

Original Research Paper

The Aesthetic Responses of Babies: Paintings That Captivate Their Interest

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Key Words: infants, aesthetic preferences, visual stimulation, brain development.

Abstract

The research reported here is phase two of a three-tier investigation. While infants looked at a variety of images, this phase focuses on their aesthetic preferences for abstracted and representational painting reproductions of landscapes, seascapes, still-life and portraits. Previous aesthetic preference research focused on children ages two and older, which has ultimately left infants unnoticed. Determining the aesthetic preferences of infants can help parents, child-care providers, early childhood art educators, and picture book illustrators to provide imagery that is aesthetically appealing to this particular audience. Because a stimulating environment (that includes visuals) is important for early brain development, providing infants with visually engaging imagery that they prefer could influence this process. Phase two of this research study has concluded that with this group of 115 children, 2 to 12 month old infants, when given a choice, preferred both abstracted and representational paintings, while 13 to 18 month old infants, when given a choice, preferred more representational paintings.

Introduction

The adult spectator is often allured by infants who take delight in looking at a variety of visual stimulation in their new world. Now, more than ever, our environment is saturated with a plethora of images that comprise our visual culture. With the economically-driven world that we currently live in, the manufacturers of toys, clothing and picture books are only too happy to accommodate the visual enjoyment of the infant. But what do the manufacturers of these items really know about infants? Are the images that are provided to babies really ones that they would choose if they had the opportunity to voice their opinion? When adult designers of early childhood settings assume knowledge of the interests of children they tend to use “colors and materials that are aesthetically pleasing to adults (not children)” (Read & Upington, 2009, p. 491). This concern is complicated further when considering the tendency of adults to limit the aesthetic world of early childhood settings to simplistic and stereotypical images, hence neglecting a richer tapestry of images.

Given the influence of the environment on the development of infants, and the value of developing the skills required to make sense of the complexity of images that confront us, it is important to consider the aesthetic preferences of infants (Piscitelli & Smith, 2009; Read

& Upington, 2009). Therefore, the research presented in this paper is an attempt to provide insight into their aesthetic world. When infants are presented with a variety of visual images (comprised of abstracted and representational paintings), which ones elicit an aesthetic preference? Before this question can be answered, we need to take a closer look at 'aesthetic preference' and what it means for very young children.

Theoretical Framework

Defining aesthetic preferences with regard to the young child

Infants grow physically, cognitively, socially, emotionally and linguistically at rapid speeds during the first year of life (Berk, 2005; Jenson, 2006). Because of this, when "babies are given opportunities to demonstrate their capabilities, the notion of the babies as an 'empty vessel' becomes a myth" (Kovach & Da Voseles, 2008, p. 21). Babies learn through their senses and they are quite capable of communicating through body language. This research argues that observant adults will be amazed with regard to the aesthetic responses of infants.

Young children's aesthetic responses are quite different from that of an adult because of differences in cognitive functioning. Adults, while viewing a work of art or anything that is visually engaging, are able to process that visual information on a reflective level. An infant, due to cognitive limitations, is not yet capable of doing this. Adults can verbalise why they find visual stimuli to be aesthetically pleasing, while an infant uses body language in the form of a smile, visual fixation, or reaching for the 'desired' stimuli. Therefore, an aesthetic response has two components, one is intellectual and the other is emotional (Freedman, 2003; Hurwitz, Madeja, & Katter, 2003).

During the postnatal period, the visual cortex is one of the first to mature (Bergen & Coscia, 2001). However, with regard to aesthetic response, the limbic system plays an important role because it is the seat of emotions (Cold, et al., 1998). The amygdala, which is part of the limbic system, is formed at birth. Therefore, infants can express emotions at an early age (Elliot, 1999). "The limbic cortex, where emotions are recognized or felt, matures during the 6 to 18 month-old period" (Bergen & Coscia, 2001, p. 28). The limbic system has a significant role in the "...development of aesthetic preferences and makes us able to attach ourselves emotionally to objects and people" (Tinmannsvik & Bjelland, 2009, p. 378). The limbic system is often referred to as the visceral brain (Heifetz, 1966). In keeping with this line of thinking, an individual can respond at the visceral level to an aesthetically pleasing image/object, "where the brain perceives and analyzes and the body reacts" (Tinmannsvik & Bjelland, 2009, p. 378). It is at this visceral level that infants respond aesthetically to a visual stimulus. But, this does not mean that adults don't operate at this level as well. They do. But, as noted earlier, adults are also able to engage in cognitive reflection. Bearing all of this in mind will help to better define what is meant by 'aesthetic preference' for this study.

The Merriam-Webster Dictionary (2010) defines aesthetic as, "responsive to or appreciative of what is pleasurable to the senses". The definition of preference is, "a special liking for one thing over another" (1997, p. 577). Applying this to an 'aesthetic preference' scenario, if an individual sees something that they really like more (this is a preference), and if this 'something' gives them enjoyment via the senses (i.e. taste, touch, smell, etc), then this is an aesthetic response. If we apply this line of thinking to infants, when they see something they like (a preference) and they have a sensory response by visually fixating upon it, reaching out to touch it, smiling at it, or any other body language that they can use to demonstrate that they like it, then this response is an aesthetic preference. Therefore, for this paper, the

definition of aesthetic preference is defined as a sensory response to something that is liked. It is a sense of pleasure that is triggered by viewing a pleasing image or object.

The recent research of Piscitelli and Smith (2009) at the Ipswich Art Gallery in Australia demonstrates that young children can have an aesthetic preference. In their research in a museum setting, Piscitelli and Smith observed infants and toddlers crawling toward an aesthetically appealing art object as their eyes were fixated upon it. Other infants were observed licking the art objects, for that multi-sensory aesthetic experience. According to Piscitelli and Smith's (2009) observations, the "data suggest that very young children can and do appreciate art and have aesthetic experiences in museum settings" (p. 14). Other researchers concur that children this young do indeed have aesthetic experiences (Abbs, 1987, 1988, 1989; Dissanyake, 2001; Lim, 2004; Pateman, 1991).

Prior research on aesthetic preferences has established that these begin at a very young age (Abbs, 1987, 1988, 1989; Pateman, 1991); "...newborns come into this world with decided preferences and motivations with natural predispositions for aesthetic engagement" (Dissanyake, 2001, pp. 335-336). These early years are the richest time for aesthetic development (Lim, 2004). There is a psychological and physical impact on development as a result of early sensory aesthetic experiences (Goldhawk, 1998), through which their "sensory channels are their primary source of learning" (Schiller, 1998, p. 52). The senses enable one to know the world by serving as a mediator. "Because real learning occurs during the interactive processes between body and environment, which Dewey calls an 'experience', a rich sensory awareness is a critical component for children's ways of knowing as real meaning-making" (Lim, 2004, p. 478).

According to Bourdieu (1984) and Anderson (2004), aesthetic preferences are not necessarily spontaneous, but are social constructions nurtured in various environments, such as the home, classroom, or childcare centre. While infants have aesthetic preferences, it is likely that these preferences will differ for children in countries around the world. This is due to the variety of visual stimuli that is a part of each indigenous cultural milieu (Anderson, 2004). Adults play a vital role in this process by surrounding children with an aesthetically pleasing environment (Abbs, 1987; Spodek, 1996; Wright, 2003). Displaying artwork in the environment of the child is important because it can help to stimulate their aesthetic responses (Cole, 1994; Epstein & Trimis, 2002; Eyestone-Finnegan, 2001; Piscitelli, 2009; Tarr, 2001). Hanging art works that are of interest to the child is important, as is the interaction of the adult, in naming, describing and identifying different characteristics found in the images (Goldhawk, 1998). Very young non-verbal children can benefit from these rich sensory experiences because it lays the groundwork for perceptual and cognitive development to occur, as well as recognition of cultural symbols, and language development (Douglas & Schwartz, 1981; Epstein & Trimis, 2002; Fox & Schirmacher, 2009; Herberholz & Hanson, 1990).

