–2.21 (0.031)*	0.27
Quantity								
Standardized	9.57 (6.91)	9.99 (7.02)	0.62 (0.536)	0.06	8.91 (2.72)	8.83 (2.94)	–0.33 (0.740)	0.03
Time/Sequence								
Standardized	9.37 (3.40)	10.15 (7.99)	1.36 (0.176)	0.09	9.85 (3.05)	8.80 (2.73)	–3.30 (0.002)**	0.002

Note: Standardized or scaled scores reflect performance relative to same-age peers in the (mostly middle-income) normative sample, and significant t-values indicate that the change demonstrated by the present subsample from fall to spring is significantly different from the change that would be expected for the normative sample.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

\*\*\*  $p < 0.001$ .

$p < 0.001$ ,  $\eta p^2 = 0.19$ , power = 1.00). Overall, children tended to show growth on the indicators of school readiness from fall to spring. Children who were younger as well as those with minority racial/ethnic backgrounds tended to score lower on the indicators of school readiness. Other main effects were not significant ( $p > 0.05$ ).

Multivariate tests ( $df = 6, 254$ ) also revealed a significant interaction between time and preschool type (Wilks' Lambda = 0.92,  $F = 3.62$ ,  $p = 0.002$ ,  $\eta p^2 = 0.08$ , power = 0.95), as well as between time and age (Wilks' Lambda = 0.93,  $F = 3.21$ ,  $p = 0.005$ ,  $\eta p^2 = 0.07$ , power = 0.92). Other interactions were not significant ( $p > 0.05$ ). Overall, children attending the arts-integrated program showed greater growth over the course of the year in school readiness, compared with their peers attending the typical Head Start. Children who were younger also tended to show greater growth over the course of the year.

Univariate tests ( $df = 1, 263$ ) indicated a significant interaction of time and preschool type for the following indicators of school readiness: School Readiness Composite or SRC ( $F = 11.98$ ,  $p = 0.001$ ,  $\eta p^2 = 0.04$ , power = 0.93), Self/Social Awareness ( $F = 7.55$ ,  $p = 0.006$ ,  $\eta p^2 = 0.03$ , power = 0.78), and Texture/Material ( $F = 5.76$ ,  $p = 0.017$ ,  $\eta p^2 = 0.02$ , power = 0.67). Children attending the arts-integrated program showed greater growth over the course of the year for these indicators of school readiness, compared with their peers attending the typical Head Start. The interaction of time and preschool type was not significant for the other indicators ( $p > 0.05$ ).

Further MANCOVAs tested for differences in program effects by gender ( $male = 1$ ), poverty status ( $poor = 1$ ,  $low-income = 0$ ), and race/ethnicity by including interaction terms. Because cell sizes did not support inclusion of a four-level variable testing for differences among African American, Asian American, Latino/Hispanic American, and Caucasian/European American groups, we used a dichotomous variable for race/ethnicity ( $1 = minority\ status$ ). We found no evidence of significant differences in program effects depending on gender, poverty status, or racial/ethnic minority group status ( $p > 0.05$ ).

#### 4. Discussion

The present study examined the impact of intensive, arts-integrated programming on the development of school readiness skills for economically disadvantaged children attending Head Start preschool. Several lines of reasoning suggest the potential for arts-integrated programming to offer advantages. The varied opportunities for learning provided by the arts may be particularly relevant for young learners (Nutbrown, 2013), as well as for English language learners and children with poverty-related developmental delays (Gregoire & Lupinetti, 2005). Including the arts in education may provide opportunities for enhancing the cultural relevance of education, to the advantage of children from diverse cultural backgrounds (Allen & Boykin, 1992). Additionally, the arts may provide important opportunities for children facing poverty-related stress to regulate their emotions in the service of learning (Menzer, 2015). Moreover, some empirical evidence suggests benefits of the arts for overall cognitive development (Schellenberg, 2005) as well as for the training of specific skills embedded in the arts, such as spatial-temporal reasoning (Rauscher & Hinton, 2011).

Few robust studies have examined the impact of arts-integrated versus typical Head Start programming on the school readiness of children at risk via economic disadvantage (Bernhard et al., 2008; Brown et al., 2010; Brown & Sax, 2013; Lobo & Winsler, 2006; Rauscher, 2003). Results of the present study suggest benefits of arts-integrated Head Start for composite school readiness as well as for the specific areas of self and social awareness and understanding of texture and materials.

#### 4.1. Head Start attendance and school readiness

Results indicated that the child participants in the present study, all of whom attended Head Start preschools, tended to show growth from fall to spring in their standardized school readiness scores. This is consistent with a robust research base suggesting that Head Start preschool promotes the school readiness of children at risk via economic disadvantage, thereby boosting the likelihood of their success in formal schooling (U.S. Department of Health and Human Services, 2010). The two Head Start preschools in the present study were NAEYC accredited, with the highest possible Pennsylvania Keystone Starts quality ratings. Although we did not compare these programs to lower quality or no preschool, past research (U.S. Department of Health and Human Services, 2010) would suggest that the economically disadvantaged children in the present study may have shown greater gains in school readiness than peers who did not attend preschools of such high quality.

