UNDERSTANDING ARTFUL BEHAVIOR AS A HUMAN PROCLIVITY: CLUES FROM A PRE-KINDERGARTEN CLASSROOM

Purpose of the Study

The methods and curricula commonly employed in conventional schools today often fail to consider the likelihood that evolution has predisposed students to learn through methods and under circumstances more common to prehistoric times than to the typical modern-day school. Scholarship noting that our bodies and brains have changed little since they evolved during the prehistoric era suggests that contemporary learning is still quite dependent on our prehistoric past (Immordino-Yang & Damasio, 2007; Mithen, 1996; Ramachandran, 2000), during which the arts first appeared and education was largely comprised of hands-on, experiential learning (Dissanayake, 2007a; Gruenewald & Smith, 2008). In addition, cognitive psychologists, neuroscientists, and evolutionary-minded scholars are increasingly suggesting that the arts contribute significantly to the development of cognition (Arnheim, 1969; Donald, 2006; Zeki, 1999a, 1999b), provide vital means toward ensuring our survival as a species (Dutton, 2009; Solso, 2003; Wilson, J. 1998; Zaidel, 2005) and satisfy inherent psychobiological needs that often go unmet in today's schools (Dissanayake, 2000, 2007a).[i] Moreover, research suggests that the social and emotional needs that the arts often fulfill are meaningful components of cognition with adaptive value (Dunbar, 2003, 2007; Immordino-Yang & Damasio, 2007; Storbeck & Clore, 2007).

Bolstering such scholarship is the everyday behavior of children and the human history of art making. Among other artistically-oriented activities, children draw, sing, paint, dance, drum, dramatize and decorate their faces and bodies with little to no encouragement from adults. Common not just to our offspring, but also to the earliest members of our species, these artistic behaviors appear to differ little from those of our prehistoric ancestors who engaged in such artful acts even as – or perhaps because – they struggled to survive the harsh conditions of the prehistoric world (Dissanayake 1988, 1995, 2000, 2007a, 2007b, 2008). That human beings have been artfully elaborating their bodies, belongings and surroundings for *at least* 30,000 years and that all known human cultures engage in some form of the arts (Aiken, 1998; Dutton, 2009; Mithen, 1996; Sarason, 1990; Solso, 2003) largely contradicts contemporary suppositions that the arts are frivolous and unnecessary. Instead this widespread and long-term engagement in the arts suggests that artful behavior is potentially a meaningful and innate human proclivity favored by evolution (Alland, 1977, 1989; Carroll, 2004; Dissanayake, 2007a, 2008; Wilson, J. 1998).

From this perspective, art is indispensable to our species, yet our educational systems generally treat the arts as non-essential leisure subjects (Eisner, 1997, 2002; Koroscik, 1997), minimizing and eliminating the very activities that we as a species have been doing the longest. Lodged in a standards-based and test-centered environment nearly oblivious to all but mathematical and verbal measures, many American school systems are cutting instructional time in the arts (Center on Educational Policy, 2007), which were practiced by human beings for tens of thousands of years before the advent of math or writing. This stark dichotomy between our knowledge of the role of art and common educational practices underscores the need to understand why nearly all children make art and, conversely, when and why we stop taking the arts seriously.

The purpose of this study is to understand how artful behavior[ii] might be an inherent human proclivity, using an interpretivist lens and a phenomenological design to examine the art-making experiences of pre-school children. Hence, the following questions; How might artful

behavior be an innate human proclivity? More specifically, how, if at all, do artistic proclivities manifest themselves in children's behavior? How do children of pre-school age experience and perceive art making?

The results, presented as deep descriptions, illustrate children's personal relationships to artful behaviors and expose several implications for educational policy and practice. Ultimately, the data will aid us in understanding how we might be intrinsically artful beings and help to bridge the gap between what we understand about human nature and what and how we are teaching in our schools.

Theoretical Framework

The conceptual framework for this study is largely dependent on the work of Ellen Dissanayake (1988, 1992, 1999, 2000, 2003, 2007a, 2007b, 2008), an independent scholar with an ethological interest in the arts. Three aspects of Dissanayake's theory are relevant to this study. First is Dissanayake's ethological notion that art is a behavior rather than a product and that it is artification, the *act* of aesthetic elaboration, which is important for our psychobiological wellbeing. She suggests that:

> We think of art ethologically as something people do – as a *behavioral predisposition* ('to artify') rather than the residue of such behavior. This conceptual shift – art as verb or verbal noun ('artify' or 'artification') – makes possible a theoretical grounding about its nature and importance, an endeavor that contemporary academe has largely abandoned. (2003, p. 246)

Second is Dissanayake's evolutionary assertion that art is an innate human propensity, something that humans will normally learn to do, given suitable conditions and materials. She wrote, "If surrounded by adults who also readily and unselfconsciously engage in these arts, as is the case in numerous premodern societies, children develop their latent aesthetic tendencies easily by imitation and practice as they also learn to speak and perform other required cultural behaviors" (p. 793). She supports her claims that art is an inherent feature of human nature with five observations: 1) Artification is found in all known societies and cultures regardless of their economic or technological development, hence we can consider artification universal; 2) Societies, especially pre-industrialized societies, devote great amounts of personal and material resources to artification; 3) Premodern societies artify largely in ritual ceremonies that deal with issues of biological importance, such as safety, health, social harmony, birth, death and other vital issues; 4) Like many other life essentials such as food, sex, and sleeping, the arts are a common source of pleasure; 5) Children engage in unprompted artification.

The third significant facet – that rhythmic or aesthetic interactions form the basis for building relationships with others – appears shortly after birth when babies begin to bond with parents by responding positively to proto-aesthetic behaviors, such as exaggerated facial expressions, vocalizations and movements (Dissanayake, 2000, 2007a; Trevarthen, 1995). Because this bond is an essential adaptation that ensures a caretaker for the nearly helpless human infant, Dissanayake claims that we are inherently aesthetic beings who will continue to seek out similarly rhythmic interactions in adulthood as a means of forming emotional connections with others. Such social bonds were also essential to the survival of our adult ancestors who were dependent on a small collaborative group to attain the physical and psychological resources necessary for survival (Dunbar, 2003; Givón & Young, 2002). In prehistoric times, these social bonds were likely established and maintained in part through the rhythmic or artistic interactions most commonly exercised in ceremonies, which were primarily

combinations of "song, dance, performance and visual spectacle" (Dissanayake, 2003, p. 245). In such contexts, the arts are used to demonstrate what is meaningful to certain cultures or individuals, thereby satisfying a fundamental psychobiological need of our species to generate emotional attachments and "make ordinary things special or *extra*ordinary" (Dissanayake, 2007a, p. 792).