As already pointed out in the research of Piscitelli and Smith (2009), while infants may not yet be able to verbalise an opinion, their body language can demonstrate to an adult observer that they find an image aesthetically intriguing. Adults validate this response by being supportive while talking to the child about the artwork and their response to it. In this sense adults play a significant role in connecting children to art works in meaningful ways (Piscitelli & Smith, 2009). Dissanyake (2001) supports this interaction arguing that, "...early interactions are critical to an infant's later emotional, intellectual, psychosocial, and linguistic functioning..." (p. 340).

Gardner (1990) notes that when a child looks at art, she/he is equipped with basic skills to decode and create symbols. Nodelmann and Reimer (2003) further note that, children

become very proficient at interpreting pictures as opposed to words because our contemporary world is filled with visual stimuli. "In the postmodern world ... children may gain more information from images than from texts ... As a result ... children increasingly learn from the visual arts" (Freedman, 2003, p. 15). With the proliferation of visual imagery, art and early childhood educators and parents should provide environments that foster aesthetic engagement. Tarr (2001), and Piscitelli and Smith (2009) note the importance of decisions made about the selection of visuals placed in an environment for a young child.

Currently, there is only one study (Piscitelli & Smith, 2009) mentioned earlier that has been done with regard to aesthetics and infants in the field of early childhood art education. There are also studies that can be found in psychological research. To provide a beginning framework, the following discussion will begin with aesthetic preference studies in art education that have been done with toddlers who are slightly older than infants. Even though these children are slightly older, the research findings might provide helpful clues to our understanding about the 'aesthetic preferences' of infants. This discussion will be followed with a review of the psychological research where infants have participated.

Aesthetic preferences of young children – art education studies

In the world of art education, much of the research regarding children's aesthetic preference responses has indicated differentiations between the child and adult responses, and that the responses tend to follow a developmental sequence. As noted by Piscitelli and Smith (2009), theorists have indicated that aesthetic development involves a progression that begins with a more visceral response of liking and disliking and eventually culminates in a more sophisticated and knowledgeable response. DeSantis and Housen (2009) concur that for naïve viewers, personal emotions influence judgments about liking or disliking works of art. This can be the case for both adult and child viewers:

This visceral level of aesthetic experience is a mere sensory coupling with a work of art, about which the viewer may know nothing. It is only the first step toward developing an understanding of art and the much richer aesthetic experience that comes with depth of knowledge (Freedman, 2003, p. 26)

Therefore, while many adults may react to an art work in a visceral way, the difference in their response, when compared to a young child, is that an adult has the cognitive capability to acquire a depth of knowledge and to go beyond this visceral level to a more contemplative introspective response. For a very young child with limited cognitive capabilities, attaining this type of reflective capability would be a great challenge. Therefore, young children respond to art in a naïve, visceral kind of way. Of course, responses will most likely change as the child has more experiences in viewing and talking about art as they mature.

That said, here are the aesthetic preference characteristics of young children that are supported by research. Children, ages two to five, enjoy art works with bright colours (Gardner, 1982; Kerlavage, 1995; Parsons, 1987; Taunton, 1983). They also prefer both abstracted and representational paintings, with an edge toward more abstracted (Gardner, 1982; McGhee & Dzuiban, 1993, 1994). Studies in perception support this. Children at earlier levels of development tend to respond favourably to the more complex shapes found in abstracted art work (Thomas, 1966; Wohwill, 1975). However, more recent investigations suggest that brain hemispheres produce different aesthetic choices, "...the left prefers the known (representational imagery) while the right prefers the novel and unusual (abstracted imagery)" (Strachan, 2000). With this in mind, it could be speculated that the population of

children in the previously mentioned studies were more prone to using the right hemisphere of the brain.

Young children also enjoy paintings and objects that are gold, silver or shiny (Danko-McGhee, 2006; Stockrocki, 1984). Piscitelli and Smith (2009) found this preference to be true with infants as well. Subject matter that portrays real life associations (i.e., things that children are familiar with), imagery that is not frightening, and that includes small children and animals, are additional aesthetic preference criteria for young children (Parsons, 1987; Danko-McGhee, 2000; Danko-McGhee, 2006; Kerlavage, 1995).

As already noted, little research has been done with regard to children younger than two years of age in the world of art education and the art curriculum. However, the research executed in the area of psychology with regard to aesthetic preferences can provide us with further clues about infants.

Aesthetic preferences of young children – psychological studies

Studies show that as soon as nine minutes after birth, babies prefer to look at pictures that most resemble human faces (Johnson, Dziurawiec, Ellis, & Morton, 1991). Around one to four months, sensory processing improves. During this time, infants are able to visually track an object; show a preference for a family member; gaze at an object; and demonstrate interest in the environment (Kovach & Da Ros-Voseles, 2008). Such research has supported claims that it is important for adults to engage the child in sensory stimulation in order to facilitate visual development and to promote neuron connections in the brain (Fox & Schirmacher, 2009; McKenzie & Day, 1987).

Around two months of age, there are further changes in perceptual behaviour (Haith, 1978). At this time, infants can discriminate between a variety of drawings of the human face that include a realistically rendered face, a symmetrical but scrambled face, and an asymmetrical face. In this selection, two-month old infants preferred the realistic face (Maurer & Barrera, 1981).

The human face has been found to be more interesting to infants than geometric patterns (DeCasper & Fifer, 1980; Fantz, 1966). Earlier research by Fantz (1963) found that while babies looked the longest at faces, a high contrast black and white schematic drawing of a face was more appealing to them. In a review of infant visual response research, Atkinson (2000) concludes that images of human faces tend to captivate the attention of infants the most.

While some of these earlier studies have been criticized for using racially biased visuals, the more recent investigations have endeavoured to avoid this by using pictures of faces from various ethnic groups (Liu, et al., 2007).

The aforementioned studies used preferential looking, dwell time and reaching to determine the child's preference for a visual stimulus. While there is an overabundance of research that utilises these attention mechanisms, only the research that is relevant to the present investigation will be discussed here.

Methods of determining the aesthetic preferences of infants

Preferential looking

Prior to the child being able to speak, one can surmise the kind of thinking that the infant is engaged in by observing behaviour (DeSantis & Housen, 2009). When studying the aesthetic choices of infants, preferential looking is a method that is most widely used (Atkinson, 2000). Fantz, Ordy, and Udelf (1962) introduced this method and Teller (1979) has since made improvements upon the procedure and identified it as forced-choice preferential looking. Two visual stimuli are positioned on a screen that is placed in front of the infant. The child views the images as the researcher observes from behind the screen. Another researcher, who is on the same side of the screen as the child, controls the positioning of the visual stimuli so that the researcher behind the screen is not aware of which side each of the visual stimuli is located. Using a peephole, the researcher behind the screen observes the child fixate upon a preferred stimulus and then a blind decision or forced-choice is made. The observer reads body language, eye movements and head movements as additional indicators that the child prefers a particular image.

Dwell time and reaching

Fixation or dwell time can be used as another indicator for an aesthetic preference for a stimulus (Atkinson, 2000). The child is capable of fixating or dwelling on a single target six weeks after birth (Bronson, 1990). By six months, infants are able to vary their fixation between varieties of target stimuli.

