

PREDICTORS OF DANCE ENROLLMENT AMONG ETHNICALLY AND  
LINGUISTICALLY DIVERSE MIDDLE-SCHOOL STUDENTS

by

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Predictors of Dance Enrollment Among Ethnically and Linguistically Diverse Middle-School Students

A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts at George Mason University

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## **ABSTRACT**

### **PREDICTORS OF DANCE ENROLLMENT AMONG ETHNICALLY AND LINGUISTICALLY DIVERSE MIDDLE-SCHOOL STUDENTS**

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George Mason University, 2015

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Accessibility of arts electives (dance, drama, visual arts) among national public middle schools has decreased in the past decade (Parsad, Spiegelman, & Coopersmith, 2012), despite the positive developmental gains associated with arts engagement, which are particularly beneficial for low-income children of color (Catterall, Dumais, & Hampden-Thompson, 2012). Creative movement and dance engagement have been linked to increased socioemotional skills (Lobo & Winsler, 2006), academic performance (Dumais, 2006), and language acquisition among English Language Learners (Greenfader, Brouillette, & Farkas, 2015; Horowitz & Beaubrun, 2010). Prior research reporting the developmental outcomes from dance engagement does not typically control for pre-existing differences between youth that do and do not enroll in dance classes. Using data from the Miami School Readiness Project (MSRP), I examined predictors of in-school dance enrollment among a large ( $n = 24,845$ ), ethnically diverse (59% Latino,

33% Black, 7% White/other) group of middle-school students. Participants included four cohorts of 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> graders who are being followed longitudinally from pre-K to 12<sup>th</sup> grade. The following research questions were addressed: 1) What proportion of MSRP children in grades 6-8 are enrolling in dance classes, for how many years, and in which grades? 2) What proportion of middle schools included in my sample offer in-school dance electives, and what percent of students at those schools chose to take dance? 3) What are the preexisting child-level differences (i.e., child demographics, school readiness at age four, and elementary academic performance) between students who do or do not enroll in dance classes? 4) What are the strongest unique predictors of taking dance classes overall, and limited to only children in schools where dance is an option? Multivariate logistic regression analyses revealed that 5.6% ( $n = 1,402$ ) of children who enrolled in dance during middle school were more likely to be White or Latino, female, have greater elementary academic achievement, less academic retention in elementary school, and greater social skills at age four after controlling for all other demographic factors. After limiting analyses to 12.3% ( $N = 9,768$ ) of children who were enrolled at a school where dance was an option, (thereby controlling for neighborhood/school), all ethnic differences disappeared, yet gender, increased behavioral concerns, increased social skills, decreased cognitive skills at age four, and higher 5<sup>th</sup> grade standardized test scores were related to later dance engagement. Based on these findings before and after accounting for school accessibility, there are clear gender, school readiness, and 5<sup>th</sup> grade academic achievement differences between students who do or do not enroll in dance during middle school. Furthermore, because school accessibility of dance electives

removed the effects of ethnicity and 5<sup>th</sup> grade academic achievement, future research should not only control for child-level differences but also school-level factors when examining outcomes of youths dance engagement. In-school dance electives may only be available for students living in higher income school neighborhoods. Once future research accounts for school accessibility and students' preexisting cognitive or socioemotional competencies, then we can determine the true developmental outcomes associated with dance engagement.

## **INTRODUCTION**

### **Predictors of Dance Enrollment Among Ethnically and Linguistically Diverse Middle School Students**

Creative arts engagement has been linked to a variety of positive cognitive and socioemotional outcomes among youth (Catterall, 1998; Catterall, Dumais, & Hampden-Thompson, 2012; Ruppert, 2006). Children from a range of socioeconomic statuses (SES), linguistic backgrounds, and cultural groups are reported to benefit from arts participation (Ruppert, 2006). For example, increased academic achievement, civic engagement, and decreased internalizing and externalizing behavior are associated with arts participation during adolescence and young adulthood (Catterall, 1998; Catterall et al., 2012).

Developmental gains are particularly beneficial among low-socioeconomic status, ethnically and linguistically diverse youth who are often understudied (Bonbright & Faber, 2004; Brown & William, 2002; Catterall, 1998; Catterall et al., 2012). Since 1980, the percentage of Hispanic children living in the United States has nearly doubled from nine to twenty-four percent in 2013, and is expected to steadily increase (Child Trends Data Bank, 2014). Unfortunately, children from Hispanic origins typically lag behind their peers in school proficiency assessments such as reading and math (Garcia & Jenson, 2009). It is clear that participation in music, drama, dance, and/or visual art during grade

school may serve as a mechanism to decrease the developmental gap between low-income, ethnically diverse youth and their more affluent peers (Catterall, 1998). Less is known about how preexisting child demographic (i.e., ethnicity and income) and academic achievement differences between students who do or do not enroll in arts electives (dance, drama, music, and visual art) influence outcomes of engagement.

The magnitude and type of developmental gains vary by art form (Dumais, 2006). Specifically, dance engagement is linked to positive outcomes for English Language Learners (ELL) (Greenfader et al., 2015; Horowitz & Beaubrun, 2010), children from various ethnic backgrounds, and those from low-income families (Brown & Sax, 2013; Lobo & Winsler, 2006). A creative dance/movement program found increases in social competence, internalizing behavior, and externalizing behavior among Head-Start preschoolers (Lobo & Winsler, 2006). Dance and theater have also been linked to promoting second language learning among emerging bilingual students in elementary and middle school (Horowitz & Beaubrun, 2010). Unfortunately, there is a lack of rigorous methodology used (i.e. controlling for demographic factors) when determining outcomes of arts participation, limiting the conclusions we can make on cognitive, social, or emotional gains of specific artistic disciplines such as dance.

Although empirical evidence depicting the cognitive and socioemotional outcomes of arts engagement is optimistic (Catterall, 1998, Lobo & Winsler, 2006, Ruppert 2006), studies examining who participates in arts activities in the first place are rare but of equal importance (Fredricks et al., 2002). It is plausible that certain types of children (i.e., gender, ethnicity, poverty status, disability status, ELL, higher academic

achievers) are participating in the arts at higher rates, and concurrently achieving at higher emotional, social, and cognitive levels than their peers. It is imperative that preexisting differences between children, specifically SES, are controlled for in future research documenting the outcomes of arts engagement among youth (Catterall, 1998; Catterall et al., 2012). Only once such differences are controlled can we conclude that the benefits of arts engagement are actually from the artistic exposure itself, and not a third extraneous variable. No studies to date have longitudinally examined unique predictors of in-school arts engagement, particularly dance engagement, among an extremely large sample of ethnically and linguistically diverse youth. Due to the non-existent literature assessing predictors of in-school dance engagement using longitudinal data, my thesis examined predictors of dance enrollment among ethnically and linguistically diverse middle school students in Miami.

The remainder of the introduction will elaborate on the positive developmental outcomes linked to arts participation during middle school of both general art (music, dance, drama, visual art) and dance engagement. Next, I will describe theoretical perspectives based on income, culture, and social class that help explain differences in accessibility rates, and selection effects of enrolling in dance. Then, using previous empirical literature, I will address several unique preexisting demographic differences that are associated with the inequality of dance participation among school-aged children. Next, I will explain the current study, methodological design, and results. The last section will elaborate on my research findings and discuss implications, limitations, and directions for future research.

## **Developmental Outcomes of General Arts Engagement**

Arts engagement has been linked to numerous adaptive social and cognitive functions during a child's middle-and-high school years (Catterall et al., 2012; Marshall & Donahue, 2014; Metsapelto & Pulkkinen, 2012; Ruppert, 2006). Unfortunately, however, there is a lack of longitudinal studies assessing arts engagement and achievement among low-SES adolescents (Brown & William, 2002; Catterall et al., 2012). In one important study aiming to fill this gap, Catterall et al. (2012) compiled data from four longitudinal studies (National Education Longitudinal Study of 1988; NELS:88, Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999; ECLS-K, Education Longitudinal Study of 2002; ELS:2002, and National Longitudinal Survey of Youth 1997; NLYS97), and compared high and low arts engagement, and high and low SES among 8<sup>th</sup> graders, high-school students, and young adults to examine differences in academic achievement and civic engagement (controlling for SES).

Eighth graders with high levels of arts participation during kindergarten through 5<sup>th</sup> grade scored higher on science and writing assessments, were more likely to continue their education after graduating high school, and keep abreast of current news than children with high or low SES and low art exposure (Catterall et al., 2012). High-school students with arts-rich experiences reported higher high-school GPAs, rates of acceptance to four-year universities, and greater involvement in academic honor societies and extracurricular activities. They also were more likely to graduate high school and earn a Bachelor's Degree than students with low arts involvement (Catterall et al., 2012). Last, young adults who reported high arts engagement during high school, particularly those

from lower-SES backgrounds, were more likely to volunteer, vote, and be involved in politics (Catterall et al., 2012). Overall, low-SES middle and high school students with arts-rich experiences paralleled or surpassed levels of achievement, test scores, and civic engagement compared to children from higher income families with no arts background (Catterall et al., 2012). Therefore, arts engagement during secondary school should be considered a vital component of the school system to promote positive developmental outcomes of children.

Using the ECLS-K longitudinal study, Dumais (2006) examined the relations between children's' extracurricular activity engagement and reading and math scores between 1st and 3<sup>rd</sup> grade. Dance participation predicted the greatest gains in reading and math scores between 1<sup>st</sup> and 3<sup>rd</sup> grade compared to music lessons, performing arts, art lessons, athletics, and clubs (Dumais, 2006). Developmental gains for students taking dance classes were demonstrated for all levels of race and SES, supporting the idea that academic gains from arts engagement are not just for poor or privileged youth. It is important to note that although this study found gains in academic achievement, the methodology did not control for preexisting differences other than SES that may influence a child's likelihood of enrolling in dance outside of school. We are unable to confidently conclude that an increase in math and reading scores from 1<sup>st</sup> to 3<sup>rd</sup> grade was due strictly to dance engagement and not other extraneous variables.

In addition to improvements in cognitive functioning, the creative arts are found to promote social-emotional school readiness among low-income children (Brown & Sax, 2013). Head Start preschoolers who participated in an arts-enriched program reported

significantly greater positive emotions (interest, happiness, and pride) compared to children in a neighboring comparison preschool (Brown & Sax, 2013). Children in the arts-integrated program also showed greater positive and negative emotion regulation from Fall to Spring compared to children in traditional Head Start (Brown & Sax, 2013).

Winsler, Ducenne, and Koury (2011) found that children ages 3 through 5 benefited from the use of symbolic systems through music and movement classes. According to Vygotskian theory, children may use the arts as a system of nonverbal symbols to exercise and explore their creative and cognitive abilities while developing language as a cultural tool to increase psychological functioning and well-being (Connery, John-Steiner, & Shane, 2010). Children's use of fine and gross motor skills and playing musical instruments contributed to greater self-regulation, private speech, and inhibitory strategies during a series of self-regulation and selective attention tasks compared to a similar demographic control group who did not receive structured music and movement classes (Winsler et al., 2011). It is clear that arts education can be used to enhance children's social, emotional, and cognitive development, especially among low-SES youth. It is also important for arts education researchers to expand studies beyond the aggregate benefits of arts engagement (i.e., music, drama, dance, and visual arts), and analyze the outcomes of each artistic discipline, such as dance. I will now specifically discuss the benefits of dance engagement before transitioning into theoretical perspectives and preexisting literature describing accessibility and demographic differences in general arts and dance participation.

## **Developmental Outcomes of Dance Engagement**

Lobo and Winsler (2006) implemented one of the few, rigorous empirical studies using random assignment to examine the benefits of a dance/movement program on social competence and behavioral problems among at-risk Head-Start preschoolers. Forty at-risk preschoolers were randomly assigned to a music and dance movement experimental or control group. Researchers implemented a double-blind technique in that neither the parents nor teachers were attuned to experimental group assignments. Pre- and-post parent and teacher reports were also used to assess the benefits of dance on social competence and behavior problems.

Children in the dance-movement program showed significant change from pre to post test in social competence, internalizing behavior, and externalizing behavior compared to the control group (Lobo & Winsler, 2006). Parent and teacher ratings of children's social competence, internalizing behavior, and externalizing behavior showed that although children in the experimental group scored lower on all three measures of behavior at pre-test compared to the control group, by post-test, the experimental group had higher social skills and lower maladaptive internalizing and externalizing behavior (Lobo & Winsler, 2006). Teachers reported that dance sessions allowed children to form mind-body connections and transfer confidence and techniques used during the music and dance class to a traditional classroom. Musical-and-dance themed activities allowed confidence, relationship building, prosocial behavior, and self-esteem to flourish among children. Finally, although not directly examined, because 83% of children did not speak English as their first language, creative dance-movement programs may be a mechanism

where socialization through means other than verbal communication (such as bodily expressions and movement) decreases the developmental gap between ELLs and English-speaking students.

In relation to research indicating that dance can possibly serve as a mechanism to enhance language development among ELLs, other studies have used dance to promote language development (Greenfader et al., 2015; Morgan & Stengel-Mohr, 2014). The Developing English Language Literacy through the Arts Project (DELLTA) uses dance and theater to integrate artistic expression with non-verbal movement to enhance language acquisition among emerging bilingual students (Morgan & Stengel-Mohr, 2014). Through DELLTA, children combine cognitive, emotional, and kinesthetic experiences to develop English language skills such as expanding vocabulary and increasing interpersonal skills with peers and adults (Morgan & Stengel-Mohr, 2014).

