



Arts enrichment and preschool emotions for low-income children at risk

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ABSTRACT

No studies to date examine the impact of arts-integrated preschool programming on the emotional functioning of low-income children at risk for school problems. The present study examines observed emotion expression and teacher-rated emotion regulation for low-income children attending Settlement Music School's Kaleidoscope Preschool Arts Enrichment Program. At a level of $p < .001$, results indicate the following. First, within Kaleidoscope, children showed greater observed positive emotions such as interest, happiness, and pride, in music, dance, and visual arts classes, as compared to traditional early learning classes. Second, children at Kaleidoscope showed greater observed positive emotions than peers attending a comparison preschool that did not include full integration of the arts. Third, across the school year, children at Kaleidoscope showed greater growth in teacher-rated levels of positive and negative emotion regulation. The implication is that arts enrichment may promote social-emotional readiness to learn for low-income children at risk for school problems.

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The impact of emotions on learning has long been recognized by practitioners and scholars alike. More than forty years ago, for example, differential emotions theory posited the adaptive value of emotions, explaining that positive emotions such as interest, happiness, and pride facilitate learning, whereas high levels of negative emotions such as sadness, fear, and anger, interfere (Izard, 1971). Only recently however has national attention centered on social-emotional "readiness to learn"; highlighting the necessity of emotional competence for school success (Raver & Knitzer, 2002). Promoting positive emotions and building skillsets for emotion regulation are now recognized imperatives for Head Start and other programs serving young, low-income children, who face risks in social-emotional as well as academic domains.

Cultivating social-emotional competence for low-income children requires consideration of threats posed by poverty and racism as well as within-group diversity hosted by the ecology of economic disadvantage. Garner and colleagues provide evidence of the many low-income children from racial/ethnic minority backgrounds who have family environments that support their successful emotion regulation (Garner, Jones, & Miner, 1994; Garner & Spears, 2000). Similarly, many have early educational environments that support their social-emotional readiness to learn. Indeed, some Head Start and other preschools serving low-income children may have embedded in their programming longstanding and successful

strategies for facilitating the positive emotional experiences and emotion regulation development required for emotional school readiness. The present study highlights Settlement Music School's Kaleidoscope Preschool Arts Enrichment Program and investigates the potential emotional benefits associated with this program's unique model of arts-integrated early childhood education.

1. Differential emotions theory

The present study is grounded in differential emotions theory (DET; Abe & Izard, 1999a; Ackerman, Abe, & Izard, 1998; Izard, 1971, 1977, 1989, 1992, 1993; Izard, Ackerman, Schoff, & Fine, 2000). DET posits that discrete emotion systems play an important role in explaining behavior. Discrete emotions are activated in response to environmental experiences, eventually giving rise to characteristic patterns of emotions, cognitions, and actions (Izard, 1992). Abe and Izard (1999b) explain that specific emotions systems emerge during particular developmental periods to aid in the successful completion of important milestones, including the transition to formal schooling. The experience of a preponderance of positive emotions in early childhood education lays the foundation for positive experiences in elementary school and beyond.

According to DET, all emotions have adaptive functions. Interest plays a primary role in learning because it powers sustained attention and engagement. Happiness provides a reward for the work that leads to skill development and mastery. And pride influences motivation and self-confidence. Also, these positive emotions counter the stress of negative emotions (Izard, 2002).

DET posits that negative emotions such as anger, sadness, and fear serve some useful purposes. Yet a high frequency and intensity

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of such emotions predict maladaptive adjustment (Abe & Izard, 1999b). Preschool negative emotionality, for example, relates to angry and aggressive behaviors in elementary school (Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002; Hill, Degnan, Calkins, & Keane, 2006; Shaw, Gilliom, Ingoldsby, & Nagin, 2003). As such, young children's ability to adaptively utilize their emotions hinges on effective regulation, which involves the flexible control of internal experience as well as outward expression of emotion (Trentacosta & Izard, 2007). Indeed, evidence suggests that flexible management of emotionality in preschool holds importance for positive learning and social behaviors in elementary school (Berhenke, Miller, Brown, Seifer, & Dickstein, 2011; Graziano, Reavis, Keane, & Calkins, 2007; Raver, Garner, & Smith-Donald, 2007; Trentacosta & Izard, 2007).

Within preschool, emotion expression and regulation demonstrate particular power for predicting classroom outcomes. A Miller et al. (2006) study of children in Head Start revealed that observed emotion expression and teacher-reported regulation were the facets of emotional competence that meaningfully predicted classroom adjustment, with relations for emotion expression disappearing after emotion regulation was accounted for. The results suggested that observed emotion expression offers an excellent snapshot of children's preschool experience, whereas teacher reports of emotion regulation may provide the best overall index of children's ongoing ability to modulate emotions in the service of social relationships and learning.

2. Economic disadvantage

Social-emotional readiness to learn holds particular importance for economically disadvantaged children, who face a host of risks to successful school functioning (Ackerman, Brown, & Izard, 2004; Duncan & Brooks-Gunn, 1997, 2000; Evans, 2004; McLoyd, 1998). Because low-income children tend to start preschool with cognitive skill gaps, they often face achievement challenges that stimulate frustration and negative emotionality. Also, they bring to preschool the negative emotions kindled by poverty-related stressors at home (Brown & Ackerman, 2011). Racism relates to particular inequities and stressors for those from minority backgrounds (Caughy, O'Campo, & Muntaner, 2004; Simons et al., 2002). Moreover, for low-income children, prerequisite skills for regulating emotions are often lacking. In particular, poor verbal skills limit opportunities for connecting feelings to words, thereby hindering emotion understanding, and stressful home environments debilitate children's ability to correctly label emotions (Izard, Fine, Mostow, Trentacosta, & Campbell, 2002).

