

AN ABSTRACT OF THE THESIS OF

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This study explored the significant verbal and behavioral patterns and the art expressions that emerged in the art making process of three sets of identical twins during art therapy sessions, and determined how these patterns were similar and different between the twins. The research took place at a small midwestern grade school and junior high, and consisted of three art-making sessions for each participant spanning a ten day period. Data collection followed naturalistic observation, and data were analyzed according to an amended version of the Four Categories of Art Therapy Assessment (FCATA). Results indicated that each set of twins shared similarities in the content and imagery created in their art work, and that the differences were varied across all three sets of twins. Nine out of eleven themes of similarity emerged in the analyzing of the "Art Part" of the FCATA, and four out of nine themes of variation emerged in the analyzing of the "Process" category of the FCATA.

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A QUALITATIVE INQUIRY

A Thesis

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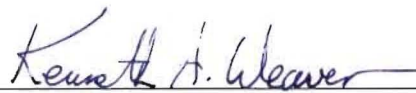
Master of Science

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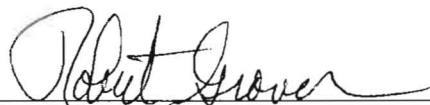
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CHAPTER 1

INTRODUCTION

Being an identical twin is central to the person I am. The bond I have with my sister is stronger than the same DNA we share. It is solid, yet pliable; it is unbreakable, yet weather-worn; it is cherished, but individuated. Even now as an independent adult I can not deny the behavioral, emotional, and physical similarities we mirror. I have often wondered if other identical twins feel similar in their desire to be individuated from one another, yet remain fascinated by their similarities. Twins comprise only a little over 3% of the population but have been studied by researchers across numerous fields for decades as they try to understand such issues as heritability, genetics, behavior, personality, and mental illness (Center for Disease Control, 2005). One area that may benefit from utilizing the twin population is that of creativity.

Researchers have studied various forms of creativity using the twin population for many years, often with mixed results (Martindale, 1999). Twin studies that examined the heritability of creativity elicited results that suggest creativity is genetic (Gedda, 1992; Reznikoff, Domino, Bridges, & Honeyman, 1973). Conversely, other studies emphasize the uniqueness of each twin in creativity with results of these studies indicating a negative correlation between creativity and genetics (Torrance, 1976; Waller, Bouchard, Lykken, Tellegen, & Blacker, 1993). Clearly, the research on twins and creativity is contradictory, and the number of studies on twins and art making are severely limited. No studies allowed for spontaneous creative expression. If spontaneous art making were accommodated, would more similarities in the art making of each twin be found, or would the findings strengthen the case for the individual creativeness of each twin? Much

like twins mirror each other in observable behavior, cognitive processes, and verbalizations, do twins also mirror each other in the creative process? Psychologists define creativity as “the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints),” (Sternberg & Lubart 1999, p. 17) and this is the definition that will be used in this study.

The purpose of this study was to document significant verbal and behavioral patterns, and art expressions that emerged in the art-making of identical twins, determining how these patterns were shared or not shared by the twins. Art therapy offers advantages in this type of qualitative inquiry; the art work itself becomes data to be analyzed, and the art therapist is qualified and trained to understand, utilize, and promote the art making experience (Musham, 2001). In art therapy, twins are a population that has gone unexplored but may offer valuable information about the creative process, art making behaviors, and creativity for art therapists. This study may contribute to the art therapy literature on the topic of creativity, art therapy interventions, and also describe and demonstrate understanding of graphic development.

For these reasons, this study attempted new insight into creativity and twins by seeking to find the similarities and differences that emerged in the non-directed (spontaneous) art-making of three sets of identical twins spanning three individual art therapy sessions. The twin population for this study included identical twins, ages 7 years to 14 years, all attending a rural midwestern grade school. In order to better understand the focus of this study, a review of the literature on twin studies, creativity, and the creativity of children follows.

Literature Review

In order to understand the purpose and direction of this study, a review of the literature on studies about twins and creativity as it pertains to art-making follows.

Another key element of this study is graphic development since the twin sample studied included participants in elementary school through junior high. Since this study was conducted through an art therapy lens, a brief overview of the art therapy literature on graphic development is included.

Art Therapy

In art therapy, art-making behaviors of children have been explored; however, neither the art making nor art products of twins have been studied. Art therapy educator and researcher Nancy Knapp summarized the history of art therapy research: “Research to evaluate the efficacy of art therapy or to understand specific art processes with particular populations has developed in many arenas and has been reviewed by numerous individuals” (1992, p. 7). However, after an extensive search, art therapy with twins was not found. Art making that takes place in the therapeutic setting may reveal the connection between art maker and art product that is not replicated in other settings in which art making takes place. Examining the artwork of identical twins from an art therapy perspective could add to art therapy research and knowledge among professionals.

Twin Studies

Using twins (especially identical twins) in research across disciplines has occurred for many decades. A search of the literature on twin studies in the last five years, however, revealed that researchers in the fields of psychiatry, medicine, genetics

(heritability), criminology, and psychology (especially studies on personality, alcoholism, eating disorders, and nature vs. nurture) have utilized identical and fraternal twins.

Generally, studies have relied on the self report of parents (Seifer, 2003); studies that compared fraternal and identical twins concluded that identical twins were more similar to one another in intelligence and memory than fraternal twins (Torrance, 1976). Across disciplines in which twins have been studied, two types of twin research exist: studies involving twins reared together and studies involving twins reared apart. While twin studies that examined creativity and twins reared together are discussed in a later section, the review of literature concerning twins reared apart appears next in order to gain a full picture of twin research.

Twins reared apart. The most well-known study of twins separated at birth and studied as adults is the Minnesota Study of Twins Reared Apart (MISTRA). This longitudinal study began as a series of case studies that grew exponentially as additional sets of separated twins volunteered to join the study (Johnson, Bouchard, Segal, Keyes, & Samuels, 2003; Segal, 1999). Studies of separated twins such as MISTRA essentially consisted of adults because the twins in these studies were separated at birth or at a very young age. The focus of such studies sought to explore similarities and differences in twin pairs.

Numerous researchers have based research on and referenced the Minnesota Twin Study (Holden, 1980; Johnson et al. 2003; Segal, 1999) since its beginning in 1979. Prior to this, only three studies had been conducted on twins reared apart, but none of these studies included fraternal twins (Segal). The purpose of including fraternal twins was to determine a genetic component, which, incidentally, became one of the study's greatest

criticisms; critics of the study thought researchers of the Minnesota study ignored differences due to environmental factors, and only examined differences due to genetics (Segal).

Each set of twins underwent six days of testing that examined psychological and medical history and health, measured mental abilities and traced developmental history, and consisted of extensive paper tests, interviews, and brain wave assessments (Holden, 1980). Researchers examined everything from daily habits to hygiene products used by each twin (Segal 1999). Ultimately, researchers determined that similarities existed more often between separated identical twins than separated fraternal twins (Holden; Segal).

Although researchers of the MISTRA conducted numerous and rigorous tests, very little was found in the literature concerning creativity and twins reared apart. Johnson et al. (2003) carried out a study by reexamining scores of 87 pairs of twins who were original participants in the Minnesota Study. These researchers sought to determine whether the twins' scores on the Stroop Color-Word Test (SCWT) were due to environmental or genetic factors. The SCWT was designed based on the assumption that naming the ink color of a word takes longer when the word is the name of a different color. Although looking at color recognition, the areas examined with this measure were mental abilities, reading, and personality. The literature on twins reared apart offers little on the topic of creativity and is therefore better understood by examining the literature on creativity and children, and specifically creativity and twins.

Creativity

While a universal definition of creativity has not been made, several researchers have attempted to provide clarity for this often generalized concept. Psychologists

Sternberg and Lubart (1999) define creativity as “the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints)” (p. 3). For art therapists, certainly, original work is desired, yet not absolutely necessary (e.g., stereotyped art can offer insight for the therapist concerning the client), but the value of art extends beyond its “usefulness.” Personality psychologist Gregory Feist (1999) noted that psychologists think that “creativity by definition is mysterious and beyond the pale of empirical scrutiny” (p. 273). He stated that while the process of creativity may not be understood, focusing on the product and the person yielded insight into creativity.

Conversely, Mace and Ward (2002) employed grounded theory to focus on the creative process of 16 professional artists while creating individual art work. They determined that the creative process is dynamic and builds upon itself. The art therapist places value on the person, the product, and the art making process, creating an even more comprehensive view of creativity. For example, a humanistic definition of creativity (found within the art therapy literature) is “characterized by intense awareness, a heightened state of consciousness, and joy at the moment of execution” (Garai, 2001, p. 153). The common thread that appears in these very different definitions across these fields is about producing and the intent of the producer; the evidence of creativity is the product. The relationship of children, how they engage in the creative process, and finally the end art product that they each create are relevant to discuss.

Creativity and children. Historically, children’s art work has been examined for various purposes. Lark-Horovitz and Norton (1960) noted that at the time of their study, the art work of children was rarely examined for the art work itself. Similarly, Rostan

(1998) stated that often research is not done on the art making of young children, as young children may not continue to develop their artistic ability as they get older and therefore not contribute to the body of knowledge about artistic development. Of the studies reviewed on children and creative art making, most relied on the self report of the children for data.

Rostan's (1998) study relied on the self-report and interviews of children who participated for at least one year in an after-school painting program. Rostan was interested in each child's perception of art making, and measured these experiences of creativity based on personal report. Rostan found that the older participants, attempted to create realistically and take on artistic challenges. Rostan reported on the children's perceptions in the areas of focus, what it means to be an artist, and the meaning of creativity. While interviews and self report can yield useful data, observations of process and art making behaviors are essential in capturing the individual's creative experience. For example, an interview with a young child who does not have adequate verbal skills will not yield as much information as observing the child in the act of making art.

Lark-Horovitz and Norton (1960) examined characteristics of children's directed art work (the children were asked to draw a specific topic). They studied 10 characteristics of the art work, based on characteristics of adult art work. The authors then correlated these characteristics to determine any relationships among them. They found that some characteristics tended to occur together, whereas others occurred independently. Although this study was one of the first to examine the art work of children, the characteristics were pre-determined and based on adult art work. Also, the children were not given freedom to create spontaneously, and therefore the art work may

have been affected by this. In an art therapeutic setting where self-directed art making is encouraged, the results may be different.

Similarly, O'Hare and Cook (1983) conducted a study on children's use of color in their art work (such as the ability to use color correctly and the ability to vary color), but the same objections to this study apply. These researchers based color use on that found in the art work of adults, and the children participating in the study were asked to finish an incomplete picture. While the older children in the study were allowed some spontaneous art making, the youngest children were not free to create their own art work.

Finally, Miller (1986) did a study of creativity and children utilizing naturalistic observation to examine the spontaneous music behaviors of children from birth to five years. Although the focus of Miller's study was on music behaviors, her study examined the creative behaviors of children and is therefore relevant to this study. Miller chose a selected population of children in the school system (including children in a Head Start program) and allowed them to engage freely in music activities in a group setting. She then discerned themes and patterns that emerged through data analysis after the observations were complete. Miller reported that using naturalistic observation with this age group yielded the most useful data as verbal skills are not yet fully developed. The freedom and openness of the design employed by Miller fosters the uninhibited creativity of young children as well.

Research studies on creativity have relied on interviews or the self-reports of parents or the child. While these methods are a pragmatic way to gather information, a naturalistic observation method as employed by Miller fosters the emergence of

spontaneous creativity because the observer collects data directly from the behaviors of the child, who is able to interact with the environment freely.

Creativity and twins. One area of focus in the literature is that of creativity and twins. Numerous studies in the literature on creativity and twins have examined the heritability of creativity, often with mixed results (Martindale, 1999). Twin studies that examined the heritability of creativity elicited results that suggest creativity is genetic (Gedda, 1992; Reznikoff et al. 1973). Conversely, other studies emphasize the uniqueness of each twin with creativity. Results of these studies indicate that creativity was not found to have a genetic component (Torrance, 1976; Waller et al. 1993). Clearly, the research on twins and creativity is contradictory, and the number of studies on twins and art making are limited.

In several studies on creativity, Torrance (1976) found that all identical twins (monozygotic, MZ) are no more similar in creativity than fraternal twins (dizygotic, DZ). In all the studies reviewed, no sets of twins were compared to non-twin siblings. While fraternal twins are no more alike genetically than non-twin siblings, fraternal twins are alike in many ways that non-twin siblings are not. For example, fraternal twins are the same age, in the same year at school, and in the same stage of life. This may influence certain behaviors, including the art-making process.

Reznikoff et al. (1973) conducted a twin study to examine the heritability of creativity. In this study, 117 pairs of twins took 10 creativity tests; the results indicated that overall, the correlation of scores on the tests was higher in the sets of identical twins. Upon closer examination of the tests utilized by these authors, fraternal twins had a stronger correlation in the Franck Drawing Completion Test (FDCT) and on the Barron-

Welsh Art Scale than the identical twin participants. These two tests utilized in the study asked participants to finish an incomplete drawing (FDCT) and to indicate liking or disliking of 86 designs (Barron-Welsh Art Scale). Of the 10 tests of creativity utilized in the study, these two measures encompassed creativity within an art context and are therefore the most relevant for the present study. Finally, Reznikoff et al. allowed the sets of twins in this study to test simultaneously, and therefore each sibling may have influenced the other. Testing each twin separately corrects this threat to originality of art work.

Gedda (1992) addressed the threat to originality in his study of creativity and twins. In a directed drawing of family mealtime, 31 sets of identical twins and 13 sets of fraternal twins were given colored pencils and white paper and asked to complete the drawing in isolation. The researcher used 10 factors such as color choice and elements included in the art. Gedda found that although there is statistically significant evidence that creativity may be genetic, each twin was found to be individually creative; Gedda did a “specific analysis of concordance” (p. 2) and found that the concordance rate for identical twins was 6.45%, while the concordance rate for fraternal twins was 0%. In other words, the art work of the identical twins was more similar across the 10 factors than the art work of the fraternal twins (although there were numerous differences in the art work of the identical twins as well). Several aspects of the art-making process were not examined in this study. Art making behaviors were not recorded, and media choice was not offered (the participants were given only white paper and a box of colored pencils). In the therapeutic setting, if media were freely chosen (and several media offered) and art behaviors recorded, a concordance rate of this kind might change.

Studies that suggest the heritability of creativity are few, and other research does not support the concordance of creativity in twins. Although the present study does not attempt to determine if creativity is genetic, it attempted to explore the similarities and differences in the art making of identical twins. Twin studies that examine the art making process are needed, and art therapy offers a method that relates the person, the process, and the product.

Graphic Development

An overview of recent literature on graphic development is sparse, but specific fields interested in graphic development include developmental psychology, the arts and art education, creativity, and culture. Art therapists have long been interested in how an artist creates, and the product the artist creates. Two prominent voices on graphic development in art therapy are Lowenfeld and Golomb, and their findings will be utilized in the proposed study.