In a five-year data analysis of 200 classroom observations of elementary-and-middle school children participating in DELLTA, seven areas of student achievement emerged as strengths: motivation, perseverance/task persistence, ability to focus, ownership of learning, spatial awareness, self-confidence, and collaboration (Horowitz & Beaubrun, 2010). Each of these seven areas increased at elementary-and-middle school levels for both theater- and-dance programs (Horowitz & Beaubrun, 2010). Arts-integrated curriculum also promoted language acquisition according to pre and posttest ratings (Horowitz & Beaubrun, 2010), although no control group was used. Adaptive behavioral skills used during dance and theater engagement like motivation, perseverance/task persistence, focus, ownership of learning, spatial awareness, self-

confidence, and collaboration may be transferable to traditional classrooms and help decrease the achievement gap between ELL and native English speaking students.

Using a more stringent quantitative research design, Greenfader et al. (2015) also reported increased language acquisition for K-2 ELLs using an in-school drama and dance intervention. The Teaching Artist Project (TAP) paired K-2 teachers with teaching artists to integrate movement, gesture, and expression into classroom-based early English literacy lessons. Over 28 weeks of 50-minute sessions (14 drama and 14 movement/dance), ELLs who participated in TAP reported greater gains in speaking assessments compared to a control group (Greenfader et al., 2015). ELLs with the lowest baseline English-language skills showed the greatest improvement on oral language assessments (Greenfader et al., 2015). In addition to the nonverbal expression and symbolism children engage in through drama and dance, TAP also provided teachers with strategies to independently implement performing arts tools to continue to bolster students' language development. Last, TAP may also facilitate language development through scaffolding with peers and adults with greater English proficiency.

### **Why Dance?**

Lobo and Winsler (2006), Greenfader et al. (2015), and Horowitz and Beaubrun (2010) suggest that children's dance engagement is an interesting and innovative way to enhance low-income, ELL, and/or ethnically diverse children's school readiness skills, socioemotional development, and academic achievement. Dance provides students with an abundance of visual, auditory, and physical modalities to assist with learning (i.e., movement, gesture, symbolism) compared to traditional classroom techniques such as

lectures and deskwork. In addition to these danced-based learning techniques, dance education can provide an “enriched environment” promoting children to engage in higher cognitive processes such as problem solving, creativity, and critical thinking used during choreographing or interacting with peers (Gilbert, 2006). A dance “enriched environment” also incorporates multi-sensory curriculum through auditory (music) and physical stimuli (body movement). Through dance, children become attuned to their own bodily movement, and increase their spatial awareness (Gilbert, 2006). Dance may be seen as an exceptional artistic discipline to engage in compared to solely drama, music, or the visual arts due to the integration of music and movement. Music engagement has been linked to a multitude of student achievements, information processing, and cognitive benefits among youth (Lipman, 2014; Moreno et al., 2011; Schellenberg, 2004; Tierney, Krizman, Skoe, Johnston, & Kraus, 2013).

Furthermore, dancing facilitates thought processes, decision-making, and reflection, which may boost self-esteem (Gilbert, 2006). Dance also provides children the opportunity to socially interact with peers of different genders and cultures (Gilbert, 2006). Emotionality is important because research has shown that children who exhibit less emotional and social competencies participate less in the classroom (Raver & Zigler, 1997), have lower teacher ratings of classroom adjustment, higher peer conflict, and higher displays of negative emotions (Miller et al., 2004). Patterns of emotion and social expressiveness are likely to follow children throughout grade school (Denham, 2006). Early maladaptive social behaviors may hinder later academic achievement and exacerbate antisocial behavior (Denham, 2006). Based on these findings, dance should be

seen as an invaluable mechanism to utilize in school systems to promote adaptive socio-emotional and cognitive skills of ethnically and linguistically diverse students.

### **The Problem With Accessibility**

Despite literature supporting the positive outcomes of arts engagement of minority youth, low-income school districts offer the fewest opportunities and availability of creative arts programs compared to high-income communities (Bell, 2014; Parsad et al., 2012). In January 2002, The No Child Left Behind Act (NCLB) was implemented in hopes of decreasing the achievement gap for low-SES youth who typically lag behind their higher performing-peers (Ruppert, 2006). Under NCLB, schools are held responsible for the academic progress of students through mandated math and reading standardized assessments. Although NCLB technically supports the integration of creative arts in the school system, many education systems devote funding to core academic subjects, and cut arts electives out of school curricula.

In reality, the availability of creative arts in secondary schools has decreased during the past decade in all artistic disciplines (dance, drama, and visual arts) except for music (Parsad et al., 2012). Specifically regarding dance, in 2008-2009, only 12% of secondary schools nationwide offered some type of in-school dance instruction; a two-percent decrease from 1999-2000 (Parsad et al., 2012). Furthermore, only 45% of secondary schools offered special dance classrooms and equipment with which students could actively engage (Parsad et al., 2012). However, the availability of dance classes among students receiving free and/or reduced lunch has actually remained the same or gotten slightly better in the past ten years (Parsad et al., 2012). Thirteen percent of

schools with 76% or more of their student body eligible for free or reduced-priced lunch offered in-school dance instruction in 2008-2009, a two-percent increase compared to 1999-2000 (Parsad et al., 2012). It is positive that accessibility of dance classes remains relatively consistent although low among low-and-high SES schools, especially since students from low-SES families have been found to benefit more academically from dance classes than high-SES students (Catterall, 1998; Dumais, 2006).

More recently, in April 2012, the President's Committee on the Arts and Humanities launched the Turnaround Arts Initiative. The Turnaround Arts Initiative is funded through the School Improvement Grant to implement high-quality arts-education to low-income and underperforming school districts (Stoelinga, Joye, & Silk, 2013). A two-year analysis of the initiative revealed that each Turnaround Arts School increased in reading and/or math proficiency scores compared to schools that also received School Improvement Grants, but allocated funding to other non-art related areas. (Stoelinga et al., 2013). It is positive that the federal government recognizes the inequity of arts infrastructure among low-income and underperforming school districts. Future research examining participation is critical to correctly reporting developmental outcomes, and increasing accessibility of arts programming in schools.

### **Theoretical Perspective/Cultural Capital**

In addition to accessibility, cultural capital may be an influential factor in determining in-school access and participation in the creative arts (Dumais, 2002; 2006; McNeal, 1998; Vanherwegen & Lievens, 2014). Cultural capital is often used to explain social status and the accessibility of resources and infrastructure allotted to families and

children based on their available monetary resources. (Lareau & Weininger, 2003; Vanherwegen & Lievens, 2014). Numerous studies have linked the theory of cultural capital to student participation in in-and-out of school activities (Dumais, 2002; 2006, Lareau & Weininger, 2003; McNeal, 1998; Vanherwegen & Lievens, 2014).

Because children spend a majority of their day in an educational setting, access to dance through the school system is extremely important for it provides children the opportunity for early artistic exposure. Arts accessibility during middle-school may be one gateway to promoting adaptive developmental outcomes because it is the first time children are able to choose their own electives (McNeal, 1998). The National Endowment for the Arts (NEA; 2012) proposed a systematic bidirectional model between creative arts infrastructure, accessibility, participation, and developmental gains (see Figure 1). The model explains the idealistic process by which arts accessibility in school leads to child participation, resulting in greater cognitive, emotional, and social outcomes.

Developmental gains decrease the achievement gap between low-income children of color and their more privileged peers, which supports arts infrastructure and greater accessibility in schools. The first three steps of the model (arts accessibility in school, child participation, and positive developmental outcomes) become confounded when researchers do not control for preexisting differences (i.e., child demographics and academic achievement) between children who do or not enroll in dance classes. For example, children living in high-income districts with more accessibility and prior exposure to the arts may already be academically achieving at greater rates compared to youth from low-income neighborhoods with less opportunities for engagement.

Therefore, the positive developmental outcomes seen in studies of arts engagement may be better explained by preexisting socioeconomic differences between those exposed and not exposed to the arts rather than the actual artistic exposure itself.

Continued participation in secondary school extracurricular activities begins with early exposure, opportunity, and support from a child's caregiver during childhood (Fredricks et al., 2006). Early positive individual and contextual influences (i.e., readily accessible private and school-based art classes, family support to purchase dance attire) shape youth's interests in extracurricular activities, and heighten the probability of engagement during middle and high school. Adolescents from middle-class families may be more likely to participate in the arts because of the large amount of constructive family and community influences (Fredricks et al., 2002). Furthermore, children from families of higher income, social ranking, or cultural capital are more likely to seek out resources and activities that are consistent with their preexisting social ranking compared to children with low cultural capital, lack of resources, and prior arts experience (Dumais, 2002). Opportunities for engagement in the arts may be limited to child-level differences such as gender, ethnicity, socioeconomic status, and social class (Dumais, 2002, 2006; McNeal, 1998; Vanherwegen & Lievens, 2014). To my knowledge, my thesis is the first study examining preexisting child-level factors that may influence dance engagement in middle school all in one study.

### **Participation in the Arts and Dance**

In 2012 the NEA conducted a survey of adult public participation in the arts. Although this survey did not include children, it shed interesting light on public dance

engagement rates compared to other artistic disciplines. For example, social dancing (weddings, clubs, social events) was the most commonly reported art-sharing and art-making activity. Thirty-three percent of females and 29% of males engaged in social dancing (NEA, 2013). Hispanics had the highest rates of social dancing compared to Whites and African Americans (NEA, 2013). Younger adults (ages 18-24 and 25-34) reported more social dancing than older adults. Last, 41.2% of people who engaged in social dance attended graduate school (NEA, 2013). This information may be useful in predicting children's engagement in dance due to the role parents/caregivers have in deciding in which activities their children participate.

Research on access to and child participation in in-school dance engagement is limited. Specifically, few if any, studies have looked at selection effects of in-school dance enrollment among ethnically and linguistically diverse middle-school students. Dance is often combined with other, in-and-out of school extracurricular activities, individual sports, and fine-art activities (Brown & Evans, 2002; Metsapelto & Pulkkinen, 2012). Further, because children are able to choose their own electives for the first time in middle school, children are voluntarily selecting courses without random assignment. From a methodological standpoint, a lack of random assignment creates a challenge for researchers to fully grasp what is accounting for outcomes.

Although there are few studies focusing on in-school dance engagement and vulnerable populations in middle school, there are studies that have reported distinct characteristics of children who engage in extracurricular or in-school artistic disciplines (Brown & Evans, 2002; Bucknavage & Worrell, 2005; Dumais 2006; Martin et al., 2012;

McNeal, 1998; Vanherwegen & Lievens, 2014). McNeal (1998) examined patterns of student participation in high school extracurricular activities using NELS:88 longitudinal data. The author found that from a sample of 14,159 students, 27.9% participated in the fine arts. White females from a two-parent household who had not been retained a grade level were most likely to engage in high-school arts classes (McNeal, 1998). The fine-arts were categorized as a closed structure, suggesting that prior participation or exposure to the arts predicts later engagement during high school. Operationally, closed-structure activities are those in which prior experience or required skill in an activity is required for later (i.e., high school) engagement. In contrast, open-structure activities are those in which previous exposure to an activity has no effect on students' decision to enroll in an elective. Because of the closed-structure system, the middle-school population (grades 6-8) is a critical period to examine. Students who had previous art exposure, or participated in arts activities during middle school were more likely to engage in the arts during high school (McNeal, 1998). A student's exposure to art during middle-school accounted for the most variance in high-school arts engagement compared to demographic factors such as ethnicity, academic ability, socioeconomic status, retention, and living in a single-or-double parent household (McNeal, 1998).

Several studies have reported significant gender differences in arts engagement, such that females are more likely than males to engage in the fine arts (Bucknavage & Worrell, 2005; Dumais, 2006; McNeal, 1998; Vanherwegen & Lievens, 2014). Among a Flemish population of 3,144 participants ranging from 14-85 years old, women were 2.5 times more likely to participate in the performing arts (dance, drama, puppet theater,

storytelling, and mime) than men across all ages (Vanherwegen & Lievens, 2014). Two different studies examining dance engagement also reported greater female participation among K-3 graders (Dumais, 2006) and academically talented middle-and high-school students (Bucknavage & Worrell, 2005).

Mixed ethnic differences in general arts and dance engagement have emerged in prior research (Brown & Evans, 2002; Bucknavage & Worrell, 2005; Dumais, 2006; McNeal, 1998). Two separate studies using nationally representative longitudinal data reported Hispanic youth to be underrepresented in arts and dance engagement (Dumais, 2006; McNeal, 1998). Hispanic children were the least likely to participate in dance outside of school during kindergarten or first grade compared to Whites and Blacks (Dumais, 2006). McNeal (1998) also reported Hispanics as the least engaged in the fine-arts during high school compared to Whites, Blacks, and Asians. In a separate study, Brown and Evans (2002) reported that European American students (grades 7-12) had the highest participation rates of the fine arts when categorized as engaging in more than 10 hours per week compared to other ethnic groups, whereas Hispanic Americans were the least engaged in the arts.

In contrast, among academically talented middle and high schools students, White American children were the least likely to engage in dance compared to Hispanic and African American students (Bucknavage & Worrell, 2005). It is important to note that Bucknavage and Worrell's (2005) sample is restricted to a gifted sample, and is less generalizable to an overall school-age population. These findings, however, do shed light

on the variance due to ethnicity in terms of who is and is not engaging in the arts and dance.