Even within these high quality Head Start programs, there were cases in which, on average, children in the present study grew in their concept knowledge, but not to the extent expected for the normative (largely middle-income) sample. This was found at the comparison preschool, for several measured dimensions of school readiness. This is also consistent with past research (Barton, 2003) and with the compelling argument that early childhood education programs cannot be expected to entirely erase poverty-related inequities (Brooks-Gunn, 2000). It is particularly notable, therefore, that the growth in school readiness demonstrated by children at the arts-integrated Head Start was similar to or greater than that expected for their same-age peers in the normative sample on all measured dimensions.

#### 4.2. Arts integration and school readiness

Results of the present study suggest that intensive arts integration adds value to high quality Head Start programming. Children attending Settlement's arts-integrated program showed greater gains in school readiness than their peers attending the typical Head Start. This suggests that intensive arts integration, as implemented via Settlement's model offers non-arts benefits above and beyond those associated with attendance at a high quality Head Start preschool. This result is particularly notable given that Settlement's arts-integrated preschool was not compared to a Head Start with no arts integration but rather to one with a more limited and typical level of arts integration. Present findings of benefits associated with intensive versus limited arts integration are consistent with past research with older children (Catterall et al., 2012) and add to evidence that advantages of arts programming for cognitive and academic skill development depend on the type and level of arts involvement (Rauscher & Hinton, 2011; Schellenberg & Winner, 2011; Young et al., 2014).

The present results indicated that children at the arts-integrated preschool showed greater growth than their counterparts on a composite indicator of school readiness as well as in two specific concept areas. Considerable debate has centered on the question of whether arts involvement benefits overall cognitive skill development (Schellenberg, 2011) or growth in particular skills specifically trained via particular arts modalities, such as auditory awareness via music (Tsang & Conrad, 2011). The present study lends some support to both of those possibilities, suggesting general as well as specific benefits of arts integration. The finding that children at the arts-integrated preschool showed greater growth on the composite indicator of school readiness suggests the possibility of benefits of arts integration for overall cognitive skill development. This does not mean that arts participation automatically bestows genius intelligence, but rather that certain types of intensive arts integration may hold modest benefits for young learners, perhaps

due to the diverse opportunities for learning (Nevanen et al., 2014), or the social-emotional advantages (Brown & Sax, 2013; Lobo & Winsler, 2006). These modest benefits still may be meaningful for young children at risk via poverty.

The present results also lend some support to the idea that arts involvement may lead to growth in specific concept areas trained via certain arts modalities. Children at the arts-integrated Head Start showed greater growth in the concept areas of texture/material and self/social awareness. These areas make sense based on past research and theory. Visual arts training in particular offers unique possibilities for children to meaningfully engage with and learn about texture and material (Meiners, 2005). Also, a growing research base supports social and emotional benefits of arts involvement, including for young, economically disadvantaged children (Menzer, 2015). The present results extend prior findings suggesting an advantage of arts-integrated Head Start for children's emotion regulation (Brown & Sax, 2013; Lobo & Winsler, 2006). Specifically, the present findings contribute by suggesting the potential for the arts to advance children's emotion knowledge; a widely accepted component of the emotional competence required to successfully regulate or manage emotions (Izard, 2002).

Notably, the greater growth for children in the arts-integrated preschool in the areas of texture/material and self/social awareness may demonstrate the viability of "near transfer," specifically the application of an understanding of texture/material concepts learned via arts classes (e.g., labeling textures like rough or smooth, and materials like cloth or stone or labeling emotions explicitly discussed in arts classes) to a standardized test of these concepts. The present results fall short of demonstrating "far transfer" or the transfer of skills from one area such as music to another that is only weakly related such as mathematics (Sala & Gobet, 2017). The present study did not find evidence to support a specific advantage of arts-integrated programming for understanding of direction and position, quantity, or time and sequence.

Some prior studies have provided support for the idea that training in arts modalities such as music advantage spatial-temporal and other mathematical skills (Hetland & Winner, 2001; Rauscher & Hinton, 2011), whereas other investigations have provided null or limited support (Costa-Giomi, 1999; Hetland & Winner, 2001). In the present study, although visual inspection suggested that mean spring school readiness scores for the concept areas of direction and position, quantity, and time and sequence were higher at Settlement's arts-integrated program compared to the typical Head Start, the differences in growth across the year were not statistically significant. Beyond sample size and related statistical limitations of the present study, this could reflect the particular type and level of arts-integration in question. Past research has suggested, for example, that learning to play music might offer lasting benefits for spatial-temporal reasoning, whereas music listening does not (Hetland & Winner, 2001; Rauscher & Hinton, 2006). The lack of significant findings could also reflect the way spatial-temporal and mathematical skills were measured in the present study. Namely, it is possible that children's spatial-temporal and mathematical skills were advanced by the arts in ways not captured by a verbal measure of school readiness concepts (BBCS-3:R; Bracken, 2006). In any case, the lack of significant findings reflects the difficulty of demonstrating far transfer of skills in robust empirical studies (Sala & Gobet, 2017). The present study adds to existing questions about the impact of the arts on spatial-temporal and mathematical skills (Costa-Giomi, 1999; Hetland & Winner, 2001; Sala & Gobet, 2017).