Viktor Lowenfeld, an art educator interested in the graphic development of children from a therapeutic standpoint, posited these questions: “How far should we go in our interpretation of children’s drawings? When do we do injustice to ourselves and the child in interpreting the use of drawings?” (1982, p. 3). Lowenfeld maintained that “Everything is legitimate which is visually conceivable to you, that which you can see in the child’s drawings” (p. 13). Lowenfeld believed that more could be gleaned from a child’s art work, but that this must be done by a professional trained in children’s art (such as an art therapist). From this belief, Lowenfeld developed a framework providing guidelines in evaluating children’s art work. He included six stages that are differentiated by three categories within each stage: drawing characteristics, space representation, and

human figure representation. The six stages include the Scribbling Stage, Preschematic Stage, Schematic Stage, Dawning Realism Stage, Pseudo-naturalistic Stage, and Adolescent art Stage. With these stages, art educators and art therapists may identify the artistic development of a child, based on technical qualities employed in the art work, and therefore Lowenfeld's stages are used as a framework in this study.

Golomb (2004) classified the research done on children's art work as either cognitive deficit or a reflection of inner emotions. The cognitive deficit perspective holds that children create art based on how they see the world; the art work therefore mirrors age and lack of cognitive development. Both the cognitive deficit and inner emotion perspective are vital in art therapy, as art therapists are concerned with how children create and their thoughts about their work, and also with the expression of self found in the art.

Overall, few studies explore twins and creativity as related to art making. The majority of the existing studies focus on the heritability of creativity. The focus of this study was on the person, the product, and the art-making process in order to gain a broader understanding of the art making behaviors of twins. Like some of the studies discussed above, naturalistic observation appears to best accommodate method data gathering in order to facilitate spontaneous art creation.

Research Question

What are the similarities and differences that emerge in the non-directed art-making activities of identical twins, including verbalizations, behavior patterns, and art expressions?

CHAPTER 2

METHOD

Introduction

A broad search of the literature on twin studies reveals limited studies on twins and creativity, especially in art therapy. This study addressed the need for research on twins and creativity through qualitative research. The purpose of this study was to determine how significant verbal and behavioral patterns and the art expressions that emerged in the art-making process of identical twins during art sessions were shared or not shared by the twins.

Design

Naturalistic observation, a method of qualitative research, was utilized in this study. Leedy and Ormrod (2005) define naturalistic observation as “observations in a qualitative study that are intentionally unstructured and free-flowing: The researcher shifts focus from one thing to another as new and potentially significant objects and events present themselves” (p. 145). Some of the advantages of this method include flexibility and allowing behaviors in the art-making process to emerge without having preconceived categories that might distract from significant observations that arise in the moment. The free-flowing nature of qualitative research was ideal because the sessions fostered spontaneous art making. Guba and Lincoln (1982) support the role of the naturalistic observer as a researcher who does not attempt to fit the data into anything that is preconceived; the data guided the results and themes that emerged.

While relying on or incorporating the report of the parents is possible, Seifer (2003) stated that parent bias in twin studies is exceptionally high. To sidestep that

problem in this project, each twin provided the themes that were examined, as recommended by Welch (1983). To maintain data that were purely spontaneous and based only on the verbalizations, behaviors, and creations that take place in the sessions, I did not include parent and teacher perceptions of the twins.

Participants

The participants in this study were three sets of identical twins, ranging in age from 7 to 14 years. All participants were students at a small midwestern grade school and junior high where multiple sets of identical twins attend school. The sample consisted of the sets of twins who volunteered for this research. To obtain this sample, an art therapy internship supervisor at the school agreed to identify identical twins in attendance there. The superintendent, principal, classroom teachers, and the parents of the twins were contacted by a letter briefly describing the purpose and intent of the research, and participation was voluntary (Appendix A). While confidentiality was assured, anonymity was not; this was stated specifically in the letter, as well as details describing the steps that were taken to ensure confidentiality.

Assessments and Guides

The Four Categories of Art Therapy Assessment (FCATA; Slater, 2003; Appendix B) was used to analyze the observations that were made in the art-making sessions. The four categories included: (1) how the art making occurs (the Art Part), (2) what each twin draws (the Art Making Process), (3) what each twin verbalizes about the art during the creating process (The Narrative), and (4) the researcher's reactions to the entire process (The Process). The FCATA is an art assessment format based on an art therapy approach of observing the person, the process, and the product. Gant (1993)

supports these tenets; art therapists are not only concerned with the finished product, but the “verbal and nonverbal responses to various materials and procedures” as well (p. 140). The sessions that took place were not considered therapy; however, viewing the participants and their art work through an art therapy lens was ideal, as the art therapist’s training promotes this type of experience (Musham, 2001). While the FCATA is an unpublished assessment at present, it lends itself as a “flexible guide” for art therapists to examine the whole person, a practice encouraged by the humanistic approach to art therapy (Garai, 2001). By organizing the data from the art sessions, observations, artwork, and verbalizations into the FCATA format, themes of similarity as well as differences emerged. More research by art therapists is needed with the FCATA to evaluate the efficacy of this approach to art-based assessment. This study was based on naturalistic observation with the FCATA as framework for organization of the data; therefore, reliability and validity of this assessment were not essential. In order to better understand how the data were analyzed, a brief description of the four categories of the FCATA is included in Table 1.

While all the categories of the original FCATA were applicable for this study, a few clarifications were created in order to facilitate recording the data. The existing categories were broadened to better show the participants’ experiences and data analysis, but the four categories did not change; no category or sub-heading of the FCATA was removed. In the first category, “The Art Part,” the sub-heading “Paper Orientation” was added as this became significant in the data as a similarity among all three sets of twins. All paper works of art created by all participants were oriented horizontally; thus, paper orientation is listed as a theme of similarity for all sets of twins but is not elaborated.

Table 1

The Four Categories of Art Therapy Assessment

The Art	Art-Making Process	The Narrative	The Process
Use of materials	Context	Art work's content,	Affect
Media choice	Directions &	according to the artist	(Beginning, middle,
Form (schema)	materials offered	Artist's verbal	end of session)
Line quality	Project completion	description of work	Cognitive
Placement of	time	Title given by artist	(followed directions,
objects, design	Mistakes	Content according to	graphic attempts)
& shape	(erasing, crossing	the art therapist	Researcher's
Use of space	out, throwing	Client-specific	observations
Color choices	project away,	representations	
Emphasis with	starting over)	Continuity of	
Materials	Total number of	verbalizations &	
Paper	works created in	representations	
Orientation	each session	Verbalizations	
Material		during the session	
manipulation		Graphic indicators	

An additional sub-heading of “Material Manipulation” was included in this category of the FCATA, as the data indicated a need for a more specific identifier than “Emphasis with Materials.” For this study, “Emphasis with Materials” was taken to indicate *how* the materials were used. For example, the artist’s behavior while using the materials (excited, hard pressure, light sketchy lines) would indicate emphasis. In the data for this study, the agility or skill with which the participants used the materials became significant, and the added sub-heading of “Material Manipulation” distinguishes these data. In the second category of the FCATA, “The Art-making Process,” a sub-heading of “Total number of works created in each session” was added, as this became significant in the comparison between the twins in each set. The third and fourth categories of the FCATA (“The Narrative and “The Process) remained unchanged. For the sub-heading “Graphic Indicators” in the third category, Lowenfeld’s (1987) stages of graphic development were utilized to identify the artistic development of all participants.

Lowenfeld’s (Lowenfeld & Brittain, 1987) work provides guidelines in evaluating children’s art work, and includes six stages that are differentiated by three categories within each stage: drawing characteristics, space representation, and human figure representation. The six stages include the Scribbling Stage, Preschematic Stage, Schematic Stage, Gang Stage, Pseudo-Naturalistic Stage, and Adolescent Art Stage. Because art therapists and art educators have utilized Lowenfeld’s stages extensively, this model was utilized in this study. Lowenfeld also places emphasis on the individuality of art making and the process and product, and therefore is compatible with the FCATA. He states that his stages “should be considered as midpoints, and the stages themselves as convenient labels for a study of children’s art and not as invariant categories” (p. 437).

Therefore, Lowenfeld's stages served as a guide for classifying the artwork in these sessions.

Materials

Materials utilized in this research included a set of 12 colored pencils, crayons, lead pencils, a set of ten markers, a set of acrylic paints and assorted brushes, and heavyweight, large white bond paper. Various other materials, including scissors and glue were also available. In addition, Model Magic, a brand of self-drying clay was offered to participants. Colors of Model Magic offered included red, white, yellow, and blue. The researcher supplied all art materials, and each twin independently had the opportunity to use the exact same materials as all other participants. Due to the spontaneous creative process fostered in these sessions, other materials not offered by the researcher may have become part of the artwork (for example, if one participant provided his or her own pencil or pen, or creatively used something in the room where the sessions took place). This spontaneous creativity fostered uninhibited self-expression and is supported by Miller (1986).

Procedure

The public school where these sessions occurred was accessed with the assistance of the grade school counselor. A letter (Appendix A), introduced the superintendent and the building principal to this study. This letter also addressed space and room needed for the sessions, as well as how much time needed with each student. The grade school counselor agreed to identify and contact parents of all twin sets, and these parents were contacted by letter as well (Appendix A; Informed Consent, Appendix D).

In the first session, after introductions, materials that were available were presented by simply naming them, and then these directions were provided: "Create whatever you wish. I'm going to take notes while you create to help me remember how you make art. You have about 30 minutes. Ready? OK." Materials offered in this initial session included 12x18 inch white paper, a set of ten markers, pencils and large erasers, a set of 12 colored pencils, and a box of 64 crayons. In the second session, scissors (one adult-size and one child-size), a glue stick, paint (acrylic: red, orange, yellow, green, blue, purple, brown, black, and white), assorted paintbrushes, water cups, and an old T-shirt (for use as a smock) were provided in addition to all the materials offered in the first session. After naming these materials, these directions were provided: "Create whatever you wish. I'm going to take notes while you create to help me remember how you make art. You have about 30 minutes. Ready? Ok." In the third session, all previous materials were offered, as well as one-ounce packages of Model Magic (red, yellow, blue, and white; one of each color was offered to each twin). The researcher gave the same directions as in the first two sessions. In each session after the initial instructions were given, each twin was free to create in any manner, and to create as many art works as desired. At the end of each session, each twin was asked to give all art work created a title and was asked to identify his or her favorite part of the art work. Art works created in these sessions are included in Appendices E, F, and G.

Data Collection

The data for this research (including the behaviors, verbalizations, and content of the art work observed) were examined by content analysis. The frequency of each characteristic in the material was tabulated (Leedy & Ormrod, 2005).

While qualitative research emphasizes letting the data emerge, a simple structure of each session was utilized to promote clarity and consistency for each set of twins. Each twin engaged in non-directed art making with the media of choice, each of the three sessions over a 10-day period lasted approximately 30 minutes for each twin, and the number of art pieces created was not restricted. Each twin was seen separately but in consecutive sessions when possible; neither twin saw the artwork created by the other. Three or four media choices were placed on the table by the researcher in each session. The same directions were given to each twin on the same day and included open-ended directives such as “Create whatever you wish.” The art-making behavior was recorded in the form of field notes and included any behavior or verbalization that occurred. Data included the art works created, and the field notes of the researcher.

CHAPTER 3

RESULTS

This study addressed the gap in research on twins and creativity through a method of naturalistic inquiry. The purpose of this study was to document relevant verbal and behavioral patterns, the art expressions that emerged in the art making process of identical twins during art therapy sessions, and determine whether these patterns were shared or not shared by the twins. Naturalistic observation was used to record these behaviors and patterns, and data were analyzed with content analysis guided by the FCATA (Slater, 2003) and Lowenfeld's (1987) stages. A color-coding system was utilized to identify recurring themes, and then these themes were summarized and presented in tables for clarity.

Seven-year-old identical twins Mary-Kate and Ashley, eight-year-old identical twins Johnny and Tiger, and fourteen-year-old identical twins Lily and Rose participated individually in three spontaneous art-making sessions in which all verbal, behavioral, and product content were observed and recorded. The sessions took place over a week-and-a-half period (due to scheduling conflicts, school cancellation on one of the appointed session days, and the absence of one twin), and each set of twins was seen separately, although not necessarily consecutively, in order to serve the needs of the classroom teachers. Each session lasted approximately 20 to 30 minutes, and all sessions took place in the art therapy room in the school. Each twin was given identical directions when entering the art room, and each twin was asked to provide a pseudonym. Ashley was the only twin who requested a name be chosen for her. After the analyzing process, several

themes of similarity emerged as well as differences between each set of twins, and are summarized in Tables 2 through 4.

Themes of Similarity, Mary-Kate and Ashley

Mary-Kate and Ashley are seven-year old identical twins; they turned eight-years old one week after this research was completed. The girls are in separate second-grade classrooms, but they both attend an after-school program where “We do art stuff sometimes, but we have to draw what they tell us to,” according to Ashley. When each girl was asked to pick a pseudonym, Mary-Kate chose her name “Because it’s a twin.” Ashley had difficulty thinking of a name, and asked the researcher to choose one for her. Mary-Kate and Ashley appeared to be shy in the sessions, and both spoke with a noticeable, similar lisp. Mary-Kate and Ashley’s sessions did not take place consecutively due to scheduling in their classrooms, but they were seen on the same days. Mary-Kate and Ashley’s themes of similarity and differences are represented in Table 2.

In analyzing the data from the three sessions with each twin, several similarities were identified. After reading the written data and color-coding frequently recurring words, behaviors, verbalizations and examining the content of the art work, four prominent themes emerged.

Color use and order. The theme, color use and order, refers to color choice of each twin in each piece of art work she created, the number of times a particular color was used, and the order in which colors were utilized. This similarity is seen in the first drawing made by each girl in the first session (Figure E1, “A Clubhouse,” by Mary-Kate and Figure E2, “I drew a house,” by Ashley). While Mary-Kate used 22 colors in her first drawing and Ashley used seven, both girls used the green crayon three times. In these

Table 2

Mary-Kate and Ashley: Emerging Themes in the Art Work, Process, and Verbalizations

Themes of Similarity	Themes of Differences
Color use and order	“Mistakes”
Schema and imagery	Use of space and materials
Behavior while making art	Intent/purpose of art work
Paper Orientation	

first drawings, both girls used the green crayon first to draw the baseline (grass), and the yellow crayon second to create a sun. Both Mary-Kate and Ashley were deliberate in their color choices; in her fourth drawing in the first session (Figure E3), Ashley mouthed the word “Strawberry” when she chose this color to use. Mary Kate also specifically chose her colors, reading the sides of the crayons before using them in her first drawing. During Session 3, Mary-Kate and Ashley opened and used the red Model Magic first, then the package of blue. Mary-Kate opened and used the yellow Model Magic third (Ashley did not use the yellow), and then each girl opened and used the white Model Magic last. Both girls used all of each color they opened.