In order to extend this argument into educational terms, we need to complement Dissanayake's argument by briefly delving into the current research supporting the role of art in cognition. Although previously relegated to the affective domain, the cognitive components of art have become increasingly apparent since the later half of the 20th century (Arnheim, 1969; Efland, 2002; Eisner, 2002). More recently, scholarship from education, psychology, anthropology, neuroscience and the arts has drawn explicit links between the skills required for art making and social and emotional cognition, in addition to explicating the evolutionary import of this uniquely human form of learning. Again, our past is significant in understanding our present and future. Because the architecture of our brains has changed so little since the Pleistocene period, in order to understand our brains as they exist today, we need to consider their evolution during prehistoric times and the conditions which prompted such adaptations (Mithen, 1996; Immordino-Yang & Damasio, 2007; Ramachandran, 2000, 2004). Because our survival individuals was so intimately tied to the survival of our group, these adaptations were overtly social and emotional. According to Immordino-Yang and Damasio (2007), it is the social and emotional components of cognition that enable us to apply and utilize factual knowledge in real-world contexts. They write:

> The realization that our evolutionary past still influences our present conditions, underscores our fundamentally social nature, making clear that the very neurobiological systems that support our social interactions and relationships are recruited for the often covert and private decision making that underlies much of our thought. In brief, learning in the complex sense in which it happens in schools or the real world, is not a rational or disembodied process; neither is it a lonely one (p. 4).

The potential for an inherent social nature is further supported by our biology, evinced by the recent discovery of so-called mirror neurons, cells in the brain that assist both learning and empathy by neurologically mimicking the actions and emotions we observe in others (Iacoboni, 2005, 2007, 2008; Ramachandran, 2000, 2004). This is not a simplistic transfer of information, however, but a predisposition for social learning that is layered with our own social, cultural and personal experiences (Immordino-Yang, 2008). This link between our brains and our cultures pervades the history of human existence. Fueled by the trying conditions of prehistoric times, it appears that humans, children included, evolved toward a predisposition for social living and cooperation (Key & Aiello, 1999), and those individuals who were socially adept had an adaptive advantage (Cosmides & Tooby, 1992; Dissanayake, 2008; Dunbar, 1996, 2003, 2007; Solso, 2003). As noted above, art often served to develop and cement these social bonds (Bruner, 1986; Carroll, 2004; Dewey, 1934; Dissanayake, 2007a), and the diminishing condition of arts education should fuel our inquiry into how a potential artful predisposition is relevant for education today.

Although many scholars have made claims that art making, specifically drawing, is a natural human behavior, especially for children (Dewey, 1902; Froebel, 1826; Kellogg, 1955, 1969; Lowenfeld, 1952, 1987; Mumford, 1926; Schaefer-Simmern, 1950; Sully, 1896;

Tomlinson, 1934), existing studies tend to focus on drawing alone rather than the broad scope of behaviors that might suggest an inherent human artfulness. Others (Golomb 1993, 1992; Kellog 1969; Lowenfeld, 1947; Lucquet, 1913) emphasize the developmental trajectory of mark making over the potential for a pervasive and persistent predisposition toward artful behavior. Empirical and theoretical research has been dedicated to exploring the universality and similarities of art forms around the globe or the biological basis for aesthetic appreciation (Aiken, 1998; Alland, 1989; Coss, 1965; De Sousa, 2004; Eibl-Eibesfeldt, 1988; Epstein, 1988; Feist, 2007; Feist & Brady, 2004; Martindale, Locher, & Petrov, 2007; Ramachandran & Hirstein, 1999; Smith, 2005; Turner, 1999; Turner & Pöppel, 1988, 2001; Voland & Grammer, 2003). To my knowledge, however, few scholars have explicitly and empirically explored the possibility that artful behavior itself is an inherent human proclivity, and even fewer have sought to fully understand the pedagogical implications of such a possibility (Sarason, 1990). In fact, none that I know of have thoroughly explored the evolutionary perspective of learning in general – and artful behaviors in particular – to educational settings. This study aims to partially fill that void by examining the earliest artful behaviors and art-making experiences of children within the context of education. Coupling empirical findings with educational application, the ultimate intent of this study is to understand the pedagogical implications of potential artful proclivities.

Methodology

Informed by Husserl's (1976) notion of intentionality, Heidegger 's (1962) interest in the nature of being and Merleau-Ponty's (1964, 1968, 1981) existentialism, this study is situated within the theoretical perspective of phenomenology, which aims to understand both the experience of the participant and the essence of a specified phenomenon, in this case artful behaviors. According to Streb (1984), "A way to avoid the mistake of reducing art to fact is to consider art phenomenologically" (p. 159). Because artful behaviors include an array of complex and diverse manifestations, phenomenological methods can offer valuable insight beyond the scope of objectivist thinking. This study draws particularly from two hermeneutic phenomenological perspectives, largely adapting the reflective lifeworld research of Dahlberg, Drew and Nyström (2001) with support from Van Manen's (1990) human sciences research agenda, which is also geared toward understanding lived experience and conducive to the examination of artful behavior and experience rather than the product of art making.

Data Sources

Dahlberg, Drew and Nyström (2001) advocate for a combination of fieldwork, interviews, observations, drawings and narratives as methods for collecting meaningful data. Adapting their methods, this study employs a combination of observations of the students during regularly scheduled activities, teacher interviews, and informal interviews with the students during voluntary interactions with studio materials introduced by the researcher. Initiated in January and completed in May 2009, data collection took place in a state-funded pre-kindergarten classroom of the child development lab at a large research university.[iii] Although it would be impossible to find subjects that are completely free of enculturation, pre-kindergarten students were chosen because, within formal education, they have been subject to the least social and cultural influences. The classroom, equipped with an observation booth, was ideal for a research study, and I observed from the booth one to two times per week for up to two hours each day at various times of the day. During observations from the observation booth, I realized the value of observing as many different activities as possible, especially times of free-choice

learning. Observations, lasting for up to two hours twice per week, moved from the booth to the classroom and back, an essential part for gaining optimal perspective, a variation on Husserl's (1964) "bracketing." Dahlberg (2006) describes Merleau-Ponty's adaptation of bracketing as a version of stepping back rather than disengaging entirely; "By slackening 'the threads of meaning,' we create a distance from the world in order not to be absorbed by it and take for granted that which seems so commonplace and well known" (p. 2). In other words, being too close to a phenomenon can prevent us from seeing it clearly, and Merleau-Ponty advocates for that optimal distance that can put the perceptual experience in focus without detachment. I found that place by moving between the observation booth, where I was able to be a more distanced observer, and the classroom, where I was immersed in the children's lifeworld and susceptible to their "natural attitude" (Husserl, 1964; Van Manen, 1990).