Infants often reach for the preferred visual by four months of age (Atkinson, 2000; Claus von Hofsten, 1982). As they fixate on visual stimuli, the child's hand often reaches out to touch it (Bower, 1976; McDonnell, 1975). Direct observations of infants and their fixation behaviours have been found to be a useful method when studying visual preferences (Atkinson, 2000).

Relating previous infant research to the present study

Because two-month-old infants are able to fixate on a visual target (Amigo, 1972; Bronson, 1974, 1990; Pamelee & Sigman, 1976), the present research investigation began with two month old infants and included children up to eighteen months of age. Despite the fact that previous research has already indicated that faces, as the visual stimuli, are appealing to infants, none of the studies used painting reproductions of other subject matter, even though it is recommended that young children be surrounded by art works (Douglas & Schwartz, 1981; Epstein & Trimis, 2002; Fox & Schirmacher, 2009; Goldhawk, 1998; Herberholz & Hanson, 1990). Psychologists, and not art educators, have conducted most of these studies in this age group. Since an infant's world is bombarded today by a variety of visual imagery, children's preferences may be changing as early as two months based on the visual symbols they are coming into contact with in the general cultural milieu.

As noted earlier, environments for infants are designed with the aesthetic eye of an adult. Nurseries are often filled with a visual bombardment that includes stereotyped symbols and imagery. They often favour colouring book or cartoon images with dark outlines and bold colours (Tarr, 2001). By providing these types of environments, there is an assumption that children are not worthy of being surrounded by "rich and diverse images and artefacts", e.g. paintings, photographs, drawings, and sculptures (Tarr, 2001, p. 35). Of course, these are images that adults think babies will like or they are images that the adult likes. Tarr (2001) encourages educators and parents to design environments with the child's aesthetic in mind.

Considering the aesthetic preferences of the infant is important because they spend much time in the environment that is prepared for them. According to Stephens (1999) and Jensen (2006), environmental factors influence 75% of the brain during the period of birth to seven years. Providing a balance of sensory stimulation that is sensitive to the cues and signals of the child is extremely important (Goldhawk, 1998).

Bearing in mind that the aesthetic preference research with two and three year old children concluded that they preferred more abstracted paintings; that the psychological research concluded that the human face is aesthetically appealing to infants; and that aesthetic preferences are culturally constructed, the research questions that guided the present study are:

1. When given a choice of abstracted or representational paintings as the visual stimuli, will more than 60% of infants prefer a particular kind of image in each picture pair, in this case, abstracted or representational?
2. When given a choice of abstracted and representational paintings as the visual stimulus, will more than 60% of infants prefer paintings of faces when compared to other subject matter?
3. Will country of origin impact the aesthetic preferences of infants?

Methodology

Participants

During Fall 2008, a diverse sample of 115 infants (59 males and 56 females) was randomly selected from early childhood centres in a mid-western state (n=22) and also additional selected sites around the world that included Australia (n=29), New Zealand (n=24), Romania (n=20), and England (n=20). Childcare centres were provided with a synopsis of the research and how it would be carried out. The ones who indicated an interest in participating were included in the study.

Children in all countries were two to eighteen months, with a mean of 12.83 months and a SD of 6.42. The mean age for each country include the following: U.S.=12.56 months; Australia = 13.50 months; New Zealand = 13.40 months, Romania = 12.21 months; and England = 12.10 months. Overall, the number of children in each age band is as follows: 2 to 4 months (n=6); 5 to 8 months (n=15); 9 to 12 months (n=29); 13 to 18 months (n=65).

Infants from the United States were from lower middle to middle class families. Infants in England, Australia and New Zealand came from middle to upper middle class university communities. Romanian infants were from an economically deprived Romani community. The Romani preserve many aspects of the same culture, which has origins in India. They speak various dialects of the same culture, and share a similar genetic makeup (Hancock, 2002). Unlike the children in other countries, the Romani children were not exposed to any books, including picture books. Parents also expressed that there were no visuals on the walls of their home. However, many of the children had exposure to images on television, as did most of the children in the other countries. Overall, 57% of parents indicated that their child watched television.

It was believed that working with babies from various countries and cultural milieu would provide a more diverse sample. As Eisner (2002) notes, "...frames of reference make a huge difference in what we see" (p. 85). Everyone's life experiences are different. While infants have had a limited amount of world experiences, each has been provided with a different environment, which may have an impact upon their aesthetic preferences.

Presentation of the visual stimuli to the infants

The research presented in this paper is only a small component of a larger research endeavour that included three phases, each displaying different visual images to the infants. In phase one, infants were shown a variety of faces, i.e. a photograph of a baby (various races were shown depending upon the race of the child viewing the images), a colourful abstracted painting of a baby by a contemporary female artist, a black and white schematic drawing of a baby used in the Fantz (1966) study, and a cartoon character, Dora the Explorer, a Latina image of a girl created by a contemporary female artist. In this phase of the research study, Dora the Explorer was found to be a favourite image for two to eighteen month old infants (Danko-McGhee, 2010).

In the second phase of the research, which is being reported in this paper, infants were shown a variety of painting reproductions. A team of art educators and historians carefully chose the paired eighteen 11-inch by 14-inch painting reproductions that were on sturdy card stock. The paintings were all the same size in order to control this extraneous variable. In order to further control the size variable, the same vendor was used to purchase all of the painting reproductions. The researcher realises that the use of one vendor in order to control the size of the paintings could impose a bias as choices were limited to what images the vendor had available. Therefore this is a limitation of the study.

The pairing system used for the paintings was an attempt to carefully match them according to colour and subject matter, with one painting in each pair being more non-representational or abstracted (bordered on being unidentifiable) and the other being more representational (looking realistic or almost photograph-like). These painting reproductions are all done by Western male artists, which is problematic and may pose another limitation or bias in the research, but there are several reasons for using them:

1. These works were used in earlier studies with older children (ages 2 to 12) and found to be discriminating with regard to age differences and aesthetic preferences (McGhee, 2000).
2. In order to control extraneous variables, the reproductions were selected more for their size, subject matter and colour instead of when and where they were created and by whom. Salkind and Salkind (1973) criticised previous aesthetic studies for their lack of control of subject matter. Rogers (1995) suggests that, "Subject matter preferred by males or females or subject matter that may appeal to both are considerations to which both researchers and designers must attend" (p. 12). According to the research of McNiff (1982), and Jakkobsdottir, Krey and Sales (1994), the following guidelines in selecting the painting reproductions for this study with regard to gender differences were considered: females tend to prefer images of people, plants and animals; female subjects; and peaceful scenery. Male aesthetic preferences include action, male subjects, and images of suspense, danger and rescue. More recently, Fox and Schirmacher (2009), suggest that when selecting art work for young children, "Appropriate content includes children, families, pets, animals, familiar objects, actions, and expressions" (p. 143). Therefore, the selected nine picture pairs included a variety of images that would be

familiar to infants and their environment: landscapes, seascapes, still-life, portraits that included males and females, one of which was a woman of colour, and images of babies. Attention was focused on these subject matter categories and not on the gender of the artist or the date the works were executed. This is because abstracted and representational subject matter was an important variable to consider in this research.