Schema and imagery. The second theme of similarity, schema and imagery, refers to the subject matter that each girl depicted in her art work, and how she chose to depict it. This theme includes images created, use of words in the art work, and prominent shapes created by each girl in her work. This similarity is supported by the imagery that is observable in Mary-Kate and Ashley’s art work from session one (Appendix E). Mary-Kate created a blue house with one window, a sun, an orange flower, a blue skyline, and a green baseline (grass) in her first drawing (Figure E1). All of these images were also created by Ashley in her first drawing (Figure E2). Ashley drew a large star in her second drawing, in the same way that Mary-Kate drew two stars in her first drawing; the stars are even created in the same way, as the pattern used to create the star is seen (the stars are not just outlined images). Perhaps the most striking similarity in schema is seen in Mary-Kate’s “The Quilt” (Figure E4) and Ashley’s “The Colorful Page” (Figure E5). Both girls divided their sheets into three vertical sections and colored these areas, creating three distinct areas of color which are characterized by open, loose scribbles.

Ashley and Mary-Kate both used words in their art work; Mary-Kate wrote words in two of her works (Figures E6 and E7), while Ashley used words in four of her pieces (Figures E3, E5, E8, and E9). The word “blue” was written by Ashley in her fifth drawing (Figure E5), which she then scribbled over with the blue crayon.

Similarity in imagery and schema between the two girls may also be seen in the use of shapes and lines. Although Mary-Kate and Ashley’s paintings appear to be very different, both girls created squiggly lines with the paintbrush; Ashley created squiggly lines in the blue and white paint that she then smoothed over; Mary-Kate created white and blue squiggly lines that are visible in her painting from session three (Figure E10). Geometric shapes are utilized by both Mary-Kate and Ashley in Session 2; in her painting “Colorful,” (Figure E11) Ashley creates areas of paint that are square-like and rectangular. In Mary-Kate’s “Shape Quilt,” (Figure E6) geometric shapes divide the paper. Finally, when using the Model Magic in the third session, both Mary-Kate and Ashley fashioned a pinch-pot (a simple vessel created by moving the fingers around the outer edge of the clay while held in the palm of the hand) with the clay during the formation of their final sculptures, and both indented holes with their fingers at some point while manipulating the clay.

Behavior while making art. Behavior during art making refers to the behaviors of each girl throughout each session, as well as her affect as noted by the researcher. This theme for Mary-Kate and Ashley may be described as level of activity during the sessions, behavior with the materials, and the level of deliberation that each girl expressed while making art. The observable affect of each girl during the art making sessions was quiet and focused. While each girl chatted with the researcher on the way to

the art room, neither girl verbalized much while engaged in the art process. Mary-Kate had only three total unprompted verbalizations, and two of these were at the beginning of her sessions when she stated what she was going to do, such as “Make something with the scissors.” Ashley whispered things about her art work under her breath but had only five un-prompted verbalizations in her sessions, three of which were “ooh,” or “oops.” In the third session while using the Model Magic, Ashley stated, “My mom has all this at home, that’s why she says I’m such a good artist and I know how to make faces and ghosts.” This was the longest verbalization made by either girl while she was creating art, although both girls appeared to have fun, as evidenced by smiling while working with the materials.

Mary-Kate and Ashley were both very active and “in-charge” of the art table and materials during their sessions. In her first session, Ashley laid the markers out on the table close to her paper to efficiently reach them, she stood up and sat down as needed to facilitate her art making, and she moved freely between materials; Ashley even tried to sharpen one of the crayons in the sharpener in order to draw a sharper line. Mary-Kate also sat down and stood up several times, arranged the materials within easy reaching distance, and moved her chair under the table for greater ease in reaching the paint in session two.

Mary-Kate and Ashley’s behaviors with the art materials were similar as well, especially when painting. Each girl used both hands while painting; the right hand held the paintbrush to paint, and then each girl passed the paintbrush to the left hand to apply paint to the paintbrush, finally passing the loaded paintbrush back to the right hand to continue painting. Finally, both girls rinsed their paintbrushes often and were careful to

rinse them well; Ashley even examined her paintbrush several times after rinsing, touching it with her fingers to make sure it was clean.

Mary-Kate and Ashley both expressed a high level of deliberation while making art, as evidenced by placing a hand or finger on her chin, pursing her lips, or pausing to stand back or examine her work. Mary-Kate paused and put her index finger or hand on her chin four times total throughout the sessions, while Ashley did this five times. Ashley paused and pursed her lips while deciding what color or material to use a total of three times, and Mary-Kate did this once. Each girl paused to stand back and examine her work or paused to think during the sessions. Mary-Kate paused 18 times, and Ashley did this 6 times. Finally, Ashley paused deliberately during the third session while she was painting, pointing to each color on her palette to see which she wanted to use. Mary-Kate displayed this type of deliberation in the second session in her first art piece (Figure E6), pausing and pointing to each space as she tried to decide what to place in each delineated area.

Although not included as a major theme, overall each twin's art work is representative of Lowenfeld's Schematic Stage, Seven-Nine Years: The Achievement of a Form Concept (Lowenfeld & Brittain, 1987). Because Lowenfeld's stages are a framework for identifying the graphic development of children, both girls seem to fit into this stage due to the level of artistic development and age rather than this being a notable twin similarity. For example, each twin's art work illustrates several of Lowenfeld's drawing characteristics. Mary-Kate's first drawing, "A Clubhouse," (Figure E1) is not drawn in perspective (the person is taller than the rainbow next to which she is standing), the drawing is very bold and flat, and space is represented by a skyline and baseline. The

rainbow offers several indications of graphic development, as it is a symbol and not correctly placed (rainbows are seen in the sky); Mary-Kate most likely included this in her drawing not to show a rainbow in the sky, but because it has personal meaning. Finally, Mary-Kate's forms do not overlap, but are for the most part lined up across the baseline, another characteristic of this stage. Ashley's art work is more difficult to support, as most of her work is abstract and appears to be exploratory. Ashley's most concrete work is her drawing titled "A Flower-Dog" (Figure E9), and her first drawing of which she stated "I drew a house" (Figure E2) when asked for a title. Like her sister, Ashley drew a skyline and a baseline (this skyline and an implied baseline are also present in Ashley's more free work, "The Sky Section," Figure E8). There is little or no overlapping of her objects, which are not drawn in perspective; the dog is much smaller than the two large flowers that are the center of this art work. By examining the graphic development of the girls according to her art work, several differences may be noted as well. The themes of differences that emerged in Mary-Kate and Ashley's sessions are discussed below.

Themes of Differences, Mary-Kate and Ashley

In analyzing the data from the three sessions with each twin, several differences were identified. After reading the written data and color-coding frequently recurring words, behaviors, verbalizations and examining the content of the art work, three prominent themes emerged as differences (determined by lack of color coding under certain categories of the FCATA).

Mistakes. For Mary-Kate and Ashley, the theme of mistakes refers to rushing or hurrying of their art work, the number of works completed by each, and what each girl

did when she made a mistake. Mary-Kate did not rush her artistic decisions in any session, and she did not leave any of her art pieces unfinished. In Session 2 when she was given a five-minute reminder, she paused contemplatively, and began a new art piece with the paint. In her first session when she was running out of time, she did not rush on her work “The Quilt” (Figure E4) until she began coloring in the large orange-red area. Mary-Kate also did not rush her “Pillow” (Figure E7) she created with the Model Magic but created a drawing to go with her sculpture after she was told she was almost out of time. Ashley did not spend as much time on her art works as her sister but often rushed through her art to begin another drawing. Ashley only needed a five-minute time reminder, but in one session. The number of works each twin completed was added to the FCATA category “Art-making process” as the discrepancy in the number of works created by Mary-Kate compared with the number of works created by Ashley emerged in analyzing the data. Overall, Ashley created 10 pieces of art work, and Mary-Kate created 6.

Each twin handled her mistakes in a different manner. Overall, Mary-Kate was a perfectionist with her work and attempted to cover up or erase her mistakes, and Ashley was freer with her art and worked with her unintended mistakes, incorporating them into her art and even sometimes repeating them. When Mary-Kate made a mistake or did not like something about her art work, she spent considerable time disguising or covering it up. For example, in her drawing “A Clubhouse” (Figure E1), Mary-Kate began to draw what appeared to be a person in the lower right corner. After drawing a head and a stick body, she filled in the head with red and reinforced the body with black over and over, ending up with a lollipop-like image. Interestingly, this is the last thing Mary-Kate added

to her drawing before she moved on to her second drawing. Mary-Kate's pattern of fixing her mistakes continued in the second session ("Shape Quilt," Figure E6), when she misspelled a word, erased it, moved to a blank section of her paper, began to write the letter "R" and the letter "A," erased these letters, drew a raindrop, and then labeled this section "raindrop." This is significant, because Mary-Kate had established a pattern of drawing the picture and then labeling, and she stuck to this pattern, even erasing letters that she would re-write after her picture was completed. In the third session, Mary-Kate accidentally laid the corner of her paper in her paint palette, getting red paint in the bottom right corner of her work "The Rooster Barn" (Figure E10) Even after the researcher wiped the paint off her paper, Mary-Kate painted over this spot with green several times in order to cover it up. Ashley, on the other hand, adopted her mistakes into her schema. Her mistakes became inspiration for what she did next in her art work. In the first session, Ashley made a black dot by her sun in "The Sky Section" (Figure E8). Ashley hesitated after doing this and stopped drawing but did not attempt to cover it up or turn it into anything else. In her second session ("Colorful," Figure 11), Ashley accidentally mixed red and blue paint on her paintbrush, and when she painted on her paper and saw her mistake, she said "oops," but then the next time she loaded paint on her paintbrush, she took a dab of red and blue intentionally and painted with the mixed colors again. Using this as inspiration, Ashley continued to mix two colors of paint on her brush throughout the session. Also in this same painting, Ashley attempted to paint an area of brown, but her paintbrush was too dry, which resulted in uneven and feathery lines on her paper. Ashley stopped and examined this, wet her brush, but did not go back over the feathery lines. When working with the Model Magic in Session 3, Ashley

smashed her clay into a flat pancake and then folded it together like a taco. When she tried to unfold it and it stuck together, she said “oops,” but once she unstuck it, she repeated this same process, smiling as she stuck the sides together over and over before forming her final sculptures (Figure E12).

Use of space and materials. The second theme of variation, use of space and materials, refers to the negative and positive space in each art piece, whether objects and images created were filled in or left as an outline, and the variety of materials used by each girl in the sessions. Overall, Mary-Kate utilized the entire page in most of her works, and in two of her six works the entire page was filled in with color. All of Mary-Kate’s drawn images and objects are solid and filled in with color, and even her Model Magic “Pillow” (Figure E7) is a solid, three-dimensional shape. Ashley, on the other hand, utilized only the center of the page in most of her drawings, and most of her drawn images and objects are outlines; she does not fill in her objects with color (Figures E2, E8, and E9).

The girls differed on the variety of materials they used as well. Apart from her paintings, Mary-Kate used more than one medium in each art work created; she used 22 different colors of crayons alone in her first drawing, “A Clubhouse,” (Figure E1) as well as markers. Including all three sessions, Mary-Kate used each medium offered at least once. She also used all the Model Magic offered, as well as all the colors. Ashley, on the other hand, used only three colors of Model Magic offered, and even though all together she created more total works of art than her sister, she used fewer media. In all her art pieces, Ashley used only one medium per art work. Interestingly, Ashley did use four

different paintbrushes in both her paintings, while Mary-Kate used only one paintbrush in her paintings.

Intent and purpose of art work. The third theme, the intent or purpose of each girl's art work simply indicates the implied intent of each artist, and each girl's individual style that is conveyed by her art work. Golomb (2004) states, "The primary function of composition is to arrange the elements of line, form, space, and color in a manner that indicates to the viewer what the work is about" (p. 169). When examining Mary-Kate's and Ashley's work, Golomb's definition of composition helps define the difference in purpose and intent of each girl. For example, Ashley's work is very expressive, and Mary-Kate's work is very figurative. Ashley's painting in Session 2, "Colorful" (Figure E11) supports this; her intent, as indicated by the title and her composition is experimentation and expression. She mixes the paint together, paints several layers, and explores numerous types of lines: dry, feathery, large, thick, watery, small, and squiggly. Ashley used four different sized paintbrushes on this painting in order to create all her shapes and lines. Even in examining Ashley's drawings from Session 1, she began rather concrete and gradually became completely non-representational by her last drawing, "The Colorful Page" (Figure E5). Even in Ashley's painting "Food Shack" from the third session (Figure E13), the painted image is not a clear structure but appears to be more exploratory. In comparison, Mary-Kate's drawings convey representational, concrete images, and in this way her work becomes more detailed and complicated than her sister's. Mary-Kate's depictions are specific, and her titles support this (Figures E1, E4, E6, E7, E10, and E14). She often uses labeling to help convey her meaning, and even her Model Magic "Pillow" (Figure E7) is accompanied by a description and drawing that was

created as she looked at her sculpture. Perhaps the greatest example of the difference in the intent and purpose of Mary-Kate and Ashley is seen in their drawings that are so similar, Mary-Kate's "The Quilt" (Figure E4), and Ashley's "The Colorful Page" (Figure E5). Although these drawings are strikingly similar, the title given by each girl reveals her intent; Ashley's purpose was to create a page full of color, but Mary-Kate's intent was to create areas of color that represent something concrete, a quilt.

Themes of Similarity, Johnny and Tiger

Johnny and Tiger are eight-year-old identical twins, in separate second-grade classrooms. Both boys were talkative and appeared excited to do art, although Tiger appeared to be more outgoing and comfortable during the sessions than Johnny. Tiger wears eyeglasses, and Johnny does not. When asked to pick a pseudonym, Tiger chose his name immediately, "Because it's my favorite animal." Johnny paused and thought about his name for a while, and then shrugged and stated "Johnny, I guess." Johnny and Tiger were not seen consecutively due to classroom scheduling, but they were each seen on the same days. Johnny and Tiger's themes of similarity and differences are represented in Table 3.

In analyzing the data from the three sessions with each twin, several similarities were identified. After reading the written data and color-coding frequently recurring words, behaviors, verbalizations and examining the content of the art work, four prominent themes emerged.