#### 4.3. Demographic variables and school readiness

On the whole, the present study found that children who were younger showed lower initial school readiness scores and greater gains across the year. This is interesting given that analyses relied

on standardized scores that were already adjusted for child age. The finding is consistent with evidence regarding the impact of poverty on early childhood development (Brooks-Gunn & Duncan, 1997; Duncan & Brooks-Gunn, 2000) and with prior studies demonstrating that younger children attending Head Start show more rapid growth in critical domains of school readiness such as language, literacy, and mathematics (Wen, Bulotsky-Shearer, Hahs-Vaughn, & Jon Korfmacher, 2012).

The present study also found that children of racial/ethnic minority backgrounds tended to demonstrate lower school readiness scores. This is consistent with evidence suggesting disproportionate risk facing children of color due to racism and related structural inequalities (Iruka & Barbarin, 2009; Lee & Burkam, 2002; Neal, 2006). Above and beyond the opportunity gaps facing children from racial and ethnic minority backgrounds, characteristics of the standardized, verbal test used in the present study (BBCS-3:R; Bracken, 2006) may have influenced the ability of children of color to demonstrate their knowledge (Brooks-Gunn, Klebanov, Settlement, Duncan, & Lee, 2003).

Growth in school readiness across the year did not differ significantly based on racial/ethnic minority status, suggesting that the school readiness benefits of a year of Head Start programming were similar for children of color and their White counterparts. Nonetheless, the lower school readiness scores found for children of color demonstrates a racial achievement gap even within this economically disadvantaged sample, suggesting the importance of closing associated gaps in the early childhood opportunities available to children of color and developing culturally relevant strategies that maximize the benefits of Head Start (Brooks-Gunn & Markman, 2005). In the present study, the effects of arts-integrated preschool programming did not differ significantly for children of color versus their White counterparts. Unfortunately, sample size limitations precluded examining the possibility of differences in program effects for particular racial/ethnic minority groups. The results, therefore, demonstrate the potential for arts-integration to benefit children of color, but fall short of suggesting unique advantages for this group as a whole, or for particular racial/ethnic subgroups.

#### 4.4. Limitations and future directions

Several limitations of the present research deserve mention. The first limitation concerns sample characteristics. Although the at-risk nature of the present sample represents a point of strength, the results may not generalize to samples that are more advantaged in their social and economic standing and do not face the same barriers to school readiness. Although some prior studies have suggested academic benefits of the arts for White students from middle-income families, other studies have reported null findings (Hetland & Winner, 2001), and certain academic benefits of intensive arts involvement may be unique to children at risk via poverty or racism. Future research with samples more representative of the entire U.S. population would be important for investigating the specificity versus generalizability of the present results. Larger and more representative samples would facilitate understanding whether the arts offer unique possibilities for closing the gap in pre-academic achievement as well as considering the possibilities of differential effects for different racial and ethnic groups (Ansari & Winsler, 2014). Moreover, although the preschool age group was important for examining the impact of arts involvement on school readiness, the results do not advance understanding of how arts-integration may affect older children or adults. The unique plasticity of young children's brains may relate to a greater impact of the arts on cognitive outcomes for this age group (Hyde et al., 2009).



The second limitation concerns the type of arts programming of interest to the present investigation. Understanding the value added by intensive integration of the arts into a Head Start curriculum has important implications for policy and practice. Yet there are many other ways that children might engage with arts programming. Indeed, some research suggests that engagement with the arts at home matters particularly for academic achievement (Young et al., 2014).

Moreover, the type of arts involvement studied by the present investigation is specific to the model used by Settlement's Kaleidoscope Preschool Arts Enrichment Program. This preschool included multiple music, dance, and visual arts classes in the daily schedule and intentionally structured these classes not only to foster the development of artistic skills but also to promote skill development in core school readiness domains of language, literacy, science, mathematics, and social and cultural learning. The results of the present study provide important evidence in support of the Settlement model and the proposition that the arts can be integrated into Head Start in ways that advance general school readiness. The present study falls short, however, of distinguishing among different possible explanations for the advantage of the arts.

Children at the arts preschool could have demonstrated greater growth in their mastery of school readiness concepts because: they received different opportunities to practice identifying shapes, colors, and other school readiness concepts via different arts and homeroom classes; the arts boosted their interest and engagement or helped them regulate their emotions in the service of learning; or the training of general or specific cognitive skills related to literacy and numeracy acquisition, for example, was naturally embedded in the arts training. Future research should attempt to pinpoint specific mechanisms of the impact of the arts as well as rule out the possibility that variables confounded with the arts instruction might have been responsible for the demonstrated benefits.