Although low-income children show increased risk for emotional difficulties as early as preschool (Kaiser, Cai, Hancock, & Foster, 2002; Webster-Stratton & Hammond, 1998), there are high rates of within-group variability (Garner et al., 1994; Garner & Spears, 2000; Raver, 2004). Garner et al. (1994), for example, documented the sound emotion socialization practices used by many low-income mothers, and their relation to children's emotional competence. Garner and Spears (2000) provided evidence of the many low-income families with appropriate emotional climates, and the links to children's constructive emotion regulation. These studies included mostly families from racial/ethnic minority backgrounds.

Preschool as well as family variables matter for low-income children's emotional functioning, and early childhood programs designed to boost social-emotional readiness to learn show promising effects. For example, compared to children in Head Start as usual, those with an emotion-based prevention program based on DET (EBP; Izard et al., 2008; Izard, Trentacosta, King, & Mostow, 2004), showed greater increases in emotion knowledge and regulation and greater decreases in negative emotion expression (Izard

et al., 2008). Several other programs have also shown good outcomes: the Preschool Promoting Alternative Thinking Strategies program (PATHS; see Domitrovich, Cortes, & Greenberg, 2007), Tools of the Mind (see Bodrova & Leong, 2007; Diamond, Barnett, Thomas, & Munro, 2007), and the Chicago School Readiness Project (CSRP; see Raver et al., 2009, 2011) are just a few examples. Yet the recent call for increased attention to social-emotional readiness to learn (Raver & Knitzer, 2002) begs the question of whether some preschools might already have embedded in their programming longstanding and successful strategies for supporting emotional functioning.

3. Arts enrichment

Arts enrichment stands out as a longstanding educational strategy that may benefit social-emotional readiness to learn. In reviewing principles of effective emotion regulation, Izard (2002) emphasizes the importance of inducing a preponderance of positive emotion and allowing children to express limited amounts of negative emotions in settings where they can learn control. These principles suggest that arts education may foster emotional competence.

Children show natural interest in the arts, which provide abundant opportunities for experiencing positive emotions. Including the arts may create space for children from diverse backgrounds to bring their lived realities into the classroom, fostering a sense of belonging, contentment, and pride (Allen & Boykin, 1992; Allison & Rehm, 2007; Griffin & Miller, 2008; Hall, 2007; Young, 1990). Also, success experiences in the arts may foster positive emotions for children with developmental difficulties (Darby & Catterall, 1994; Eisner, 1998).

Additionally, the arts may provide a means by which children are able to express or process negative emotions. De Petrillo and Winner (2005) induced negative mood and asked child participants to draw pictures aimed at venting or distraction, respectively: those in the venting group showed the greatest mood improvement. A further study compared use of the visual arts to vent versus turn one's attention to the positive, and suggested that turning attention to the positive might be more effective (Dalebroux, Goldstein, & Winner, 2008). Both studies show the potential for the arts to help children overcome effects of poverty-related stress.

Moreover, the creative arts may facilitate improvement in emotion understanding and regulation. The types of emotion training found in Izard et al.'s emotions-based prevention (EBP) program can also be found in the arts. For example, EBP includes teaching children to demonstrate, label, and compare intensities of emotion expressions, identify causes and consequences of emotions, and discuss ways to regulate emotions (Izard et al., 2004, 2008). These are common components of arts education. In music, for instance, children learn that various songs elicit different emotions and can be used to change feelings. Through the emotion training interwoven in arts education, children may build healthy connections between emotions, cognitions, and actions, and acquire tools for learning in emotionally challenging situations.

A recent study suggests the benefits of music and movement. Winsler, Ducenne, and Koury (2011) found that, compared to a control group, young children in Kindermusik showed better self-regulation. They used more private speech, which seemed to enhance their performance on self-regulatory tasks, and were also more likely to use other strategies such as singing/humming to themselves, seemingly in an effort to control their behavior. Winsler and colleagues suggested that exposing children to music and movement experiences such as stop/start, slow/fast, and loud/soft, may have facilitated improvement in self-regulatory skills.

A 2006 study by Lobo and Winsler showed that the emotional benefits of dance also hold importance for low-income children attending Head Start. Compared to an attention control group, the experimental dance program related to greater positive changes in social competence and internalizing and externalizing behaviors, as rated by parents and teachers. The results provide a compelling case for using arts education with low-income children.

Despite the potential benefits, arts programming is typically limited in preschool settings that serve low-income children. To some extent, early childhood educators incorporate the arts as standard practice. Yet a study of NAEYC-accredited preschools revealed that art forms such as music were typically used for a small amount of time each day, and primarily to enrich the classroom environment (Lee Nardo, Custodero, Persellin, & Fox, 2006). This differs from full integration, which involves the arts as mechanisms for accomplishing core goals of early childhood education. No research to date examines the impact of full integration of the arts on the preschool emotions of young children at risk for school problems. Settlement Music School's Kaleidoscope Preschool affords an excellent opportunity for this type of investigation.

4. Settlement Music School's Kaleidoscope Preschool Arts Enrichment Program

Settlement Music School launched the Kaleidoscope program in 1990 to promote school readiness via arts enrichment for young, low-income children living in the surrounding neighborhood. Several years later, Kaleidoscope became a Head Start site and received accreditation through the National Association for the Education of Young Children (NAEYC). Like many Head Starts, Kaleidoscope uses the Creative Curriculum (Dodge & Colker, 1992). Yet unlike others, Kaleidoscope delivers instruction in core early childhood domains through an arts-integrated model that includes standard early learning classes, as well as daily music, creative movement, and visual arts classes taught by credentialed artist teachers.