Administrators at the lab suggested the after-school program as an ideal time to introduce the studio materials I proposed, which narrowed the number of participants from 20 to 8. During the month of February I began visiting the after-school program to help students become comfortable and familiar with my presence in the classroom. On three separate occasions in March, I introduced three different sets of studio materials as options during centers time. During the studio activities, students were invited to take part, but were also told that they could participate in any of the regular center activities. The materials were intentionally chosen to avoid supplies that had pre-specified uses or were often available in the classroom (such as crayons, markers and tempera paint). Although this approach might partially avoid the conventions that often surround certain studio materials, it does not account for the novelty of introducing a new material into the classroom. The first set of materials offered included textured and patterned papers, various colors of card stock, oil pastels, feathers, fabric, felt, scissors and glue. The second activity featured Lizella clay, water and clay tools, and the third offered colored modeling clay, buttons (at a student's request), feathers, fabric and pipe cleaners. The point of these studio interactions was to share the experience with the children and access their life world as they interacted with the materials. During these activities I was open to student dialogue, which was audio recorded. As Thompson and Bales (1991) wrote, "The talk that emerges around classroom art centers may be well more than idle chatter: it may be the sound of children thinking, together and alone, about art and the experiences it embodies" (p. 44). In April I conducted phenomenological in-depth interviews with both afterschool teachers and the lead teacher for the classroom, which proved a valuable source for additional information and triangulation. Seidman (2006) paraphrases Vygotsky (1987) to support the interview as an essential method of phenomenology, stating "Every word that people use in telling their stories is a microcosm of their consciousness" (p. 7).

Data analysis consisted of whole-parts-whole hermeneutic phenomenological thematic analysis (Dahlberg, Drew and Nyström, 2001), which resulted in data immersion and the identification of emergent themes, namely the prevalence of rhythmic behaviors, the exploration of social relationships during art activities, a delight with the process of art making, and the artification of important people, spaces and objects.

Findings

Portrait of a Classroom

In order to depict the students' lifeworld, the following vignette describes events that occurred within the classroom.

It is centers time, and the pre-kindergarten classroom is abuzz with activity, fueled by an endless variety of things to do. The room is packed with engaging opportunities. One corner offers a cozy reading nook and loft, where students are often curled up around a teacher reading a book. Another area includes all shapes and sizes of blocks and a colorful carpet on which students build all kinds of structures. Block play often goes hand in hand with dramatic play in which students crawl around purring and meowing like cats or climbing onto queenly thrones they built out of large blocks. Students paint on an easel in the far corner of the room, and shelves nearby house cutting and gluing materials that they use to construct projects on an adjacent table. The children take turns using a duo of computers that tempt the students with a handful of educational games. The center of the room is filled with tables and chairs along with islands of activity – a dress up center, a scale, a wet table, colored tapes, games and books. Banners and art work hang from the ceiling, splashed with vibrant colors and glitter. The students' cubbies wrap around the far wall, stuffed with blankets, pillows, projects and all manner of decorations. The room is ripe with sensory stimuli, and the students feed off of the room's boundless offerings by bouncing from one engaging activity to the next like bumblebees that buzz from flower to irresistible flower. Outside of nap time, utter stillness and quiet are strangers in this room. Even Buster, the class guinea pig, has hair that shoots from his head in countless directions, as if his fur is channeling the room's energy.

The sound of busy children is constant and ranges from the soft murmur of conversation between two girls at the art table to the roars and squeals that accompany more vigorous romping. There are layers and layers of noise. Bits of language float around the room. Exclamations and spontaneous songs of the children mingle with their conversations. The students seem to say everything as if it is a melody, using a roller coaster of volumes and pitches and repeating certain phrases with varied effects. "Look at this. Look! At! This! Penelope, look at THIS!" Their words are often emphatically staccato, melodic or cadenced. Rhythm is everywhere. It is clean up time and two boys are collecting pieces of a wooden track they had laid out for their race cars. They toss the pieces into the box with exaggerated force, delighting at the noisy explosive crash each piece creates as it collides into the plastic container and its contents. Joey holds the container as Sam collects the parts. Shake shake shake. Shake shake shake. The parts crash from one side to the other, rhythmic noise is added to the chaotic cacophony of clean up. Shake shake shake. Joey smiles mischievously as he shakes his make-shift maraca, clearly enjoying its nearly deafening pulse until the teacher asks him to stop the noise.

As clean up comes to an end, students trickle one by one to gather in a circle on the carpet, and the teacher plays a quiet song to transition to the circle activity. Penelope and Kate are so absorbed at the drawing table that they are willfully oblivious of all clean-up related announcements. The teacher calls across the room to remind them that it is time to clean up their area. After several reminders, the two reluctantly put away their supplies. Afterwards, Kate heads for the circle, but one of Buster's rare energetic moments catches Penelope's attention. She loiters by his cage until the teacher notices her reluctance to join the circle. Another reminder comes from the teacher. Penelope finally makes her way toward the carpet. She walks halfway to her destination, but

suddenly she's dancing toward the circle, her limbs alive and twirling impulsively. She returns to an even stride just in time for her arrival. "Thank you for joining us Penelope." The students in the circle are singing a song and making hand motions to illustrate the lyrics. They wave their arms and clap their hands, immersed in the coordination of song and movement. The teacher begins to read a story, and the students settle into their spots on the carpet, but their struggle to sit still and their urge to move is obvious. Occasionally their restlessness boils over during story time. Maggie, who happens to have an empty space next to her on the carpet, rolls on her hands and feet over to the adjacent spot, where she lands on her bottom. She rolls back to her spot and then back to the neighboring space. She flips back and forth a third time and then settles back into her own spot, ready to listen to the story. Other students flutter into rhythmic action occasionally. They spontaneously and repetitiously wiggle a hand, rock back and forth or tap their feet as the story continues.

When the story is over, the teacher announces that it's time to play the rhythm sticks. The news sends a jolt of excitement through the students' faces, voices and bodies. The minute they get a set of rhythm sticks in their hands, they start playing, running the sticks across one another, generating a grating sound like that made by a spoon drawn across a washboard. They giggle and laugh and leap to their feet. The music starts and the students and teachers march around in a circle. Alex immediately picks up the music's punctuation and matches his march to the beat and its accents. Left, right, left, jump. Right, left, right, jump. Leigh swings her hips back and forth as she marches and strikes the sticks together. Every one is absorbed into the unified movement and sounds of the group, and a semblance of the ancient ceremonies that Dissanayake (2003, 2007a) and Dewey (1934) describe seems momentarily revived. When the song is over, the rhythm sticks go back into their container, again thrust with noisy enthusiasm. Ernie makes his way around the circle collecting the sticks in a plastic container. Shake shake shake. Shake shake shake.