Schema and imagery. The theme of schema and imagery is supported by images, use of words, and lines created in both boys' work. Both Johnny and Tiger presented representational art work, and many of their images they portrayed are similar. The art

Table 3

Johnny and Tiger: Emerging Themes in the Art Work, Process, and Verbalizations

Themes of Similarity	Themes of Differences
Schema and imagery	Use of space and materials
Narrative	Intent or purpose of art work
Pressure	Confidence with materials
Paper orientation	

work of both boys from session one (Appendix F) shows similar images. Johnny's first drawing, "The House or Outside" (Figure F1) is a drawing of two houses, and Tiger also portrayed a house in his drawing "It's Raining on the House" (Figure F2). In these drawings as well, both boys repeated blue images: Johnny depicted a line of blue birds above his house, and Tiger created a line of blue raindrops above his. Johnny and Tiger's paintings from session two also contain similar imagery. In his painting "Road and Lava Under" (Figure F3), Johnny identified the orange area at the bottom of the page, asking "Do you know what this is? Lava." Not only did Tiger create a picture with lava in the first session, "It's Raining on the Lava" (Figure F4), but again in Session 3, in his sculpture scene "Night time and Summer with a Volcano" (Figure F5), in which the lava is seen halfway down on the inside of the mountain. Each boy also created a paper airplane, Tiger in Session 1 (Figure F6) and Johnny in Session 3 (Figure F7). Interestingly, Tiger created a paper hat in the first session (Figure F8), and Johnny told a story in the last session while he was creating his paper airplane, "I made a pirate hat once out of paper." The similarities of imagery continued in session three, as each boy identified that he was creating a tree out of the Model Magic. Johnny created a "White Tree" (Figure F9), and Tiger created a "bush...no, a tree...well, really it's a flower..." (Figure F10). Johnny and Tiger both used words in their art work once, and both in Session 1; Johnny labeled all the images in his drawing "The House or Outside" (Figure F1), and Tiger labeled his drawing "The Volcano" (Figure F11).

Johnny and Tiger both created similar lines in their art work. Similar stair-step-like lines are seen in Johnny's work from Session 1, "Colors and ladders" (Figure F12) and in Tiger's work "The Volcano" (Figure F11). Although the subject matter identified

by each boy is different, the lines used are very alike. In Session 2, both boys created thick, heavy lines of paint to create their pictures (Tiger, Figure F13; Johnny, Figure F3). Interestingly, in each boy's painting, the red and green lines are adjacent, as are the purple and black lines. Again, although the subject matter is different, the use of lines is similar.

Narrative. The second theme of similarity, the narrative, refers to what each boy said before, during, and after each session; for Johnny and Tiger, the most similarities in narrative were inspired by the act of art making, verbalizations about color, and verbalizations about the finished product. While both boys were talkative before, during, and after their sessions, most of Johnny's verbalizations were brought on by using the art materials, while Tiger's finished products inspired the most verbalizations for him as his art clearly became a metaphor for himself. For example, while using the colored pencils in Session 1, Johnny stated "I have colored pencils in the classroom. I don't use them that much. I just use my crayons and markers. I lost my yellow one, but at least we have a large bag of them." This verbalization is important, as Johnny had said very little until this. In Session 3, while using the Model Magic, Johnny stated "I don't really get to use this that much." Tiger, on the other hand, spoke the most about his finished art work. He told a detailed story for each drawing he created, and the stories became personal for him. Tiger stated of his first drawing in Session 1 ("The hammerhead shark in the ocean," Figure F14) "that is swimming away from the other ones because it's mad because the other ones hurted it's feelings." In the second session Tiger described his painting "The Rainbow-Rainer" (Figure F13): "It makes the rain because the people always say 'We want the rainbow to make rain,' and they always get their wish. Even toys." This story is

personal for Tiger, as he told a story earlier in the session about not receiving as many toys for Christmas one year as his brothers.

Interestingly, both boys stated similar things about certain colors. For example, both boys told the researcher something about the color purple. Johnny stated “Almost the whole class likes purple,” and Tiger stated “A lot of people like purple.” Both Johnny and Tiger commented on the white paint while they painted in Session 2. Johnny stated, “But I can’t really see the white,” but used it in his painting anyway. Tiger stated while painting white in his rainbow, “It won’t show a lot,” although he continued to use it as well. Finally, both boys commented about St. Patrick’s Day when using the color green.

Pressure. The third theme of similarity, pressure, refers to the degree of force used by Johnny and Tiger in creating their art, with the materials and how much pressure they used to create their images. In the first session, both Tiger and Johnny broke their pencils; Johnny broke his pencil twice, and sharpened the same colored pencil three times in order to create dark, hard lines. Tiger immediately broke the brown colored pencil as soon as he used it in Session 1, saying “Ahhhh” and then sharpening the pencil until it was extremely sharp. Johnny and Tiger both used lots of pressure when painting as well. Johnny applied great pressure to the paintbrush, digging and wiping it on the paper to remove all the paint from the paintbrush and stood up occasionally in order to apply the paint, pressing hard on his paintbrush until it was flat against his paper. Tiger also used firm pressure when painting, even when he rinsed his paintbrush in the water, saying “I’m banging in the water!” For the brown dots Tiger created under his rainbow (Figure F13), Tiger used force as he slammed the paintbrush into his page. The manner in which the boys created with the Model Magic was also similar. Johnny squeezed the red Model

Magic in his hands with so much pressure that he grunted, while Tiger made zooming and plopping noises as he placed his “ice cubes” and “snowballs” around his scene, “Winter with Snowballs” (Figure F10).

Although not included as a major theme, it is relevant to note that overall Tiger and Johnny’s art work is representative of Lowenfeld’s Schematic Stage, Seven-Nine Years: The Achievement of a Form Concept (Lowenfeld & Brittain 1987). Because Lowenfeld’s stages are a framework for identifying the graphic development of children, it is probable that both boys fit into this stage due to the level of artistic development and age rather than this being a notable twin similarity. For example, each twin’s art work illustrates several of Lowenfeld’s drawing characteristics of this stage. One of these characteristics is repeated forms. Tiger repeats his volcano (Figures F4, F5, and F11), sea animals (Figures F14, F15, and F16), and lava (Figures F4 and F5). Johnny repeats his tree forms, his image of a house, and birds (Figure F1). There is little or no overlapping in any of Johnny or Tiger’s creations, and their drawings are both very flat. Lack of perspective, another characteristic of this stage is seen in Johnny’s drawing “The House, or Outside” (Figure F1) and in Tiger’s model Magic scene, “Winter with Snowballs” (Figure F10). These two works also illustrate characteristics of this stage identified by Lowenfeld that states that objects are proportional to the significance of meaning to the child; Johnny draws his houses large, but the trees next to the houses are very small in comparison. Tiger creates a tall “flower,” and a large snake, and very large snowballs in comparison to the sun. While the graphic development of Johnny and Tiger is similar, several themes of variation emerged as well as similarities. The themes of variation that emerged in analyzing the data are discussed below.

Themes of Differences, Johnny and Tiger

In analyzing the data from the three sessions with each twin, several differences were identified. After reading the written data and color-coding frequently recurring words, behaviors, verbalizations and examining the content of the art work, three prominent themes emerged as differences (determined by lack of color coding under certain categories of the FCATA).

Use of space and materials. The theme use of space and materials is supported by data referring to the positive and negative space in the art work created by the twins, the filling in versus outlining of images and objects in the art work, and the amount of materials used by each twin, including color. Overall, Johnny used the majority of his paper in all his creations; there is more positive space than negative. In contrast, Tiger's depictions are center-focused and small; even his Model Magic sculptures are small, as compared to Johnny's. Johnny's art work also shows images and objects that are solid and colored-in; Tiger's drawings are outlines only (Figures F2, F4, F11, F14, F15, F16, and F17). Tiger's painting from Session 2, "The Rainbow-Rainer" (Figure F13) is the exception, in which the rainbow fills in the entire page.

The boys also differed in the amount and variety of the materials they used. While Johnny created detailed, complex works, he used sparing amounts of materials, taking only what he needed to complete his piece. Tiger used large amounts of materials for his small, simple works (9 pieces of paper in session one alone); Tiger also used large amounts of paint that he played with in the water cup, rinsing instead of using it on his paper. The variety of color used by Johnny and Tiger also differed. Johnny used four colors in his first drawing alone; Tiger used only four colors in his first nine works!

Johnny also used a greater variety of media, including markers, colored pencils, crayons, and markers in session one, while Tiger used only colored pencils and did not create any mixed-media art pieces.

Intent and purpose of art work. The second theme of variation, the intent and purpose of the artwork of each boy, is supported by what is conveyed by the content and composition of the art work, and the manner in which each boy created. Overall, Johnny's art work is specific, executed with care, and completed with great focus. Tiger's work, however, is quickly done and quantity-focused. Johnny drew everything carefully in his first drawing in Session 1, even carefully labeling his images, and coloring in his drawings (Figure F1). In his painting from Session 2, "Roads and Lava Under" (Figure F3), Johnny carefully dabbed out the paint in slow, short strokes, and then went back over them once he was satisfied with his line. Johnny carefully painted the orange section of lava at the bottom of the page, taking care to fill it in evenly and completely. He stated while painting this "Cause lava's under the ground," and the title he gave this painting reflects this statement, as well as the visual image he created. Johnny clearly began his work with the intention of creating something specific, and this idea is carried out.

Tiger's intent and purpose for his art work is very different. Tiger's intent was to have fun and to explore with the media. Tiger appears to be confident in what he is doing, but it is all in the moment, even the stories that accompanied his art work are spontaneous. In this way, Tiger's art work is dynamic; it developed as he created and often the meaning changed; the finished art product served as a beginning for a story that is not always reflected visually in his art work. In Session 1, Tiger created nine art pieces, indicating that he was exploring and had a lot to express visually; he did not commit himself to one

drawing. In Session 3, Tiger added many details that would fit on the page to his Model Magic scene “Winter with Snowballs” (Figure F10) although the composition of details are unrelated (a large flower, a snake, blue cubes, a sun, and snowballs). However, this is not important, as Tiger created in the moment and simply changed the meaning of images as necessary (the large flower was originally a bush and then a tree before he decided it was a flower). The finished art product then served as a beginning for a story that is not always reflected visually in Tiger’s art work. For example, Tiger’s drawing “The Swordfish and the Sea” (Figure F15) was described by Tiger as “swimming with the other ones and they’re having fun jumping in there,” but Tiger’s visual creation does not depict any action, and there is only one swordfish in the drawing. In his fourth drawing, “The Kite that’s Flying up in the Sky” (Figure F17), Tiger depicts a lone, stationary kite, and yet he stated of this drawing “People are flying the kite and having fun so they’re gonna fly a lot of kites in the blue sky.” Finally, in his drawing “The Volcano,” (Figure F11) Tiger stated, “They put a lot of sand inside of it, almost to the top,” although this sand is not drawn in the picture. While Johnny’s intent with his art work is specific and the purpose of his art work is visually convey this, Tiger’s intent is to explore and have fun. Tiger is comfortable with letting images develop and take on any direction (and meaning) that is needed in the moment.

Confidence with materials. The third theme that emerged as a prominent difference between Johnny and Tiger was confidence with materials, and refers to the amount of control each boy appeared to have over the materials, mistakes made and how they were handled, and artistic attempts made with the media. Overall, Johnny appeared to be hesitant and unsure of himself with the materials, while Tiger was eager and

fearless. In the first session, Tiger freely used whatever he needed, and created two paper sculptures, although with the materials on the table were implied drawing materials. In his first session, Johnny appeared to be bothered by his mistakes and appeared to have a need for control. In his first drawing, Johnny began to draw a tree using the brown marker, said “oops,” and traced over the brown with the green marker several times. Immediately after, Johnny picked up a pencil and began to draw with it, only using the other media when he had the desired outline; in this way, Johnny displayed a need for control with the media. Johnny also looked up at the researcher many times in this session, as if looking for approval or encouragement. In the second session, Tiger accidentally mixed the blue and orange paint on his paper, and although he said “oopsie” when this happened, he did not appear bothered by this and continued to explore mixing other colors of paint on his paper. Throughout this session, Tiger stated that he was having fun and that he liked to paint. During his painting session, Johnny was focused, and worked slowly and carefully. He hesitantly dabbed the paint on his paper to create his roads to make sure he created straight lines, then going back over the lines with great force to make sure they were neat. When Johnny got orange paint on his paintbrush while painting black, he immediately stopped, looked at the researcher with wide eyes, and then over-rinsed his paintbrush in the water to remove all the mixed paint. Tiger remained confident in his third session and appeared comfortable while creating his Model Magic scenes (Figures F5 and F10). He took paper as he needed it to place his small objects on and interacted with the clay, making noises and using paintbrushes to help him mold it. When he had difficulty getting his large flower to stand, he worked with it until it was stable, even taking away part of the clay to make it smaller so that it would stand. Johnny

did not appear comfortable when working with the Model Magic. He began by gingerly poking the clay and barely squeezed it in his hands. When he moved on to the white Model Magic, Johnny barely manipulated it, and spent less than 10 seconds on his “White Tree” (Figure F9). When it did not stand, Johnny moved on without attempting to make it stable. On his third Model Magic piece, Johnny created an “alien” with the blue piece, and then when he opened the yellow package of Model Magic, the clay came out of the package in a perfect rectangle. Johnny did not manipulate the yellow clay but simply stuck it to the blue piece and stated that he was finished, creating all three of his pieces in less than 10 minutes. Johnny created at least two or three minutes longer than Tiger in the first two sessions, but interestingly, in this last session, Johnny created 11 minutes less than his brother. Johnny also had difficulty throughout the sessions opening and closing the art supplies, but Tiger displayed no difficulty.

Themes of Similarity, Lily and Rose

Lily and Rose are fourteen-year-old identical twins who attend all the same classes. The girls are in eighth grade and attend all their classes in the resource room (Special education) at the junior high they attend. Both girls stated that they do not have the opportunity to do a lot of art, but both enjoy crafts when they get the chance (Rose brought her crocheting to the first session). Lily and Rose were seen consecutively for the first and second sessions; each girl was seen on a different day and time for the last session, as Rose was absent from school on the last day of this planned research. Of all the participants, Lily shared the most about being a twin. Rose and Lily also presented as having an extremely close relationship, sharing classes, clothes, and a bedroom at home. Lily stated, “She wants her own room, and we tried it, but we ended up staying in each

other's rooms all the time." Lily and Rose even correctly predicted the pseudonym the other would choose. While Rose remained quiet throughout the sessions, Lily shared a large amount about her and Rose's relationship: "You know how everyone asks if it's fun to be a twin? Rose always says 'No, because you get in fights with your best friend, and there's no space,' and other times she says 'It's cool because you say and think the same things.'" When Lily was asked what her favorite thing about being a twin was, she paused, and then stated "Rose will *always* stick up for me." Lily and Rose's themes of similarity and differences are represented in Table 4.

In analyzing the data from the three sessions with each twin, several similarities were identified. After reading the written data and color-coding frequently recurring words, behaviors, verbalizations and examining the content of the art work, three prominent themes emerged.