Most Head Starts base instruction around early learning themes, but the repetition of these themes in arts as well as regular early learning classes is unique to Kaleidoscope. For the theme of self-expression, a typical Head Start might give children opportunities to practice labeling facial expressions of emotions as well as express themselves through creating journals in regular early learning classes. At Kaleidoscope, children additionally receive opportunities to explore the theme in arts classes. The visual arts class might allow children to express themselves through media such as painting or collage, for example, as well as discuss how pieces of visual art make them feel. In music, children might use their voices and other instruments to reproduce sounds that humans and other animals make to express emotions. Also, in dance, children might use creative movement to perform different emotions for their classmates to identify. In the various arts classes, children participate in guided exploration of how to use sound, movement, and visual media, respectively, to express and change their emotional state.

Also in common with most Head Starts, Kaleidoscope incorporates varied cultural traditions and provides opportunities for skill development in core early childhood domains of math, science, language, literacy, and social/cultural learning. Again Kaleidoscope is unique, however, in using multiple arts as well as early learning classes to accomplish these goals. For example, in autumn, Indian cultural traditions might be included as children learn about Diwali, the "festival of lights." At Kaleidoscope, children might develop language/literacy skills such as: vocabulary, by learning Hindi vocabulary words in early learning classes; writing prerequisites, by copying Indian mandala designs in visual arts, and reading prerequisites, by following Indian song-stories in music and dance, singing and moving in response to pictorial cues. To develop math

skills, children might learn about patterns by repeating their mandala designs with variation in visual arts, as well as clapping and moving to the beat in music and dance. In this way, core school readiness skills would be practiced through multiple modes of learning.

Brown, Benedett, and Armistead (2010) conducted two studies on the school readiness of children at Kaleidoscope. The first documented that Kaleidoscope children practiced language, literacy, mathematics, science, and other school readiness skills in music, creative movement, and visual arts classes. Achievement gains related to the dose of exposure to Kaleidoscope. The achievement gap that often separates children from racial/ethnic minority backgrounds from their majority group peers even within typical Head Start programs was not apparent within Kaleidoscope. Also, although children with developmental difficulties related to poverty showed lower initial achievement than their typically functioning peers, they showed equal growth.

The second study compared children attending Kaleidoscope to those attending a nearby preschool that met similar quality standards. Over the course of a year of program attendance, children attending Kaleidoscope's arts-integrated Head Start program showed three times the gains in receptive vocabulary as children attending the traditional Head Start program that did not include the arts in such a full, structured, and intentional way (Brown et al., 2010). These findings suggested benefits of arts integration with regard to the development of certain school readiness skills, but did not address emotional competence. The present study includes a subsequent cohort of children at Kaleidoscope, and provides an initial investigation of arts enrichment and preschool emotions for low-income children at risk for school difficulties.

5. Present study

The present study explores the possibility that the arts programming at Settlement Music School's Kaleidoscope Preschool supports social-emotional readiness to learn. We focus on Kaleidoscope because it is the only program we know of that uses daily early learning as well as music, dance, and visual arts classes to educate young, low-income children. Poverty risks (Ackerman et al., 2004; Duncan & Brooks-Gunn, 1997, 2000; Evans, 2004; McLoyd, 1998) as well as evidence of diversity among economically disadvantaged children (Garner et al., 1994; Garner & Spears, 2000; Raver, 2004) suggest the importance of attention to this population. Kaleidoscope's model provides an important chance to study within-child differences in early learning versus arts classes as well as between-child differences across preschool type.

Izard's (2002) review suggests that prevention of emotional difficulties depends on promoting an abundance of positive emotions and providing limited opportunities for children to express negative emotions in contexts that allow them to master the skills required for successful regulation. Moreover, Miller et al.'s (2006) study suggests that emotion expression and regulation may be the components of emotional competence that matter most for young, low-income children. For these reasons, we focus on emotion expression and regulation.

Emotion expression is rated by trained observers, and emotion regulation by preschool teachers, with all raters blind to study hypotheses. For emotion expression, we examine the frequency of positive and negative emotions across Kaleidoscope's early learning and arts classes. We predict that the arts classes will host more positive and fewer negative emotions.

We also compare the frequency of positive and negative emotions across the school day for children at Kaleidoscope versus a nearby alternative. The alternative, like Kaleidoscope, is a Head Start site and NAEYC accredited, with the same Pennsylvania

Keystone Stars quality rating, and same requirements for teacher-to-child ratio and teacher education and credentials. At the alternative, all lead teachers hold a BA and certification in Early Childhood Education (ECE) and the same is true for Kaleidoscope except for one teacher who is certified in ECE but still working toward a BA. Both follow the Creative Curriculum (Dodge & Colker, 1992) with some arts enrichment in regular early learning classes. Kaleidoscope also includes music, dance, and visual arts in the daily schedule to accomplish curricular goals, whereas the comparison preschool includes just early learning classes. We control for child verbal ability, age, gender, race/ethnicity, and family income, which show demonstrated relations to preschool emotions (Izard et al., 2004, 2008; Miller et al., 2006; Shields et al., 2001). We hypothesize that compared to the alternative children at Kaleidoscope will show more positive and fewer negative emotions.

With respect to emotion regulation, the study employs a short-term longitudinal design and examines change in teacher-rated emotion regulation from fall to spring of a year of preschool attendance for children at Kaleidoscope versus those at the comparison preschool. Again we include controls for child age, gender, race/ethnicity, and verbal ability, and family income. We expect that children attending Kaleidoscope will show greater growth in emotion regulation over the course of the school year compared to children attending the comparison site.

6. Method

6.1. Participants

This study included 205 participants and their primary caregivers. The participants were children who attended one of two Head Start preschools in Philadelphia, Pennsylvania in one of two cohorts. The first cohort attended the preschools during the 2008–2009 school year and the second, during the 2009–2010 school year. In total, 174 children attended Settlement Music School's Kaleidoscope Preschool and 31 attended the comparison site, which was smaller. Rates of participation were near 85% at both preschools. Although we made efforts to include all interested families, several did not participate because we were unable to contact them to schedule interviews or because they repeatedly missed their scheduled appointments.