Surprisingly, lunch time is one of the most rhythmic times of the day, and observing lunch feels a bit like bird watching, where, if you sit quietly and watch from a suitable distance, the phenomenon appears. Eating lunch is accompanied by not only vigorous conversation, but also rhythmic interludes. Holding his spoon in one hand and his fork in the other, Joey takes a break from eating his black-eyed peas to drumming madly on the table for a few moments before he returns to eating. Maggie stretches her arms behind her for a second before clapping four times over her head. Then she gets back to her corn. Alex swivels away from the table, then pulls his shirt over the hollow in the chair back to form a drum. Pat pat pat. Pat pat. Today his shirt drum goes unnoticed by the teachers. When I see Alex reattempt a shirt drum on another day, the teacher stops him so he won't stretch out his shirt again. In this case, Alex pats the shirt drum for a few moments and then finishes his lunch. "Woo WOO woo Woo woo," Penelope sings between nibbles of corn. A stream of rhythmic behaviors punctuates the eating, talking and food distribution that usually fills lunch time. Neither the teachers nor the students seem to find the intermittent clapping of hands, tapping of tools, singing of songs or patting of the shirt drum odd. They do not notice the artfulness of lunchtime. It is part of their world.

Discussion

Rhythm

Such observations reveal that, unsurprisingly, rhythmic behaviors were evident during the many musical, dramatic and art activities that occurred in the classroom. The data, however, is also rife with examples of students behaving artfully outside of explicit art-making activities. The most surprising data came from lunchtime, circle time, and clean up time, moments when art-making opportunities were not prominent. Observations revealed that these modest and spontaneous displays of artful behavior are a frequent, but often unnoticed, part of the pre-kindergarten classroom. Evidence that children will behave artfully, even without an overt art-making opportunity, offers a telling indication of the potential existence of artful proclivities. Elaborating on the rhythms and tensions that inspire artistic works and aesthetic experience in *Art as Experience*, John Dewey (1934) is worth quoting at length:

> Because rhythm is a universal scheme of existence, underlying all realization of order in change, it pervades all the arts, literary, musical, plastic and architectural, as well as the dance. Since man succeeds only as he adapts his behavior to the order of nature, his achievements and victories, as they ensure upon resistance and struggle, become the matrix of all esthetic subject-matter; in some sense they constitute the common pattern of art, the ultimate conditions of form. Their cumulative orders of succession become without express intent the means by which man commemorates and celebrates the most intense and full moments of his experience. Underneath the rhythm of every art and every work of art there lies, as a substratum in the depths of the subconsciousness the basic pattern of the relations of the live creature to his environment. (1934, p. 156)

If rhythmic behaviors are the basis for our interactions with our environments, as Dewey suggests, we must wonder what happens to the rhythmic behaviors that are so evident in children as they transform into adults. Why do adults not dance to the copy machine? Or clap spontaneously while lunching? Do our artful behaviors diminish as our rhythmic impulses fade into an un-cadenced maturity? These questions came to mind again involuntarily and in my own classroom when a student's request for toothpicks sent me down the hall to the supply closet. Walking back to my classroom with the box of toothpicks in my hand, I suddenly became aware of the sound that had accompanied me all the way down the hall. Shake shake shake. Shake shake shake. The realization that this rhythmic behavior was hitherto also part of my unnoticed life world was a surprise and suggestive of the need for further study. Perhaps future studies should ask: How do these proclivities and their resulting behaviors change as we progress through childhood and into adulthood? How might educational contexts influence any such changes?

Social Qualities of the Art Experience

The studio materials I introduced to the after-school program revealed students' delight in the process and the social components of art making. All of the students participated in the activities at least once and all but one of the students regularly and persistently engaged with the materials. Much of the studio time was dedicated to the distribution and sharing of materials. Even though our small group generally worked at one table, the exchange of supplies, as well as of art products, required a good deal of social navigation. The patterned papers, for example, were especially exciting for the students, because some of them were bedecked with sparkling or flocked patterns in a variety of colors. Each time a new paper was discovered amongst the pile of

offerings, a lengthy discussion of its qualities, who would use it, and how it would be shared, ensued. Maggie, for example, was ruffling through the different papers, trying to distribute them diplomatically.

> Maggie: (picking up a piece of paper) Ohhh, pretty. Who wants this one?
> Penelope: Me!
> Maggie: The next one is going to be for somebody else.
> Penelope: I actually don't want this one. I want the next one. (Picking up one of the papers) What color is this one?
> Maggie: It's pink.
> Penelope: I want another piece of paper. I don't know what I'm going to make.
> (Maggie and Penelope continue to rifle through the papers, pulling out different sheets.)
> Penelope: Whoa! I didn't see that one! Pretty!

The continued discovery of different patterns and colors among the papers fueled a nearly endless conversation. Quite often, the end product was also distributed as a gift to other students, teachers or parents. One student spent nearly the entire first session with the art materials by gluing her favorite decorative papers to card stock and gifting them to teachers and fellow students. In another session, Maggie, who was working with the modeling clay, said,"This flower is for my grandma. She likes the color purple. Are you using this? I need to make a little face for my dad. How did you make your little man's mouth?"

Maggie's questions also reveal the students' eagerness to learn from each other, from their teachers and myself. Although my study was initially designed to gauge their unfettered reaction to the materials, they often asked me how I made a certain shape and if I could show them how to do it. Because I started the study with the intention of allowing the children to interact with the materials without the burden of creating a representational object that so often quashes the artistic interests of children (Sarason, 1990), I intentionally avoided giving instructions or making representational images while we were interacting with the materials during the first two sessions. However, as I noticed their enthusiasm for learning from their peers and teachers, I adjusted my research design to incorporate a more Vygotskian (1971) approach. Hence, during the last session while working alongside the children, I made representational objects and, when asked, explained or demonstrated how I made them. As a result, many of the children mimicked my tiny clay man with feathers for hair and buttons for eyes, as well as the clay flower I made. In interviews, the teachers also described the social qualities of many of their art activities. When asked about the role of art-related activities in the classroom, one teacher responded:

> Teacher: Usually if one child begins to make something, the rest of them will follow behind.
> Researcher: Why do you think that is?
> Teacher: I guess it's just the peer relationships they are trying to form. You know if their best friend for the day is doing something, they are going to go right behind them so they can stay in the relationship – as far as space, they can stay with them… even if they don't look the same, they are making the same thing.