On this note, the third limitation concerns the quasi-experimental design of the present study. The present study is rigorous in its use of pre- and post-tests, and inclusion of demographic control variables. Moreover, the study of arts-integration as actually implemented at an existing Head Start preschool holds relevance for understanding the real world relevance and potential for scaling up such models. Still, the study lacks the rigor of a true experimental design with random assignment to arts-integrated versus typical or control conditions.

Specific hypotheses about the arts and school readiness were not revealed to parents, children, teachers, or research assistants. Yet these individuals' perceptions may have influenced child performance on the Bracken measure of school readiness in ways unaccounted for by the current design, and this is a serious limitation. The standardized procedures for the Bracken measure of school readiness limit the possible impact of administrator bias, but future studies with experimental designs would be necessary for eliminating it.

Family, child, and preschool characteristics not captured by the present study may have influenced which families selected Settlement's arts-integrated versus the typical Head Start and may also have influenced growth in school readiness across the year (Wen et al., 2012). For example, although program administrators reported that most families selected the preschool closest to their home, it is possible that some families who particularly valued the arts may have made particular efforts to enroll their children in Settlement's arts-integrated preschool. Presumably, these families might also have integrated the arts into their children's lives in other ways not captured by the present study. This is an important issue that should be accounted for in future investigations.

The samples differed significantly in family income-to-needs ratios, with lower average income-to-needs for those at the arts-integrated preschool. Theoretically, lower income-to-needs ratios

could have predicted lower initial school readiness scores for children at the arts-integrated preschool, and in this way could have explained greater growth over the course of the year. In the present study, however, this did not seem to be the case. Despite the difference in family income, the samples showed similar initial school readiness levels, and the income variable did not relate significantly to start- or end-of-year school readiness, nor did a two-level income variable interact with program effects. The results offer assurance that the present finding of greater growth in school readiness for children in the arts-integrated preschool are not explained by differences in family income. Nonetheless, the difference in family income suggests the samples may have differed in additional ways not captured by the present measurement battery.

Also, the two Head Start preschools might have differed along dimensions not measured by the present investigation, such as the proportion of teacher-directed activities, individual versus small or large group activities, fine versus gross motor activities, teaching quality, or exact quantity or quality of integration of the arts into early learning classes (Halle, Hair, Wandner, & Chien, 2012). True experimental designs with random assignment would be important for disentangling potential benefits of intensive arts-integration from other factors that influence educational outcomes (Halle et al., 2012; Wen et al., 2012). Also, longer-term studies would be useful, particularly if they spanned across the transition to formal schooling. Such investigations would shed light on the extent to which arts-integrated preschool programming might influence children's academic achievement in elementary school.

#### 4.5. Implications for policy and practice

The present results support the broad educational value of the arts. Our findings indicate that the arts may hold value not only for art's sake but also for advancing children's overall school readiness. In a study of primary school teachers, Bresler (1992) found that the arts were commonly regarded as a distraction from "basic" academic skills related to literacy and numeracy. More recently, arts instruction has sometimes been regarded as a distraction from the science, technology, engineering, and math disciplines referred to as STEM (National Research Council, 2011). Results of the present investigation, however, argue against pitting the arts against the sciences and mathematics, and align with arguments that the arts not only enhance the development of the "whole child" but in fact can be used to teach STEM content (Robelen, 2011). Practitioners and policymakers should consider the possibility that the arts may be used to advance children's artistic and creative skills as well as to promote academic competence more broadly.

Results of the present investigation also support using the arts to foster social-emotional competence. The finding that children receiving arts-integrated preschool showed greater growth across the year in self/social awareness is consistent with a growing body of evidence that arts programming enhances children's social and emotional development (Menzer, 2015). Shonkoff et al. (2004) has stated the importance for all early childhood programs of balancing their focus on cognition and literacy skills with attention to emotional and social development, and also noted the gap in early childhood professionals' preparedness for this challenge. The challenge may be particularly great for programs serving economically disadvantaged children who face risk not only for academic but also emotional difficulties (Raver & Knitzer, 2002). Arts-integrated programming should be among the strategies considered for advancing social-emotional as well as academic school readiness, including for economically disadvantaged children.

The present results suggest that the arts hold value for the early childhood education of economically disadvantaged children. This is an important finding given the risk that poverty poses for early childhood development (Brooks-Gunn & Duncan, 1997; Duncan &

Brooks-Gunn, 2000). Data suggest that children at risk via poverty and racism are least likely to receive arts programming (Rabkin & Hedberg, 2011). Results of the present study suggest this trend should be reversed, not only to promote equality in arts education but also to close gaps in academic and social-emotional school readiness. Most existing programming falls short of equalizing educational outcomes for children from economically disadvantaged and racial and ethnic minority backgrounds and innovative strategies are needed to close the gap: Arts integration is a strategy that should be further developed and studied.

Results of the present study suggest that intensive arts integration can add to the value of Head Start. Our nation has invested considerable resources into developing Head Start as a model for equalizing educational opportunities for economically disadvantaged children (U.S. Department of Health and Human Services, 2010), and we should continue to search for ways to maximize the benefits of this program (Bulotsky-Shearer, Wen, Faria, Hahs-Vaughn, & Korfmacher, 2012). The present study provides evidence that intensive arts integration may be associated with school readiness gains above and beyond those demonstrated in a typical, high quality Head Start program. Practitioners and policymakers should consider further integrating the arts into Head Start preschool.