Across both preschools, of the primary caregivers who completed the interviews, approximately 85% were biological mothers of the children, 10% biological fathers, and 5% other biological relatives. Of the children, 48% were female, and 75% were African American, 10% Latino/Hispanic American, 10% Asian American, and 5% Caucasian/European American. The mean age of the children was 4 years, 2 months ($SD=6.60$, range = 33 months). Information about income and family size was combined to compute income-to-needs ratios, which were compared to federal poverty guidelines: 65% of the families were poor, and 90% were low-income, with income-to-needs ratios less than two times the poverty threshold.

6.2. Procedure

Ethical standards were followed in the conduct of this study and all procedures were approved by the appropriate institutional review boards. The study included four components. The first component involved an initial interview with caregivers, conducted at the preschool by trained research assistants, to collect demographic information. The second included assessments of child verbal ability individually administered at the preschool by trained research assistants. The third component involved questionnaires about children's emotion regulation completed independently by teachers at the preschools in the fall (October) and spring (May)

of the school year. The fourth component involved observations of children's classroom emotions, completed by trained research assistants at the Head Start preschools.

6.3. Measures

Demographics. The demographic interview for caregivers measured household income-to-needs and child age, gender, and race/ethnicity (Ackerman, Brown, & Izard, 2003).

Child verbal ability. The Peabody Picture Vocabulary Test-III (PPVT-III; Dunn & Dunn, 1997) measured child verbal ability. The PPVT-III is a well validated measure with test-retest reliability of .89. Standardized scores ranged from 28 to 134 ($M=91.60$, $SD=19.34$).

Child emotion regulation. The Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997) measured child positive and negative emotion regulation. This measure was developed to foster the study of emotion regulation beyond infancy and toddlerhood (Shields & Cicchetti, 1997) and has been used in multiple studies with Head Start populations (see Berhenke et al., 2011; Miller, Gouley, Seifer, Dickstein, & Shields, 2004; Miller et al., 2003; Shields et al., 2001; Spritz, Sandberg, Maher, & Zajdel, 2010). The measure has 24 items rated on a 4-point Likert scale indicating frequency of various behaviors (1 = rarely/never to 4 = almost always). The Positive Emotion Regulation subscale has eight items assessing emotion understanding and empathy. Sample items are "Is empathetic towards others," and "Shows concern when others are upset or distressed." Cronbach's alpha was .71. Scores ranged from 8 to 51, and the fall mean was 14.04 ($SD=3.89$). The Negative Emotion Dysregulation subscale includes 16 items focusing on emotional lability, anger reactivity, and negative emotion intensity. Sample items are "Exhibits wide mood swings," "Is easily frustrated," and "Responds angrily to limit setting by adults." Cronbach's alpha was .83. Scores ranged from 16 to 61, and the fall mean was 28.71 ($SD=8.62$). The correlation of the two scales was $-.48$ in the fall and $-.29$ in the spring.

Child observed emotions. Child emotions were coded by independent observers using an adapted version of the Affex system, which is grounded in DET (Izard, Dougherty, & Hembree, 1989). Affex was developed to provide a sufficiently reliable and time-efficient affect expression identification system to encourage research that requires the analysis of relatively long periods of facial behavior, and is based on cross-cultural research, and developmental studies of infants and young children (e.g., Ekman, Friesen, & Ellsworth, 1972; Izard, 1971, 1977, 1978; Tomkins, 1962, 1963). Intersystem reliability for various coding systems for facial expression of emotions (e.g., Affex, Max, FESM) ranges from 74% to 88%, with a mean of 80%, and these systems show predictive validity for emotion classification responses of untrained observers (social consensus) ranging from 56% to 73% (see Izard et al., 1989).

In the present study, children were coded in 1-min intervals as showing one of eight mutually exclusive emotion categories: neutral, interested, happy, proud, sad, angry, fearful, or "other." In pilot testing with this sample, typical Affex categories of contempt, disgust, and pain were rare and difficult to distinguish from anger; thus these emotions were coded as anger. Children sometimes showed multiple emotions and/or an emotion blend and were coded based on the predominant emotion for that time interval. Graduate research assistants served as observers and were trained by expert coders, first using videos and then, by jointly conducting live observations of children in the classrooms, and discussing discrepancies. For video training, intrarater reliability with Cohen's kappa was .91. Approximately 10% of the sample was double-coded live. For this subset, interrater reliability according to Cohen's kappa was .82.

Table 1
Correlations between emotion variables and covariates ($N = 205$).

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Child age	–	–.01	.02	–.07	.00	–.23*	.19*	–.16*	.02	.06	–.06
2. Male	–.01	–	–.06	–.02	–.12	.04	.02	.01	.12	–.02	.09
3. Minority	.02	–.06	–	–.18*	.03	–.05	.06	–.03	–.05	.12	–.08
4. Child verbal ability	–.07	–.02	–.18*	–	.10	.18*	–.09	–.11	.02	–.04	–.03
5. Family income-to-needs	.00	–.12	.03	.10	–	–.07	.04	–.06	.03	.16*	–.05
6. Pos emotion expression ^a	–.23*	.04	–.05	.18*	–.07	–	–.42*	.07	.04	.04	–.12
7. Neg emotion expression ^a	.19*	.02	.06	–.09	.04	–.42*	–	–.00	.06	.34*	–.09
8. Fall pos emotion reg	–.16*	.01	–.03	–.11	–.06	.07	–.00	–	–.48*	.18*	.07
9. Fall neg emotion reg	.02	.12	–.05	.02	.03	.04	.06	–.48**	–	–.38*	.29*
10. Spring pos emotion reg	.06	–.02	.12	–.04	.16*	.04	.34*	.18*	–.38*	–	–.29*
11. Spring neg emotion reg	–.06	.09	–.08	–.03	–.05	–.12	.09	.07	.29*	–.29*	–

Note. Minority: member of a racial/ethnic minority group; pos: positive; neg: negative; reg: regulation.