This teacher seems to echo Vygotsky (1971), who also described the social connections generated through art making by claiming that, although an emotion might begin as an individual

experience through a work of art, the emotion is generalized and becomes social. He wrote, "Art is the social within us, and even if its action is performed by a single individual, it does not mean that its essence is individual" (p. 249).

If we look to the past, there is an evolutionary explanation for both the social bonds created through art making and the divergence of artistic styles that might dominate a group or region. Further, these two phenomena are interconnected. Along with Vygotsky, Dewey (1934), Dissanayake (2003) and Carroll (2004) have all argued that art has the capacity to coordinate emotions and intentions. They contend that art making is a form of social bonding in which we can not only know more about another individual, but also cohere as a social group. Borrowing from anthropology, Robin Dunbar's (1993, 1996, 2003, 2007) explanation of linguistic evolution suggests that verbal communication arose among our prehistoric ancestors to help maintain social bonds within groups. According to Dunbar (1996), dialects further evolved to help us easily distinguish those who are group members from those who are outsiders possibly trying to take advantage of group resources by feigning membership. Applied to visual communication, formal similarities among the art work of a particular region or group could also serve such purposes. This theory potentially explains the simultaneous similarities and stylistic diversity of artistic forms across the world, as well as the "copying" that commonly occurs at the art center.

In relation to the social communication I observed, "making special" was another theme that emerged as students often elaborated the things that were important to them. Dissanayake (2007) states that, "By visually enhancing bodies, surroundings and valued objects, with song, dance, special language, and performance, humans exercise their innate predispositions to make ordinary things special or *extra*ordinary" (p. 792). For example, one student made an intricate heart-shaped collage of various pink materials intended to decorate her room, where she had just rearranged the furniture to accommodate her big girl bed. The cubbies, personalized with photographs of family members, art projects and found treasures, serve as an example of the tendency to artify our most important spaces and belongings. Leigh, who was particularly fond of decorating herself and her space, had used colored tape to add a row of feathers that dangle across the shelf of her cubby, and Penelope stashed a collection of her favorite beads in her cubby drawer. As a means of self decoration, Leigh was constantly adorning herself with stickers, dress-up outfits, and—on one occasion–the decorative papers from the art activity. Dewey (1934) noted that art of the past was often used to intensify the "sense of immediate living" (p. 5) by decorating one's self and surroundings.

The Process of Art Making

Clearly, however, not all the students were interested in the final product. This was most evident the day I brought clay into the classroom. Once seated with a hunk of clay, the children started to experiment with the tools I had left on the tables. Initially, they used the tools to poke the clay, scrape it gently and even to pick it up. "Can we touch it with our fingers?" Leigh asks with awe. "Can we pick it up with our hands?" Ernie wonders aloud. "Yes, you can touch it and pick it up," I replied. That's when the real excitement began. Leigh, who had her clay stuck on the end of a tool like a popsicle plopped it on the table and touched it gingerly. She laughed. "Awesome! Ernie, touch it with your hands!" she giggled. "Ewww!" Ernie exclaimed, smiling and wrinkling his nose simultaneously. "It's mud!" Ernie asked if I could come back the next day and insisted that I provide a satisfactory explanation for only coming once a week. Students shrieked, oohed and chuckled, delighting in manipulating the clay, in moving it around in their hands and squishing it between their fingers. The classroom was brimming with noise. The high-

pitched squeals that only children can make, and the excited giggles and sighs that come with sticking their fingers into the wet, malleable clay filled the room.

The teachers provided similar data concerning the experience of art making. In an interview, one of the teachers reflected on her life as an adult without the musical involvement she experienced as a child. She said,

> It's been kind of interesting as far as music goes for me. I was always involved with music growing up, but I never really thought of it as a huge part of my life. Since I've gone to college and left that behind – I did a lot in high school – I've started to miss it more now. I don't play an instrument or anything, but I did sing in choirs and things like that, and choruses. I'm trying to get more involved with that again now. Getting back into that, it's been more fulfilling trying to get involved with that again. I didn't even realize that that's what I feel like I'd been missing until recently.

Teacher interviews further revealed the value they place on the arts in the curriculum, which could be key in enabling the students of this group to behave artfully. The teacher responsible for the bulk of curriculum design said that she tried to incorporate the arts whenever possible into the classroom, because the most memorable educational activities for students of all ages are typically hands-on. She further wondered about when we stop embracing those activities in formal education. She said,

> I think that art is something you see everyday, and they do it in large groups and small groups. They do it on their own. It's just their way of expressing themselves at this age. I do kind of wonder where it stops, because I do think it's just so abundant at this age. I remember the assignments or activities that we did, the more hands on you can get, no matter what age you are… I was in college and my favorite things were doing projects.

This quote recalls the basis for Dissanayake's (2003) statement that the arts are an inherent human predisposition, because they are intrinsically pleasurable. That teachers are reflecting on such issues is a telling indicator that educational methods could take our inherent proclivities into account to the benefit of their students.

Significance

The behaviors documented in this study support the possibility that children have inherent artful proclivities, which – if fully understood – could enable us to sculpt a curriculum that favors such predispositions rather than thwarts them. Because standards-driven formal education can be a dissatisfying, if not painful, experience for many children (Huebner, Drane & Valois, 2001; Olson, 2009; Seligson, Huebner & Valois, 2005; Willingham, 2009), the potential for this research to inform educational methods toward a more satisfying means of learning is significant. It could be argued that in order for formal education to be successful and satisfying for its students, it must consider our inherent predispositions for learning, which includes social and emotional context. Many pedagogies already encompase these ideas theoretically, some more overtly than others. Place-based education, for example, advocates for a collaborative community-focused education, based on the notion that humans have depended on their tightly-knit social groups and local resources for survival for nearly all of human existence. Gruenewald and Smith (2008) remind us that contemporary forms of education have had a very short history

compared to the long history of education. “Place-based education is both an old and a new phenomenon. All education prior to the invention of the common school was place-based. It is education as practiced in modern societies that has cut its ties to the local” (p. 1). Mark Graham (2007) extends the ideas proposed by Gruenewald and Smith to include aesthetic education and art making in his version of critical place-based art education. By utilizing this pedagogy, formal education can help us socially and contextually reengage, thereby embracing the historic tendencies of human beings.