Emphasis with materials. The first theme, emphasis with materials, refers to how each girl used the materials, whether the materials were used with confidence or hesitancy, and the amount of pressure utilized with the materials. Lily and Rose used the materials in a similar manner; they both used the media hesitantly and displayed a light, sketchy line quality when creating. In the first session, both girls worked at the same pace. Rose created very light and sketchy outlines with a pencil first, erasing often. Next, she filled in most of her outlines with loose, quick strokes using the markers. Lily also worked hesitantly, using the crayons to fill in her tree and background with light, open strokes. In the second session in which both girls painted, Lily and Rose both painted with short, hesitant strokes. Each girl applied a small amount of paint to her brush, and only on the very tip. While Lily and Rose chose different paintbrushes to paint with, they

Table 4

Lily and Rose: Emerging Themes in the Art Work, Process, and Verbalizations

Themes of similarity	Themes of differences
Emphasis with materials	Graphic development
Schema and imagery	Color use
Paper orientation	Affect during art making

both painted carefully using dabbing motions. Brush marks may be seen in each girl's painting. When working with the Model Magic in the last sessions, both Rose and Lily used light pressure when manipulating the clay. Each twin created a piece that was an assembly of separately-created parts, and when Lily and Rose attached these pieces together, they did so very lightly, applying very little pressure; each girl had to re-stick at least one piece back onto the larger sculpture.

Schema and imagery. The second theme of similarity, schema and imagery indicates similarities in subject matter, shapes, and images created by each girl. All of Lily and Rose's pieces are about nature, except for Lily's Model Magic piece. Lily's crayon depiction from the first session, "Tree" (Figure G1) depicts a multi-colored tree with a knot, a sunset, and water. She divided her paper into multiple planes to add perspective. Rose's pencil and marker creation, "Nature" (Figure G2) has many of these same images. She drew a tree with a knot and multi-colored leaves, a sunset, and a pond; Rose also attempts perspective in her drawing. When each girl was asked about her favorite part of her drawing, they each liked the same part; Rose stated "The sky," and Lily stated "The sun setting." Both girls drew a similar pond with vegetation around it. Rose's pond appears in her drawing "Nature" (Figure G2), and Lily paints her pond in her piece, "Moon Half Sun" (Figure G3). Even Lily and Rose's Model Magic pieces are similar, as they are both relatively flat, dominated by the blue and red clay, and similar in shape (Figures G4 and G5).

Themes of Differences, Lily and Rose

In analyzing the data from the three sessions with each twin, several differences were identified. After reading the written data and color-coding frequently recurring

words, behaviors, verbalizations and examining the content of the art work, three prominent themes emerged as differences (determined by lack of color coding under certain categories of the FCATA).

Graphic development. The first theme of variation, graphic development, refers to Lily and Rose's development of imagery, and how this is supported by Lowenfeld's (1987) stages of graphic development. Overall, Lily's work was more advanced than that of her sister; she attempted shading, perspective, and advanced imagery (the idea of reflection in her painting, "Half Moon Sun," Figure G3). Rose, while she attempts greater detail, has difficulty with perspective, draws only stick figures, and some of her imagery is not logical. While their subject matter in Session 1 is very similar, Lily made a greater attempt at shading (the knot on the tree) and switched between light and dark hues to portray depth. Rose's color was very flat, and no attempt was made at depth; Rose did attempt in her drawings to show perspective (the picture is divided into several planes), as does Lily. Lily's imagery was large and bold, and Rose's imagery was smaller and sketchier, as if it was abbreviated. In this way, Rose attempted greater detail than Lily; Lily's art work was more expressive, illustrating their stylistic and developmental differences. Rose had some difficulties that Lily did not. For example, some of Rose's imagery was not logical. The size of her images were not in perspective (a bunny in the first drawing is almost as large as the bush on the right side of the drawing, Figure G2). Rose drew an apple tree on the beach in her painting, and there was a small bus parked on the beach that was outsized by the stick figures playing with a ball around it. In her Model Magic piece (Figure G5), Rose placed water on all sides of her beach; while this could be considered an island, the size of the person as compared to the island or beach

was off-scale. Because of the graphic differences seen in Rose and Lily's art work, noting where each girl falls in Lowenfeld's stages of graphic development is important.

According to the Lowenfeld's stages, Rose's drawings are characterized by Nine-Twelve Years: The Dawning Realism, and the Pseudo-naturalistic Stage Twelve-Fourteen Years: the Age of Reasoning. Because of her attempt at greater detail, her apparent self-consciousness and hesitancy in her work (as evidenced by her light and sketchy drawing), the absence of shading, and her abbreviated-like depictions, Rose's art work is characteristic of the The Dawning Realism Stage. However, Rose's art work also displays some characteristics of the Pseudo-naturalistic stage, as "shorthand notations," and the portrayal of action. In her beach painting, Rose drew people on the beach playing with a ball, grilling food, fishing, and jumping on a trampoline (Figure G6). According to Lowenfeld's stages, Lily's works would be characterized by the Pseudo-naturalistic stage. Her drawing and painting are centered on something specific, they attempt depth and shading, and they show comprehension of the environment. Perhaps most significantly, Lily's drawings were personal in nature and considered projective. For example, Lily's creations may be seen as two halves; her painting "Moon Half Sun" (Figure G3) illustrates a division between night and day, and one side of her Model Magic piece (Figure G4) is a yin-yang. Because Lily spoke so much in the art sessions about being a twin, perhaps being a twin (one half of a something) is reflected in her art work. This is further evidenced in Lily's use of color; while she painted the night time side of her painting "Moon Half Sun" (Figure G3), Lily told a story about how she and Rose were almost split up by their parents when they were little; as she told this story, she

filled in the night side of her painting with black paint, which could be her projection of dark feelings about being separated from her sister.

Color use. The second theme that emerged as a difference between Rose and Lily was that of color use, and indicates how color is used by each girl, its purpose, and how it was applied. For Rose, color is secondary, implied, and incomplete. Color is used only after a sketch is completed in pencil in sessions one and two, and color is not applied to all images in her pictures; in her first drawing, the bunny and the ground were left uncolored, and in her second drawing all the stick figures on the beach, the bus, and the trampoline under the apple tree were left uncolored. Where Rose did apply color, it was sketchy and incomplete. Her strokes were open and loose, giving the suggestion of color. For Lily, color was primary, diverse, and solid. In each of her pictures, the entire page was filled with solid color; even the moon is painted white in her painting “Moon half Sun” (Figure G3) instead of leaving the blank white page.

There is contrast in the manner in which each girl applied color as well. Rose completed her application of color efficiently and randomly. She used each color only once; in session one, she used the green to color the leaves, the tree, around the pond, and on the tree again before taking the yellow and coloring the berries on the tree, the tops of the weeds around the pond, and the sun, and then moving on to the next color. In contrast, Lily applied color freely and used each color more than once.

Lily used color to convey perspective, depth, and variety. She mixed paint to create new colors in her painting “Half Moon Sun” (Figure G3), and she overlapped her crayon-coloring in her first drawing “Tree” (Figure G1), using light and dark colors to portray shading. Lily used 17 colors in her first drawing (Figure G1), and 9 colors in her

painting (Figure G3). In contrast, Rose used 7 colors in her first drawing (Figure G2), and 7 colors in her painting (Figure G6). Rose used color as a suggestion, not to convey depth or perspective. In comparison, Rose's use of color is abbreviated compared to Lily's use of color.

Affect during art making. The third and final theme of variation is the affect displayed by each girl during her art sessions. Rose and Lily both displayed very different affects during their sessions. Lily presented as open, friendly, and talkative. She asked many questions of the researcher and talked a great deal about being a twin. Lily talked so much during her sessions that she often stopped creating and paused to talk. Rose, however, presented as quiet and shy, focusing during her sessions and displaying little expression of feeling. Rose worked slowly and steadily and spoke without prompting only twice during the first session, once in the second session, and three times in the last session. When she did speak, it concerned what she was doing in the session, such as "I'm done," and "Is there any certain thing you want me to do?" Lily was much more verbose than her twin, speaking without prompting 15 times in the first session, 20 times in the second session, and 10 times in the second session. Lily talked very little about the art sessions but a lot about being a twin, sharing information about her and Rose and their relationship.

Overall, Tables 2 through 4 indicate that schema/imagery and paper orientation are the strongest themes of similarities across these three twin sets. Although other themes of similarities are different for each set, most of the themes of similarity emerged in the analyzing of the "Art Part" category of the FCATA; 9 themes out of the 11 total themes of similarity across all twin sets fall under this category. All three of Lily and

Rose's themes of similarity fall under the "Art Part," as do three of Johnny and Tiger's (their other theme emerged in the "Narrative" category), and three of Mary-Kate and Ashley's (their other theme emerged in the "Process" category).

While more varied than the themes of similarity, a few themes of difference are shared between twin sets; no theme of difference is shared by all three twin sets. Overall, themes of differences that emerged in the analyzing of the "Process" category of the FCATA were the most occurring themes. Four out of nine themes of differences across all three twin sets fell under this category, and three out of nine themes of differences emerged in the "Art Part" category. Interestingly, Mary-Kate and Ashley share two themes of variance with Johnny and Tiger, use of space and materials and intent or purpose of art work. Since each twin set has at least one theme of variance that emerged in the analyzing of the "Process" category (Johnny and Tiger had two), this is considered the strongest overall theme of differences among all three twin sets (even though no specific themes of variance are shared by all twin sets). While the description of each theme above is helpful, it is also necessary to determine what these similarities and differences indicate. This will be explored in the following section.

CHAPTER 4

DISCUSSION

This study documented the verbal and behavioral patterns and the art expressions that emerged in the art making process of three sets of identical twins during art-making sessions. The research took place at a small midwestern grade school and junior high and consisted of three art-making sessions spanning a 10-day period. Data were collected and analyzed according to a revised version of the Four Categories of Art Therapy Assessment (FCATA).

The similarities and differences that emerged from the data for each set of twins were summarized, as well as those across twin sets. Overall, the strongest themes of similarity across all three sets of twins were schema/imagery and paper orientation. All three sets of twins shared these specific themes, and nine out of eleven total themes of similarity emerged in the analyzing of the “Art Part” category of the FCATA. While there were no shared themes of difference across all twin sets, four out of nine themes of differences fall under the “Process” category of the FCATA and is therefore considered to be the strongest variance. As indicated by the data above, the twin sets were very alike in their similarities and very diverse in their differences. In order to gain a better understanding of these similarities and differences, a discussion of each common theme follows in relation with each twin set.

All three twin sets had schema/imagery and paper orientation as themes of similarity. All art works created on paper were created horizontally by all participants. While this is a strong similarity, it may not be attributable to twinship; because of this strong similarity, more research is warranted.

Schema and imagery was another strong theme of similarity across all twin sets, meaning that each twin in all twin sets produced similar imagery and subject matter as his or her sibling. Mary-Kate and Ashley stated that they participated in the after-school program, and occasionally they had an art lesson where they were “told what to draw.” The similarities discussed above (such as the way each girl drew stars and flowers), could indicate that the girls learned to draw in a specific way from the after school program. Mary-Kate’s work “The Quilt” (Figure E4) and Ashley’s work “The Colorful Page” (Figure E5) may also have been influenced by an art lesson from the after school program. Johnny and Tiger also produced similar imagery, although unlike Mary-Kate and Ashley, their similar art work is from different sessions. For example, each boy created a paper airplane, but Tiger created his in the first session and Johnny in the last session. Tiger created lava in the first and third sessions, and Johnny in the second. Also, Johnny told the researcher in his third session “I made a pirate hat once out of paper” (Tiger created a paper hat in the first session). While the boys were not seen consecutively, they were seen on the same days, and the boys are in separate classrooms; because Tiger and Johnny’s similar work is from different days, it might be possible that they discussed their art work with one another. Finally, Rose and Lily created similar art work (multi-colored trees, pond with vegetation, sunsets). For the first session, Lily and Rose were seen consecutively, and this is when they created their most similar work, a tree with a sunset. Since it is not possible they discussed their art work, the similarity may be due to the fact that Rose and Lily share all the same classes and could have been influenced by their classroom experiences. Rose and Lily also presented as having an extremely close relationship, sharing classes, clothes, and a bedroom at home. Each girl

also accurately predicted the pseudonym her sister would choose. Perhaps because these twins share so much, their imagery is influenced by this sharing.

All of Lily and Rose's themes of similarity fall under the "Art Part" category of the FCATA, but Mary-Kate and Ashley as well as Tiger and Johnny's did not. Mary-Kate and Ashley's other theme of similarity was behavior while making art, a theme that falls under the "Process" category of the FCATA. Both Mary-Kate and Ashley were quiet, focused, and displayed deliberation while creating art. While this could be seen as a twin similarity, perhaps it is due more to the fact that Mary-Kate and Ashley have experience and opportunity to create art, both at school and at home (Ashley stated that their mother has art supplies at home). The amount of deliberation and careful examination of their work may be a result of their experience, and because they are directed what to draw at school (their art work is evaluated).

Johnny and Tiger's third theme of similarity, narrative while making art, emerged in the "Narrative" category of the FCATA. For example, Johnny and Tiger both said similar things concerning the specific colors of purple, white, and green. While the comments they made about these colors are striking, it cannot be stated that this is due to Johnny and Tiger's twin relationship; green may have been discussed because St. Patrick's Day was approaching. Perhaps the majority of second-grade students do favor the color purple, and white is difficult to see on white paper. Perhaps the significance is not what was said about each color, but that these colors prompted each boy to verbalize.

While there were no shared themes of difference across all twin sets, four out of nine themes of difference fall under the "Process" category of the FCATA. These results are therefore considered to be the strongest difference. The themes that emerged for each

twin set in this category will be discussed in order to understand the differences that emerged.

Mary-Kate and Ashley differed in their intent and purpose of their art work, as did Tiger and Johnny. While each twin utilized similar imagery as that of her or his sibling, the images had different meaning for each; the titles that each gave for his or her art work offers support this, as do the manner in which the art was created, as discussed in the previous section. Golomb (2004) describes this: “The primary function of composition is to arrange the elements of line, form, space, and color in a manner that indicates to the viewer what the work is about” (p. 169). Although similar “elements” were used by each twin, the arrangement and the meaning assigned to these elements is different.

Johnny and Tiger’s theme confidence with materials and Lily and Rose’s affect during the process fall under the “Process” category of the FCATA as well. These are two different themes based on the information from the data provided for each twin set, and specifically describe the differences that emerged between each set. However, these themes are similar because they pertain to differences in behavior and affect as well as cognitive processes. Tiger was confident with the art materials, Johnny was not; Lily was talkative and animated during art making, and Rose was not. Segal’s concept of polarity offers some explanation for this difference, as twins might each possess different characteristics, such as that of “a *doer* and *watcher* and *aggressor* and *clinging vine*, quantitatively different characters acquired in relation to one another” (1999, p. 78). In other words, one twin may be outgoing because her sister is not; one twin speaks for both as one may be shy, or one twin is confident and a risk-taker because the other is not.