^a For correlations involving emotion expression variables, $n = 182$.

* $p < .05$.

Children were each coded for 15 consecutive minutes (out of a 45 min class period), in each of the four class periods across their school day that were not lunch, recess, or naptime. At Kaleidoscope, these four classes included a regular early learning (i.e., homeroom) class, as well as a music, dance, and visual arts class (which occurred daily). At the comparison, observations took place at the same times of day as Kaleidoscope and were similarly representative of the children's daily schedule: Thus, nearly all took place during regular early learning classes, with arts-focused activities such as music included in proportion to their occurrence. For each period observed, ratings of interest, happiness, and pride were combined, and ratings of sadness, anger, and fear were combined, to create respective indexes of positive and negative emotions. Results were based on the average minutes showing a given emotion index per 15 min block.

7. Results

7.1. Evaluation of missing data

Complete data for demographics, child verbal ability, and child emotion regulation were available for all 205 participants. Of these, the 182 who were present on days scheduled for classroom observations had complete data for emotion expression. The 23 children who were absent (21 from Kaleidoscope and two from the comparison preschool) did not differ from the rest on other study variables and were excluded only from analyses of emotion expression.

7.2. Correlational analysis and sample characteristics

Table 1 shows correlations among study variables and Table 2 shows means and standard deviations by preschool type. To evaluate start-of-year differences between the preschools, we used chi-square analyses for the dichotomous variables for gender ($male = 1$) and race/ethnicity ($minority\ group\ member = 1$) and independent samples t -tests for other sample characteristics. With $N = 205$ and $p < .05$, results indicated no significant differences for gender ($\chi^2 = .29$), race/ethnicity ($\chi^2 = .20$), age ($t = -.58$), family income-to-needs ($t = -.38$), verbal ability ($t = .56$), and start-of-year positive ($t = .81$) and negative ($t = 1.18$) emotion regulation.

7.3. Emotion expression within Kaleidoscope

We used a dependent-samples t -test with an alpha level of .05 to evaluate whether children's observed emotions differed significantly in arts versus regular early learning (i.e., homeroom) classes at Kaleidoscope. Children's display of positive emotions in arts classes ($M = 4.35$, $SD = .60$) versus early learning classes ($M = 3.95$, $SD = 1.26$) differed significantly ($t(152) = -3.94$, $p < .001$).

Children's display of negative emotions in arts ($M = .41$, $SD = .51$) versus early learning classes ($M = .45$, $SD = .86$) did not differ significantly ($t(152) = .60$, ns).

7.4. Emotion expression and emotion regulation at kaleidoscope versus comparison

We used regression and MANCOVA analyses to test the impact of preschool type on observed emotion expression and teacher-rated emotion regulation. All necessary assumptions were met. For the regression analyses, the first block included covariates of child age, gender, race/ethnicity, verbal ability, and family income-to-needs, and the second block included preschool type. Table 3 displays the results. The effect of preschool type was significant for observed positive emotion expression, and positive and negative emotion regulation, but not for observed negative emotion expression. Further analyses with Hierarchical Linear Modeling (HLM; Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011) revealed qualitatively similar results and indicated that, with $p < .05$, classroom-level variance accounted for a non-significant amount of the variance in positive ($ICC = .05$) and negative emotion expression ($ICC = .09$), as well as change in positive ($ICC = .05$), and negative emotion regulation ($ICC = .06$).

Next, we used a MANCOVA to test the impact of preschool type on observed emotions (see Table 2 for cell means and standard deviations). We controlled for child age, verbal ability, and family income-to-needs. Multivariate tests revealed a significant

Table 2
Means and standard deviations for variables by preschool ($N = 205$).

	Kaleidoscope ($n = 174$)	Comparison ($n = 31$)
Fall		
Age in months	49.67 (.57)	50.52 (1.35)
Male	.47 (.04)	.42 (.09)
Minority ^a	.95 (.02)	.94 (.04)
Family income-to-needs	.90 (.08)	.98 (.18)
Verbal ability	91.91 (1.47)	89.81 (3.48)
Positive emotion expression ^b	4.25 (.61)	2.64 (.77)
Negative emotion expression ^b	.42 (.48)	.27 (.35)
Positive emotion regulation skills	14.13 (4.07)	13.52 (2.68)
Negative emotion regulation problems	29.01 (8.88)	27.03 (6.82)
Spring		
Positive emotion regulation skills	20.24 (10.33)	12.32 (2.27)
Negative emotion regulation problems	18.90 (9.17)	25.23 (6.72)

Note. With $p < .05$, only the following differed significantly by preschool: fall positive emotion expression, spring positive emotion regulation skills, and spring negative emotion regulation problems.

^a Member of a racial/ethnic minority group.

^b For emotion expression variables, Kaleidoscope $n = 153$ and the comparison $n = 29$.

Table 3
Summary of hierarchical regressions for emotion variables ($N = 205$).