Children with disabilities are less likely than typically developing students to engage in in-school activities such as classroom activities and school-sponsored organizations (Coster et al., 2012). A nationwide survey found that as level of impairment increased (ie., mild, moderate, severe), participation in a variety of school activities decreased (Simeonsson, Carlson, Huntington, McMillen, & Brent, 2001). Furthermore, children with attention and learning problems had the highest participation rates in activities including band, orchestra, chorus, and art classes compared to children with physical disabilities (fine and gross motor skills), and/or emotional and behavioral problems (Simeonsson et al., 2001). To my knowledge, there are no studies examining students with disabilities' participation in in-school dance electives.

There is also a lack of preexisting literature examining the predictability of school readiness skills and prior academic achievement for later dance engagement. Ethnically and linguistically diverse pre-school children (specifically Hispanics) typically lack in school readiness skills compared to their White and Asian peers (Garcia & Jenson, 2009). Students with greater early academic achievement and school readiness skills may be more likely to engage in dance later in their school trajectory. This idea supports the theoretical perspective of parental influence and cultural capital linking increased arts engagement to higher education levels (NEA, 2013) and social class (Dumais, 2002). The purpose of my study was to examine preexisting child-level differences between students who do or not do enroll in dance during middle school. Identifying selection effects

between youth who do or do not enroll in dance will help later studies become more aware of the influence of preexisting differences on child outcomes, and therefore help to accurately report outcomes of dance engagement after controlling for such differences between dance exposure groups.

### **The Current Study**

Longitudinal data examining at-risk youth are scarce, and minority children are under represented in research (Bonbright & Faber, 2004; Brown & William, 2002; McNeal, 1998). The current study used a sample of low-income, ethnically, and linguistically diverse children from the Miami School Readiness Project (MSRP; Winsler, et al., 2008, 2012). The MSRP began in 2002, and is a cohort-sequential, longitudinal study following the developmental trajectory of five cohorts of children who received childcare subsidies and those who attended public school pre-K programs at age four in Miami-Dade County, Florida (Winsler et al., 2008). Miami-Dade County, Florida is the fourth largest school district in the nation and largest school district in Florida, encompassing a variety of ethnic and linguistic groups, containing students from 155 different countries who speak 150 different languages (Bell, 2014).

Miami-Dade County is known for its ethnically diverse population and culture with 65% of its residents of Hispanic or Latino decent (U.S. Census Bureau, 2015). The arts are strongly supported within Miami's diverse community. For example, Miami-Dade County is home to Art Basel, a reputable world-renowned international art show that connects private and public artists from around the globe by annually hosting a variety of visual and performing art shows. Also the Miami City Ballet is one of the

largest and fastest growing ballet companies in the United States, and there are other nationally and internationally recognized performing arts centers and universities in Miami, Florida.

The Miami-Dade County education system supports arts-integrated curriculum. An average Miami-Dade County K-12 public school requires that children receive 60 minutes of weekly visual art engagement and at least 90 minutes of weekly music activity (Bell, 2014). Students are able to enroll in dance and theater, although the two disciplines are not as heavily emphasized by the school system as music and visual arts.

Unfortunately, although Florida public middle schools appear to provide greater accessibility to dance compared to the region (21% of schools compared to a 13% regional average), at the child level, the percentage of Florida middle-school students actually enrolled in dance classes is only 14%, compared to a regional average of 20% of middle-school students enrolled in dance classes (Bell, 2014).

In the current study, I examined a number of child-level predictors that may influence enrollment into in-school dance classes among low-SES, ethnically, and linguistically diverse middle-school students. The following research questions were addressed:

- 1) What proportion of MSRP children in grades 6-8 are enrolling in dance classes, for how many years, and in which grades?
- 2) What proportion of middle schools included in my sample offer in-school dance electives, and what percent of students at those schools chose to take dance?

- 3) What are the preexisting child-level differences (disability, gender, elementary school retention, ethnicity, ELL status in kindergarten, initial school readiness at age four, poverty status, parent marital status, parent education level, and 5<sup>th</sup> grade GPA, and 5<sup>th</sup> grade standardized test scores) between students who are and are not enrolling in dance classes during middle school?
- 4) When controlling for all demographic factors, what are the strongest unique predictors of children who take dance classes during middle school?
  - A) Overall, across all middle schools (regardless of whether the school attended by the child offers dance as an option), and
  - B) Limited to only children in schools where dance is an option.

I expected Hispanic/Latino students to enroll in more dance classes compared to Whites and African Americans. My hypothesis that Hispanics will report greater dance participation is supported by a) the diverse Hispanic culture and support of the arts in Miami-Dade County, b) the NEA (2013) report that Hispanic adults had the highest rates of social dancing compared to all other art activities, and c) the large influential role parents have in determining their child's activity engagement (Fredricks et al., 2002). Supported by previous literature, I expected females from two-parent households to show the greatest dance engagement (McNeal, 1998). Due to the influence of family income and accessibility on children's exposure to and engagement in the arts, I expected students who did not apply for/receive free or reduced lunch, and those from families with greater education levels to be more likely to enroll in dance (Dumais, 2002).

Although there is little to no research examining differences of disability status and school readiness skills at age four on later dance engagement, I expected students with weaker gross motor skills, fine motor skills, language development, and greater behavioral concerns to be less likely to enroll in dance during middle school (Coster et al., 2012; Simeonsson et al., 2001). I predicted students who were never retained during elementary school, and who had higher 5<sup>th</sup> grade GPA and standardized test scores to be more likely to enroll in dance compared to their underperforming peers. I could not find preexisting literature linking prior academic achievement to later in-school participation rates, although it is likely that increased cognitive ability is linked to dance engagement as reported by the NEA (2013) survey of public art participation. I expected controlling for SES in my analyses would negate some of the relations between my child-level predictors on dance enrollment. For example, ethnicity may be significantly related to dance engagement (i.e., Hispanics are more likely than Blacks to enroll in dance), but when holding SES constant, dance enrollment may be better explained by income status, therefore the significant ethnic difference in dance enrollment might disappear.

## METHOD

### Participants

This study explored a subset of children extracted from a larger sample of the MSRP ( $N = 40,603$ ). My sample consisted of four out of five cohorts of a large ( $N = 24,845$ , 51.2% male), ethnically diverse (59% Latino, 34% Black, and 7% White/other) sample of students who attended Miami-Dade County public schools, and completed 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade between the academic years 2009-2013. Approximately 81% of the students in this sample received free or reduced lunch in 6<sup>th</sup> grade, 15% were coded for a disability in 6<sup>th</sup> grade, 57% were English language learners (ELL) in kindergarten, and 10% were retained at some point during elementary school (see Table 1). This sample represents 92% of the entire Miami-Dade county consented population of low-income 4-year old children who either received government subsidies to attend non-Head Start child care facilities, or attended public school pre-K programs during 2002-2006 (Winsler et al., 2008).

Due to the cohort sequential design of my data, my sample was subject to cohort attrition as children are still progressing through middle school. The total number of children by grade level fluctuated depending on the available data for each cohort between the 09-13' school years. I had data on 24,102 6<sup>th</sup> graders, 16,563 7<sup>th</sup> graders, and 9,467 8<sup>th</sup> graders. Each of the four out of five cohorts are referenced in ascending order

by year as A, B, C, or D. Participants in Cohort A included children who completed 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade between the academic years 09-10'-12-13'. Participants in Cohort B included 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> graders between the academic years 10-11'-12-13'. Participants in Cohort C included 6<sup>th</sup> and 7<sup>th</sup> graders between the academic years 11-12'-12-13'. Last, participants in Cohort D included 6<sup>th</sup> graders during the 12-13' academic years. In sum, due to cohort attrition, my sample did not include 7<sup>th</sup> grade data for cohort D, and 8<sup>th</sup> grade data for Cohorts C and D. It is important to note that my sample included children who have skipped or repeated a grade level at some point.

## **Measures**

Children's school readiness skills were assessed at age four during the Fall of their pre-K year (2002-2003 to 2006-2007). Follow-up archival school record data were collected each proceeding year. Public school data were collected longitudinally as children progressed through grade school.

### **Dance Enrollment.**

I created five dependent variables to categorize children who did or did not enroll in dance. Three yes/no dichotomous grade-based variables were created: a) dance enrollment in sixth grade (yes = "1" vs. 0), b) dance enrollment in seventh grade (yes = "1" vs. 0), and c) dance enrollment in eighth grade (yes = "1" vs. 0). A fourth yes/no dichotomous variable was created indicating if the child ever took dance during middle school regardless of year (enrolled in dance during 6<sup>th</sup>, 7<sup>th</sup> or 8<sup>th</sup> grade = "1" vs. 0). Last, a summation variable was created to calculate the total number of years a student took dance across 6<sup>th</sup>, 7<sup>th</sup>, and/or 8<sup>th</sup> grade. Scores for this variable ranged from (0 = never took

dance, to 3 = took dance all three years). Last, my data were coded as having taken any dance classes regardless of level (1,2,3, or advanced) for the 09-10', 10-11', 11'-12', and 12-13' school years, although Miami-Dade County Public School offers multiple levels of dance class in a given year. My study only recognized if a child ever took dance during 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade, and did not partition dance electives into multiple levels of dance classes taken in a single year.

It is important to note that the continuous summation dependent variable (how many years the child took dance classes in 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade ranging from 0-3) does not care about children retained or skipping a grade. For example, a child who was retained in 6<sup>th</sup> grade, and therefore enrolled in 6<sup>th</sup> grade for two different academic years, and took dance in both years will still be assigned a "2", just like an on-time student who was not retained in sixth grade and took dance in both 6<sup>th</sup> and 7<sup>th</sup> grade. My dichotomous 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade yes/no variables were not affected by children who were retained or skipped a grade because they only identify if the child ever enrolled in dance during 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade using a simple 1= yes 0= no coding system.

### **Middle School Accessibility of Dance Electives.**

Middle schools were categorized as offering dance electives using three methods of data collection. First, a school was flagged as offering dance if the school's website listed a dance instructor on staff, or offered a dance elective based on 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade curriculum/subject selection sheets. If no online public data were available, I called those middle schools and asked a staff member if their school offered dance electives in 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade. Last, schools were flagged as offering dance based on student enrollment in

a dance class using the child-level data. For example, if a student was marked as ever taking dance during middle school, I then matched that student to their corresponding school ID for that grade (6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup>), and subsequently marked that school as offering dance. I created a final aggregate variable indicating whether a school offered dance across the three methods - publically available data, phone calls, and child enrollment. A school was assigned a “1” if they offered dance electives indicated by any of the three methods above (vs. 0).

Children in my sample were enrolled in traditional 6<sup>th</sup> - 8<sup>th</sup> grade middle schools, magnet schools, charter schools, and combination schools (kindergarten-6<sup>th</sup>, kindergarten-8<sup>th</sup>, or 6<sup>th</sup>-12<sup>th</sup> grade). Combination schools were only marked as offering dance if it was offered during 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade. Out of 192 schools used in my analysis, I could not find information for 20 schools due to school closure, no publically available data, or I could not reach a school employee who could verify in-school dance elective offerings. These schools were assigned a “dot” (vs. a 1 or 0), and treated as missing data. Out of the students included in my sample .8% ( $n = 189$ ) went to a school with missing dance information.

#### **Child-Level Predictors.**

***Gender.*** Gender was collected using parent report. Females were coded as 0 and males were given a 1 based on school records from the district.

***Ethnicity.*** Ethnicity was collected using parent report, and is coded using information provided by the school district each year. Due to the large ethnic diversity of our sample, multiple groups were combined to create three ethnic categories: “Hispanics”

included individuals who identified as Hispanic/Latino or Hispanic at any time; “Black” included individuals who identified as African American/Black/Caribbean, or Black and some other racial group; and “White/Other” included individuals who identified as White, Asian Pacific, or a mixture of other racial groups (not including Black or Latino).

***Disability Status.*** In order for a student to receive a code for special education, they must have a listed primary exceptionality code (ESE) in 6<sup>th</sup> grade. Specifically, ESE codes include the following groups: intellectual disability, speech/language disorder, or 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 6<sup>th</sup> grade, the child was coded (1 = yes, vs. 0) as receiving special education. Gifted students were coded as a “0”. A master variable was created that contained disability status for students during 6<sup>th</sup> grade regardless of if they were on-time, repeated, or skipped a grade.

***ELL Status.*** Students were categorized as ELL based on parent-report of home language at kindergarten entry, and by placement on an ESOL (English as a Second Language) test. Students categorized as ELL were coded as a “1” (vs. 0).

***Grade Point Average (GPA) in 5<sup>th</sup> Grade.*** At the end of each academic year, students received grades from their teachers based on academic proficiency in their subject domains. Fifth-grade subjects include art, science, social studies, music, reading, language arts, English as a second language, math, and physical education. Subject enrollment varied by student. Grades were averaged across academic subjects based on a 5-point, A-F scale, where 5.0 = A, 4.0 = B, 3.0 = C, 2.0 = D, and 1.0 = F.

**5<sup>th</sup> Grade Standardized Test Scores.** The Florida Comprehensive Assessment Test (FCAT), is a mandatory high-stakes standardized exam given to third through twelfth graders in Florida. The FCAT consists of a math and reading portion, and questions are formatted using multiple choice, short answer, and detailed responses (Florida Department of Education, 2004). The FCAT is graded using a continuous score ranging from 100 to 500 (Florida Comprehensive Assessment Test, 2011). The FCAT reports internal consistency using Cronbach's alpha reliability coefficients for reading and math tests at 0.91 and 0.88 (Florida Department of Education, 2004). FCAT math and reading scores were highly correlated ( $r = .92, p < .001$ ). I used 5<sup>th</sup> grade math and reading FCAT scores in my initial bivariate analysis. Due to collinearity, I used only FCAT math scores in my regression.