The present results speak to the particular value of Settlement's model of intensive arts integration in which music, dance, and visual arts classes are structured to promote skill development in core school readiness areas of language, literacy, science, mathematics, and social and cultural learning. Nardo et al.'s (2006) survey revealed that, for teachers in NAEYC-accredited preschools, arts components such as music typically were used infrequently, and promoting skill development was ranked as the least important reason for using the arts. The results of the present investigation suggest the value added by using daily music, dance, and visual arts classes to promote the development of core school readiness skills.

Settlement's model of daily music, dance, and visual arts classes taught by credentialed artist teachers in fully equipped arts studios may be difficult to replicate in many Head Start preschools. Yet there may be other models that deliver similar benefits. Settlement currently offers a teacher training institute through which they support other early childhood professionals to more fully integrate the arts into regular homeroom or early learning classes. Additionally, their experienced artist teachers sometimes visit other preschools to provide creative arts programming for children during a particular time interval (although they did not visit the comparison preschool during the present study). This is similar to the idea of artist in residence programs, which hold demonstrated effectiveness for strengthening existing early childhood curricula (Eckhoff, 2011). Varied possibilities for integrating the arts into early childhood education for economically disadvantaged children should be further implemented and tested.

## References

- Allen, B. A., & Boykin, A. W. (1991). The influence of contextual factors on Afro-American and Euro-American children's performance: Effects of movement opportunity and music. *International Journal of Psychology, 26*, 373–387. <http://dx.doi.org/10.1080/00207599108246860>
- Allen, B. A., & Boykin, A. W. (1992). African American children and the educational process: Alleviating cultural discontinuity through perceptive pedagogy. *School Psychology Review, 21*, 586–596.
- Allison, B. N., & Rehm, M. L. (2007). Effective teaching strategies for middle school learners in multicultural, multilingual classrooms. *Middle School Journal, 39*, 12–18. Retrieved from <http://files.eric.ed.gov/fulltext/EJ779053.pdf>
- Ansari, A., & Winsler, A. (2014). Montessori public school pre-K programs and the school readiness of low-income Black and Latino children. *Journal of Educational Psychology, 106*, 1066–1079. <http://dx.doi.org/10.1016/j.jecresq.2016.06.002>
- Anvari, S. H., Trainor, L. J., Woodside, J., & Levy, B. A. (2002). Relations among musical skills, phonological processing, and early reading ability in preschool children. *Journal of Experimental Child Psychology, 83*, 111–130. [http://dx.doi.org/10.1016/S0022-0965\(02\)00124-8](http://dx.doi.org/10.1016/S0022-0965(02)00124-8)
- Barton, P. E. (2003). *Parsing the achievement gap: Baselines for tracking progress*. Princeton, NJ: Educational Testing Service.
- Bernhard, J. K., Winsler, A., Bleiker, C., Ginienievicz, J., & Madigan, A. L. (2008). Read my story! Using the early authors program to promote early literacy among diverse, urban preschool children in poverty. *Journal of Education for Students Placed at Risk, 13*, 76–105. <http://dx.doi.org/10.1080/10824660701860458>
- Bracken, B. A. (2006). *Bracken basic concept scale-third edition: Receptive (BBCS-3-R)*. San Antonio, TX: Harcourt Assessment.
- Bresler, L. (1992). Visual art in primary grades: A portrait and analysis. *Early Childhood Research Quarterly, 7*, 397–414. [http://dx.doi.org/10.1016/0885-2006\(92\)90029-X](http://dx.doi.org/10.1016/0885-2006(92)90029-X)
- Brooks-Gunn, J., & Duncan, G. (1997). The effects of poverty on children. *The Future of Children, 7*, 55–71. <http://dx.doi.org/10.2307/1602387>
- Brooks-Gunn, J., & Markman, L. (2005). The contribution of parenting to ethnic and racial gaps in school readiness. *The Future of Children, 15*, 139–168. <http://dx.doi.org/10.1080/10824660701860458>
- Brooks-Gunn, J., Klebanov, P. K., Settlement, J., Duncan, G. J., & Kyunghye, L. (2003). The black-white test score gap in young children: Contributions of test and family characteristics. *Applied Developmental Science, 7*, 239. [http://dx.doi.org/10.1207/S1532480XADS0704\\_3](http://dx.doi.org/10.1207/S1532480XADS0704_3)