Predictor	Positive emotion expression ^b				Negative emotion expression ^b				Δ positive emotion regulation skills				Δ negative emotion regulation problems			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	β	t	β	t	β	t	β	t	β	t	β	t	β	t	β	t
Age	-.21	-2.95*	-.17	-3.12*	.18	2.44*	.19	2.59*	.12	1.68	.13	1.90	-.07	-.95	-.08	-1.15
Male	.01	.17	.02	.30	.04	.56	.04	.58	.01	.07	.01	.08	-.03	-.41	-.02	-.27
Minority ^a	-.01	-.17	-.05	-.89	.05	.71	.05	.62	.13	1.81	.12	1.71	-.04	-.53	-.03	-.37
Income-to-needs	-.08	-1.07	-.04	-.83	.04	.59	.05	.70	.18	2.57*	.19	2.78*	-.06	-.85	-.07	-1.00
Verbal ability	.17	2.27*	.12	2.16*	-.07	-.93	-.08	1.08	.02	.26	.01	.08	-.05	-.65	-.03	-.48
Arts-integrated preschool			.66	12.45*			.14	1.89			.27	4.04*			-.28	-4.19*
R ²	.09		.52		.05		.07		.06		.13*		.01		.09	
F for ΔR ²	3.33*		155.09*		1.69		3.58		2.68*		16.28*		.47		17.52*	

^a Minority: member of a racial/ethnic minority group.

^b For emotion expression variables, $n = 182$.

* $p < .05$.

main effect for preschool (Wilks' Lambda = .34, $F(2, 176) = 170.78$, $p < .001$, $\eta^2 = .66$, power = .99). Univariate effects for observed emotions, as measured at a single time point in the fall of the preschool year, suggested more positive emotions at Kaleidoscope versus the comparison ($F(1, 177) = 155.20$, $p < .001$, $\eta^2 = .47$, power = .99), no significant difference in negative emotions ($F(1, 177) = 3.25$, $p = ns$, $\eta^2 = .02$, power = .77), and no significant effects of the covariates.

Finally, we used a repeated-measures MANCOVA to evaluate the impact of time (fall versus spring) and preschool type (arts-integrated versus traditional) on emotion regulation (see Table 2 for cell means and standard deviations). We included controls for child age, verbal ability, and family income-to-needs. Multivariate tests showed a significant main effect for preschool (Wilks' Lambda = .90, $F(2, 199) = 11.42$, $p < .001$, $\eta^2 = .10$, power = .99), and a significant interaction between time and preschool type (Wilks' Lambda = .89, $F(2, 199) = 12.59$, $p < .001$, $\eta^2 = .11$, power = .99). There was also a significant interaction between time and income-to-needs, suggesting that change over time in emotion regulation varied according to family income (Wilks' Lambda = .96, $F(2, 199) = 4.16$, $p < .05$, $\eta^2 = .04$, power = .73). There were no other significant main effects or overall interactions with preschool type.

Univariate tests showed significant effects of time by preschool type for both positive emotion regulation ($F(1, 200) = 16.79$, $p < .001$, $\eta^2 = .08$, power = .98) and negative emotion regulation ($F(1, 200) = 17.93$, $p < .001$, $\eta^2 = .08$, power = .99). Children attending the arts-integrated Head Start showed greater growth in positive and negative emotion regulation from fall to spring, compared with children attending the traditional Head Start. Univariate tests also showed significant effects of time by income-to-needs for positive emotion regulation ($F(1, 200) = 8.36$, $p < .01$, $\eta^2 = .04$, observed power = .82). Children whose families had lower income-to-needs ratios showed less growth in positive emotion regulation from fall to spring.

8. Discussion

The present study examines emotion expression and emotion regulation for low-income children attending an arts-integrated Head Start preschool. Emotion training is often interwoven into arts programming, and a seminal study of an experimental dance program demonstrated the potential benefits for Head Start preschoolers (Lobo & Winsler, 2006). Yet no previously published studies examine preschool emotions for children in an arts-integrated Head Start.

Settlement Music School's Kaleidoscope Preschool offered a unique opportunity to study the impact of the arts. Typical early

childhood programs include the arts for small parts of the day, primarily for classroom enrichment. At Kaleidoscope, the daily schedule includes music, dance, and visual arts classes, used to teach school readiness skills. We know of no other preschool that uses such a model of full integration of the arts to educate low-income children.

We chose to focus on low-income children because of the notable risks of poverty, as well as evidence of considerable within-group diversity. In our sample, approximately 65% of the families were poor, and 90% low-income. Additionally, 95% of the children were from racial/ethnic minority backgrounds. Children from racial/ethnic minority groups may face increased risks due to effects of institutionalized racism (Caughy et al., 2004; Simons et al., 2002). Yet few studies focus on their emotion regulation (Garner et al., 1994; Garner & Spears, 2000; Izard et al., 2002); none prior in the context of an arts-integrated preschool.

Children in this study who attended Kaleidoscope's arts-integrated Head Start did not differ from the comparison group on variables measured at the start of the year. Analyses revealed no significant differences for age, gender, racial/ethnic minority group status, family income-to-needs, verbal ability, or start-of-year emotion regulation. Nevertheless, children were not randomly assigned to preschool, and our analyses leave open the possibility that the samples differed on unmeasured variables. Thus, the results should be interpreted with caution.

8.1. Observations of emotion expression

Differential emotions theory holds that positive emotions facilitate engagement with learning (Abe & Izard, 1999b), and the present study examined observer ratings of interest, happiness, and pride for children attending the arts-integrated Head Start (Kaleidoscope). Consistent with study hypotheses, children showed a greater incidence of these positive emotions in music, dance, and visual arts classes as compared to regular early learning classes. The study also examined observer ratings of positive emotions for children in the arts-integrated Head Start versus one with a traditional curriculum. Results indicated that children in the arts-integrated program showed more interest, happiness, and pride compared to their peers.

The results suggest that arts programming relates to more positive emotions in school for young children at risk for educational difficulties. Izard (2002) contrasts the importance of inducing positive emotions with the dearth of prevention programs with this focus. Arts programming is a longstanding educational strategy that may be well suited for filling the gap. Children show natural interest in the arts, which often elicit feelings like happiness

and pride. The success experiences available through the arts may play a particularly important role for children with cognitive skill gaps (Darby & Catterall, 1994; Eisner, 1998). Brown et al.'s (2010) study of Kaleidoscope's arts-integrated program found that children with developmental delays showed school readiness growth equal to that of their typically functioning peers. A range of verbal and non-verbal options for acquiring and expressing knowledge may benefit the emotional experiences of children with language-based learning delays (Gregoire & Lupinetti, 2005).