3. As noted earlier, the images used in phase two were in addition to more diverse and contemporary images (from different genres, i.e. photographs, drawings, paintings, cartoons, etc.) used in phase one. It was the intent of the author to determine which faces were of interest to infants in the first phase, then to determine which type of paintings were preferred in the second phase. The preferred visuals from the first two phases of the research will then be used in the third phase of the study, which is currently being conducted. With a total of 50 visuals and 25 paired combinations in all three phases of the study, it was not considered to be feasible to show all of them in one sitting with infants who have short attention spans. Hence, three separate viewing phases were developed. Since the forced-choice method works best for this age group, showing two visuals at a time was used with a limited amount of visuals for each phase of the study.
4. The author was using these assorted images (faces and a variety of paintings) as a first attempt to find out what babies prefer. This is exploratory research because very little work has been done in this area with this age group. The author believes that with the plethora of imagery currently available in our world, there will always be some bias in selecting visuals for research purposes, which is almost impossible to avoid.
5. It should be noted that this paper does include artworks that are found in museums. It is current thought that, "Visual culture often involves contested boundaries between traditional and new visual forms, as well as including painting and sculpture, computer graphics, fashion design, architecture, television, comics, and cartoons, etc." (Freedman, 2003, p. 16). The first phase of the study included non-traditional images, some of which were selected from the mass media and phase two included a more traditional art form, paintings. All are 'visual culture'.

Set-up of the display of visuals

A 20"x30" folded foam-core black screen was the format used to display the painting reproductions to the child. The peephole for viewing the infant was in the centre and 12" from the bottom edge of the screen. It was a ½" square. The screen was placed in a quiet corner of the childcare centre where there were no distractions from the other children.

Velcro strips were placed on the black folded screen and on the back of each painting reproduction. The pictures were placed on the screen in pairs at two locations that were at the eye level of the child and at either side of the midline of the folded screen. There were nine pairs that were presented to each of the subjects as follows:

1. <i>Charing Cross Bridge</i> by Andre Derain, 1906	1. <i>Charing Cross Bridge</i> by Camille Pissarro, 1890
2. <i>C&O</i> by Franz Kline, 1958.	2. <i>Fruit & Baltimore Oriole</i> by Wagguno, 1858
3. <i>Berkeley #2</i> by Richard Diebenkorn, 1955	3. <i>Midsummer Twilight</i> by Leroy Metcalf, 1890
4. <i>La Negresse</i> by Henri Matisse, 1952	4. <i>Woman with Peonies</i> by Federic Bazille, 1870
5. <i>Head of Christ</i> by Emil Nolde, 1909	5. <i>The Veil of Veronica</i> by Domenico Fetti, 1618
6. <i>Improvisation</i> by Wassily Kandinsky, 1913	6. <i>Ships in Distress</i> by Ludolf Bakhuisen, 1667
7. <i>Baby</i> by Gustav Klimt, 1917	7. <i>The Cradle</i> by Claude Monet, 1867
8. <i>Mount Katahdin</i> by Marsden Hartly, 1942	8. <i>A View of the Mountain Pass</i> by Thomas, Cole, 1839
9. <i>The Lovers</i> by Pablo Picasso, 1923	9. <i>Ill-Matched Lovers</i> by Quentin Massys, 1520

Even though the pictures were displayed in the order described above, they were randomly placed on the screen so that an abstracted or representational painting was not always on the same side of the board. For example, abstracted paintings were not always placed on the left side of the screen. Doing this helped to alleviate a potential problem of the child always favouring a particular side without really looking at the painting. Children viewed all eighteen images in a quiet location and sat on the lap of a child-care provider or the parent at a distance of 40cm from the screen.

The researcher stood behind the screen that displayed these picture pairs. The research observer did not know which picture was placed on which side of the display board because an assistant researcher placed these into position. The observer had to make a 'blind decision' or 'forced choice' as to which side the infant preferred. Eye movements, head movements, pointing, facial expressions, and even pulling the favoured picture off of the display screen were some of the cues that helped to determine the choice of the child. The observation period was under the control of the researcher and did not exceed 10 seconds for each picture pair.

Figure 1. Infant looking at images on a black screen



Collecting observational data from the infant

The baby's responses to the painting reproductions were determined by visual fixation, dwell time, and any other physical response, i.e. a smile, giggle, pointing, etc. The baby's visual fixation was observed as each painting pair was displayed. The images that provoked a visual fixation of a 10 second time frame (determined by the use of a stop watch) were the ones determined to be of interest to the baby. In addition to the visual fixation, other physical responses noted above were observed as well.

When children displayed behaviour that they did not want to take part, the data collection was stopped and the child was given an opportunity at another time to view the pictures. No child was ever forced to participate if they chose not to do so. The aesthetic preferences of each child were recorded on a survey form prepared by the principle investigator. The age, gender and ethnicity of each child were recorded along with observational notes about head/eye movement and body language.

Data Analysis and Interpretation

Bearing in mind that the first research question asks if more than 60% of infants will prefer abstracted or representational paintings, a one-tail test for proportion at the .05 level was done for each of the nine painting pairs. The hypotheses for each painting pair were:

- H0: $p \leq .60$
- H1: $p \geq .60$

where p = proportion of infants preferring abstracted or representational paintings.

Because there were such a small number of children in each age group, the data analysis is presented in two age bands: 2 to 12 month old children and 13 to 18 month old children. Table I indicates that the z-scores were significant for painting pairs #1, 2, 6, and 7. For pair #1, the calculated z-score was 4.35. Therefore, the proportion of infants preferring the abstracted painting is more than 60%. For pair #2, a z-score of 2.90 was calculated. The proportion of infants preferring the representational painting is more than 60%.

For pair #6, a z-score of 2.61 was calculated and the proportion of children preferring the abstracted painting is more than 60%. Painting pair #7 yielded a z-score of 2.17. and was significant. The proportion of infants preferring the representational painting is greater than 60%.

Other painting pairs yielded z-scores that were not significant which indicates that the proportion of children preferring the abstracted or representational painting in these pairs was less than 60%.

Table 1. One Tail Test for Proportion (at 60%) to Determine Aesthetic Preferences of Infants, ages 2 to 12 Months, for Abstracted and Representational Paintings

Painting Pairs	Sample Proportion Preferring a Particular Painting	Z-Score at .05 level
Charing Cross vs. Charing Cross	.90 .10	4.35*
C&O vs. Fruit w/ Oriole	.20 .80	2.90*
Berkeley vs. Midsummer Twilight	.47 .53	-1.01
La Negresse vs. Woman w/ Peonies	.35 .65	.725
Head of Christ vs. Veil of Veronica	.41 .59	-.145
Improvisation vs. Ship in Distress	.78 .22	2.61*
Cradle (Monet) vs. Baby (Klimt)	.75 .25	2.17*
Mt. Katahdin vs. View of Mt. Pass	.33 .67	1.01
Lovers vs. Ill-Matched Lovers	.39 .61	.145

*Significant at .05 level

As indicated in Table II, infants, ages 13 to 18 months old (n=64) had the following aesthetic preferences. The proportion of infants preferring the representational painting in pairs #2, 7, and 8 is more than 60%, while the proportion of infants preferring the abstracted painting in pair #1 is more than 60%. The remaining painting pairs yielded z-scores that were not significant.

Table 2. One Tail Test for Proportion (at 60%) to Determine Aesthetic Preferences of infants, ages 13 to 18 months, for Abstracted and Representational Paintings (n= 64)

Painting Pairs	Sample Proportion Preferring a Particular Painting	Z-Score at .05 level
Charing Cross vs. Charing Cross	.70 .30	1.64*
C&O vs. Fruit w/ Oriole	.14 .86	4.26*
Berkeley vs. Midsummer Twilight	.59 .41	-.164
La Negresse vs. Woman w/ Peonies	.64 .36	.656
Head of Christ vs. Veil of Veronica	.39 .61	.164
Improvisation vs. Ship in Distress	.64 .36	.656
Cradle (Monet) vs. Baby (Klimt)	.78 .22	2.95*
Mt. Katahdin vs. View of Mt. Pass	.27 .73	2.13*
Lovers vs. Ill-Matched Lovers	.36 .64	.656

*Significant at .05 level

It should be pointed out that none of the z-scores for painting pairs that reached significance included faces.