- Brooks-Gunn, J. (2000). *Do you believe in magic? What we can expect from early childhood intervention programs*. New York: Columbia University, Teachers College.
- Brown, E. D., & Sax, K. L. (2013). Arts enrichment and preschool emotions for low-income children at risk. *Early Childhood Research Quarterly, 28*, 337–346. <http://dx.doi.org/10.1016/j.jecresq.2012>
- Brown, E. D., Benedett, B., & Armistead, M. E. (2010). Arts enrichment and school readiness for children at risk. *Early Childhood Research Quarterly, 25*, 112–124. <http://dx.doi.org/10.1016/j.jecresq.2009.07.008>
- Bulotsky-Shearer, R. J., Wen, X., Faria, A. M., Hahs-Vaughn, D. L., & Korfmacher, J. (2012). National profiles of classroom quality and family involvement: A multilevel examination of proximal influences on Head Start children's school readiness. *Early Childhood Research Quarterly, 27*, 627–639. <http://dx.doi.org/10.1016/j.jecresq.2012.02.001>
- Catterall, J. S., Dumais, S. A., & Hampden-Thompson, G. (2012). *The arts and achievement in at-risk youth: Findings from four longitudinal databases*. Washington, DC: National Endowment for the Arts. Retrieved from <https://www.arts.gov/sites/default/files/Arts-At-Risk-Youth.pdf>
- Corrigan, K. A., & Trainor, L. J. (2011). Associations between length of music training and reading skills in children. *Music Perception: An Interdisciplinary Journal, 29*, 147–155. <http://dx.doi.org/10.1525/mp.2011.29.2.147>
- Costa-Giomi, E. (1999). The effects of three years of piano instruction of children's cognitive development. *Journal of Research in Music Education, 47*, 198–212. <http://dx.doi.org/10.2307/3345779>
- Dalebroux, A., Goldstein, T. R., & Winner, E. (2008). Short term mood repair through art-making: Positive emotion is more effective than venting. *Motivation and Emotion, 32*, 288–295. <http://dx.doi.org/10.1007/s11031-008-9105-1>
- Darby, J. T., & Catterall, J. S. (1994). *The fourth R: The arts and learning*. *Teachers College Record, 96*, 299–328.
- Dege, F., Kubicek, C., & Schwarzer, G. (2011). Music lessons and intelligence: A relation mediated by executive functions. *Music Perception: An Interdisciplinary Journal, 29*, 195–201. <http://dx.doi.org/10.1525/mp.2011.29.2.195>
- Dodge, D. T., & Colker, L. J. (1992). *Creative curriculum for early childhood*. Washington, DC: Teaching Strategies, Inc.
- Dow, C. B. (2010). *Young children and movement: The power of creative dance*. *YC: Young Children, 65*, 30–34.
- Drake, J. E., & Winner, E. (2013). How children use drawing to regulate their emotions. *Cognition & Emotion, 27*, 512–520. <http://dx.doi.org/10.1080/02699931.2012.720567>
- Duncan, G., & Brooks-Gunn, J. (2000). Family poverty, welfare reform, and child development. *Child Development, 71*, 188–196. <http://dx.doi.org/10.1111/1467-8624.00133>
- Eckhoff, A. (2011). Art experiments: Introducing an artist-in-residence programme in early childhood education. *Early Child Development and Care, 181*, 371–385. <http://dx.doi.org/10.1080/03004430903388089>
- Edwards, C., Gandini, L., & Forman, G. (1998). *Hundred languages of children: The Reggio Emilia approach—Advanced reflections*. Greenwich, CT: Ablex.
- Eisner, E. W. (1998). Does experience in the arts boost academic achievement? *Clearing House, 72*, 143–149. <http://dx.doi.org/10.1080/00098659909599615>
- Elias, C. L., & Berk, L. E. (2002). Self-regulation in young children: Is there a role for sociodramatic play? *Early Childhood Research Quarterly, 17*, 216–238. [http://dx.doi.org/10.1016/S0885-2006\(02\)00146-1](http://dx.doi.org/10.1016/S0885-2006(02)00146-1)
- Forgeard, M., Winner, E., Norton, A., & Schlaug, G. (2008). Practicing a musical instrument in childhood is associated with enhanced verbal ability and nonverbal reasoning. *PLoS One, 3*, 3566. <http://dx.doi.org/10.1371/journal.pone.0003566>
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York, NY: Basic Books.
- Gardner, H. (2013, September, 10). *Harvard Project Zero: A Personal History*. Retrieved from <https://howardgardner01.files.wordpress.com/2012/06/pz-history-9-10-13.pdf>
- Goldsmith, L. T., Hoyle, C., Hetland, L., & Winner, E. (2016). Visual-spatial thinking ingenuity and the visual arts. *Psychology of Aesthetics, Creativity, and the Arts, 10*, 56–71. <http://dx.doi.org/10.1037/aca0000027>