Mary-Kate and Ashley's second theme of variance, mistakes, emerged in analyzing data from the "Art-Making Process" category of the FCATA. For the most part, Ashley did not seem concerned by mistakes that occurred during the art making sessions, while Mary-Kate spent a great deal of effort fixing or disguising her mistakes. Perhaps this difference may be explained by the intent or purpose of each girl as an artist. As discussed above, Ashley's intent in making art was exploration, while Mary-Kate's was to create a figurative, representational rendering of her subject matter. Because of her freer intent, perhaps Ashley was not as concerned with her mistakes but was more open to what they could add to her art work.

Both Mary-Kate and Ashley as well as Johnny and Tiger had the theme, use of space and materials, as a theme of variance, which emerged while evaluating data under the "Art Part" of the FCATA. For both of these twin sets, this theme is offered support by the other theme of variance that these twin sets share, intent and purpose of art work, and the personal meaning that is infused in the art work.

Of all three twin sets, Lily and Rose's themes of variance were the most spread out among the four categories of the FCATA. Lily and Rose's two other themes of variance were graphic development (belonging to the "Narrative" category of the FCATA), and color use (the "Art Part" of the FCATA). The data that emerged for this twin set in the "Narrative" category indicates Lily and Rose are in different stages of graphic development, and this could be for several reasons. Lowenfeld (1987) thought that without further instruction, graphic development would remain in the Gang Stage, and Rostan (1998) also notes that many people do not explore artistically beyond childhood. Interest and motivation to create may play a part, as well as practice and

opportunity. The difference in color use may also be influenced by the same reasons.

Implications for Future Research

This project has several implications for future research. Although the nature of qualitative research allows for the study of a small number of participants, a larger study involving additional sets of identical twins could yield results that build on those of this study. Also, while beyond the scope of this project, including fraternal twin sets could make for an interesting comparison study as would the inclusion of non-twin siblings, especially due to the lack of studies found including non-twin siblings. A study of this nature could provide art therapists with even more information on the process of creativity.

Limitations

First, the art making covered only three 30-minute sessions with each twin, and therefore time was a limiting factor. Additional sessions could have provided more data to be analyzed that might strengthen or weaken the themes of similarity and difference that were found. The presence of the observer might have influenced the behaviors and responses of the participants (Carolan, 2001), but this might have been eliminated by the participants familiarity with the facility where the sessions occurred, and an increased level of comfort with the researcher as the sessions continued. It is also possible that not seeing each member of each twin pair consecutively could have influenced the data, as the twins may have discussed their art work with one another. Time and scheduling restraints contributed to this, as school was cancelled one of the planned research days, and Rose was absent on the last research day, extending the research period. Finally, while the parents of the twins reported that their twins were identical, it is impossible to

be certain that all three twin sets were biologically identical. Overall, the limitations of this research were expected due to the nature of the research and the time limitations of the project.

Conclusion

Although the sessions that took place with these twin sets did not serve the purpose of therapy, art making that takes place in the therapeutic setting may reveal the connection between art maker and art product that is not replicated in other settings or in other research. For example, the art therapist looks at the person, the process, and the product. The meaning assigned to the artwork by the artist is important (Golomb, 2004), and this became especially true in illustrating how these twins created differently. If only the art work (product) was examined, only the similarities would be seen; the variations in process, intent, behavior, affect, and meaning would be ignored. Examining the art making of these twin sets through an art therapy lens provided a more accurate picture of these twins, how they differ, as well as how they are alike creatively. The Four Categories of Art Therapy Assessment (FCATA) is based on these tenets of the person, the process, and the product, and the meaning of art making through the "Narrative." As a guide in this study, the FCATA provided valuable direction in identifying themes and organizing results. The FCATA lends itself as a flexible guide for art therapists who wish to examine the whole creative process of an individual. More research with this assessment should be undertaken by other art therapists to determine reliability and validity.

The strong similarities that emerged for these sets of twins in this study may indicate support for the genetic component of creativity. However, the aim of this study

was to examine the art-making of three sets of identical twins and to determine their similarities and differences, and is therefore not able to be generalized to the twin population. Additional studies of this kind could provide more information concerning the heritability of creativity as it pertains to the creation of art.

REFERENCES

- Carolan, R. (2001). Models and paradigms of art therapy research. *Art Therapy: Journal of the American Art Therapy Association*, 18, 190-206.
- Center for Disease Control. (2005). *National vital statistics report*, 54(2). Retrieved September 24, 2005 from www.cdc.gov.
- Feist, G. (1999). The influence of personality on artistic and scientific creativity. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 273-296). Cambridge, MA: Cambridge University Press.
- Gantt, L. (1993). A description and history of art therapy assessment in research. In H. Wadeson (Ed.), *A guide to conducting art therapy research* (pp. 133-156). Chicago: American Art Therapy Association.
- Garai, J. (2001). Humanistic art therapy. In J. Rubin (Ed.), *Approaches to art therapy: Theory and technique*. New York: Brunner-Routledge.
- Gedda, L. (1992). Spontaneous drawing and the individuality of twins. *Act-Geneticae-Medicae-et-Gemellologiae: Twin Research* 40, 1-6.
- Golomb, C. (2004). *The child's creation of a pictorial world* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Guba, E. & Lincoln, Y. (1982). Epistemological and methodological bases of naturalistic inquiry. *Educational Communication and Technology Journal* 30, 233-252.
- Holden, C. (1980). Identical twins reared apart. *Science*, 207, 1323-1328.

- Johnson, W., Bouchard, T.J., Segal, N., Keyes, M., & Samuels, J. (2003). The Stroop Color—Word Test: Genetic and environmental influences; reading, mental ability, and personality correlates. *Journal of Educational Psychology, 95*, 58-65.
- Knapp, N. (1992). Historical overview of art therapy research. In H. Wadeson (Ed.), *A guide to conducting art therapy research* (pp. 7-12). Mundelein, IL: American Art Therapy Association.
- Lark-Horovitz, B., & Norton, J. (1960). Children's art abilities: The interrelations and factorial structure of ten characteristics. *Child Development 31*, 453-462.
- Leedy, P., & Ormond, J. (2005). *Practical research: Planning and design (8th ed)*. Upper Saddle River, NJ: Pearson Prentice Hall.
- Lowenfeld, V. (1982). *The Lowenfeld lectures: Viktor Lowenfeld on art education and therapy* (J.A. Michael, Ed.). State College, PA: Pennsylvania State University Press.
- Lowenfeld, V., & Brittain, W.L. (1987). *Creative and mental growth (8th ed.)*. New York: Macmillian.
- Mace, M., & Ward, T. (2002). Modeling the creative process: A grounded theory analysis of creativity in the domain of art making. *Creativity Research Journal, 14*, 179-192.
- Martindale, C. (1999). Biological bases of creativity. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 137-152). Cambridge, MA: Cambridge University Press.
- Miller, L. (1986). A description of children's musical behaviors: Naturalistic. *Bulletin of the Council for Research in Music Education, 87*, 1-16.

- Musham, C. (2001). The potential contribution of art therapy to social science research. *Art Therapy: Journal of the American Art Therapy Association*, 18(4), 210-215.
- O'Hare, D., & Cook, D. (1983). Children's sensitivity to different modes of colour use in art. *British Journal of Education and Psychology* 53, 267-277.
- Reznikoff, M., Domino, G., Bridges, C., & Honeyman, M. (1973). Creative abilities in identical and fraternal twins. *Behavior Genetics* 3, 365-377.
- Rostan, S. (1998). A study of the development of young artists: The emergence of an artistic and creative identity. *Journal of Creative Behavior*, 32, 278-301.
- Segal, N. (1999). *Entwined lives: Twins and what they tell us about human behavior*. New York: Penguin Group.
- Seifer, R. (2003). Twin studies, biases of parents, and biases of researchers. *Infant Behavior and Development*, 26, 115-117.
- Slater, N. (2003). The four categories of art therapy assessment [unpublished].
- Sternberg, R., & Lubart, L. (1999). The concept of creativity: Prospects and paradigms. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 3-15). Cambridge, MA: Cambridge University Press.
- Torrance, E. (1976). The creative child in the family: Each one is special. *Creative Child and Adult Quarterly*, 1, 195-198.
- Waller, N., Bouchard, T., Lykken, D., Tellegen, A., & Blacker, D. (1993). Creativity, heritability, familiarity: Which word does not belong? *Psychological Inquiry*, 4, 235-237.

Welch, W. (1983). Experimental inquiry and naturalistic inquiry: An evaluation.

Journal of Research in Science Teaching, 20, 95-103.

Appendix A: Letter to Parents and School Faculty

To Whom It May Concern:

This letter is to inform you that I would like to conduct a research study at Lebo Elementary and Middle School studying the art making behaviors of identical twins. The purpose of this research is to fulfill a graduate thesis requirement for my Masters degree in Art Therapy. I am currently an art therapy intern at Lebo Elementary, and have discussed this research with my on-site supervisor, Ida Wilson. Participation in this study is voluntary, and this study has been approved by Emporia State University's Institutional Review Board. If approved by Lebo Elementary faculty and administration as well as parents and students contacted for participation, the study will last approximately one week in which I will conduct three individual art making sessions separately with each twin. The sessions may occur in the art therapy room set up in the lower level of the high school building, and all art materials will be provided by the researcher. In these sessions, participants will be encouraged to create spontaneous art works that will be retained by the researcher until digital images may be taken; art work will then be returned to participants. All attempts at confidentiality will be maintained, and all identifying information will be changed or concealed. The purpose of this research is to determine the similarities and differences that emerge in these sessions between each set of twins. It is hoped that these similarities and differences may contribute to the existing art therapy literature on the individuality of creativity.

If you have any questions, concerns, or desire additional information, please contact Jennifer McCreight at 620-343-3080 or at mccreight_jennifer@yahoo.com.

Thank you for your time.

The Four

Sincerely,

Categr

Jennifer D. McCreight

Appendix B: The Four Categories of Art Therapy Assessment (FCATA)

Four Categories of Art Therapy Assessment

*Prepared by Nancy Slater, Ph.D., A.T.R.
Revised November 2001 & September 2003
Art Therapy Program
Department of Psychology and Special Education*

This Four categories of Art Therapy Assessment (FCATA) is a brief outline of therapeutic art-making and art-based assessment. This model can be used for an initial assessment using art-base activities in therapy, as a systematic approach in ongoing treatment, or as a one-time engagement specifically for assessment. This model can be used to make a general art-based assessment of a participant's functioning and response to therapeutic art-making. It also can be utilized as part of a process of diagnosis in which an art therapist would include more than one art-making activity.

The FACTA implies that in each engagement of an art therapist with an art therapy participant, there is a 3-way relationship that includes the art therapist, the participant and the art-making activity (including the art product).

The ART part f art therapy assessment

A. Use of materials (by the client)

1. Media – choice of
2. Form – schema
3. Line quality
 - a. Pressure
 - b. Spaces in continuous line
 - c. Wavy or 'wobbly' (apparently not intended)
4. Placement of objects, design, shape
5. Use of space (including empty space)
6. Colors – choice of
7. Emphasis with materials

B. Art-making process

1. Context in which project is done
2. Project completion
3. 'Mistakes' identified
 - a. Erasures
 - b. Crossing out ('X'ing out)
 - c. Throwing away project
 - d. Destroying project
 - e. Starting over

The NARRATIVE

C. Art project contents

1. According to the art-maker
 - a. Art-maker's verbal description – including the story in the art expression
 - b. Art-maker's identified content
 - c. Art-maker's title of the art expression
 - d. Meaning of the art expression – stated by the art-maker
2. As observed by the art therapist
 - a. Graphic indicators of graphic development
 - b. Graphic indicators as identified in current AT research
 - c. Unique or 'client-specific' representations
 - d. Continuity of visual representations with client's verbal description

The PROCESS

D. Art project process reported by the art therapist

1. Affect (of the participant)
 - a. Initially (at beginning of session or project time)
 - b. During the art-making activity
 - c. During the art-maker's narrative/description of art expression
 - d. At the end of session or project time
2. Cognitive function (observable) and expressions (of the participant)
 - a. Initially (at beginning of session or project time)
 - b. During the art-making – including following directions as given by the art therapist
 - c. During the art-maker's description /narrative of the art expression
 - d. At the end of session or project time – during both closure and departure
3. Affective and cognitive responses of the art therapist throughout the entire process

Note: It is essential to pay attention to your own responses to all that happens during the time of engagement with the art therapy participant and to reflect afterwards about the participant's responses as well as your own. Taking notes during and after engagement and participation in a clinical art therapy session along with drawing in your Daily Drawing Journal facilitates your understanding and awareness of the clinical art therapy experience.

Appendix C: Institutional Review Board Approval Letter and Permissions



March 3, 2006

Jennifer McCreight
PSYCH/SE
1533 Merchant N9
Emporia, KS 66801

Dear Ms. McCreight:

Your application for approval to use human subjects, entitled "The Art Making of Identical Twins: A Qualitative Inquiry," has been reviewed. I am pleased to inform you that your application was approved and you may begin your research as outlined in your application materials.

The identification number for this research protocol is 06084 and it has been approved for the period 3/1/06 - 12/31/06.

If it is necessary to conduct research with subjects past this expiration date, it will be necessary to submit a request for a time extension. If the time period is longer than one year, you must submit an annual update. If there are any modifications to the original approved protocol, such as changes in survey instruments, changes in procedures, or changes to possible risks to subjects, you must submit a request for approval for modifications. The above requests should be submitted on the form Request for Time Extension, Annual Update, or Modification to Research Protocol. This form is available at www.emporia.edu/research/docs/irbmod.doc.

Requests for extensions should be submitted at least 30 days before the expiration date. Annual updates should be submitted within 30 days after each 12-month period. Modifications should be submitted as soon as it becomes evident that changes have occurred or will need to be made.

On behalf of the Institutional Review Board, I wish you success with your research project. If I can help you in any way, do not hesitate to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Robert Stow".

Dr. Robert Stow
Chair, Institutional Review Board

pf

cc: Nancy Slater

Appendix D: Informed Consent and Permissions

CONSENT FORM FOR RESEARCH PARTICIPATION

Subject's Name (s) _____ Date _____

You are invited to participate in a study investigating the similarities and differences in the art and art making behaviors of identical twine. The purpose of this research is to search for the similarities and differences in the process and content of four individual art making sessions by observing three sets of identical twins.