The multiple modes of learning provided through the arts may also benefit the emotional experience of those whose linguistic traditions do not occupy a central position in mainstream education. This holds importance given the growing proportions of racial/ethnic minorities and non-native English speakers in this country (Hobbs & Stoops, 2002). Moreover, the arts hold a central position in the cultural traditions of most racial/ethnic minority groups: integrating the arts may create a bridge between home and school for children from these backgrounds, and facilitate their experience of interest, happiness, and pride (Allison & Rehm, 2007; Hall, 2007).

Whereas positive emotions encourage engagement and learning, DET suggests that a high frequency and intensity of negative emotions such as anger, fear, and sadness, interferes (Abe & Izard, 1999b). The present study compared observer ratings of anger, fear, and sadness, in arts versus early learning classes for children at Kaleidoscope, with the expectation that the arts classes would host fewer negative emotions. This expectation was not met, as there were no significant differences between expressed negative emotions in regular early learning and arts classes. Also, contrary to our expectations, when we compared observed negative emotions across the school day for children attending Kaleidoscope's arts-integrated Head Start to those attending the program with a traditional curriculum, we found no significant differences.

The results suggest that arts-integrated programming is not necessarily associated with decreased experience of negative emotions. Our lack of findings for negative emotions may relate to measurement issues. First, the present observations of emotions took place at the start of the year, and it is possible that observations at a later time point would differ. Second, we coded type of emotion but not intensity; arts classes at Kaleidoscope may have hosted equal incidence but lower intensity of negative emotions. Third, we measured the incidence of various emotions rather than the proportion of time showing negative versus positive. Izard (2002) suggests that programs should host a preponderance of positive emotions but also posits some benefits of negative emotions. Arts classes at Kaleidoscope may have allowed children to express their feelings while simultaneously learning to control and adaptively cope with them.

8.2. *Teacher ratings of emotion regulation*

Comparing emotion regulation at Kaleidoscope versus the alternative suggests that something about the arts-integrated programming offered an advantage. Whereas start-of-year emotion regulation did not differ significantly across the preschools, regression analyses and a repeated-measures multivariate analysis of covariance suggested that children at the arts-integrated program showed greater growth over the course of the year. The repeated-measures analysis, which compared emotion regulation at start-and end-of-year at the two preschools, showed a significant overall effect for school and a significant time by school interaction. Children at Kaleidoscope showed greater growth in positive and negative emotion regulation.

These results possibly could be explained by unmeasured start-of-year differences between the preschools. Nonetheless, the finding that Kaleidoscope's arts-integrated program related to

greater gains in emotion regulation matches study expectations. Experiences with the arts elicit a range of emotions, and may help children to understand connections between events and feelings, as well as practice appropriate strategies for emotion regulation (Peter, 2003). Moreover, critical components of emotion training programs such as the emotions-based prevention program (Izard et al., 2004, 2008), may be interwoven into arts classes. For example, music, dance, and visual arts classes may include training in labeling, expressing, and comparing intensities of emotions, identifying causes and consequences, and discussing ways to regulate. Although the present research does not distinguish between potential mechanisms associated with emotion regulation growth, it documents the potential for using the arts to promote social-emotional readiness to learn for young children at risk via economic disadvantage.

8.3. *Implications*

The opportunity to boost emotion regulation skills via arts enrichment holds importance in light of the critical challenges facing economically disadvantaged children, and our nation's investment in using early childhood education to promote their school success. Economic disadvantage places children at risk for both social-emotional and academic problems (Ackerman et al., 2004; Duncan & Brooks-Gunn, 1997, 2000; Evans, 2004). Head Start boosts school readiness for low-income children, but does not eliminate the achievement gap that separates them from their middle-income peers, or erase the impact of socioeconomic inequities on their emotional readiness to learn (Administration on Children, Youth and Families [ACYF], 2006; Raver et al., 2007). Compelling evidence links preschool emotions and emotion competence to elementary school academic achievement (Graziano et al., 2007; Raver et al., 2007; Trentacosta & Izard, 2007). Fully integrating the arts into education for low-income children could serve as a powerful tactic for equalizing opportunity.

The risks facing economically disadvantaged children should be considered alongside evidence of considerable within-group diversity that indicates the potential for children of all socioeconomic backgrounds to achieve social-emotional and academic competence. Just as many low-income families support children's development of emotion competence (Garner et al., 1994; Garner & Spears, 2000), so do many Head Start and related preschool programs. The present study demonstrates that, notwithstanding the recently developed emotion-centered prevention initiatives (e.g., EBP; Izard et al., 2004, 2008), some Head Starts have already embedded into their programming successful strategies for supporting social-emotional readiness to learn. Arts enrichment represents one such pedagogical tool that long has benefitted school readiness and perhaps could be used more fully to tackle existing early childhood educational challenges. Present results support this possibility by showing the advantages associated with the full integration of the arts employed by Settlement Music School's Kaleidoscope Preschool.

The emotion advantages associated with Kaleidoscope stand out because of the commonalities shared by this preschool and most Head Starts across the nation, including a basis in the Creative Curriculum (Dodge & Colker, 1992). Kaleidoscope differs from Head Start as usual because the preschool uses music, dance, and visual arts, as well as regular early learning classes to accomplish core curricular goals. This could be a useful model for other programs to emulate, particularly because it offers the possibility of promoting social-emotional readiness to learn without displacing other preschool components. Indeed, Brown et al. (2010) provided evidence that Kaleidoscope effectively uses arts classes not only to train artistic skills but also to develop skills in language, literacy, math, science, and social/cultural learning.