Although not based on evolutionary science, Montessori and Reggio Emilio schools are among the many examples of experiential learning that integrate more active exploration of one’s environment. The Montessori curriculum in particular is especially attuned to the inclusion of art in the classroom (Montessori, 1964). Dedicated to incorporating music into the Montessori classroom, Maria Montessori conveyed her conviction that the age of three to six is a peak learning period for musical education to her colleague Elise Braun Barnett. Barnett (1973) wrote,

> But the rendition of a heard melody can occur only after 'understanding' through coordination of body movement and the music's movement – the rhythm – is experienced. Hearing music, then, is the necessary preparation for making music, and therefore daily 'concerts' are an integral part of the Montessori program. (p. vi.)

Montessori even designed specific instruments to cultivate children’s musical skills (Faulmann, 1980). Although often criticized for its overly structured approach, the theory behind the Montessori method embraced creativity. “The creative arts have a definite place within the Montessori curriculum. The very fact that painting, for example, appeals to to the young child is proof enough of his need for freedom basic to creative self expression” (Montessori, 1965, p. 104).

Classrooms can only facilitate this active learning in the arts, however, by allowing the space and the freedom for students to move and make noise, a liberty the students had in the pre-kindergarten classroom I observed, but one that seems to diminish in conventional schools with the advancement of educational level. Dissanayake (2007) wrote of the incongruous nature of active children and physically restrictive schools:

> Educators and others readers are invited to think of adolescent boys they know, for example, who seem more suited to hunting wooly mammoths or building a long house with their buddies than to learn algebra. Moreover, it is helpful to realize that for at least a quarter-of-a-million years people much like ourselves led fully human lives without reading, writing or arithmetic. It is not ‘natural’ to sit in school 6 to 8 hours a day (p. 994).

Clearly we need to continue teaching reading, writing and math skills in schools, but perhaps we can conceptualize the curriculum more broadly to incorporate our natural predispositions for learning. Schools can invite artful behaviors rather than discourage them. We can only imagine the failure that would have accompanied prehistoric men attempting to learn to hunt by sitting on their neatly aligned rocks and studiously listening to a lecture about hunting theory. Physical evidence suggests that these Paleolithic ancestors more likely understood hunting through experiential methods, including tracking the animal, experimenting with tools and weapons, participating in hunts, and possibly even through drawing and sculpting images of their prey.

Although art historians have not shown evidence for a definitive purpose for prehistoric cave art, the possibility that these images were used as teaching tools, for target practice or to ensure the survival of the herd has not been eliminated (Kleiner, 2009). Perhaps contemporary education can take a cue from our Paleolithic predecessors and incorporate both direct experience and art making into our curriculum.

The potential for artful proclivities supports an experiential approach to learning as well as the integration of arts in our schools. Ultimately, art education can be a presuasive leader for meaningful, experiential education that fosters social bonds, emotional engagement and cognitive development.

Conclusion

The preponderance of spontaneous artful behaviors in this pre-kindergarten classroom suggests that artful behaviors may be an inherent part of human behavior, but this conclusion only begs the question of if and when these artful proclivities disappear. Do adults simply learn to control, divert or suppress such artful impulses? Or do we merely find more acceptable means for expressing our artfulness, such as gardening, scrap booking, wood working or even subtly tapping our pen rhythmically on the desk? In future research, I hope to address more explicitly the changes in children's artful behaviors and their perceptions and experiences of art as they move through elementary school and into adulthood.

That human beings around the globe have been making art for at least 30,000 years, suggests a need to understand why and how artful behavior has played (and can continue to play) such a vital role in the history of human life and education. Due to our inherent proclivities for learning, educators who understand human nature can better support the complex learning that has taken place among members of our species for thousands of years and potentially transfer such capacities for learning into the modern-day classroom. Therefore, being able to identify artful behavior as an inherent human proclivity has significant implications for the methods and curricula employed in mainstream American education and underscores the need for a more art-friendly pedagogy. Ultimately, if we can better understand and apply the role of artful behavior among humankind in general, and children in particular, our schools can better serve the needs of the many students who fill our classrooms.

References

Aiken, N. (1998). *The biological origins of art.* Westport, CT: Prager.

Alland, A., Jr.. (1977). *The artistic animal: Inquiry into the biological roots of art.* Garden City, NY: Anchor Press/Doubleday.

Alland, A., Jr.. (1989). Affect and aesthetics in human evolution. *The Journal of Aesthetics and Art Criticism*, 47(1), 1-14.

Arnheim, R. (1969). *Visual thinking.* Berkley, Los Angeles, London: University of California Press.

Barnett, E. B. (1973). *Montessori and music.* New York: Schocken Books.

Bruner, J. (1986). *Actual minds, possible worlds*. Cambridge, MA: Harvard University Press.

Carroll, N. (2004). Art and human nature. *The Journal of Aesthetics and Art Criticism,* 62(2), 95-107.

Center on Education Policy. (2007). *Choices, changes, and challenges: Curriculum and instruction in the NCLB era.* Washington, DC: Author. Retrieved on November 11, 2007 from http://www.cep-dc.org.

Coote, J. & Shelton, A. (Eds.).(1992). *Anthropology and Aesthetics*. Oxford: Claredon Press.

Cosmides, L. & Tooby, J. (1992). Cognitive adaptations for social exchange. In J.H. Barkow , L. Cosmides, & J. Tooby. (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture.* Oxford: Oxford University Press.

Coss, R.G. (1965). *Mood provoking visual stimuli: Their origins and applications*. Los Angeles: University of California Press.

Dahlberg, K. (August 2006) 'The individual in the world – the world in the individual': Towards a human science phenomenology that includes the social world. *The Indo-Pacific Journal of Phenomenology,* 6(special edition), 1-9.

Dahlberg, K., Drew, N. & Nyström. M. (2001). *Reflective lifeworld research.* Lund, Sweden: Studentlitteratur.

De Sousa, R. (2004). Is art an adaptation? Prospects for an evolutionary perspective on beauty. *The Journal of Aesthetics and Art Criticism*, (62)2, 109-118.

Dewey, J. (1902/1991). *The school and society and the child and the curriculum.* Chicago: University of Chicago press.

Dewey, J. (1934). *Art as experience.* New York: Penguin Group.

Dissanayake, E. (1988). *What is art for?* Seattle: University of Washington Press.

Dissanayake, E. (1995). *Homo Aestheticus: Where art comes from and why.* Seattle: University of Washington Press.

Dissanayake, E. (1999). "Making Special" – An undescribed human universal and the core of a behavior of art. In B. Cooke & F. Turner. (Eds.), *Biopoetics: Evolutionary explorations in the arts* (pp. 27-46). Lexington, KT: International Conference on the Unity of the Sciences

Dissanayake, E. (2000). *Art and intimacy: How the arts began.* Seattle: University of Washington Press.