If your twins participate in this research, they will be asked to participate in art making activities in three sessions, each lasting about 30 minutes. Each participant will be asked to create as many art works as he or she wishes in the 30 minutes, and all art making sessions will take place in the art therapy room at Lebo Elementary or the counselor's office. The art will be kept by the researcher, and coded and evaluated without any names attached to the drawings. Art work will be returned to the participants as soon as digital images have been taken and art work has been examined. **Confidentiality will be ensured at all times; art work and notes from each session will remain locked in a file cabinet, and all identifying characteristics will be changed.**

The results of this research will be used in the thesis of this researcher to fulfill the graduate requirement for a Master's degree in Art Therapy. **Participation in this study is completely voluntary, and you may choose not to participate in this research at any time.** If you desire additional information concerning this study, please contact **Jennifer McCreight (the principal researcher) at 343-3080, or mccreight_jennifer@yahoo.com**. The Institutional Review Board (IRB) at Emporia State University may be reached at 341-5849.

I acknowledge that I have fully reviewed and understood the contents of this consent form. My signature denotes consent to partake in this study.

I, _____ give permission for my children, _____ and _____ to participate in the study described above. I understand that all attempts at confidentiality will be made, and I understand that we may withdraw our children from this study at any time, with no penalty.

I certify that I have reviewed the contents of this form with the person signing above, who, in my opinion, understood the explanation. I have explained the known side effects and benefits of the research. I certify that I am the principal researcher and am responsible for this study, for ensuring that the subject is fully informed in accordance with applicable regulations, and for advising the Human Subjects Committee of any adverse reactions that develop from the study.

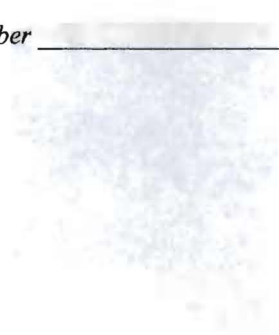
Parent's Signature _____

Date _____

Student Researcher's Signature _____

Date _____

Telephone Number _____



Small vertical text on the right edge of the page, possibly a page number or reference code.

Appendix E: Art work, Mary-Kate and Ashley



Figure E1. A clubhouse.



Figure E2. "I drew a house."



Figure E3. My heart.



Figure E4. The quilt.

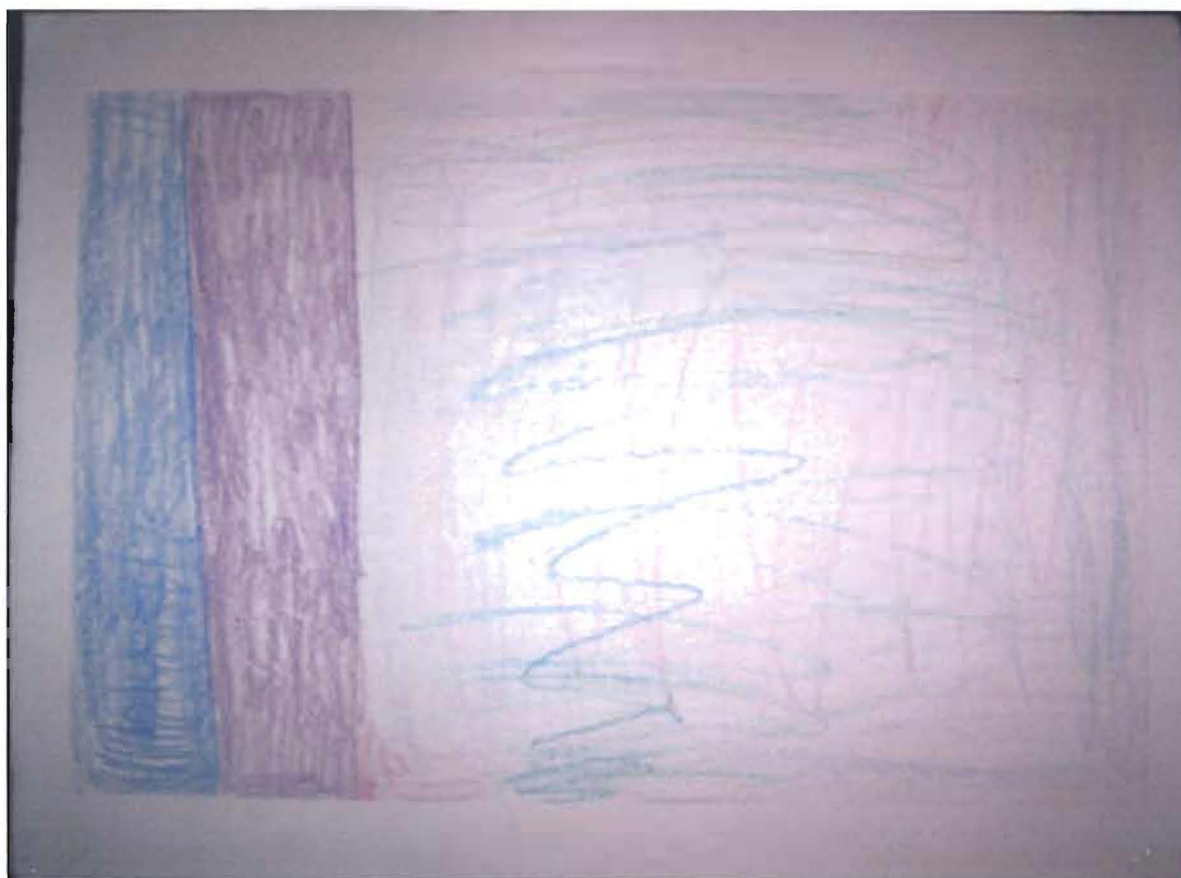


Figure E5. The colorful page.



Figure E6. Shape quilt.



Figure E7. The pillow.



Figure E8. The sky section.



Figure E9. A flower-dog.



Figure E10. The rooster barn.



Figure E11. Colorful.

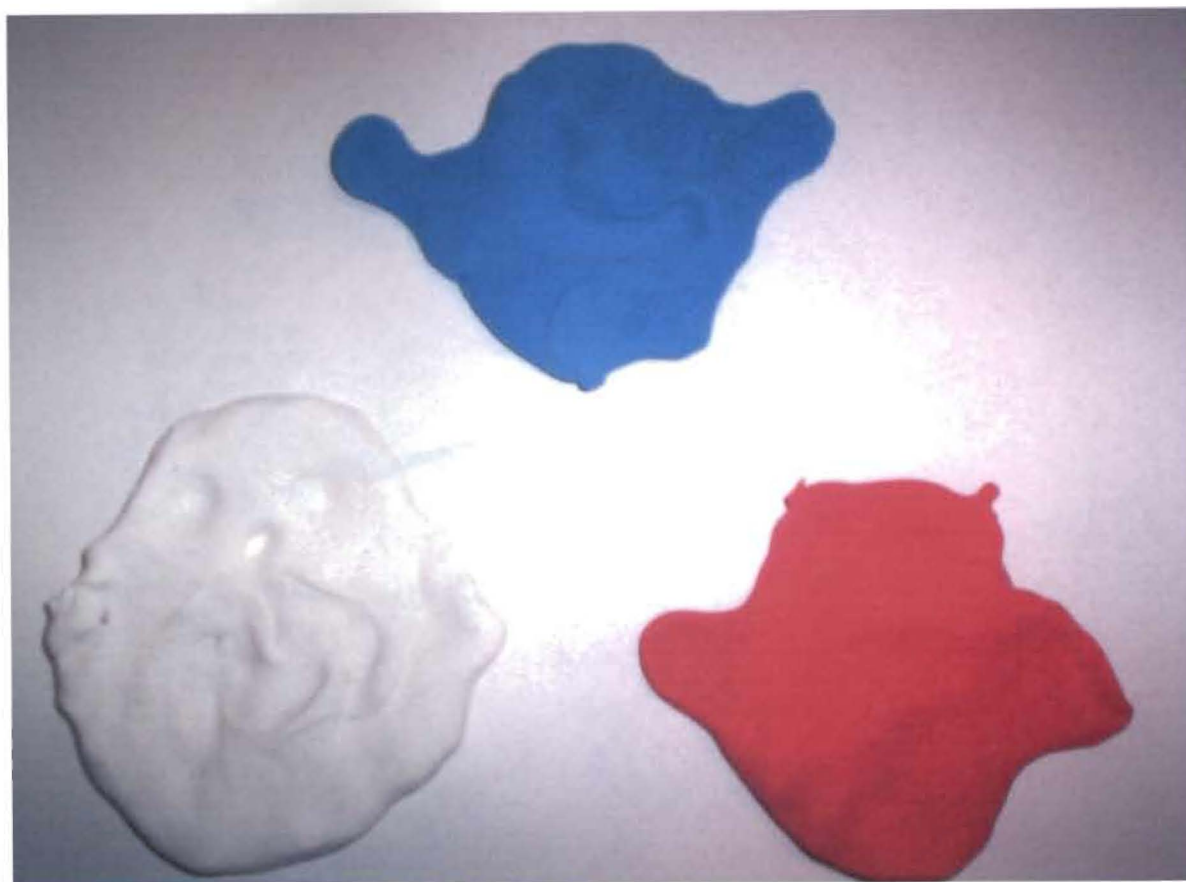


Figure E12. Owl, Shrek, and ghost.

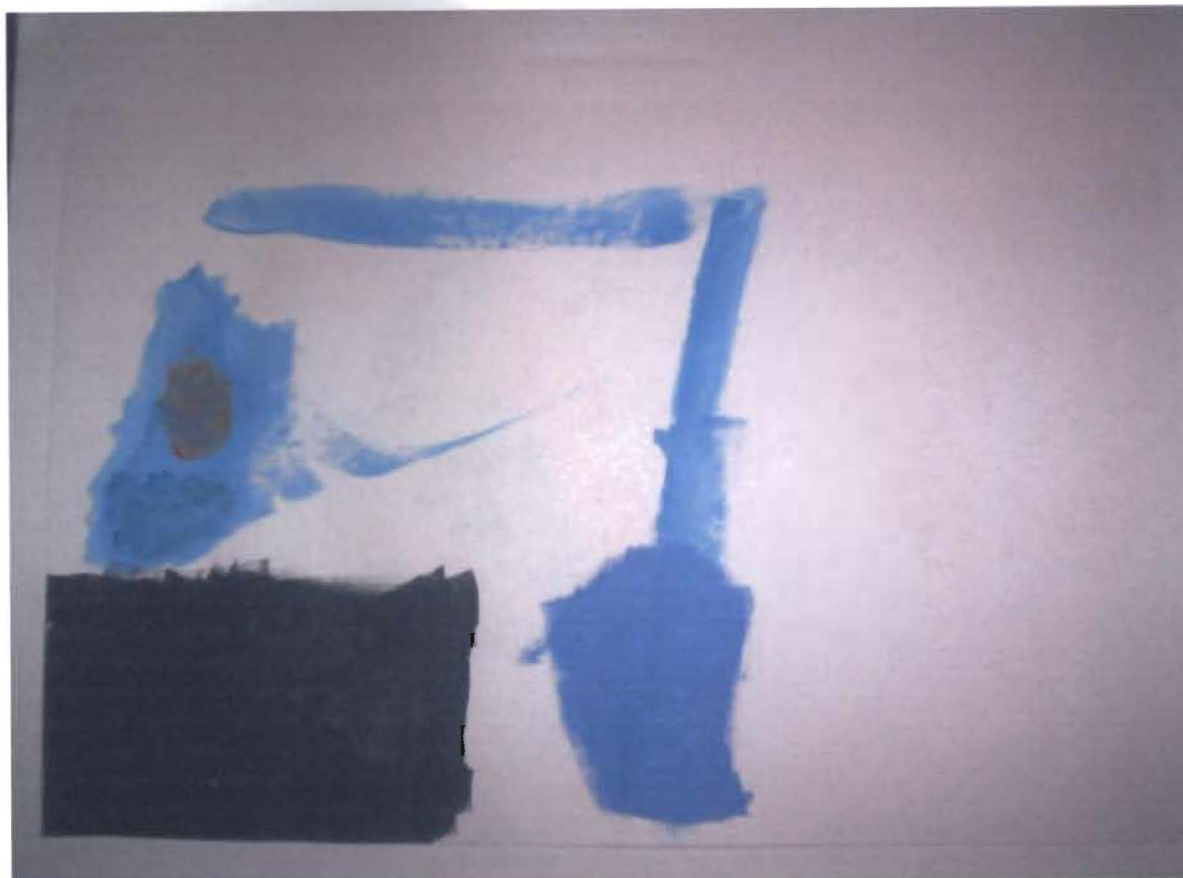


Figure E13. Food shack.



Figure E14. The college.

Appendix F: Art work, Johnny and Tiger

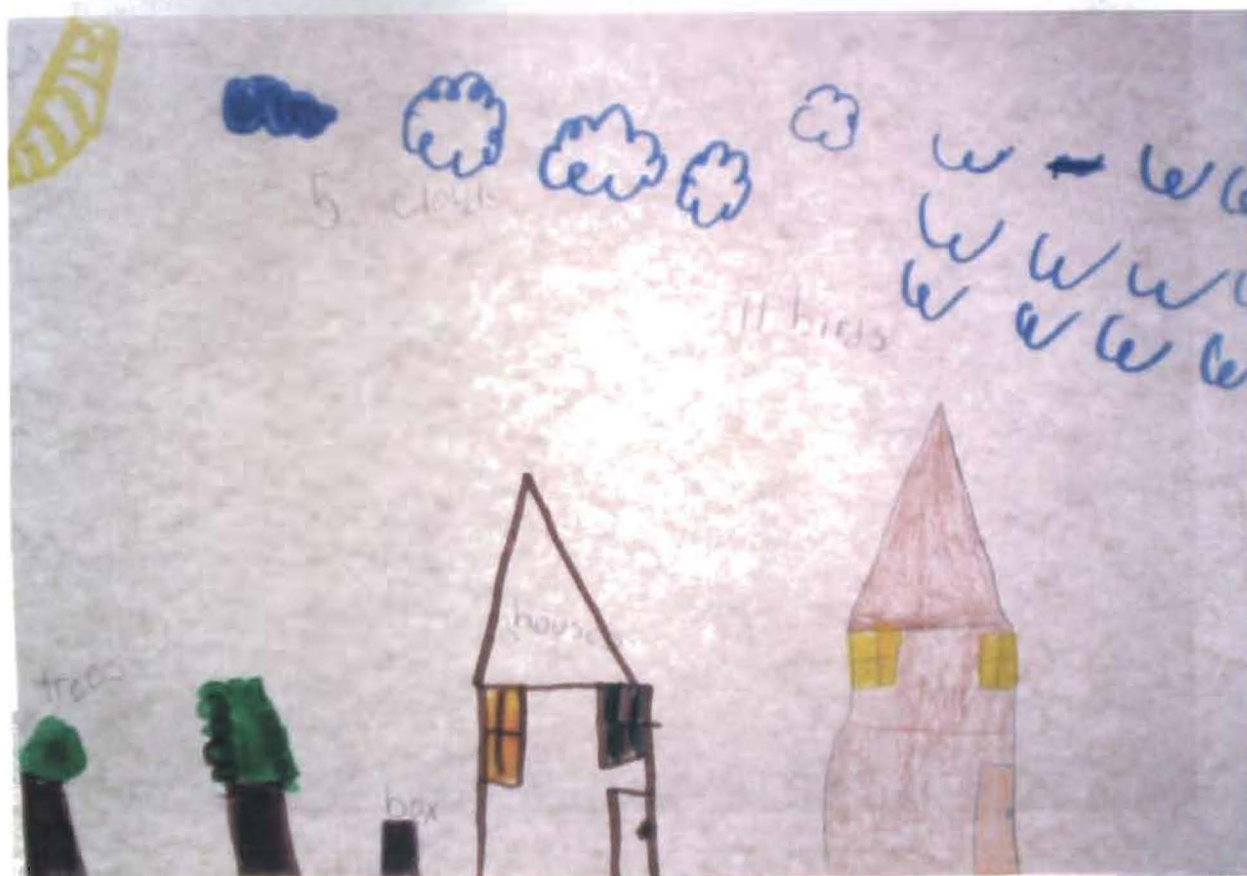


Figure F1. The house or outside.