- Goldstein, T. R., & Winner, E. (2012). Enhancing empathy and theory of the mind. *Journal of Cognition and Development, 13*, 19–37. <http://dx.doi.org/10.1080/15248372.2011.573514>
- Gregoire, M. A., & Lupineti, J. (2005). Supporting diversity through the arts. *Kappa Delta Pi Record, 41*, 159–162. <http://dx.doi.org/10.1080/00228958.2005>
- Griffin, J. J., & Miller, E. (2007). A research practitioner's perspective on culturally relevant prevention: Scientific and practical considerations for community-based programs. *Counseling Psychologist, 35*, 850–859. <http://dx.doi.org/10.1177/0011000007307999>
- Hall, H. R. (2007). Poetic expressions: Students of color express resiliency through metaphors and similes. *Journal of Advanced Academics, 18*, 216–244. <http://dx.doi.org/10.4219/jaa-2007-355>
- Halle, Tamara G., Hair, Elizabeth C., Wandner, Laura D., & Chien, Nina C. (2012). Profiles of school readiness among four-year-old head start children. *Early Childhood Res. Q., 27*, 613–626.
- Hanna, G., Patterson, M., Rollins, J., & Sherman, A. (2011). *The arts and human development: Framing a national research agenda for the arts, lifelong learning, and individual well-being*. Washington, DC: National Endowment for the Arts. Retrieved from. <https://www.arts.gov/sites/default/files/TheArtsAndHumanDev.pdf>
- Hetland, L., & Winner, E. (2001). The arts and academic achievement: What the evidence shows. *Arts Education Policy Review, 102*, 3–6. <http://dx.doi.org/10.1080/10632910109600008>
- Hyde, K. L., Lerch, J., Norton, A., Foregard, M., Winner, E., Evans, A. C., et al. (2009). The effects of musical training on structural brain development. *Annals of the New York Academy of Sciences, 1169*, 182–186. <http://dx.doi.org/10.1523/JNEUROSCI.5118-08.2009>
- Iruka, I. U., & Barbarin, O. (2009). African American children's early learning and development: Examining parenting, schools, and neighborhood. In H. A. Neville, B. M. Tynes, S. O. Utsey, H. A. Neville, B. M. Tynes, & S. O. Utsey (Eds.), *Handbook of African American psychology* (pp. 175–186). Thousand Oaks, CA: Sage.
- Izard, C. E. (2002). Translating emotion theory and research into preventive interventions. *Psychological Bulletin, 128*, 796–824. <http://dx.doi.org/10.1037/0033-2909.128.5.796>
- Lee, V. E., & Burkam, D. T. (2002). *Inequality at the starting gate: Social background differences in achievement as children begin school*. Washington, DC: Economic Policy Institute. Retrieved from. <http://epsl.asu.edu/epru/articles/EPRU-0603-138-OWI.pdf>
- Lobo, Y. B., & Winsler, A. (2006). The effects of a creative dance and movement program on the social competence of Head Start preschoolers. *Social Development, 15*, 201–519. <http://dx.doi.org/10.1111/j.1467-9507.2006.00353.x>
- Meiners, J. (2005). In the beginning. Young children and arts education. *International Journal of Early Childhood, 37*, 37–44. <http://dx.doi.org/10.1007/BF03165744>
- 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. Retrieved from. <https://www.arts.gov/sites/default/files/arts-in-early-childhood-dec2015-rev.pdf>
- Moreno, S., Friesen, D., & Bialystok, E. (2011). Effect of music training on preliterate skills: Preliminary causal evidence. *Music Perception: An Interdisciplinary Journal, 29*, 165–172. <http://dx.doi.org/10.1525/mp.2011.29.2.165>
- Nardo, R. L., Custodero, L. A., Persellin, D. C., & Fox, D. B. (2006). Looking back, looking forward: A report on early childhood music education in accredited American preschools. *Journal of Research in Music Education, 54*, 278–292. <http://dx.doi.org/10.2307/4139751>
- National Research Council. (2011). *Successful K-12 STEM education: Identifying effective approaches in science, technology, engineering, and mathematics*. Washington, DC: The National Academies Press.
- Neal, D. A. (2006). Why has Black-White skill convergence stopped? In E. A. Hanushek, & F. Welch (Eds.), *Handbook of the economics of education* (Vol. 1) (pp. 511–576). New York: Elsevier.
- Nevanen, S., Juvonen, A., & Ruismaki, H. (2014). Does arts education develop school readiness? Teachers' and artists' points of view on an art education project. *Arts Education Policy Review, 115*, 72–81. <http://dx.doi.org/10.1080/10632913.2014.913970>
- Nutbrown, C. (2013). Conceptualizing arts-based learning in the early years. *Research Papers in Education, 28*, 239–263. <http://dx.doi.org/10.1080/02671522.2011.580365>
- Rabkin, N., & Hedberg, E. C. (2011). *Arts education in america: What the declines mean for arts participation. Based on the 2008 survey of public participation in the arts*. Washington, DC: National Endowment for the Arts. Retrieved from. <https://www.arts.gov/sites/default/files/2008-SPPA-ArtsLearning.pdf>
- Rauscher, F. H., & Hinton, S. C. (2006). The Mozart effect: Music listening is not music instruction. *Educational Psychologist, 41*, 233–238. [http://dx.doi.org/10.1207/s15326985Sep4104\\_3](http://dx.doi.org/10.1207/s15326985Sep4104_3)