**Retention.** Retention was coded using a dichotomous variable indicating if the child was ever retained during elementary school. A "yes" (1) was assigned to children who met the following four criteria: The child had to enter either 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> grade on time, have completed the specific grade demonstrated by end-of-the-year grades, appear in the same grade for a second time the proceeding academic year, and complete the same grade demonstrated by end-of-the-year grades for the subsequent year. A "no" or (0) was assigned to children who enrolled in 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> grade on time, completed each grade as demonstrated by end-of-the-year grades, was continually promoted to the proceeding grade-level during the following academic year, and completed the grade as demonstrated by end-of-the-year grades for the subsequent year. Specifically, 3.7% ( $n = 774$ ) of children were retained in 1<sup>st</sup> grade, 2.5% ( $n = 499$ ) were

retained in 2<sup>nd</sup> grade, 5.9% ( $n = 1,160$ ) were retained in 3<sup>rd</sup> grade, 0.3% ( $n = 54$ ) were retained in 4<sup>th</sup> grade, and 0.1% ( $n = 21$ ) were retained in 5<sup>th</sup> grade. According to each grade-based retention variable, a master aggregate variable was created that identified if a child was ever retained during elementary school. If a student was retained in 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> grade they were coded as a “1” (vs. 0).

**Poverty status.** Children’s poverty status was determined based on student’s eligibility for free and/or reduced lunch in 6<sup>th</sup> grade. Eligibility is determined at the beginning of each child’s academic year in accordance with the family meal application completed by the child’s primary caregiver. Children from low-income families who are 130% of the federal poverty line qualify for free lunch, and those who are 185% of the federal poverty line receive reduced-price lunch. Free and reduced lunch meal plans are available for the year in which the application is filed. Youth from families who receive Food Stamps, Temporary Aid to Needy Families, or have a Social Security number on file with the school can receive free/reduced lunch through direct certification and recertification (Morrissey, Hutchison, & Winsler, 2013). A master variable was created indicating free/reduced lunch status for students in 6<sup>th</sup> grade regardless if they progressed through school on-time, repeated, or skipped a grade.

**Gross motor, fine motor, cognitive, and language skills at age 4.** The Learning Accomplishment Profile-Diagnostic (LAP-D, Nehring, Nehring, Bruni, & Randolph, 1992) is a norm-referenced, developmental assessment of school readiness administered individually to children at the beginning and end of the school year (T1: September-October; T2: April-May). LAP-D scores from T2 were used in my analysis because T2

(64.2% - 69.8% of the children) most accurately represented children's school readiness skills before kindergarten. In the case that T2 scores are unavailable, T1 scores were used (25.2% - 33.4%), and if T1 scores were unavailable, I used LAP-D scores collected when the child was three years old (2.4% - 5%). Children who received subsidies to attend a childcare center were administered the LAP-D by bilingual trained assessors. Children who attended public school pre-K programs were administered the LAP-D by their classroom teachers, who completed the same training as the bilingual assessors. The primary language (English; Spanish) used to administer the LAP-D was chosen by the assessor after discussion with the teacher and determining the student's strongest language. The LAP-D is comprised of four scales with two subscales each: cognitive (counting and matching), language (comprehension and naming), fine motor (writing and manipulation), and gross motor (body and object) skills. I used all four scales in my analysis. Within the Miami sample, internal consistencies ranged from .93 for cognitive, .95 for language, and .94 for fine motor (Winsler et al., 2008).

*Socioemotional skills and behavior at age 4.* Children's socio-emotional protective factors and behavior problems were measured at age four using the Devereaux Early Childhood Assessment (DECA; Lebuffe & Naglieri, 1999). Parents and teachers completed the DECA at two time points during the beginning and end of the school year (T1: September-October; T2: April-May). Similar to the LAP-D time points discussed above, T2 scores were used to most accurately represent school readiness skills before kindergarten. The DECA is comprised of three subscales (initiative, attachment/closeness with adults, and self-control) that are collapsed to create an overall measure of children's

socio-emotional strengths and resiliency (socioemotional total protective factors). The remaining behavioral scale taps a child's overall behavioral problems. The variation of times points for each scale used in my analyses are as follows: Total Protective Factors (T2 = 68.9%, T1 = 25.7%, 3yr = 5.4%), and Behavioral Concerns (T2 = 68.9%, T1 = 25.7%, 3yr = 5.4%). A five-point Likert scale was used to indicate frequency of child behavior (0= never to 4 = very frequently). Bigger numbers on the protective factors scale indicate greater strengths, and bigger numbers on the behavioral problems scale indicate greater maladaptive behavior.

Teachers could fill out the DECA in a Spanish or English form. Nineteen percent of teachers filled out the Spanish form at T1 and 16% at T2 (Winsler et al., 2008). I used the socioemotional total protective factors (including all three subscales) and the behavioral scale in my analysis. Good internal consistency reliability was found among the Miami sample for total protective factors (.91 parent reports, .94 teacher reports) and behavioral concerns (.72 parent reports, .81 teacher reports) (Winsler et al., 2008).

Marital status and parent education level were only collected for a small subset (two cohorts) of children who attended subsidized childcare. We have data on parent education level for 3,577 children, and marital status for 1,396 children. Due to the lack of available information, I ran separate analyses on these two variables.

***Marital status.*** Marital status was determined using family demographic information collected when the child was in pre-K. A dichotomous variable was created to differentiate children reared in a 1-vs. 2-parent household at age four (0 = single, divorced, or separated, 1 = married/cohabitates).

***Parent education level.*** A continuous variable was created to determine parent education level using self-report information collected on parents when their child was in pre-K. Parental reported how many years of formal education they received were used in my analyses.

### **Analytic Plan**

First, I ran univariate descriptive statistics (proportions and means) to show how many children enrolled in dance classes during 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade, how many courses they enrolled in, and for how long. Next, I conducted descriptive statistics among schools that offered 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade in my sample to determine the accessibility of in-school dance electives, and the number of children who were enrolled in the schools that offered dance classes. I then analyzed bivariate associations between child demographics on my Y/N dependent variable of ever enrolling in a dance elective. I used chi-squares or independent samples t-tests for my dichotomous Y/N dance ever dependent variable, depending on whether my predictor variable was categorical (gender) or continuous (school readiness skills at age 4). Next, I conducted a Pearson Correlation between each of my continuous predictor variables (DECA and LAP-D scores, 5<sup>th</sup> grade GPA, 5<sup>th</sup> grade FCAT scores, and parent education level) and my summative total number of years a child took dance dependent variable. Because my data were positively skewed, I restricted the range of my summation dependent variable to only include children who enrolled in dance at least once (range = 1-3 years). Last, controlling for demographic factors, I examined the strongest unique predictors of children who took dance courses using logistic regression.

## RESULTS

### **RQ1. What proportion of MSRP children in grades 6-8 are enrolling in dance classes, for how many years, and in which grades?**

Out of the 24,845 middle school students in my sample, 5.6% ( $n = 1,402$ ) enrolled in a dance elective during 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade. As a reminder, I had data on 24,102 6<sup>th</sup> graders, 16,563 7<sup>th</sup> graders, and 9,467 8<sup>th</sup> graders. It is important to note that the 5.6% of children enrolled in dance during middle school is underestimated due to cohort attrition, therefore not every student had yet reached 7<sup>th</sup> or 8<sup>th</sup> grade. Specifically, 3.1% ( $n = 757$ ) of 6<sup>th</sup> graders, 4.7% ( $n = 772$ ) of 7<sup>th</sup> graders, and 4.5% ( $n = 423$ ) of 8<sup>th</sup> graders took dance (see Table 2). Next, I ran frequencies using my summation variable to calculate the proportion of children who enrolled in dance for one, two, or three years of middle school (see Table 2). Of the students who ever took dance ( $N = 1,402$ ) 68.8% ( $n = 965$ ) took dance for one year, 23% ( $n = 323$ ) took dance for two years, and 8.1% ( $n = 114$ ) took dance for three years.

To examine the continuation or discontinuation of enrolling in a dance elective as children progressed through middle school, I ran cross tabulations between 6<sup>th</sup> and 7<sup>th</sup> graders, 7<sup>th</sup> and 8<sup>th</sup> graders, and 6<sup>th</sup> and 8<sup>th</sup> graders. I had data on 16,101 children who were around for both 6<sup>th</sup> and 7<sup>th</sup> grade. The first cross tabulation between 6<sup>th</sup> and 7<sup>th</sup> graders revealed that only about half, 54.1% ( $n = 299$ ) of the 553 6<sup>th</sup> graders who took

dance classes also took dance in 7<sup>th</sup> grade (see Table 3). Only three percent ( $n = 463$ ) of the 15,454 students who did *not* enroll in dance during 6<sup>th</sup> grade, started to take dance in 7<sup>th</sup> grade.

The second cross tabulation examined continuation or discontinuation of dance enrollment between 7<sup>th</sup> and 8<sup>th</sup> graders. I had data on 9,130 children who were around for both 7<sup>th</sup> and 8<sup>th</sup> grade. This analysis revealed that 50.9% ( $n = 243$ ) of the 477 7<sup>th</sup> graders who took dance classes continued taking dance in 8<sup>th</sup> grade (see Table 4). Only two-percent ( $n = 175$ ) of the 8,653 students who did *not* take dance in 7<sup>th</sup> grade started taking dance in 8<sup>th</sup> grade. The final cross tabulation between 6<sup>th</sup> and 8<sup>th</sup> graders indicated that 37% ( $n = 122$ ) of the 331 6<sup>th</sup> graders who took dance also took dance in 8<sup>th</sup> grade (see Table 5). I had data on 8,886 for both 6<sup>th</sup> and 8<sup>th</sup> grade.

Overall, results indicate that the number of children who enroll in dance decreased by approximately half each year they progress in middle school. Students are less likely to begin taking dance without participating in the preceding grade, and it is even more rare for students to remain in dance in 8<sup>th</sup> grade from 6<sup>th</sup> grade. Therefore, early exposure to dance may be critical in determining later engagement.

**RQ2: What proportion of middle schools included in my sample offer in-school dance electives, and what percent of students at those schools chose to take dance?**

It is important to note that the above (and much of the below) analyses do not take into account whether the particular schools that children attended actually offered dance as an option. Here I examine the proportion of schools attended by the students that give students the option of signing up for dance. Out of all of the public middle schools used

in my analyses ( $N = 192$ ), 33.1% ( $n = 57$ ) of schools offered dance electives compared to 66.9% ( $n = 115$ ) of schools that did not. Using only middle schools that children in my sample were enrolled in, a very similar 33.5% ( $n = 56$ ) of schools offered dance compared to 66.5% ( $n = 111$ ) that did not. Out of my total sample ( $N = 24,845$ ), 39.6% ( $n = 9,768$ ) of students went to a middle school that offered dance during 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade, compared to 60.4% ( $n = 14,888$ ) of students that did not. Of the children enrolled in a school that offered dance, 12.3% ( $n = 1,203$ ) took dance compared to 87.7% ( $n = 8,565$ ) that did not. This is a possible lower-bound estimate, and may have been higher if we had information about the 20 schools that 189 students in my sample attended with missing dance information.

**RQ3: What are the preexisting child-level differences between students who are and are not enrolling in dance classes in middle school?**

**Child-level differences.** I conducted a bivariate 2x2 cross tabulation, chi-square test between each of my categorical child predictors (gender, ethnicity, poverty status, ELL status, disability, retention, and parental marital status) and the categorical Yes/No ever dance participation dependent variable (see Table 6). Females were more likely to enroll in dance during middle school compared to males ( $\chi^2(1) = 1265.21, p < 0.001$ ). While 11% ( $n = 1,329$ ) of females took dance, only 0.6% ( $n = 72$ ) of males did so. Hispanic/Latino students were just as likely to enroll in a dance elective as White/Other students, but Black students were the least likely to take dance ( $\chi^2(2) = 123.45, p < 0.001$ ). Seven percent ( $n = 116$ ) of White/Other students took dance compared to 6.8% ( $n =$

1,000) of Hispanic/Latino students, and 3.4% ( $n = 285$ ) of African American/Black students.

There was a marginally significant association between free/reduced lunch status in 6<sup>th</sup> grade and taking dance during middle school ( $\chi^2(1) = 3.81, p = .051$ ). There was practically no difference in dance enrollment between children who received free/reduced lunch (5.6%,  $n = 1,086$ ) and students who did not (6.3%,  $n = 296$ ). Students who were not coded with a disability in 6<sup>th</sup> grade were more likely to enroll in dance during middle school compared to students without a disability ( $\chi^2(1) = 132.26, p < 0.001$ ). Of the students coded with a disability during 6<sup>th</sup> grade, 1.6% ( $n = 58$ ) of them took dance during compared to 6.4% ( $n = 1324$ ) of typically developing kids. More ELL students, 6.3% ( $n = 893$ ) took dance during middle school, compared to 4.8% ( $n = 509$ ) of non-ELLs ( $\chi^2(1) = 23.73, p < 0.001$ ).

Finally, of the 24,845 students who reached middle school, 10.1% ( $n = 2,507$ ) of children were retained at some point during elementary school in 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> grade. Children who were retained in elementary school were less likely to take a dance elective 2.4% ( $n = 60$ ) during middle school compared to students who were not retained (6.0%  $n = 1,342$ ;  $\chi^2(1) = 55.30, p < 0.001$ ). In summary, gender, ethnicity, disability status, and ELL status were all significantly bivariately related to taking a dance elective in middle school.