Dissanayake, E. (2003). Art in global context: An evolutionary/functionalist perspective for the 21st century. *International Journal of Anthropology,* 18(4), 245-258.

Dissanayake, E. (2007a). In the beginning: Pleistocene and infant aesthetics and 21st-century education in the arts. In L. Bresler (Ed.), *International Handbook of Research in Arts Education*. New York: Springer.

Dissanayake, E. (2007b). What art is and what art does: An overview of contemporary evolutionary hypotheses. In C. Martindale, P. Locher & V.M. Petrov, (Eds.), *Evolutionary and neurocognitive approaches to aesthetics, creativity and the arts* (pp. 1-14). Amityville, NY: Baywood Publishing Company.

Dissanayake, E. (2008). The arts after Darwin: Does art have an origin and adaptive function? In K. Zijlmans & W. van Damme (Eds.), *World art studies: Exploring concepts and approaches* (pp. 241-263). Amsterdam: Valiz.

Donald, M. (2006). Art and cognitive evolution. In M. Turner (Ed.), *The artful mind: Cognitive science and the riddle of human creativity* (pp. 3-20). Oxford: Oxford University Press.

Dunbar, R. (1993). Coevolution of neocortical size, group size and language in humans. *Behavioral and Brain Sciences, 16* (4), 681-735.

Dunbar, R. (1996). *Grooming, gossip and the evolution of language.* London: Faber and Faber.

Dunbar, R. (2003). The social brain: Mind, language, and society in evolutionary perspective. *Annual Review of Anthropology, 32*(2003), 163-181.

Dunbar, R. (2007). The social brain hypothesis and its relevance to social psychology. In J.P. Forgas, M.G. Haselton & W. von Hippel (Eds.), *Evolution and the social mind: Evolutionary psychology and social cognition* (pp. 21-31). New York: Psychology Press.

Dutton, D. (2009). *The art instinct: Beauty, pleasure and human evolution*. New York: Bloomsbury Press.

Efland, A.D. (2002). *Art and cognition: Integrating the visual arts in the curriculum.* New York: Teachers College Press.

Eibl-Eibesfeldt, I. (1988). The biological foundation of aesthetics. In I. Rentschler, B. Herzberger & D. Epstein. (Eds.), *Beauty and the brain: Biological aspects of aesthetics* (pp. 29-68). Basel: Birkhauser Verlag.

Eisner, E. (1997). The state of art education today and some potential remedies: A report to the National Endowment for the Arts. *Art Education,* 50(1), 27-28, 61-72.

Eisner, E. (2002). *The arts and the creation of mind.* New Haven, CT: Yale University Press.

Epstein, D. (1988). Tempo relations in music: A universal? In I. Rentschler, B. Herzberger & D. Epstein. (Eds.), *Beauty and the brain: Biological aspects of aesthetics.* Basel: Birkhauser Verlag.

Faulmann, J. (1980, May). Montessori and music in early childhood.*Music Educators Journal, 66* (9). 41-43.

Feist, G. & Brady, T. (2004). Openness to experience, non-conformity, and the preference for abstract art. *Empirical Studies of the Arts*, 22(1), 77-89.

Feist, G.J. (2007). An evolutionary model of artistic and musical creativity. In C. Martindale, P. Locher & V.M. Petrov, (Eds.), *Evolutionary and neurocognitive approaches to aesthetics, creativity and the arts*. Amityville, NY: Baywood Publishing Company.

Froebel, F. (1826/1903). *The education of man*. New York: D. Appleton and Company.

Givón, T. & Young, P. (2002). Cooperation and interpersonal manipulation in the society of intimates. In M. Chibatani (Ed.), *The grammar of causation and interpersonal manipulation* (pp. 23-56). Amsterdam: John Benjamins.

Golomb, C. (1992). *The child's creation of the pictorial world.* Berkley, CA: University of California Press.

Golomb, C. (1993). Art and the young child: Another look at the developmental question. *Visual Arts Research, 19*. 1-15.

Graham, M. (2007). Art, ecology, and art education: Locating art education in a critical place-based pedagogy. *Studies in Art Education,* 48(4), 357-391.

Gruenewald, D.A. & Smith, G.A. (Eds.). (2008). *Place-based education in the global age: Local diversity.* New York: Taylor & Francis Group.

Heidegger, M. (1962). *Being and time* (J. Macquarrie and E. Robinson, Trans.). New York: Harper and Row.

Huebner, E.S., Drane,W. & Valois, R.F. (2001). Levels and Demographic Correlates of Adolescent Life Satisfaction Reports. *School Psychology International,* 21(3), 281-292.

Husserl, E. (1964). *The idea of phenomenology* (W.P. Alston & G. Nakhnikian, Trans.). The Hague, Netherlands: Martinus Nijhoff.

Husserl, E. (1976). *Ideas: General Introduction to pure phenomenology* (W. Gibson, Trans.). New York: Humanities Press. (Original work published 1931)

Iacoboni, M. (2005). Understanding others: Imitation, language, empathy. In S. Hurley & N. Chater (Eds.), *Perspectives on imitation: From mirror neurons to memes* (pp.77-99). Cambridge, MA: MIT Press.

Iacoboni, M. (2007). The quiet revolution of existential neuroscience. In E. Harmon-Jones & P. Winkielman (Eds.), *Social neuroscience: Integrating biological and psychological explanations of social behavior* (pp. 439-453). New York: The Guilford Press.

Iacoboni, M. (2008). *Mirroring People: The New Science of How We Connect with Others.* New York: Farrar, Straus, & Giroux.

Immordino-Yang, M.H. & Damasio, A. (2007). We feel, therefore we learn: The relevance of affective and social neuroscience to education. *Mind, Brain, and Education,* 1(1), 3-10.

Immordino-Yang, M.H. (2008). The smoke around mirror neurons: Goals as sociocultural and emotional organizers of perception and action in learning. *Mind, Brain and Education, 1*(1), 3-10.

Kellogg, R. (1955). *What children scribble and why*. Palo Alto, CA: National Press Books.

Kellogg, R. (1969). *Analyzing children's art*. Palo Alto, CA: Mayfield.

Kellogg, R. (1969). *Analyzing Children's art*. Palo Alto, CA: Mayfield.

Key, C.A. & Aiello, L.C. (1999). The evolution of social organization. In R. Dunbar, C. Knight & C. Power (Eds.), *The evolution of culture: An interdisciplinary view* (pp. 15-33). New Brunswick, NJ: Rutgers University Press.

Koroscik, J.S. (1997, March/April). The intellectualization of American arts education policy. *Arts Education Policy Review,* 98(4), 2-13.