Cross-cultural differences and similarities

To determine if country of origin has an impact upon aesthetic preferences, chi-squares were calculated (with 4 degrees of freedom at the .05 level) for each picture pair. These can be found in Table 3. The following results were obtained for children, ages 2 to 12 months (n=51). Country of origin does have an impact upon aesthetic preferences for picture pair #3, 6, and 7.

For pair #3 *Berkeley* paired with *Midsummer Twilight* resulted in a chi square of 10.06 and is significant. Looking at the data, infants in the United States had a stronger preference for the abstracted painting in comparison to infants in the other countries.

For pair #5, *Head of Christ* paired with *Veil of Veronica* resulted in a chi square of 8.98 and is significant. Looking at the data, infants in the United States had a stronger preference for the abstracted painting in comparison to infants in other countries.

For pair #6, *Improvisation*, when compared to *Ships in Distress*, yielded a chi square of 21.68. It was significant. Looking at the data, infants in the United States had a stronger preference for the abstracted painting. For pair #7, a chi square of 11.27 was the result of the pairing of *Baby by Klimt* and *The Cradle* by Monet. It was significant. The data reveals that United States infants had a stronger preference for the representational painting. Country of origin did not have an impact upon aesthetic preferences for the other painting pairs.

Table 3. Chi Squares for Country of Origin and Favoured Paintings for Children, Ages 2 to 12 Months (n= 51)

Painting Pairs	United States	Romania	England	Australia	New Zealand	X2
#1 - Charing Cross Bridge by Derain (Abstract)	fe=10.58 fo=10	fe=6.9 fo=8	fe=10.12 fo=10	fe=10.12 fo=10	fe=8.28 fo=9	3.42
Charing Cross Bridge by Pissaro (Realistic)	fe=1.15 fo=2	fe=.75 fo=0	fe=1.1 fo=2	fe=1.1 fo=1	fe=.9 fo=0	
#2 – C&O (Abstract)	fe=2.3 fo=1	fe=1.5 fo=3	fe=2.2 fo=2	fe=2.2 fo=3	fe=1.8 fo=1	3.38
Fruit with Baltimore Oriole (Realistic)	fe=9.43 fo=11	fe=6.15 fo=5	fe=9.02 fo=9	fe=9.02 fo=8	fe=7.38 fo=8	
#3 – Berkeley (Abstract)	fe=5.52 fo=10	fe=3.6 fo=4	fe=5.28 fo=3	fe=5.28 fo=5	fe=.95 fo=2	10.06*
Midsummer Twilight (Realistic)	fe=6.21 fo=2	fe=4.05 fo=4	fe=5.94 fo=8	fe=5.94 fo=6	fe=4.86 fo=7	

#4 – La Negresse (Abstract)	fe=4.14 fo=3	fe=2.7 fo=4	fe=3.96 fo=4	fe=3.96 fo=6	fe=3.24 fo=1	5.41
Woman with Peonies (Realistic)	fe=7.59 fo=9	fe=4.95 fo=4	fe=7.26 fo=7	fe=7.26 fo=5	fe=5.94 fo=8	
#5 – Head of Christ (Abstract)	fe=4.83 fo=9	fe=3.15 fo=2	fe=4.62 fo=5	fe=4.62 fo=3	fe=3.78 fo=2	8.98*
Veil of Veronica (Realistic)	fe=6.9 fo=3	fe=4.5 fo=6	fe=6.6 fo=6	fe=6.6 fo=8	fe=5.4 fo=7	
#6 – Improvisation (Abstract)	fe=9.2 fo=12	fe=6.0 fo=6	fe=8.8 fo=9	fe=2.2 fo=8	fe=7.2 fo=5	21.68*
Ships in Distress (Realistic)	fe=2.53 fo=0	fe=1.65 fo=2	fe=2.42 fo=2	fe=2.42 fo=3	fe=1.98 fo=4	
#7 – Baby by Klimt (Abstract)	fe=2.99 fo=0	fe=1.95 fo=2	fe=2.86 fo=5	fe=2.86 fo=2	fe=2.34 fo=2	11.27*
Cradle by Monet (Realistic)	fe=8.74 fo=12	fe=5.7 fo=6	fe=8.36 fo=6	fe=8.36 fo=8	fe=6.84 fo=7	
#8 – Mount Katahdin (Abstract)	fe=3.91 fo=4	fe=2.55 fo=4	fe=3.74 fo=4	fe=3.74 fo=2	fe=3.06 fo=3	3.80
View of Mt. Pass (Realistic)	fe=7.82 fo=8	fe=5.1 fo=4	fe=11.22 fo=7	fe=7.48 fo=9	fe=6.12 fo=6	
#9 – The Lovers (Abstract)	fe=4.6 fo=6	fe=3.0 fo=2	fe=4.4 fo=3	fe=4.4 fo=5	fe=3.6 fo=4	2.26
Ill-Matched Lovers (Realistic)	fe=7.13 fo=6	fe=4.65 fo=6	fe=6.82 fo=8	fe=6.82 fo=6	fe=5.58 fo=5	

*Significant at .05 level

Table 4 displays the results that were obtained for children, ages 13 to 18 months (n=64). Country of origin does have an impact on aesthetic preferences for picture pairs #1, 2, 3, 5, 6, and 7. For picture pair #1, *The Charing Cross Bridge* paintings, the chi square is 11.26 and is significant. According to the data, infants in Australia and New Zealand have a stronger preference for the abstracted painting for this painting pair. For pair #2, *C&O* paired with *Fruit and Baltimore Oriole*, the chi square is 7.81 and is significant. According to the data, infants in Australia and New Zealand have a stronger preference for the representational painting for this painting pair. For picture pair #3, *Berkeley* paired with *Midsummer Twilight* resulted in a chi square of 8.71 and is significant. According to the data, infants in New Zealand have a strong preference for the abstracted painting in comparison to infants in the other countries. Infants in Australia have a stronger preference for the representational painting. For picture pair #5, the pairing of *Head of Christ* and *Veil of Veronica* yielded a chi square of 9.15. It was significant. According to the data, infants in Australia preferred the representational painting more than infants in other countries. For picture pair #6, *Improvisation* when compared to *Ships in Distress* yielded a chi square of 8.63. It was significant. Infants in the United States, Australia and Romania had a stronger preference for the abstracted painting, while infants in New Zealand preferred the representational painting. For picture pair #7, A chi square of 11.76 was the result of the pairing of *Baby* by Klimt and *The Cradle* by Monet. It was significant. The data indicates that infants in the Australia and New Zealand had a stronger preference for the representational painting. The chi squares for the other painting pairs were not significant indicating that country of origin did not have an impact upon aesthetic preferences.