I ran a separate bivariate 2X2 cross tabulation analyses on parental marital status and my (Y/N) dance enrollment dependent variable because I only had this information for a small subset of children who attended subsidized childcare ( $n = 1,396$ ). There was a

significant association between parental marital status and ever taking dance in middle school ( $\chi^2(1) = 4.237, p < .05$ ). A small number of children who lived with a single parent during preschool (6.5%,  $n = 83$ ) took dance during middle school. Students taking dance in middle school was almost double at 11.5% ( $n = 14$ ) for children who reported living in a two-parent household.

Next, I conducted independent samples t-tests between each of my continuous child-level predictors (school readiness skills at age four, 5<sup>th</sup> grade GPA, 5<sup>th</sup> grade standardized test scores, and parent education level) and my categorical Yes/No dance participation dependent variable (see Table 7).

***DECA teacher total protective factors and behavioral concerns.*** Teacher-rated total protective factors (initiative, attachment/closeness with adults, and self-control) during pre-K were significantly higher for students who took dance seven years later during middle school compared to those who didn't ( $t(1509.94) = -15.32, p < 0.001$ ). On average, children who later enrolled in dance during middle school had higher pre-K social skill scores at school entry (about the 70<sup>th</sup> percentile nationally) than students who did not take dance, who scored at the 58<sup>th</sup> percentile. Teacher-rated behavioral concerns during pre-K were also significantly lower for students who took dance during middle school compared to those who did not ( $t(1473.57) = 11.59, p < 0.001$ ). The effect sizes for social skills and behavioral concerns were small to moderate. Children who later took dance during middle school had greater social skills and better behavior during pre-K compared to children who did not.

***Lap-D gross motor, fine motor, cognitive, and language skills.*** There was no significant difference in gross motor skills between children who later did or did not enroll in dance during middle school ( $t(16023) = 1.86, p = .067$ ). However, fine motor skills ( $t(11316.12) = -12.95, p < 0.001$ ), cognitive skills ( $t(1278.82) = -7.75, p < 0.001$ ), and language skills ( $t(18237) = -6.25, p < 0.001$ ) during pre-K were all significantly higher for students who went on to take dance during middle school compared to those who did not. On average, students who went on to take dance during middle school placed in significantly higher national percentiles at age four in fine motor, cognitive, and language skills versus those who did not.

***GPA, 5<sup>th</sup> grade FCAT math and reading scores.*** Fifth grade GPA was significantly higher for students who took dance later during middle school versus those who didn't ( $t(1800.80) = -22.88, p < 0.001$ ). On average, students who later took dance had GPAs consisting of mostly A's and one or two of B's ( $M = 4.35$ , using a 5-point, A-F scale, where 5.0 = A and 1.0 = F). Student's GPAs for those who did not later enroll in dance consisted of either mostly B's, or half A's and half C's ( $M = 3.98$ ). Fifth grade FCAT math scores were significantly higher for students who later took dance during middle school compared to those who didn't ( $t(1757.23) = -23.43, p < 0.001$ ). Fifth grade FCAT reading scores were also significantly higher for students who took dance during middle school versus those who didn't ( $t(1738.54) = -25.70, p < 0.001$ ). The magnitude of the association between each of the elementary school performance variables was moderate to high. Interestingly, the variance in FCAT math and reading scores was substantially less for students who later enrolled in dance, indicating that standardized

test scores are not only higher but also less variable for children who later take dance. Overall, these analyses revealed that students who took dance during middle school were more academically advanced before entering middle school compared to students who did not.

***Parent education level.*** I ran a separate independent samples t-test on parent education level and my (Y/N) dance enrollment dependent variable due to the small subset of children I had this information for ( $n = 3,577$ ). Parent education level during pre-K was significantly higher for children who took dance during middle school compared to those who didn't ( $t(316.11) = -3.20, p = .001$ ).

**Correlations between total years of dance enrollment and school readiness at age four, 5<sup>th</sup> grade academic performance, and parent education level.** The analyses described above allowed me to create demographic profiles between students who do or do not enroll in dance using each of my child-level predictors (categorical and continuous) and my (Y/N) ever taken dance dependent variable. Next, for the students who ever took dance, I conducted a Pearson correlation to examine the direction and strength of each of my continuous predictor variables (school readiness at age four (Lap-D and DECA scores), elementary school academic performance (5<sup>th</sup> grade GPA and 5<sup>th</sup> grade FCAT math and reading scores), and parent education level) with the total number of years a student took dance (range = 1-3 years of dance courses taken).

Of the students who enrolled in dance, DECA total protective factors at age four and number of years of dance courses taken was significantly and positively correlated (see Table 8). The higher a student's total protective factor score, the greater the total

number of years they took dance. Behavioral concerns were negatively and significantly related to total years of dance courses taken in middle school. The less behavioral concerns a student had at age four, the greater the total number of years a child took dance in middle school. Although significant, both correlations were small. Lap-D gross and fine motor skills were positively and significantly correlated with total years of dance engagement in middle school. These correlations were also small in size. LAP-D cognitive and language skills and number of years of dance classes taken were not significantly correlated.

Of the students who ever took dance during middle school, 5th grade GPA and FCAT math and reading scores were positively and significantly correlated with total years of dance courses. The correlation between 5<sup>th</sup> grade GPA and total years of dance courses taken was small. There was a stronger association between 5th grade FCAT math and reading scores and total number of dance course taken in middle school. Out of all of my predictors, FCAT math and reading scores had the strongest correlation with total number of dance courses, indicating that greater standardized test scores in 5<sup>th</sup> grade are associated with taking more dance courses during middle school. These correlations show that school readiness at age four and elementary school performance are not only related to a student ever taking dance during middle school (Y/N), but they are also indicative of sustained dance participation throughout middle school. Last, parent education level and total years of dance enrollment were not significantly correlated.

**RQ4. When controlling for all demographic factors, what are the strongest unique predictors of children who take dance courses?**

**A) Overall, across all middle schools (regardless of whether the school attended by the child offers dance as an option).** Because every child must have information for each variable in a multiple regression, I first examined what kind of listwise deletion problem I would have if I inserted all of the variables at the same time in the model. I already knew that parental education level and marital status had high amounts of missing data, so I planned to conduct separate models for those variables. When all other variables were inserted into one model, my total  $N$  decreased from 24,845 to 13,700 children. Frequencies revealed that the majority of missing data came from Lap-D gross motor ( $N = 16,025$ ), Lap- D language ( $N = 18,239$ ), Lap-D Cognitive ( $N = 18,329$ ), and Lap-D fine motor scores ( $N = 18,339$ ). I excluded Lap-D gross motor scores from block one because it contained the most missing data and reran the model. When excluding Lap-D gross motor skills, my sample size increased from 13,700 to 15,666 children, although the results remained the same for all other variables. Next, I ran a subsequent model excluding all Lap-D scores. Deleting all Lap-D scores increased my sample from 13,700 to 19,578, and my results for the other variables remained exactly the same. Due to the lack of change in results between models, I included all Lap-D scores in my final regression models described below.

To check for collinearity, I conducted a correlation matrix between each of my predictors. Fifth grade FCAT math and reading scores were significantly and highly correlated,  $r = .896$ ,  $p < 0.001$ . Based on the high collinearity between FCAT reading and

math scores (and the non-significant relationship between FCAT reading scores and dance enrollment when both are included), only FCAT reading scores were included in the final model.

Once the final model was determined, I used binary logistic regression to examine the strongest unique predictors of children who took dance courses using my Yes/No ever took dance in middle school as the dependent variable. Results, including odds ratios and standard errors, are reported in Table 9. The first step examined the predictive value of demographic variables (ethnicity, gender, poverty status in sixth grade, disability status in sixth grade, and ELL status) and school readiness skills at age four (Lap-D gross motor skills, fine motor skills, cognitive skills, and language skills and DECA total protective factors and behavioral concerns). Elementary academic achievement (ever retained, 5<sup>th</sup> grade GPA and FCAT math scores), which occurred later, were added into the second block. This method was chosen in order to control for variables that may influence dance enrollment, and to explore the unique contributions of each variable (ethnicity, gender, poverty status, disability status, ELL status, DECA scores, and Lap-D scores), while holding all other predictors constant.

The binary regression model was significant,  $\chi^2(1) = -2.70, p < 0.001$ . Step 1 explained 19.5% (Nagelkerke  $R^2$ ) of the variance in child dance enrollment. Step 1 of the equation allowed me to analyze child-level predictors that may have influenced dance enrollment while controlling for other variables (i.e. income). Ethnicity, gender, and sixth-grade disability status still significantly predicted dance enrollment with the other variables in the model. The odds of enrolling in dance were more than double for White

and Hispanics compared to Blacks. There was no significant difference between the likelihood of Whites and Latinos enrolling in dance. Black students had less odds of enrolling in dance compared to White and Hispanic students even when controlling for all other demographics and school readiness skills age four. Males had 95.7% fewer odds of enrolling in dance compared to females, and those coded with a disability had 43% less odds of enrolling in dance compared to typically developing students. Sixth grade ELL and poverty statuses were not significantly predictive of dance enrollment when holding all other demographic factors constant.

Including all demographic variables, DECA total protective factor was the only school readiness predictor at age four to significantly predict dance engagement during middle school. For each one percentile point increase in social skills, a child's odds of enrolling in dance seven years later increased by 1.007%. Therefore, if a child's total protective factor percentile score increased by 50 points, their odds of taking dance during middle school would increase by approximately 35% ( $50 \times .007$ ).

In step 2, I added elementary school academic performance (ever retained during elementary school, 5<sup>th</sup> grade GPA, and 5<sup>th</sup> grade FCAT math scores). Step 2 explained 21.9 % (Nagelkerke  $R^2$ ) of the variance in dance enrollment. When accounting for elementary school academic performance, Whites and Hispanics still had greater odds of enrolling in dance compared to Blacks, although the effect of ethnicity decreased slightly compared to step 1. This means that a small amount of the reason why White or Hispanic students are enrolling in dance more so than Blacks is not based solely on ethnic differences, but rather elementary school performance. Males still had less odds of

enrolling in dance compared to females. Interestingly, the significant predictability of 6<sup>th</sup> grade disability status on dance enrollment found in step 1 was no longer significant when controlling for elementary academic performance in step 2. This means that differences between children who do or not enroll in dance based on disability status is better explained by performance in elementary school (retention, 5<sup>th</sup> grade GPA, or 5<sup>th</sup> grade FCAT math scores). DECA teacher-rated total protective factors was similar to step 1, such that for every one percentile point increase in social skills, a child's odds of enrolling in dance in middle school increased by 1.005%.

Each of the academic performance variables added in step 2 was significantly predictive of dance enrollment during middle school while controlling for all other demographic variables. Children who were retained at some point during elementary school had 38.3% less odds of taking dance compared to on-time students. Furthermore, the odds of a student enrolling in dance increased by almost 20% for each one-point increase in 5<sup>th</sup> grade GPA (i.e., moving from a "B" to "A" average). Last, the odds of dance enrollment increased by 1.006% for each one-point increase in FCAT math scores. These results show clear academic achievement differences between students who enroll in dance before they even enter middle school. Students who score higher on standardized tests or who were never retained have a greater probability of taking dance compared to their lower-achieving peers. These differences are true even when controlling for ethnicity, gender, poverty status, disability status, ELL status, and school readiness at age four.

Due to the small subsample with family-level predictors, I ran a second regression model inputting parental marital status, and parent education level. This model was a replica of step 1 and step 2 of the model described above, except I added the two family level predictors into step 1 of the regression block along with child demographic factors and school readiness at age four. Neither marital status nor parent education level was related to dance enrollment in middle school when including all other variables as covariates.

**B) Limited to only children in schools where dance is an option.** Due to my earlier findings reporting the inequity of in-school dance accessibility across Miami-Dade county public middle schools (which ignores whether dance is even an option for the children at their particular middle school), I ran a third regression replicating the steps previously explained above, but only using 26.4% ( $N = 5,625$ ) of students in my entire sample who were enrolled in a school that offered dance. Results, including odds ratios and standard errors, are reported in Table 10. The regression model was significant,  $\chi^2(1) = -1.87, p < 0.001$ . Step 1 explained 23.5% (Nagelkerke  $R^2$ ) of the variance in child dance enrollment, and allowed me to analyze child-level predictors that may have influenced dance engagement while controlling for other demographics and to some extent the neighborhood/school that they are in. Similar to step 1 of the original model in A) above, there was no significant difference between the odds of Whites and Latinos enrolling in dance. Hispanics still had greater odds of enrolling in dance compared to Blacks, although the relationship was only modestly significant and the odds ratio decreased by almost half. In contrast, Whites were no longer more likely to enroll in

dance compared to Blacks. The effect of gender remained the same, in that males had 95.7% fewer odds of enrolling in dance compared to females. Disability status no longer significantly predicted dance engagement. Including all demographic variables, DECA total protective factor was still the only school readiness predictor at age four to significantly predict dance enrollment during middle school.

In Step 2, as in the above, I added elementary school academic performance (ever retained during elementary school, 5<sup>th</sup> grade GPA, and 5<sup>th</sup> grade FCAT math scores). Step 2 explained 26.1 % (Nagelkerke  $R^2$ ) of the variance in dance enrollment. When accounting for elementary school performance, all previous significant ethnic differences on dance enrollment disappeared. This means that differences in dance engagement between Latinos, Whites, and Blacks is due to a third extraneous variable of accessibility in terms of the probability of attending a school that offers dance, versus actual ethnic variation in participation when it is available to all groups within a school. It is also worth noting that the Hispanic vs. Black effect still present in Step 1 disappeared when student academic performance was included in Step 2. This means that it was ethnic differences in student academic performance and not ethnicity per se that was driving the increased enrollment in dance for Latinos.