Lowenfeld, V. (1947). *Creative and mental growth.* New York: Macmillan Publishing Company.

Lowenfeld, V. (1952). *The nature of creative activity: Experimental and comparative studies of visual and non-visual sources of drawing, painting, and sculpture by means of the artistic products of weak sighted and blind subjects and of the art of different epochs and cultures.* London: Routledge & Kegan Paul Ltd.

Lowenfeld, V. (1987). *Creative and mental growth.* New York: Macmillan Publishing Company.

Luquet, G. (1913). *The drawings of a child*. Paris: Alcan.

Martindale, C., Locher, P. & Petrov, V.M. (Eds.), (2007). *Evolutionary and neurocognitive approaches to aesthetics, creativity and the arts*. Amityville, NY: Baywood Publishing Company.

Merleau-Ponty, M. (1981). *Phenomenology of perception* (C. Smith, Trans.). London: Routledge & Kegan Press.

Merleau-Ponty. M. (1964). *The primacy of perception* (J. M. Edie, Trans.). Evanston, IL: Northwestern University Press.

Merleau-Ponty. M. (1968). The v*isible and the invisible* (C. Lefort, Ed., A. Lingis, Trans.). Evanston, IL: Northwestern University Press.

Montessori, M. (1964). *The Montessori method.* Cambridge, MA: Robert Bentley, Inc.

Montessori, M. (1965). *A Montessori handbook; "Dr. Montessori's own handbook."* (Orem, R.C., Ed.). New York: G.P. Putnam's Sons.

Mithen, S. (1996). *The prehistory of the mind: A search for the origins of art, religion and science.* London: Thames and Hudson.

Mumford, L. (1926). The Child as Artist. *The New Republic,* June 30, 165-67.

Olson, K. (2009). *Wounded by school: Recapturing the joy in learning and standing up to old school culture.* New York: Teachers College Press.

Ramachandran, V. S. (2004). *A brief tour of human consciousness: From impostor poodles to purple numbers*. New York: Pi Press.

Ramachandran, V.S. & Hirstein, W. (1999). The science of art: A neurological theory of aesthetic experience. *Journal of Consciousness Studies, 6*(6-7), 15-51.

Ramachandran, V.S. (2000). Mirror neurons and imitation learning as the driving force behind "the great leap forward" in human evolution. http://www.edge.org/documents/archive/edge69.html

Sarason, S.B. (1990). *The challenge of art to psychology.* New Haven, CT: Yale University Press.

Schaefer-Simmern, H. (1950). *The unfolding of artistic activity: Its basis, process and implications*. Berkley, CA: University of California Press.

Seidman, I. (2006). *Interviewing as qualitative research: A guide for researchers in Education and the Social Sciences,* 3rd ed. New York: Teachers College Press.

Seligson, J.L., Huebner, E.S., & Valois, R.F. (2005). An investigation of a brief life satisfaction scale with elementary school children. *Social Indicators Research*, 73, 335-374.Solso, R.

(2003). *The psychology of art and the evolution of the conscious brain.* Cambridge, Mass.: MIT Press.

Smith, C.U.M. (2005). Evolutionary neurobiology and aesthetics. *Perspectives in Biology and Medicine, 48*(1), 17-30.

Solso, R. (2003). *The psychology of art and the evolution of the conscious brain.* Cambridge, Mass.: M.I.T. Press.

Storbeck, J. & Clore, G.L. (2007). On the interdependence of cognition and emotion. *Cognition and Emotion, 21*(6), 1212-1237.

Streb, J.H. (1984). Thoughts on phenomenology, education, and art. *Studies in Art Education*, 25(3), 159-166.

Sully, J. (1896). *Studies of Childhood.* New York: D. Appleton.

Thomlinson, R.R. (1934). *Picture Making by Children*. London: The Studio.

Thompson, C.M. & Bales, S. (1991). "Michael doesn't like my dinosaurs": Conversations in a preschool art class. *Studies in Art Education, 33*(1), 43-55.

Trevarthen, C. (1995). Mother and baby -- Seeing artfully eye to eye. In R. Gregory, J. Harris, P. Heard, & D. Rose. (Eds.), *The artful eye*. Oxford: Oxford University Press.

Turner, F. & Pöppel, E. (1988). Metered poetry, the brain and time. In I. Rentschler, B. Herzberger & D. Epstein. (Eds.), *Beauty and the brain: Biological aspects of aesthetics* (pp. 71-90). Basel: Birkhauser Verlag.

Turner, F. & Pöppel, E. (2001). The neural lyre: Poetic meter, the brain and time. *Poetry Magazine*. Retrieved November 23, 2008 from http://www.cosmoetica.com/B22-FT2.htm.

Turner, F. (1999). An ecopoetics of beauty and meaning. In B. Cooke & F. Turner (Eds.), *Biopoetics: Evolutionary explorations in the arts.* Lexington, KY: ICUS.

Van Manen, M. (1990). *Researching lived experience.* New York: State University of New York Press.

Voland, E. & Grammer, K. (Eds.). (2003). *Evolutionary Aesthetics*. New York: Springer.

Voland, E. & Grammer, K. (Eds.). (2003). *Evolutionary Aesthetics*. New York: Springer.

Vygotsky, L. (1987). *Thought and language* (A. Kozulin, Ed.). Cmbridge, MA: MIT Press.

Vygotsky, L. S. (1971). *Psychology of art.* Cambridge, MA: M.I.T. Press.

Willingham, D.T. (2009). *Why don't students like school?: A cognitive scientist answers questions about how the mind works and what it means for the classroom.* San Francisco: John Wiley & Sons.

Wilson, J. (1998). Art-making behavior: Why and how arts education is central to learning. *Arts Education Policy Review*, 99(6), 26 – 41.

Zaidel, D.W. (2005). *Neuropsychology of art: Neurological, cognitive, and evolutionary perspectives.* New York: Psychology Press.

Zeki, S. (1999a). Art and the brain. *Journal of Consciousness Studies,* 6(6-7), 76-96.

Zeki, S. (1999b). *Inner vision: An exploration of art and the brain.* New York: Oxford University Press.

---

[i] "Psychobiological needs" can be understood as biologically embedded by our evolutionary history.

[ii] Although this study is primarily interested in artful proclivities, we must rely on the observable manifestations of these predispositions, that is artful behaviors, which can be spontaneous or modest without the intent to create a finished product or work. Artful behaviors, however, can also lead to an art product as in artification, the act of aesthetically elaborating pre-existing objects (Dissanayake, 2003), places and persons, or art making, the process of generating works of art in various media.

[iii] The Institutional Review Board of the university's Human Subjects Office approved this study.