Table 4. Chi Squares for Country of Origin and Favoured Paintings for Children, Ages 13 to 18 Months (n= 64)

Painting Pairs	United States	Romania	England	Australia	New Zealand	X2
#1 - Charing Cross Bridge by Derain (Abstract)	Fe=7.2 fo=9	fe=8.55 fo=6	fe=6.3 fo=3	fe=12.6 fo=14	fe=10.35 fo=12	11.26*
Charing Cross Bridge by Pissaro (Realistic)	fe=3.04 fo=1	fe=3.61 fo=6	fe=2.66 fo=6	fe=5.32 fo=4	fe=4.37 fo=3	
#2 – C&O (Abstract)	Fe=1.44 fo=4	fe=1.71 fo=2	fe=1.26 fo=0	fe=2.52 fo=2	fe=2.07 fo=1	7.81*
Fruit with Baltimore Oriole (Realistic)	fe=8.8 fo=6	fe=10.45 fo=10	fe=7.7 fo=9	fe=15.4 fo=16	fe=12.65 fo=14	
#3 – Berkeley (Abstract)	Fe=6.08 fo=5	fe=7.22 fo=8	fe=5.32 fo=6	fe=10.64 fo=6	fe=8.74 fo=13	8.71*
Midsummer Twilight (Realistic)	fe=4.16 fo=5	fe=4.94 fo=4	fe=3.64 fo=3	fe=7.28 fo=12	fe=5.98 fo=2	

#4 – La Negresse (Abstract)	Fe=6.56 fo=5	fe=7.79 fo=7	fe=5.74 fo=5	fe=11.48 fo=14	fe=9.43 fo=10	2.83
Woman with Peonies (Realistic)	fe=3.68 fo=5	fe=4.37 fo=5	fe=3.22 fo=4	fe=6.44 fo=4	fe=5.29 fo=5	
#5 – Head of Christ (Abstract)	Fe=4.0 fo=8	fe=4.75 fo=3	fe=3.5 fo=4	fe=7.0 fo=5	fe=5.75 fo=5	9.15*
Veil of Veronica (Realistic)	fe=6.24 fo=2	fe=7.41 fo=9	fe=5.46 fo=5	fe=10.92 fo=13	fe=8.97 fo=10	
#6 – Improvisation (Abstract)	Fe=6.56 fo=9	fe=7.79 fo=9	fe=5.74 fo=7	fe=11.48 fo=10	fe=9.43 fo=6	8.63*
Ships in Distress (Realistic)	fe=3.68 fo=1	fe=4.37 fo=3	fe=3.22 fo=2	fe=6.44 fo=8	fe=5.29 fo=9	
#7 – Baby by Klimt (Abstract)	Fe=2.24 fo=6	fe=2.66 fo=3	fe=1.96 fo=0	fe=3.92 fo=3	fe=3.22 fo=2	11.76*
Cradle by Monet (Realistic)	fe=8.0 fo=4	fe=9.5 fo=9	fe=7.0 fo=9	fe=14 fo=15	fe=11.5 fo=13	
#8 – Mount Katahdin Abstract)	Fe=2.72 fo=4	fe=3.23 fo=4	fe=2.38 fo=1	fe=4.76 fo=4	fe=3.91 fo=4	2.47
View of Mt. Pass(Realistic)	fe=7.52 fo=6	fe=8.93 fo=8	fe=6.58 fo=8	fe=13.16 fo=14	fe=10.81 fo=11	
#9 – The Lovers (Abstract)	Fe=3.68 fo=6	fe=4.37 fo=4	fe=3.22 fo=3	fe=6.44 fo=5	fe=5.29 fo=5	3.16
Ill-Matched Lovers (Realistic)	fe=6.56 fo=4	fe=7.79 fo=8	fe=5.74 fo=6	fe=11.48 fo=13	fe=9.43 fo=10	

*Significant at .05 level

Discussion

The intent of phase two of this investigation was to determine infants' aesthetic preferences for abstracted and representational paintings. The following discussion is oriented around the three research questions.

Preferences for abstracted or representational paintings

In response to the first research question, this sample of children, ages 2 to 12 months, preferred both representational and abstracted paintings. This finding does not support earlier research that used pictures of faces as the stimuli. In this case, realistic as opposed to scrambled (abstracted) faces were preferred by infants (Maurer & Barrera, 1981). What is interesting to note, out of all the paintings that were selected as favourites, infants did not choose portraits. This is especially noteworthy because the earlier psychological research indicated that visuals of faces are a top choice for infants, especially in this age band.

When given a choice, 13 to 18 months old infants in this sample preferred more representational paintings. This might suggest that this aesthetic change in preference for these older infants could be the result of developmental characteristics. Research suggests that the cortical circuitry develops very quickly during the first year of life (Johnson, Dziurawiec, Ellis, and Morton, 1991). Additionally, development "occurs in a relatively orderly sequence, with later abilities, skills and knowledge building on those already acquired" (Goldhawk, 1998, p. 2). With this in mind, the data is suggestive that development and/or longer exposure to environmental influences may play a part here. This warrants further investigation.

The paintings, *Charing Cross Bridge* (the abstracted painting) and Monet's *The Cradle* (representational painting) were favourites in previous research with two to four year old children as they were for two to 18 month old infants in the present study. Colour may be an aesthetic criterion here due to the bold colour palette of Derain's *Charing Cross Bridge*. But, familiar subject matter, the baby in Monet's *The Cradle*, appears to be an aesthetic criteria as well. The aesthetic characteristics of infants are very similar to the two to four year old age children that were discussed earlier in this paper.

It should be pointed out that infants displayed eagerness and an attentiveness to view the paintings. This behaviour was not really observed when infants viewed faces of children in phase one of the study. Perhaps this is because in a typical nursery, there are more pictures of children instead of 'fine art reproductions' of paintings. Therefore, children may have viewed the paintings to be novel. Nevertheless, the study does suggest that infants in this sample enjoyed paintings and perhaps they should be displayed more often in the environment of infants. It will be recalled that earlier in this paper, several authors have suggested this (i.e. Douglas & Schwartz, 1981; Epstein & Trimis, 2002; Fox & Schirmacher, 2009; Goldhawk, 1998; Herberholz & Hanson, 1990; Tarr, 2001).

Faces vs. other subject matter

In response to the second question, it has already been noted that infants did not choose paintings of faces as their top favourite. Colour may have been a factor here as two of the paintings chosen as favourites (that were not portraits) had bright colours in them. Even when looking specifically at the aesthetic preferences of children from different cultures, the top choices were more colourful paintings and not portraits. Perhaps using colourful portraits would yield different results. This warrants further investigation.

The impact of country of origin on aesthetic preferences

Despite the fact that there were very small groups in the sample of children from each country, it is still worth looking at the aesthetic differences that may be a result of the cultural milieu. The findings discussed here pertain only to the sample of children involved in this study. The finding that U.S. infants, ages 2 to 12 months, gravitated toward more abstracted works and children from Australia chose more representational is noteworthy. Perhaps visiting each home to observe the environment first hand would provide some insight into these aesthetic choices. As it stands, it is difficult to determine why abstracted paintings were preferred more by one group of children and more representational paintings preferred by other groups of children. Again, this could be because of lateralised cognitive ability differences (discussed earlier in the paper) in children from each country, or it could be the cultural milieu.

For 13 to 18 month old infants, country of origin was also a factor with regard to aesthetic choice. Australian and New Zealand infants chose representational paintings more often out of the nine painting pairs. But, more revealing is the choice for “Fruit & Baltimore Oriole” by Wagguno, which was strongly preferred by children in Australia and New Zealand compared to other countries. This may suggest that these children had chosen what they are most familiar with in their own environment. When observing them, many of the infants displayed a joyous look on their face when they saw the watermelon. Some tried to reach for it and say ‘watermelon’. As pointed out earlier in this paper, it is important to note here that one of the characteristics of young children with regard to aesthetic preferences is that they often choose images with subject matter that they are familiar with (Danko-McGhee, 2000; Danko-McGhee, 2006; Kerlavage, 1995; Parsons, 1987). This appears to be the case in this research as well.