Interestingly, after controlling for elementary school performance, LAP-D cognitive and DECA teacher-rated behavioral concerns at age four became significantly related to dance enrollment. For every one percentile point increase in cognitive skills, a child's odds of enrolling in dance in middle school *decreased* by .005%. Furthermore, for every one percentile point *increase* in teacher rated behavioral concerns, a child's odds of

enrolling in dance in middle school increased by 1.003%. Thus, within schools where dance is available, increased behavior problems and lower cognitive skill is associated with *increased* participation in dance. DECA teacher-rated total protective factors was similar to step 2 in the original model, in that every one percentile point increase in social skills, increased the odds of later dance enrollment by 1.005%.

Unlike the original model, ever being retained during elementary school and 5<sup>th</sup> grade GPA were no longer significantly predictive of dance enrollment during middle school controlling for all other covariates. This finding suggests that it is the higher performing schools that tend to offer dance because after accounting for accessibility, smaller differences in student achievement and dance enrollment remain. The only elementary school performance variable that remained significant was 5<sup>th</sup> grade FCAT math score. Consistent with the original model, the odds of dance enrollment increased by 1.006% for each one-point increase in FCAT math scores. These results indicate that elementary school retention and 5<sup>th</sup> grade GPA are less predictive of later dance enrollment compared to 5<sup>th</sup> grade FCAT math scores than we originally thought. When including only students who were enrolled in a school that offered dance, and due to the fact that the effects 5<sup>th</sup> grade GPA and being retained in elementary school disappeared and other school readiness skills surfaced, it seems that cognitive skills, behavioral concerns, and social skills at age four are more closely associated with later dance engagement than elementary school performance.

## **DISCUSSION**

The major goal of the present study was to examine preexisting child-level differences between students who do or do not enroll in dance during middle school. Although the relationship between creative arts engagement and increased cognitive functioning and socioemotional gains is well documented, especially among low-income youth of color (Catterall, 2012), less is known about selection effects influencing dance engagement rates. Middle school (grades 6-8) is a critical period to examine because of the “closed structure system” documented by McNeal (1998). Children who participate and/or are exposed to the arts before or during middle school are more likely to continue engagement into high school (McNeal, 1998). Early artistic engagement may be key to continued participation and increased outcomes during a child’s developmental trajectory. Unfortunately, the accessibility of in-school dance electives has decreased in the past decade (Parsad et al., 2012). Furthermore, research examining effects of arts-engagement often combines other in-and-out of school extracurricular and fine-art activities such as music, drama, or visual art (Brown & Evans, 2002; Metsapelto & Pulkkinen, 2012). To correctly report the cognitive, social, or behavioral gains from dance engagement, researchers must a) examine dance as its own artistic discipline and b) identify preexisting demographic differences between youth who do and do not enroll in

dance, and control for such differences in later analyses examining the outcomes of dance participation.

The culturally rich population of Miami-Dade County, Florida allowed me to explore the influence of dance selection among a large noteworthy sample of ethnically and linguistically diverse low-income children. Expanding beyond demographic influences, the longitudinal dataset also allowed me to examine the duration of dance enrollment between 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade. To my knowledge, my study is the first to examine child-level predictors on in-school dance engagement during middle school. This thesis allowed me to contribute to preexisting literature on arts engagement in the following ways:

- a) Examine dance as its own entity, and students' participation in public schools
- b) Explain proportional differences of children enrolling in dance during 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grade, for how many years, and how enrollment rates fluctuate across grade levels.
- c) Report the accessibility of in-school dance electives offered by public middle schools in Miami-Dade County, Florida
- d) Identify and describe unique child-level differences (ethnicity, gender, poverty status, disability status, ELL, school readiness at age four, parental marital status, maternal education level, elementary school retention, 5<sup>th</sup> grade GPA, and 5<sup>th</sup> grade standardized test scores) between students who do or do not enroll in dance

- e) Explain the strongest unique relationships between child demographics, school readiness at age four, and elementary school performance variables on dance enrollment in middle school using a logistic regression controlling for other covariates

### **Proportion of Children Enrolling in Dance**

Out of my entire sample ( $N = 24,845$ ), the proportion of children enrolling in dance was extremely low at 5.6%, although this number more than doubled to 12.3% after restricting my analyses to children who were enrolled in a school that offered dance. The low proportion of children enrolling in dance is consistent with Florida's dance enrollment rates being lower than the regional average (14% compared to a regional average of 20%), even though 21% of Florida public middle schools offer in-school dance electives compared to 13% of middle schools in the region (Bell, 2014). Low student dance enrollment was not surprising due to the fact that only 12% of middle schools nationwide even offer dance as an elective (Parsad et al., 2012). Dance may be perceived as a less popular art elective compared to music or visual art, which are offered at greater rates across the nation (Parsad et al., 2012). Modest enrollment in dance may also be related to the largely low-income nature of my sample. Children need monetary support from caregivers to acquire the adequate resources such as shoes and attire for dance engagement purposes. It is possible that these resources are not readily available to students in my sample.

A child's decision to enroll in dance obviously depends on the school's accessibility of in-school dance electives. Simply speaking, if dance electives were not

offered in the first place, then students never had an opportunity to sign up for a dance class. Out of the middle schools children in my sample were enrolled, about a third of schools (33.5%) offered dance. The percentage of Miami-Dade County middle schools offering dance (approximately 33%) based on data from the MRSP is higher than Florida's public middle school state-wide average of accessibility of dance electives at 21%. This means that my sample and the middle schools they attended are largely representative of the Miami-Dade County student population and school district. It is positive that Miami-Dade County middle schools offer more dance electives compared to the state average, especially among schools with high rates of children from low-income families, although this number is still small and the overall student dance participation remains low at 5.6% of *students* county-wide. There is an obvious unequal distribution of in-school dance electives across middle schools, which may be linked to schools in low-income communities (Dumias, 2002) and segregated neighborhoods (Smiley, 2014) not offering dance.

An important contribution of this study was its ability to examine the longitudinal continuation or discontinuation of students taking dance across 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade. Between 6<sup>th</sup> and 7<sup>th</sup>, and 7<sup>th</sup> and 8<sup>th</sup> grade the continuation of taking a dance elective decreased by approximately half each subsequent year. For example, 54.1% of 6<sup>th</sup> graders who took dance continued taking dance in 7<sup>th</sup> grade, and 50.9% of 7<sup>th</sup> graders who took dance also took dance in 8<sup>th</sup> grade. It was even more rare for students to begin taking dance in 8<sup>th</sup> grade if they hadn't previously taken in 6<sup>th</sup> grade. Only 37% of students remained in dance from 6<sup>th</sup> to 8<sup>th</sup> grade. The majority of students who continued dancing

throughout middle school were the students with previous exposure during 6<sup>th</sup> or 7<sup>th</sup> grade. These findings strongly support McNeal's (1998) idea that students perceive art activities as a "closed-structure" system, and continued participation begins with early exposure and opportunity (Fredricks et al., 2006). Early exposure to dance is essential for continued engagement later in middle school, and the associated cognitive, social, or emotional gains linked to dance participation. To promote longevity of dance engagement, it is important to figure out who the 50% of students are that stop taking dance, and the reasons underlying their disengagement. It is possible that peer influences, type of dance offered, quality of teacher and program, and family and school pressure to focus time on traditional academics may contribute to students' decisions to stop taking dance classes. Future research in our lab will examine predictors/reasons for dropping out of dance.

### **Preexisting Child Demographic Differences**

Several interesting findings emerged related to differences in child-demographic factors between children who do or do not enroll in dance during middle school. When using all students in my sample regardless of whether dance is offered at their particular schools, Blacks reported the lowest percentage of dance engagement in middle school. Hispanic and White students were equally likely to take dance during middle school. Exploring this relation using logistic regression, the equal odds of Hispanic or White students enrolling in dance compared to Black students remained significant, even after controlling for covariates such as income, ELL status, disability status, school readiness at age four, and elementary school performance. White and Hispanics were still twice as

likely to enroll in dance compared to Blacks. Examining the relationship between ethnicity and dance engagement when only including students who were enrolled in a middle school that offered dance, all significant ethnic differences in dance enrollment disappeared; White, Hispanic, and Black students had equal odds of enrolling in dance. This means that the original finding in the first regression model reporting Blacks to be less likely to engage in dance compared to Hispanics and Whites is due to a lack of accessibility of in-school dance classes. Due to neighborhood and school segregation in the poorest parts of town, it seems Black students do not attend schools that tend to offer dance in the first place.

The ethnic distribution of Miami-Dade County public schools consists of approximately 235,000 (66.7%) Hispanic students, 82,000 (23.5%) Black students, and 28,000 (8.0%) White students (Miami-Dade County Public Schools, 2013). Although Black students make up the second largest ethnic group in Miami-Dade County public schools, Blacks remain underrepresented in dance engagement. Students of African American descent may not be receiving the necessary familial influence, monetary support, and/or community infrastructure to support in-school dance engagement. Recently, specific school systems in Miami-Dade County, Florida have been described as “isolated” consisting of 85% of one racial group (Smiley, 2014). It is possible that areas of Miami-Dade County are largely segregated, and the majority of Black students are living in low-income school districts that do not offer dance electives (Smiley, 2014).

Although previous empirical literature reports Whites to have the highest engagement relates in dance, whereas Hispanic youth were the least engaged (Dumais,

2006; McNeal, 1998), these ethnic differences were only due to issues of accessibility in my study. My findings were not supportive of my hypothesis that Hispanic students would be most likely to enroll in dance due to the unique ethnic and linguistic population in Miami-Dade County, Florida. Miami-Dade County is a multicultural rich population with 65% of its residents of Hispanic or Latino descent (U.S. Census Bureau, 2015). Due to Miami's eclectic population, youth of Hispanic or Latino origin may not be perceived as a racial minority group. In fact, Hispanic students who are not considered marginalized may be just as likely to engage in middle-to-upper class activities such as the fine arts compared to their White peers. Social dancing is also a large part of Latino and Hispanic heritage (NEA, 2013), and it is likely Hispanic youth are exposed to social dancing outside of the school context that may influence Hispanic students decision to enroll in dance electives.

Overall, when dance is readily assessable to students, my findings support Miami's diverse cultural background in that White, Hispanic, and Black students enrolled in dance at practically equal rates. It is only when we do not account for differences in accessibility of dance electives across schools that racial disparities surface. Because Blacks were underrepresented in dance engagement when including all students in my sample regardless of whether they had the opportunity to take dance, it is vital that dance remains perceptually and tangibly accessible to students of all ethnic backgrounds across middle schools. It is important to note that even when using a low-income, ethnically diverse sample such as this, problems with accessibility remain.

Consistent with previous literature, females were significantly more likely to enroll in dance compared to males (Bucknavage & Worrell, 2005; Dumais, 2006; McNeal, 1998; Vanherwegen & Lievens, 2014). Large gender effects remained after controlling for all other demographic variables and elementary school performance. This finding means that higher rates of females taking dance compared to males cannot be better explained by my other covariates.

Oftentimes male participation in Western European dance (i.e. ballet) is stigmatized by social norms and/or gender stereotypes favoring female engagement (Gard, 2008; Risner, 2007). Dance engagement in Western societies is primarily female dominant, and may challenge male identity or masculinity (Risner, 2007). Challenges to male identity may result in decreased likelihood of male dancers, especially during adolescence when youth are exploring a sense of self and securing friend groups. In contrast, male dancing is more normalized in Afro-Caribbean and Latino cultures that embrace dance as a form of social engagement and cultural sharing (NEA, 2013). Types of dance such as Salsa, Bachata, Tango, Cha Cha Cha, and Mambo are popular dances within Caribbean and Latin American culture often found in Miami, Florida that encourage both female and male participation. However, although male dancing is more “normalized” in Latino culture, we still see a large significant gender difference in Miami, a place where we might hypothesize gender differences to be less salient given the diverse cultural context.

I did not have information on what type of specific dance was offered to students during middle school. It is possible that most Miami-Dade County public middle schools

only offer contemporary Western types of dance such as Ballet or Jazz. Schools that offer limited forms of dance styles may decrease male enrollment due to gender stereotypes, peer pressure to engage in other more “masculine” school activities, and Western cultural ideology (Risner, 2007). School systems may consider offering various dance forms (such as Salsa and Bachata) to their students to help decrease gender differences in dance participation, especially in Latino populations that value dancing as a part of their culture.

A notable finding of this study was the modest bivariate significant effect of poverty status on dance engagement, and the null relation between poverty status and dance enrollment when controlling for all other variables. This finding might be attributable to the general lack of variance in poverty status due to the fact that 81% of the entire MRSP sample consisted of families qualifying for free/reduced lunch. It was not consistent with previous research linking higher SES to increased fine-arts participation (McNeal, 1998), and the idea that more financially available resources may promote dance engagement in studies that sampled the full range of SES groups (Dumais, 2002; Vanderwegen & Lievens, 2014). Furthermore, I expected that poverty status would have negated some of the relations between other demographic variables (such as ethnicity or school readiness at age four), although this was not the case.