Moreover, children attending the Kaleidoscope program showed three times the growth in receptive vocabulary as their peers attending a traditional Head Start (Brown et al., 2010). Future studies might examine the relationship between emotional and other pre-academic advantages associated with arts integration, including the possibility that emotional benefits mediate growth in general school readiness. At present, the data on Kaleidoscope imply simply that arts integration can be accomplished in such a way that it benefits emotional as well as overall school readiness.

8.4. Limitations

Several limitations of the present research deserve mention. First, results showing an advantage of the arts for children's emotions and emotion regulation are specific to Settlement Music School's Kaleidoscope Preschool Arts Enrichment Program. The focus on Kaleidoscope is important, particularly because this is the only preschool we know of that uses the arts in such a full, structured, and intentional way to educate young children at risk. Still, the results may not apply to programs that use the arts in other ways. Kaleidoscope's model of arts integration is unique, and benefits may be linked to the intense, daily exposure to the arts, or to ways the credentialed artist teachers use music, dance, and visual arts classes to foster social-emotional growth as well as acquisition of other school readiness skills. Moreover, although similar to other Head Starts, including our comparison site, with regard to the teacher-child ratio for any given class period, Kaleidoscope differs in that children visit music, dance, and visual arts classes with respective arts teachers who take the place of an early learning teacher during those periods. These components could be difficult to replicate in most Head Start programs.

Additionally, the present research does not uncover how arts exposure might boost emotional functioning, and future research should focus on mechanisms. Winsler et al.'s (2011) study showing that Kindermusik may boost young children's self-regulation by increasing their use of private speech stands as a useful example of how studies might pinpoint means of effect. The present results suggest that future studies might examine potential benefits associated with the opportunities for negative emotion expression availed by arts activities. The benefits might apply especially to low-income children like those in the present study who tend to experience poverty-related stressors that engender negative emotions and tax regulatory capacities.

The at-risk nature of the present sample represents a point of strength. Yet the results may not generalize to other groups, including children from the majority socioeconomic or racial/ethnic group who do not face the same barriers to school success and may not show the same benefits of arts enrichment. Also, the age range of the present study was limited to three- to five-year-olds. Studies of this group matter particularly, given the importance of promoting social-emotional readiness to learn (Raver & Knitzer, 2002). Still, present findings may not apply to older children or adults, and future studies should examine other age groups.

The present study suffers from all of the limitations associated with correlational and quasi-experimental designs. The within-group comparisons of children's emotions in arts versus non-arts classes at Kaleidoscope combined with between-group comparisons of children attending Kaleidoscope versus a more traditional Head Start suggests the emotional benefits of the arts. Also, the short-term longitudinal design for the study of emotion regulation represents a point of strength. The significant interaction for program type by time makes a compelling case for greater growth in emotion regulation at Kaleidoscope, and controls for key demographic variables such as age and income-to-needs, as well as child verbal ability, reduces that chance that findings are attributable to child factors unique to the two preschools.

Still, children were not randomly assigned to the arts- versus non-arts-integrated preschools, and selection effects may have influenced the results. Indeed, findings of overall group differences rather than just time by preschool effects (or end-of-year differences) highlight this possibility. Unmeasured child characteristics such as parent education or musical experience may have driven enrollment at Kaleidoscope versus the alternative. Also, program components that differed beyond the use of arts enrichment may have influenced results. Furthermore, the number of children attending the comparison preschool was small, particularly relative to the number attending Kaleidoscope. Significant results suggest adequate power to detect effects. Nonetheless, future studies should include a larger comparison group. Moreover, although observers and teachers were blind to study hypotheses, their ratings could have been biased. Future research would benefit from multiple raters and measures for key variables.

True experimental designs with random assignment would be important for disentangling potential benefits of the arts from other factors that influence educational outcomes. Lobo and Winsler's (2006) study stands as an important example of how such designs might be used to study arts programming. In the Lobo and Winsler study, children attending Head Start were randomly assigned to an experimental dance program versus attention control group: Those in the dance program showed greater positive changes in social competence and internalizing and externalizing behaviors, as rated by parents and teachers, who were blind to study hypotheses.

In the absence of such robust experimental designs, future studies should include additional controls for sample and program characteristics and further pre- versus post-program comparisons to pinpoint the value added by the arts. Also, longer-term studies would be useful, particularly if they spanned across the transition to formal schooling. Such investigations would shed light on the extent to which arts-integrated preschool programming might influence children's social-emotional and academic outcomes in elementary school.

9. Conclusion

Despite limitations, the present study contributes to understanding of arts enrichment and preschool emotions for low-income children at risk for school problems. Efforts to close the achievement gap have highlighted the critical importance of children's social-emotional readiness to learn (Raver & Knitzer, 2002). Emotion expression and regulation stand out as the facets of emotional competence that matter most for preschool outcomes (Miller et al., 2006). Promoting positive emotions in school and building a skillset for emotion regulation is imperative for Head Start and other programs serving young, low-income children, who face risks in social-emotional as well as academic domains. No previously published studies focus on the emotional benefits of arts-integrated preschool programming for this population.

The present results indicate that arts programming relates to greater experience of positive emotions such as interest, happiness, and pride, and greater growth in emotion regulation across the school year. Differential emotions theory suggests that forming appropriate links between emotions, cognitions, and actions in preschool could have long-term implications for children's lives (Izard et al., 2002). We hope that the present findings of emotional benefits for low-income children attending Settlement Music School's Kaleidoscope Preschool Arts Enrichment Program will spark the interest of future researchers, practitioners, and policy-makers in the use of the arts to facilitate social-emotional readiness to learn for young children at risk.

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