The differences in the aesthetic preferences in this study suggest that the cultural milieu, that includes the home environment and childcare centres, could be a factor with regard to aesthetic preferences. However, once again, due to the small number of subjects from each country, one must be cautious about any conclusions that can be drawn with regard to cultural milieu. Therefore it is recommended that future studies include much larger samples. The value of this research is that it provides some insight into the kinds of images infants prefer. Imagery is a major part of our contemporary world and also in the environment that we provide young children. Visually stimulating environments that engage children can help to facilitate development.

Closing Remarks

Looking at the entire group of subjects (disregarding the country of origin) the results of this research provide a better sense of the type of visual stimulation 2 to 18 month old infants prefer for this particular sample of children. Visual stimulation is important to the growth and development of a young child because it involves the use of visual discrimination skills, which is the ability to decode symbols in order to derive meaning. But more importantly, visual stimulation involves cognitive processes.

As indicated earlier in this paper, the first years of life are critical with regard to learning because it is during this time that the most growth with regard to brain development takes place (Bergen & Coscia, 2001; Jensen, 2006). Early sensory experiences are vital (Brotherson, 2005). How the brain develops hinges, in part, on the child’s environment (Fox & Schirrmacher, 2009).

The environment affects not only the number of brain cells and number of connections among them, but also the way those connections are wired...brain growth can be positively stimulated...so an enriched environment addresses multiple aspects of development simultaneously (Fox & Schirmacher, 2009, p. 16).

There are many more neuron connections in an infant's brain in comparison to an adult (Klugar, 2009). This suggests that infants are quite capable of learning from a visually stimulating environment. "The absence of stimulation can slow down or weaken the developmental process" (DeSantis & Housen, 2009, p. 4). Providing a stimulating environment that includes visuals that children prefer could contribute to their cognitive growth process, which is:

...highly dependent on the environment to which an individual is exposed. As a child grows, and as her/his interactions with the environment expand and diversify, s/he receives stimulation for further development of meaning making strategies by encountering new problems that call for finding new solutions (DeSantis & Housen, 2009, p. 4).

As a result of this research, it is suggested that early childhood art educators and child care providers take into consideration the aesthetic preferences of infants prior to designing their environments. "...children can best create meaning and make sense of their world through living in complex, rich environments" (Tarr, 2001, p. 36). These environments should be designed to "...enhance children's perceptual awareness and provide places for wonder, curiosity, and the expression of ideas" (Tarr, 2001, p. 39).

Because of the differences with U.S. children and those from the other countries, there is an implication here that infant aesthetic preferences are clearly not universal because the environment and cultural milieu appears to have an impact upon their aesthetic preferences. What can also be said about this sample of infants is that 2 to 12 month old children have aesthetic preferences for both representational and abstracted paintings, while 13 to 18 month old infants, when given a choice, prefer more representational paintings. Also, bright colours and familiar subject matter, in this case, babies and watermelon, appear to be the aesthetic criteria for this sample of children.

This research has answered some questions, but many others have emerged, such as, what exactly in the environment is triggering these aesthetic responses? While actual home visits would be ideal, a tool to assess the home environment is needed which could provide more detailed information about the visual stimulation that is provided to young children. Needless to say, much more research is needed to answer this question.

References

- Abbs, P. (1987). Promoting aesthetic appreciation in young children. In S. Wright (Ed.). *The arts in early childhood* (pp.217-234). Sydney: Prentice Hall.
- Abbs, P. (1988). *A is for aesthetic: Essays on creative and aesthetic education*. London: The Falmer Press.
- Abbs, P. (1989). Aesthetic education: An opening manifesto. In P. Abbs (Ed.), *The symbolic order: A contemporary reader on the arts debate* (pp. 3-11). London: The Falmer Press.
- Amigo, C. (1972). Visuo-sensory development of the child. *American Journal of Optometry and Archives of American Academy of Optometry*, 49, 991-1001.

- Anderson, R. (2004). *Calliope's sisters: A comparative study of philosophies of art*. New York: Pearson Education.
- Atkinson, J. (2000). *The developing visual brain*. Oxford: Oxford University Press.
- Bergen, D., & Coscia, J. (2001). *Brain research and childhood education: Implications for teaching*. Olney, MD.: Association for Childhood Education International.
- Berk, L.E. (2005). *Infants and children: Prenatal through middle childhood*. 5th ed. Boston: Pearson Education.
- Bourdieu, P. (1984). Postscript: Towards a 'vulgar' critique of 'pure' critiques. In P. Bourdieu (Ed.). *Distinction: A social critique of the judgement of taste*. London: Routledge.
- Bower, T.G.R. (1976). Repetitive processes in child development. Bronson, G.W. (1990). Changes in infant visual scanning across the 2-to-14-week period. *Journal of Experimental Child Psychology*, 49, 101-125.
- Bronson, G.W. (1974). The postnatal growth of visual capacity. *Child Development*, 45(4), 873-890.
- Brotherson, S. (2005). Understanding brain development in young children. Retrieved February 14, 2010, from <http://www.ag.ndsu.edu/pubs/yf/famsoci/fs609w.htm>.
- Cold, B., Kolstad, A., & Larssaether, S. (1998). *Aesthetics, well-being and health. Abstracts on theoretical and empirical research within environmental aesthetics*. Oslo: Norsk Form.
- Cole, E. (1994). Activating aesthetic dialogue with young children: A multi-purpose approach. *Ohio Art Education Journal*, 32(2), 12-20.
- Danko-McGhee, K. (in press). The aesthetic preferences of infants: Pictures of faces that captivate their interest. *Contemporary Issues in Early Childhood*, 11(4).
- Danko-McGhee, K. (2006). Favourite artworks chosen by young children in a museum setting. *International Journal of Education Through Art*, 2(3), 223-235.
- Danko-McGhee, K. (2000). *The aesthetic preferences of young children*. New York: Mellen Press.
- Decasper, A., & Fifer, W. (1980). Of human bonding: Newborn's prefer their mother's voices. *Science*. 208(4448), 1174-1176.
- DeSantis, K., & Housen, A. (2009). *A brief guide to developmental theory and aesthetic development*. New York: Visual Understanding in Education.
- Dissanyake, E. (2001). Aesthetic incunabula. *Philosophy and Literature*, 25(2), 335-346.
- Douglas, N.J., Schwartz, J.B., & Taylor, J.B. (1981). The relationship of cognitive style of young children and their modes of responding to paintings. *Studies in Art Education*, 22(3), 24-31.
- Eisner, E. (2002). *The arts and the creation of mind*. New Haven: Yale University Press.
- Eliot, L. (1999). *What's going on in there? How the brain and mind develop in the first five years of life*. New York: Bantam.
- Epstein, A.S., & Trimis, E. (2002). *Supporting young artists: The development of the visual arts in young children*. Ypsilanti, MI: High Scope Press.