- Rauscher, F. H., & Hinton, S. C. (2011). Music instruction and its diverse extra-musical benefits. *Music Perception: An Interdisciplinary Journal, 29*, 215–226. <http://dx.doi.org/10.1525/mp.2011.29.2.215>
- Rauscher, F. H. (2003). Effects of piano, singing and rhythm instruction on the spatial reasoning of at-risk children. *Proceedings of the 5th triennial ESCOM conference*, Hanover University of Music and Drama, Germany.
- Raver, C., & Knitzer, J. (2002). *Ready to enter: What research tells policymakers about strategies to promote social and emotional school readiness among three- and four-year-old children*. New York, NY: National Center for Children in Poverty. Retrieved from. <http://www.nccp.org/publications/pdf/text.485.pdf>
- Reed, J., Hirsh-Pasek, K., & Golinkoff, R. M. (2012). Drawing on the arts: Less-traveled paths toward a science of learning? In A. M. Pinkham, T. Kaefer, & S. B. Neuman (Eds.), *Knowledge development in early childhood* (pp. 71–89). NY: Guilford.
- Robelen, E. W. (2011, December 1). STEAM: Experts make case for adding arts to STEM. *Education Week*. Retrieved from [http://www.edweek.org/ew/articles/2011/12/01/13steam\\_ep.h31.html](http://www.edweek.org/ew/articles/2011/12/01/13steam_ep.h31.html)
- Sala, G., & Gobet, F. (2017). When the music's over. Does music skill transfer to children's and young adolescents' cognitive and academic skills? A meta-analysis. *Educational Research Review, 20*, 55–67. <http://dx.doi.org/10.1016/j.edurev.2016.11.005>
- Schellenberg, E. G., & Winner, E. (2011). Music training and non-musical abilities: Introduction. *Music Perception: An Interdisciplinary Journal, 29*, 129–132. <http://dx.doi.org/10.1525/mp.2011.29.2.129>
- Schellenberg, E. G. (2004). Music lessons enhance IQ. *Psychological Science, 15*, 511–514. <http://dx.doi.org/10.1111/j.0956-7976.2004.00711.x>
- Schellenberg, E. G. (2005). Music and cognitive abilities. *Current Directions in Psychological Science, 14*, 322–325. <http://dx.doi.org/10.1111/j.0963-7214.2005.00389.x>
- Schellenberg, E. G. (2011). Examining the association between music lessons and intelligence. *British Journal of Psychology, 102*, 283–302. <http://dx.doi.org/10.1111/j.2044-8295.2010.02000.x>
- Shonkoff, J. P., Boyce, W. T., Cameron, J., Duncan, G. J., Fox, N. A., Greenough, W. T., et al. (2004). *Children's emotional development is built into the architecture of their brains*. Boston, MA: National Scientific Council on the Developing Child. Retrieved from. [http://www.developingchild.net/pubs/wp/Childrens\\_Emotion-Development-Architecture-Brains.pdf](http://www.developingchild.net/pubs/wp/Childrens_Emotion-Development-Architecture-Brains.pdf)
- Strait, D., & Kraus, N. (2011). Playing music for a smarter ear: Cognitive, perceptual, and neurobiological evidence. *Music Perception: An Interdisciplinary Journal, 29*, 133–146. <http://dx.doi.org/10.1525/mp.2011.29.2.133>
- Sylwester, R. (1995). *A celebration of neurons: An educator's guide to the human brain*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Tsang, C. D., & Conrad, N. J. (2011). Music training and reading readiness. *Music Perception: An Interdisciplinary Journal, 29*, 157–163. <http://dx.doi.org/10.1525/mp.2011.29.2.157>
- U.S. Census Bureau. (2016). *Income and poverty in the United States: 2015 (Report number: p60-256)*. Washington, DC: U.S. Government Printing Office.
- U.S. Department of Health and Human Services. (2010). *Head start impact study: Final report*. Washington, DC. Retrieved from. <https://www.acf.hhs.gov/opre/resource/head-start-impact-study-final-report>
- U.S. Department of Health and Human Services. (2011). *The Head Start child development and early learning framework: Promoting positive outcomes in early childhood programs serving children 3–5 years old*. Washington, DC. Retrieved from. <https://eclkc.ohs.acf.hhs.gov/hslc/h/sr/approach/cdelf>
- Wen, X., Bulotsky-Shearer, R. J., Hahs-Vaughn, D. L., & Korfmacher, J. (2012). Head Start program quality: Examination of classroom quality and parent involvement in predicting children's vocabulary, literacy, and mathematics achievement trajectories. *Early Childhood Research Quarterly, 27*, 640–653. <http://dx.doi.org/10.1016/j.ecresq.2012.01.004>
- Winsler, A., Duce, L., & Koury, A. (2011). Singing one's way to self-regulation: The role of early music and movement curricula and private speech. *Early Education and Development, 22*, 274–304. <http://dx.doi.org/10.1080/10409280903585739>
- Young, B. (1990). *Art, culture, and ethnicity*. Reston, VA: National Art Education Association.
- Young, L. N., Cordes, S., & Winner, E. (2014). Arts involvement predicts academic achievement only when the child has a musical instrument. *Educational Psychology, 34*, 849–861. <http://dx.doi.org/10.1080/01443410.2013.785477>