Bivariately, children from two-parent families at age four, and children whose parent held higher educational status were more likely to enroll in dance later in middle school. I hypothesized that children from two-parent homes with higher maternal education level would enroll in dance more. These hypotheses was based on the NEA (2013) survey of public art participation that the percentage of adults who reported social

dancing increased with educational background, the large effect of family influences on children's activities (Fredricks et al., 2002), and prior research finding that children from two-parent families were more likely to take fine-arts during high school (McNeal, 1998). When holding all other factors constant (most notable poverty status), marital status and education level was no longer related to dance engagement. In sum, ethnicity and poverty status appear to account for the effects that marital status and parent education level can have on child participation in school activities as seen in other studies (Dumais, 2002; Fredricks et al., 2002).

There is a small amount of empirical literature examining the predictability of disability status on dance engagement (Coster et al., 2012; Simeosson et al., 2001). I found that typically developing children were more likely to enroll in dance compared to their atypically developing peers. This finding supports literature stating typically developing students are more likely to engage in in-school activities (Coster et al., 2012). It is important to note that the majority of students in my sample coded with a disability had psychological or behavioral impairments as opposed to physical disabilities. I was unable to differentiate between type of disability and level of impairment, but disability status in 6<sup>th</sup> grade may be related to gross motor, fine motor, cognitive, and language skills at age four. For example, using a sample of children with cognitive and physical disabilities, Simeosson et al. (2001) found that children with attention and learning problems had the highest in-school art activity (band, orchestra, chorus, and art classes) participation rates compared to children with weaker fine and gross motor skills. It is possible that students with academic disabilities may seek escape from traditional

lecturing in academic subjects by enrolling in dance classes, but this was not supported in our data. My results indicated that stronger fine motor skills at age four predicted dance engagement during middle school, and both fine and gross motor skills were associated with longevity of dance courses. These findings are important for future research on disability status and dance participation. Variation in student dance engagement may depend on type of disability (cognitive or physical) and level of impairment.

When holding all other child demographic covariates constant, children without a disability were still more likely to enroll in dance compared to those who didn't. This relationship, however, was no longer significant after controlling for elementary school academic performance such as ever retained, 5<sup>th</sup> GPA, or 5<sup>th</sup> grade FCAT math score. The relationship between disability status and ever taking a dance course may be better explained by elementary academic performance. In terms of cognitive ability, this finding makes sense in that many types of disabilities are related to deficits in cognitive functioning and higher-order processes. It is possible that students with learning disabilities are struggling with academic coursework, and must allocate more time to their academics versus participating in dance electives. If this is the case, this is unfortunate due to the positive socioemotional and cognitive benefits arts engagement can have for underperforming youth.

Last, more English Language Learners (ELLs) took dance compared to non-ELLs, although the relation between ELL status and ever taking dance in middle school was no longer significant when controlling for other factors. Due to the positive research linking dance engagement to increased language acquisition (Greenfader et al., 2015;

Horowitz & Beaubrum, 2010) and greater school readiness skills and socioemotional development among low-income ELL youth (Lobo & Winsler, 2006), it is important for ELL students (especially those achieving at lower academic rates compared to their more affluent peers) to participate in dance. Schools may consider promoting dance engagement as an option for ELL students to potentially boost language acquisition, socioemotional competence, and academic achievement through non-verbal expression and symbolism.

### **School Readiness at Age Four**

Bivariately, children with stronger social skills and less behavioral problems in the classroom at age four were more likely to enroll in dance seven years later compared to those who did not. Out of the students who took dance, greater social skills and decreased behavioral problems were also associated with increased total years of dance courses taken during middle school. These findings supported my hypothesis that children more apt to engage in positive social interactions with peers, and with decreased externalizing behaviors at age four would be more likely to later enroll in dance. This conclusion may be due to the amount of self-regulation and adaptive peer interactions children often engage in during dance (Gilbert, 2006). Unfortunately, because I did not have data on previous dance exposure before middle school, I was unable to determine the extent to which the preexisting social skills and decreased behavior problems of this sample were possibly due to in-or-out of school dance participation prior to entering middle school. It is possible that children taking dance in the early elementary school

years is what led to children's increased social, behavioral, and academic skills, which had a carryover effect as students chose their middle school electives.

Fine motor, cognitive, and language skills at age four were similarly significantly higher for students who ever took dance during middle school compared to those who did not. Greater gross and fine-motor skills were significantly and positively correlated with the total number of years a child took dance during middle school, however the effects of gross motor, fine motor, cognitive, and language skills varied depending on ever enrolling in dance, or the total years of dance courses taken. Stronger gross and fine motor skills were associated with longevity of dance engagement and not cognitive and language ability. Increased cognitive ability and language skills were associated with ever taking a dance course in middle school. Fine motor skills were related to both ever-taking dance and total years of courses taken. It is likely that motor skills at age four better predicted longevity of dance engagement due to the physicality and kinesthetic nature of dance as children become attuned to their own body movement and increased spatial awareness (Gilbert, 2006).

Controlling for all other covariates (child demographics, school readiness at age four, and elementary school performance), regardless of accessibility, teacher-rated social skills (protective factors), was the only school readiness skills at age four that remained significantly predictive of ever taking dance in middle school. For every one-point increase in social skills, a child's odds of enrolling in dance also increased by 1.007%. Therefore, if a child's social skills percentile score increased by 75 points, their odds of taking dance in middle school would increase by 52%. The relationship between social

skills at age four and ever taking dance in middle school cannot be better explained by any of the other demographic covariates. Furthermore, the individual relations between behavioral concerns, gross motor, fine motor, cognitive, and language skills at age four on ever taking dance in middle school disappeared. In light of this finding, social skills may be the most salient school readiness skill in regards to later dance engagement.

New significant results emerged between school readiness skills at age four and later dance engagement when limiting the sample to only students who were enrolled in a school that actually offered dance. After controlling for elementary school retention, 5<sup>th</sup> grade GPA, and 5<sup>th</sup> grade FCAT math scores, preschool cognitive skills and teacher-rated behavioral concerns were significantly related to dance enrollment during middle school in addition to teacher-rated social skills. Interestingly, when dance electives are readily accessible to students, lower cognitive ability and increased behavioral problems at age four was associated with *increased* dance participation in middle school. It is possible that students with early behavioral problems, decreased cognitive skills, and/or greater social skills may later perceive dance electives in middle school as a healthy outlet to engage with peers and release energy that is different from a traditional lecturing academic environment.

### **Elementary School Performance**

Differences in elementary school performance were found for all performance variables (ever retained, 5<sup>th</sup> grade GPA, 5<sup>th</sup> grade FCAT math and reading scores) between those that did or not take dance during middle school. Students with higher prior academic achievement scores and who were never retained during elementary school had

greater odds of enrolling in dance in middle school compared to their lower achieving peers. This finding supports prior research indicating that youth who were not previously retained were more likely to engage in a fine-arts activity during high-school (McNeal, 1998). Furthermore, fifth graders who later took dance during middle school had higher GPAs. Not only were 5<sup>th</sup> grade FCAT math and reading scores higher for students who later took dance, but the variance in higher test scores was substantially less among students who later enrolled in dance compared to those who did not.

All elementary school performance variables (ever retained, 5<sup>th</sup> grade GPA, 5<sup>th</sup> grade FCAT math and reading scores) were highly predictive of not only ever taking a dance course during middle school, but also the total years of dance courses taken controlling for poverty status. Elementary school performance was most positively and strongly associated with total year of dance courses taken in middle school compared to other continuous variables such as school readiness skills at age four and parent education level. After holding all other covariates constant (child demographics, school readiness skills at age four, and elementary academic performance) FCAT reading scores were no longer significantly predictive of (Y/N) dance engagement. Ever retained during elementary school and increased 5<sup>th</sup> grade GPA, and/or 5<sup>th</sup> grade FCAT math scores were still predictive of later dance enrollment. In fact, for every one-point increase in FCAT math score, a student's odds of later enrolling in dance increased by 1.006%. For example, a 50-point increase in a student's FCAT math score would yield a 30% increased odds of enrolling in dance. Clearly, higher academic achievement is related to children taking dance, and more years of dance classes in middle school.

After rerunning the regression model controlling for all other covariates, and including only students who went to a school that offered dance electives, 5<sup>th</sup> grade FCAT math scores was the only elementary school performance variable to remain significantly predictive of dance enrollment during middle school. It is important to point out the large null relation and huge standard error that emerged between ever being retained during elementary school and middle school dance engagement. Looking into this finding further, I discovered that 100% ( $n = 1,203$ ) of the students in my sample who went to a school that offered dance *and* took dance were never retained during elementary school. Having no prior student retention among dancers confounded the results for this variable in my regression model, and explained why the effects of retention on middle school dance engagement didn't surface. (Results were rerun without the retention variable and they were the same for all the other variables). Overall, students who later took dance were academically outperforming their peers during elementary school and performing higher on standardized tests compared to students who did not. Notably, 5<sup>th</sup> grade GPA was no longer significantly related to middle school dance engagement after accounting for accessibility. This suggests that students' grades in school are partly a function of the school/neighborhood in which they are found.

In sum, when examining my sample regardless of the unequal accessibility of dance electives offered across schools, increased cognitive ability and academic achievement scores immediately before entering middle school were predictive of ever enrolling in dance, and the continuation of dance participation in middle school. In contrast, including only students who were offered the option of taking a dance elective

at their schools, students' standardized test scores and elementary retention were salient factor predicting dance enrollment in middle school. It is evident from these results, that even when accounting for accessibility of dance electives, students who take dance during middle school are more academically advanced (at least in math) before entering middle school compared to students who do not.

The association between academic achievement and dance participation is also consistent with the NEA (2013) public art participation survey that the majority of social dancers were also those with a college degree. Dance engagement during middle school may increase youths' academic achievement during middle-and-high school and promote adolescents' decision to pursue a college degree. As noted earlier, I did not have measures on student's previous dance engagement before middle school. Therefore I was unable to account for differences in 5<sup>th</sup> grade cognitive ability between students who had previously received, or were currently taking dance courses versus those who were not. It is possible that students with prior dance exposure may also be the students achieving at higher cognitive levels compared to those without dance exposure. Due to this potential difference in outcomes, it is important for researchers examining the benefits of dance to control for prior competence, and to follow younger children longitudinally.

### **Limitations**

Although the strengths of this study include its large ethnically and linguistically diverse sample, longitudinal data, and its ability to examine dance as its own artistic discipline in public middle schools, it was also subject to several limitations. First, the effects of income were limited because of our mostly already low-income sample (81%

of the children in the sample qualified for free/reduced lunch). Differences in SES are well documented in previous research on the participation and outcomes of arts engagement using nationally representative longitudinal data sets including families with more financial means (Catterall, 1998; Catterall et al., 2012). Future research examining selection effects of dance engagement may want to use a sample of children with more variance in family income (low, medium, and/or high SES) to fully capture the influence of SES on dance engagement. However, despite the decreased external validity of these findings to other more income-diverse populations, my sample was adequate for my research purposes because I was interested in examining the variance of dance enrollment among mostly low-income ethnically and linguistically diverse youth.

I did not have data on children's involvement in out-of school dance classes. Previous exposure and engagement in dance prior to middle school may also have a substantial impact on enrolling in a middle school dance elective. Furthermore, data on out-of-school dance participation (before and during middle school) may also help explain differences in elementary academic achievement since we know that children who enroll in dance during middle school are more academically advantaged in 5<sup>th</sup> grade compared to those who do not. It is possible that students who engage in dance before entering middle school are already receiving cognitive, social, or emotional gains from earlier dance engagement that follow them into middle school, and therefore influence their decision to enroll in dance electives during 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> grade.

Last, my study did not account for school-level differences that may have influenced dance participation. For example, school quality is known to be linked to

accessibility of dance electives, the style of dance (ballet, jazz, salsa, dance team) offered, and the number of dance classes offered in a given year (Bell 2014; Thomas et al., 2013). Furthermore, some Miami Dade County public schools offer multiple levels of dance classes (beginner, intermediate, advanced). My study only accounted for if a student ever took dance without knowledge of level of expertise or number of classes in a given year at the student's middle school and the total years of dance courses taken ranging from 1 to 3 years.

## **Conclusion**

In summary, this study identified unique preexisting differences between students who do or do not enroll in dance during middle school. A major take away point is that early (i.e., 6<sup>th</sup> grade) exposure and participation in dance is critical to later or continued involvement in 7<sup>th</sup> and 8<sup>th</sup> grade. Children enrolling in dance during middle school may perceive dance as a closed-structure activity, in that they don't think they have the "adequate skills" necessary to start taking dance. This perception puts youth at a disadvantage because they may be less likely to enroll in dance and receive the cognitive and socioemotional gains associated with dance engagement.

Another major take home point is that there are selection effects influencing children's engagement in dance such as ethnicity, gender, social skills at age four, and elementary academic performance, both in terms of these factors being associated with attending a school that offers dance, and that some of the pre-existing competence variables continue to predict dance even when they have accessibility to dance classes in their schools. Aside from identifying child demographic and school performance

differences between students who do or do not enroll in dance, selection effects may be indirectly influencing the inequity of dance engagement during middle school. It is important for all students no matter their gender, ethnicity, income status, or academic achievement to perceive dance as a useable and accessible in-school elective to promote creativity, innovative thinking, and increase psychology well-being and academic success.