- Eyestone-Finnegan, J. (2001). Looking at art with toddlers. *Art Education*, 54(3), 40-45.
- Fantz, R.L. (1966). Pattern discrimination and selective attention as determinants of Perceptual development from birth. In A.H. Kidd (ed.). *Perceptual development in children*. New York: International University Press.
- Fantz, R.L., Ordy, J.M., & Udelf, M.S. (1962). Maturation of pattern vision in infants during the first six months. *Journal of Comparative and Physiological Psychology*, 55(6), 907-917.
- Fanz, R.L. (1963). Pattern vision in newborn infants. *Science*, 140(3564), 296-297.
- Fox, J., & Schirmacher, R. (2009). *Art and creative development for young children*. California: Wadsworth.
- Freedman, K. (2003). *Teaching visual culture: Curriculum, aesthetics, and the social life of art*. New York: Teacher's College Press.
- Gardner, H. (1990). *Art education and human development*. California: Getty Center for Education in the Arts.
- Gardner, H. (1982). *Art, mind and brain*. New York: Basic Books.
- Goldhawk, S. (1998). *Young children and the arts: Making creative connections. A report of the task force on children's learning and the arts: Birth to age eight*. Washington, D.C: Art Education Partnership.
- Haith, M. (1978). Visual competence in early infancy. In R. Held, H. Leibowitz, & H.L. Teuber (Eds.) *Handbook of sensory physiology: Vol. VIII*. Berlin: Springer-Verlag.
- Herberholz, B., & Hanson, L. (1990). *Early childhood art*. Iowa: William Brown.
- Hurwitz, A., Madeja, S., & Katter, E. (2003). *Pathways to art appreciation: A source book for media and methods*. Vancouver: National Art Education Association.
- Jakkobsdottir, S., Krey, C., & Sales, C. (1994). Computer graphics: Preferences by gender in grades 2, 4, & 6. *Journal of Educational Research*, 88(2), 91-100.
- Jensen, E. (2006). *Enriching the brain: How to minimize every learner's potential*. San Francisco: Jossey-Bass.
- Johnson, M., Dziurawiec, S., Hadyn, E., & Morton, J. (1991). Newborns' preferential tracking of face-like stimuli and its subsequent decline. *Cognition*, 40(1-2), 1-19.
- Kerlavage, M. (1995). A bunch of naked ladies and a tiger: Children's responses to adult works of art. In C. M. Thompson (Ed.). *The Visual Arts and Early Childhood Learning* (pp. 56-62). Vancouver: National Art Education Association.
- Keel, J. (1972). The roots of aesthetic experience. *Art Education*, 25(3), 4-7.
- Kovach, B., & Da Ros-Voseles, D. (2008). *Being with babies: Understanding and responding to the infants in your care*. Beltsville, MD: Gryphon House, Inc.
- Lim, B. (2004). Aesthetic discourses in early childhood settings: Dewey, Steiner, and Vygotsky. *Early Childhood Development and Care*, 174(5), 473-486.
- Liu, S., Ge, L., Quinn, P., Slater, A., Lee, K., Liu, Q., Pascalis, O., & Kelly, D. (2007). Cross-race preferences for same-race faces extend beyond the African versus Caucasian contrast in 3-month old infants. *Infancy* 11(1), 87-95.

- Maurer, D., & Barrera, M. (1981). Infants' perception of natural and distorted arrangements of a schematic face. *Child Development* 52(1), 196-202.
- Merriam Webster (2010). Retrieved from <http://www.merriam-webster.com/dictionary/aesthetics>.
- McDonnel, P.M. (1975). The development of visually guided reaching. *Perception and Psychophysics*, 18(3), 181-185.
- McGhee, K., & Dzuiban, C. (1994). Visual preferences of Mexican preschool children for abstract and realistic paintings. *Perceptual and Motor Skills*, 79, 240-242.
- McGhee, K., & Dzuiban, C. (1993) Visual preferences of preschool children for abstract and realistic paintings. *Perceptual and Motor Skills*, 76, 155-158.
- McKenzie, B., & Day, R. (1987). *Perceptual development in early infancy: Problems and issues*. New Jersey: Lawrence Erlbaum.
- McNiff, K. (1982). Sex differences in children's art. *Journal of Education*, 164, 271-289.
- Nodleman, P., & Reimer, M. (2003). *The pleasures of children's literature*. Boston: Allyn & Bacon.
- Pamelee, A.H., & Sigman, M. (1976). Development of visual behavior and neurological organization in pre-term and full-term infants. In A. Pick (ED.), *Minnesota symposia on child psychology*, Vol. 10 (pp. 119-155). Minneapolis: University of Minnesota Press.
- Parsons, M. (1987). *How we understand art: A cognitive developmental account of aesthetic experiences*. Cambridge: Cambridge University Press.
- Pateman, T. (1991). *Key concepts: A guide to aesthetics, criticism and the arts in education*. London: The Falmer Press.
- Piscitelli, B. (2009, June). *Infants, toddlers and contemporary art: Bright and shiny research findings*. Paper presented at the third Art in Early Childhood Conference, Singapore.
- Read, M., & Upington, D. (2009). Young children's colour preferences in the interior environment, *Early Childhood Education*, 36(6), 491-495.
- Rogers, P. (1995, March). Girls like colors, boys like action? Imagery preferences and gender. Paper presented at the Association for Educational Communication and Technology conference in Anaheim, California.
- Salkind, S., & Salkind, N. (1973). A measure of aesthetic preferences. *Studies in Art Education*, 15(1), 21-27.
- Schiller, P. (1998). The thinking brain. In *Brain research: Beginnings workshop series* (pp.49-52). Redmond, WA.: Child Care Information Exchange.
- Schirrmacher, R. (2002). *Art and creative development for young children*. New York: Thomas Learning.
- Siegel, S. (1956). *Nonparametric statistics: For the behavioral sciences*. New York: McGraw Hill.

- Spodek, C. (1996). Educationally appropriate art activities for young children. In *Art experiences: Beginnings workshop series* (pp. 44-48). Redmond, WA.: Childcare Information Exchange.
- Stephens, K. (1999). Primed for learning: The young child's mind. In *Applying brain research: Beginnings workshop series*, (pp. 44-48). Redmond, WA.: Childcare Information Exchange.
- Stockrocki, M. (1984). The meaning of aesthetic awareness for preschoolers in a museum class. *Art Education*, 54(3), 33-39.
- Strachan, A. (2000). In the brain of the beholder: The neuropsychological basis of aesthetic preferences. *The Harvard Brain*, 7, p. 1-20. Retrieved November 18, 2010, from <http://www.hcs.harvard.edu/~hsmdb/BRAIN/vol7-spring2000/aesthetics.htm>
- Tarr, P. (2001). Aesthetic codes in early childhood classrooms: What art educators can learn from Reggio Emilia. *Art Education*, 54(3) 33-39.
- Taunton, M. (1983). The influence of age on preferences of subject matter, realism, and spatial depth in painting reproductions. *Studies in Art Education*, 21(3), 40-53.
- Taunton, M. (1980). The influence of age on preferences of subject matter, realism, and spatial depth in painting reproductions. *Studies in Art Education*, 21(3), 40-53.
- Teller, D. Y. (1979). The forced-choice preferential looking procedure: A psychophysical technique for use with human infants. *Infant Behavior and Development*, 2, 135-153.
- Thomas, H. (1966). Preferences for random shapes: Age six through nineteen years. *Child Development*, 84(8), 843-859.
- Thompson, C. (2006). The ket aesthetic. In J. Fineberg (Ed.), *When we were young: New perspectives on child art* (pp.199-283). Berkely: University of California Press.
- Tinmannsvik, L., & Bjelland, H. (2009). Children and aesthetics: Exploring toddler aesthetic experience of everyday products. *Int. J. Product Development*, 9(4), 370-388.
- Von Hofsten, C. (1982). Eye-hand coordination in newborns, *Developmental Psychology*, 18(3), 450-461.
- Vygotsky, L.S. (1929). The problem of the cultural development of the child. *Journal of Genetic Psychology*, 36, 415-34.
- Wohwill, J. (1975). Children's voluntary exploration and preference for tactually presented nonsense shapes differing in complexity. *Journal of Experimental Child Psychology*, 20(1), 159-167.
- Wright, S. (2003). *Children, meaning-making and the arts*. New South Wales: Pearson Education.

Acknowledgements

A University Research and Fellowship Grant from the University of Toledo funded this study. The author would like to thank Dr. Margaret Brooks, Dr. Roberta Bustin, Maryann Rody, and Rosemary Richards for their assistance in locating research sites.

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