As noted in my study, the unequal distribution of dance offerings across middle schools largely affected the original ethnic, school readiness skill and elementary academic performance differences seen between students who did or did not enroll in dance during middle school. In particular, most of the reason why Blacks were less likely to enroll in dance compared to Whites and Hispanics was due to their enrollment in low-income schools that do not offer dance as opposed to actual child ethnicity. This idea is largely supported by my findings that all ethnic differences disappeared after rerunning the final regression model including only students enrolled in a school that offered in-school dance electives. It is clear that when dance is offered, children from all ethnic backgrounds are equally likely to enroll. It is unfortunate that Black students from low-income communities don't even have the chance to take dance when we know that children from low-income neighborhoods benefit more from arts engagement compared to their peers from higher SES backgrounds (Catterall et al., 2012). Typically, higher grossing districts provide greater infrastructure and art resources to support in-school dance or other artistic electives (Bell, 2014). It is critical for inequity in dance offerings

to be removed so children from all groups and ranges of SES can receive the cognitive, social, or emotional benefits from dance engagement.

Finally, this study revealed that there are unique preexisting differences between children who do or do not enroll in dance during middle school. Due to the significant association between school readiness skills at age four, and 5<sup>th</sup> grade academic achievement, it is imperative that these differences be examined and controlled for in future studies trying to document the positive outcomes of dance engagement among youth. If not controlled for, the positive developmental gains linked to dance participation may be overestimated because the real gains could be a result of prior heightened academic competence, not the actual dance engagement. Without controlling for selection effects, the question of bidirectionality between students who enroll in dance and adaptive developmental outcomes cannot be resolved. For example, are students with greater prior psychological well-being and academic achievement enrolling in dance at higher rates compared to their peers, or does dancing actually lead to the increased cognitive, social, or emotional gains associated with dance participation? Only once preexisting differences are controlled for can we begin to identify the real developmental gains due specifically to dance engagement.

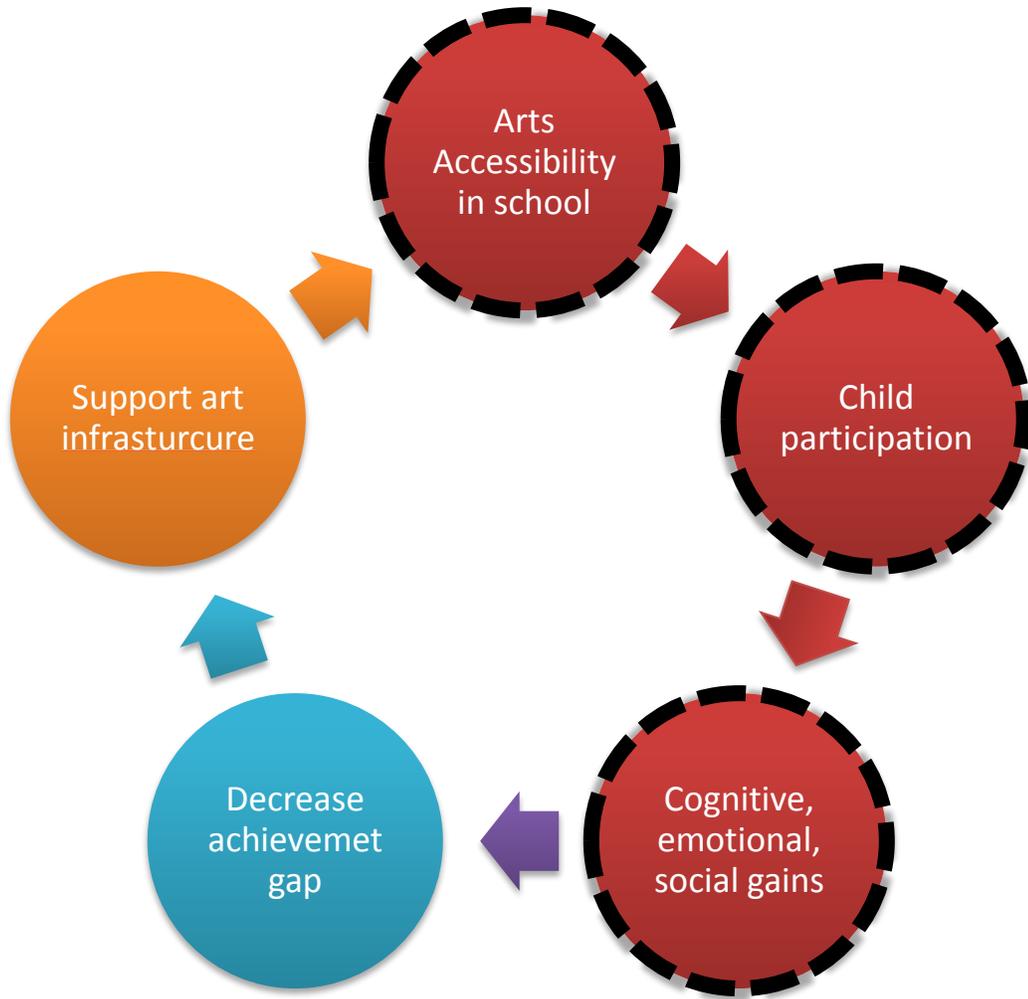


Figure 1. *The Bidirectional Model Between Creative Arts, Participation, and Accessibility (NEA, 2012).*

Table 1. *Demographic Information of the Sample*

<b>Total sample</b>	24,845
<b>Gender</b>	
Male	12,690 (51.30%)
Female	12,059 (48.70%)
<b>Ethnicity</b>	
Black	8,413 (34.00%)
Hispanic	14,606 (59.00%)
White/Other	1,727 (7.00%)
<b>Poverty status</b>	
Received free/reduced lunch	19,444 (80.60%)
Did not receive free/reduced lunch	4,681 (19.40%)
<b>English language learner (ELL)</b>	
ELL	14,727 (57.40%)
Not ELL	10,572 (42.60%)
<b>Disability status</b>	
Has a disability	3,592 (14.90%)
Non-disabled	20,533 (85.10%)
<b>Retention</b>	
Retained in elementary school	2,507 (10.10%)
Not retained in elementary school	22,338 (89.90%)
<b>Parent marital status</b>	
Married/Cohabitates	122 (8.70%)
Single parent home	1,274 (91.30%)
<b>Parent education level in years</b>	$M = 11.57 (SD = 1.70)$

Table 2. *Proportion of Middle School Students Enrolled in Dance By Grade and Cumulative Number of Years*

Grade	Frequency	Total	Percent
6	757	24,102	3.1%
7	772	16,563	4.7%
8	423	9,467	4.5%
Ever	1,402	24,845	5.6%
Number of Years	Frequency	Total	Percent
1 Year	965	1,402	68.8%
2 Years	332	1,402	23.0%
3 Years	114	1,402	8.1%

Table 3. *Enrollment Versus Non-Enrollment in Dance Electives Grade Six and Seven*

		Grade 7		
		Not Enrolled	Enrolled	Total
Grade 6	Not Enrolled	15,085	463	15,548
	%	97.0%	3.0%	100.0%
	Enrolled	254	299	553
	%	45.9%	54.1%	100.0%
	Total	15,339	762	16,101

Table 4. *Enrollment Versus Non-Enrollment in Dance Electives Grades Seven and Eight*

		Grade 8		
		Not Enrolled	Enrolled	Total
Grade 7	Not Enrolled	8,478	175	8,653
	%	98.0%	2.0%	100.0%
	Enrolled	234	243	477
	%	49.1%	50.9%	100.0%
	Total	8,712	418	9,130

Table 5. *Enrollment Versus Non-Enrollment in Dance Electives Grades Six and Eight*

		Grade 8		
		Not Enrolled	Enrolled	Total
Grade 6	Not Enrolled	8,267	288	8,555
	%	97.3%	2.7%	100.0%
	Enrolled	209	122	331
	%	63.1%	36.9%	100.0%
	Total	8,476	410	8,886

Table 6. *Enrollment in a Dance Elective in Middle School by Demographic Groups*

Variable	Enrolled	
	<i>n</i>	%
<b>Total</b>	1,402	5.6%
<b>Gender*</b>		
Male	72	0.6%
Female	1,329	11.0%
<b>Ethnicity*</b>		
White/Asian/Other	116	6.7%
Hispanic	1,000	6.8%
Black	285	3.4%
<b>Poverty Status</b>		
No free or reduced lunch	296	6.3%
Free or reduced lunch	1086	5.6%
<b>Disability status*</b>		
Non-disabled	1,324	6.4%
Has a disability	58	1.6%
<b>English Language Learner (ELL)*</b>		
Non-ELL	509	4.8%
ELL	893	6.3%
<b>Retention in elementary school*</b>		
Not-retained	1342	6.0%
retained	60	2.4%
<b>Parental marital status*</b>		
Married/Cohabitates	14	11.5%
Single parent home	83	6.5%

Note. \* $p < .001$ . We only had parental marital status information for a small subset of my sample ( $n = 1,396$ ).

Table 7. *Independent Samples T-Tests of Enrollment in a Dance Elective in Middle School*

Variable	Enrolled			Not Enrolled			Cohen's <i>d</i>
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	
<b>School readiness at age four</b>							
<b>DECA</b>							
Total S-E protective factors*	1,274	69.54	24.08	19,376	58.75	28.07	.41
Behavioral concerns*	1,274	37.80	27.49	19,376	47.07	29.57	-.32
<b>Lap-D</b>							
Gross motor skills	973	67.27	28.25	15,052	69.00	28.52	-.06
Fine motor skills*	1,121	66.98	25.23	17,218	56.82	28.70	.38
Cognitive skills*	1,114	59.72	28.62	17,215	52.84	30.20	.23
Language*	1,104	51.14	30	17,135	45.19	30.66	-.19
<b>Academic performance</b>							
5 <sup>th</sup> Grade GPA*	1,364	4.35	.56	22,232	3.98	.87	.51
<b>Standardized test scores</b>							
5 <sup>th</sup> Grade FCAT math*	1,366	327.88	59.59	22,276	287.64	88.50	.53
5 <sup>th</sup> Grade FCAT reading*	1,366	310.00	55.93	22,274	268.67	81.17	.60
<b>Parent education level*</b>	258	11.85	1.45	3,319	11.55	1.72	.19

Note. \* $p < .001$ . I only had data on parent education level for a small subset of my sample ( $n = 3,577$ ).

Table 8. *Pearson Correlations Between School Readiness at Age Four, Academic Performance During Elementary School, and Maternal Education Level on Total Number of Years a Student Enrolled in Dance*

Variable	Total years of dance enrollment
<b>School readiness skills at age four</b>	
<b>DECA</b>	.09**
Total protective factors	
Behavioral concerns	-.09**
<b>LAP-D</b>	
Gross motor skills	.09**
Fine motor skills	.07*
Cognitive skills	.04
Language skills	.04
<b>Elementary academic performance</b>	
5 <sup>th</sup> Grade GPA	.10***
<b>Standardized test scores</b>	
5 <sup>th</sup> Grade FCAT math	.24***
5 <sup>th</sup> Grade FCAT reading	.23***
<b>Parent education level</b>	.05

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . This sample only includes students who ever enrolled in dance during middle school. I only had data on parent education level for a small subset of my sample ( $n = 3,577$ ).

Table 9. *Logistic Regression Predicting Dance Enrollment in Middle School*

Variable	Step 1		Step 2	
	Odds Ratio	<i>SE(B)</i>	Odds Ratio	<i>SE(B)</i>
<b>Demographics</b>				
White/Black	2.14***	0.162	1.81***	0.164
Hispanic/Black	2.23***	0.112	2.04***	0.113
Hispanic/White	1.04	0.154	1.13	0.155
Male	0.04***	0.173	0.04***	0.174
Received free/reduced lunch	1.02	0.100	1.20	0.103
Disability	0.57**	0.19	0.90	0.202
ELL	.906	0.099	0.88	0.100
<b>School readiness at age 4</b>				
<b>DECA</b>				
Total protective factors	1.007***	0.002	1.005**	0.002
Behavioral concerns	1.00	0.002	1.00	0.002
<b>Lap-D</b>				
Gross motor skills	1.00	0.001	1.00	0.001
Fine motor skills	1.00	0.002	1.00	0.002
Cognitive skills	1.00	0.002	0.10	0.002
Language skills	1.00	0.002	1.00	0.002
<b>Elementary academic performance</b>				
Retention in elementary school			0.62*	0.199
GPA in 5 <sup>th</sup> Grade			1.18*	0.081
FCAT Math Score in 5 <sup>th</sup> Grade			1.006***	0.001

Table 10. *Logistic Regression Predicting Dance Enrollment in Middle School of the Students Enrolled in a School that Offered Dance*

Variable	Step 1		Step 2	
	Odds Ratio	<i>SE(B)</i>	Odds Ratio	<i>SE(B)</i>
<b>Demographics</b>				
White/Black	1.31	0.188	1.13	0.193
Hispanic/Black	1.28*	0.127	1.17	0.130
Hispanic/White	0.98	0.179	1.04	0.181
Male	0.04***	0.185	0.04***	0.186
Received free/reduced lunch	1.09	0.114	1.23	0.116
Disability	0.63	0.261	0.80	0.265
ELL	.95	0.113	0.92	0.114
<b>School readiness at age 4</b>				
<b>DECA</b>				
Total protective factors	1.006**	0.002	1.005*	0.002
Behavioral concerns	1.00	0.002	1.003*	0.002
<b>Lap-D</b>				
Gross motor skills	1.00	0.002	1.00	0.002
Fine motor skills	1.00	0.002	1.00	0.002
Cognitive skills	0.99	0.002	0.995*	0.002
Language skills	1.00	0.002	1.00	0.002
<b>Elementary academic performance</b>				
			0.00	40192.
Retention in elementary school				97
GPA in 5 <sup>th</sup> Grade			1.12	0.093
FCAT Math Score in 5 <sup>th</sup> Grade			1.006***	0.001

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