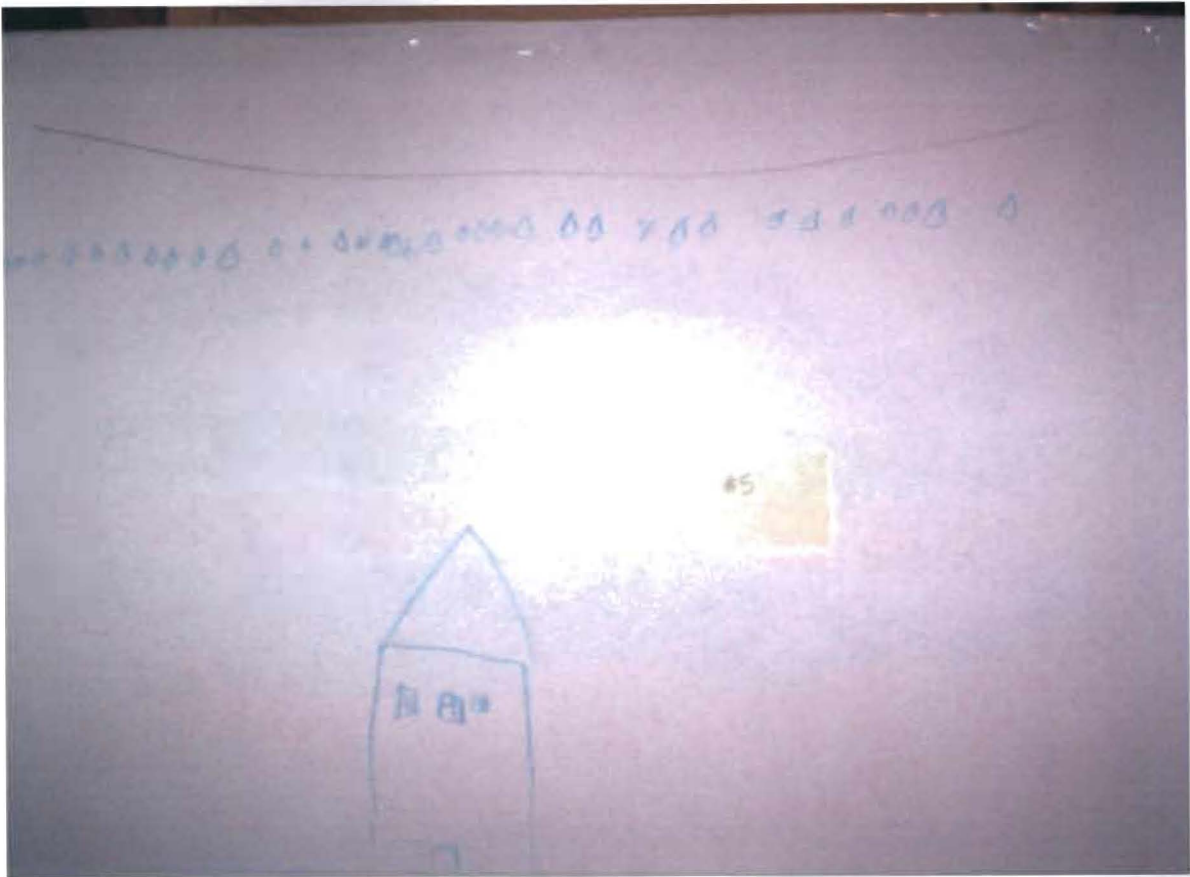


Figure F2. It's raining on the house.

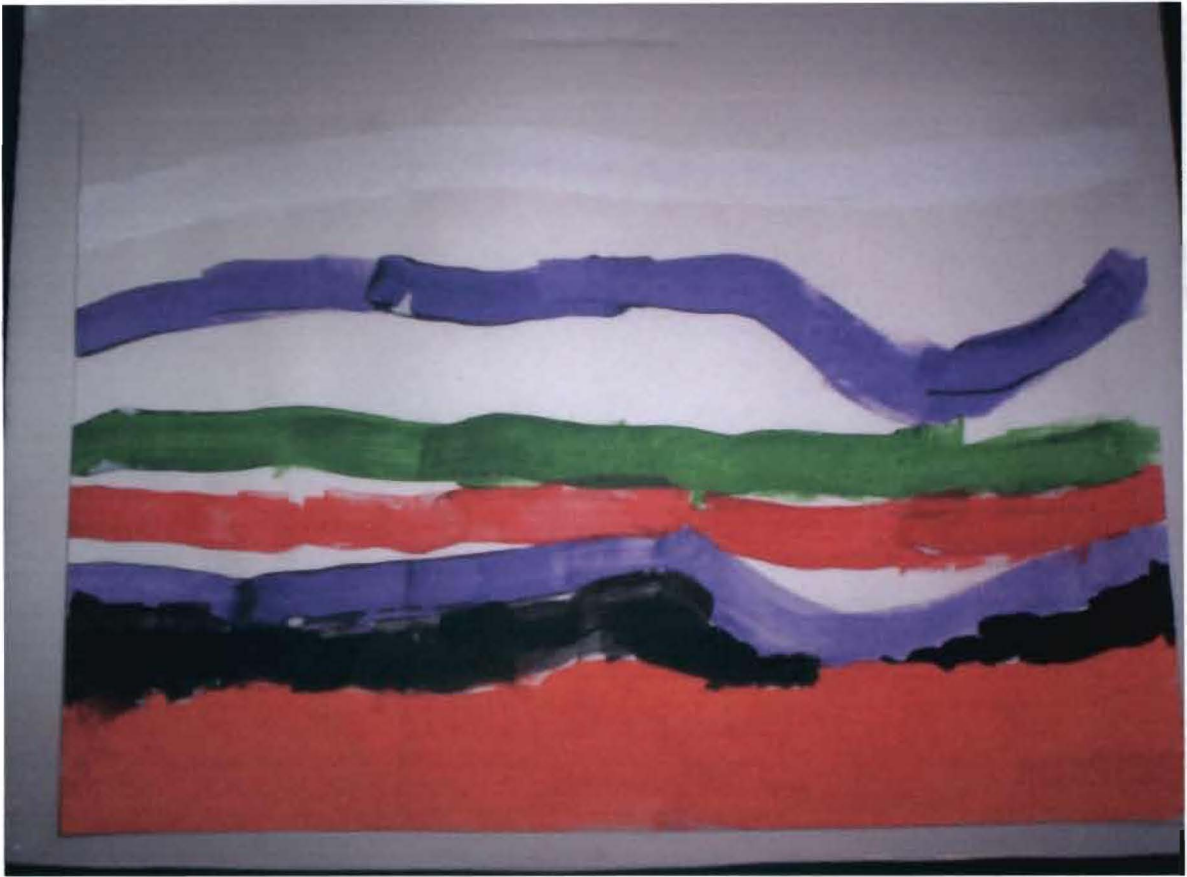


Figure F3. Road and lava under.

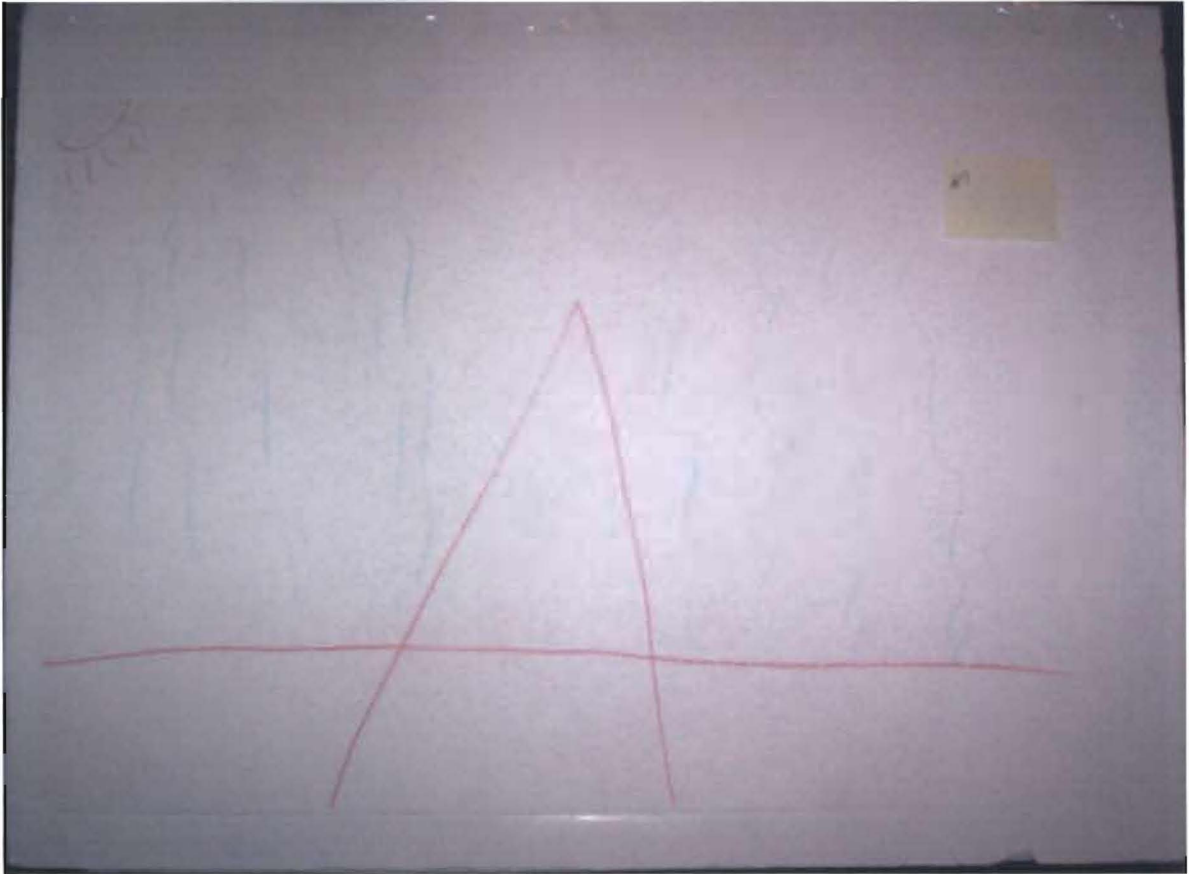


Figure F4. It's raining on the lava.



Figure F5. Night time and summer with a volcano.

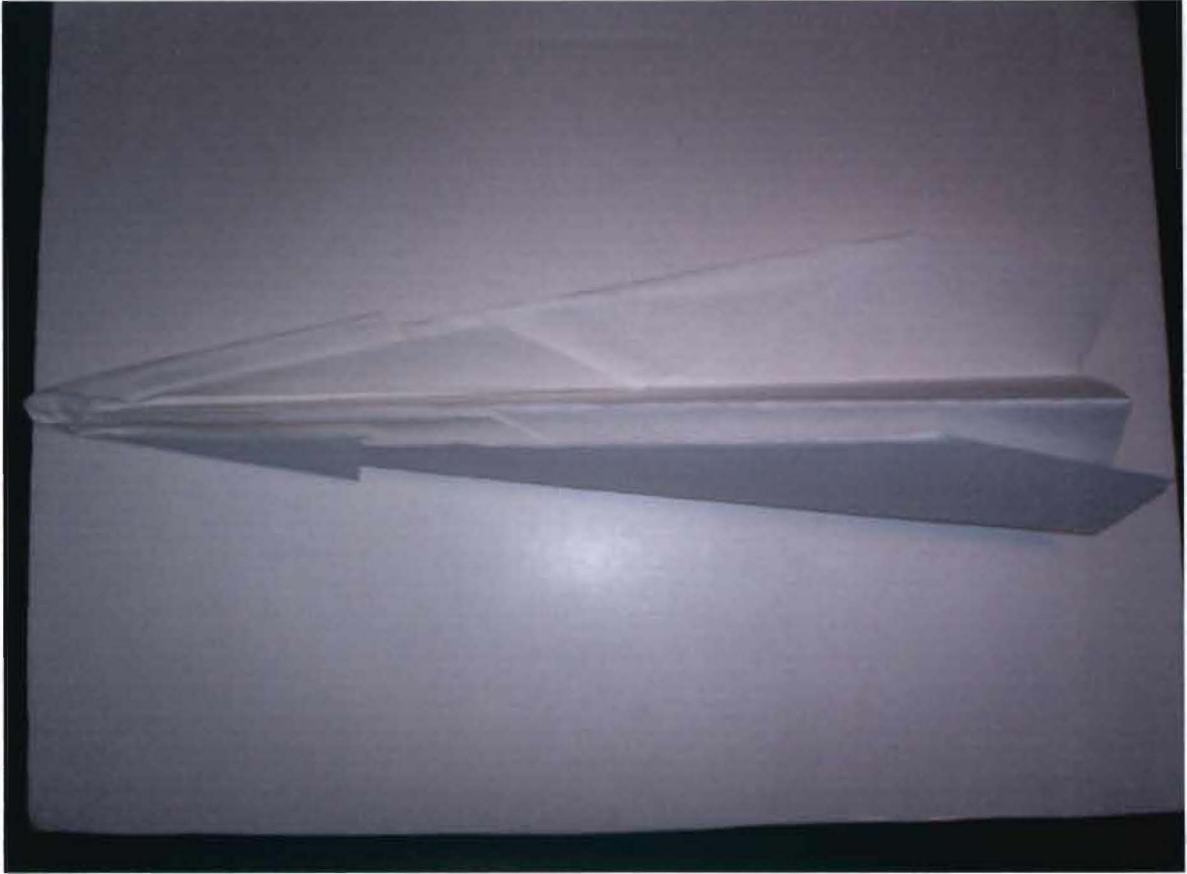


Figure F6. Paper Airplane



Figure F7. Paper airplane.



Figure F8. The hat.

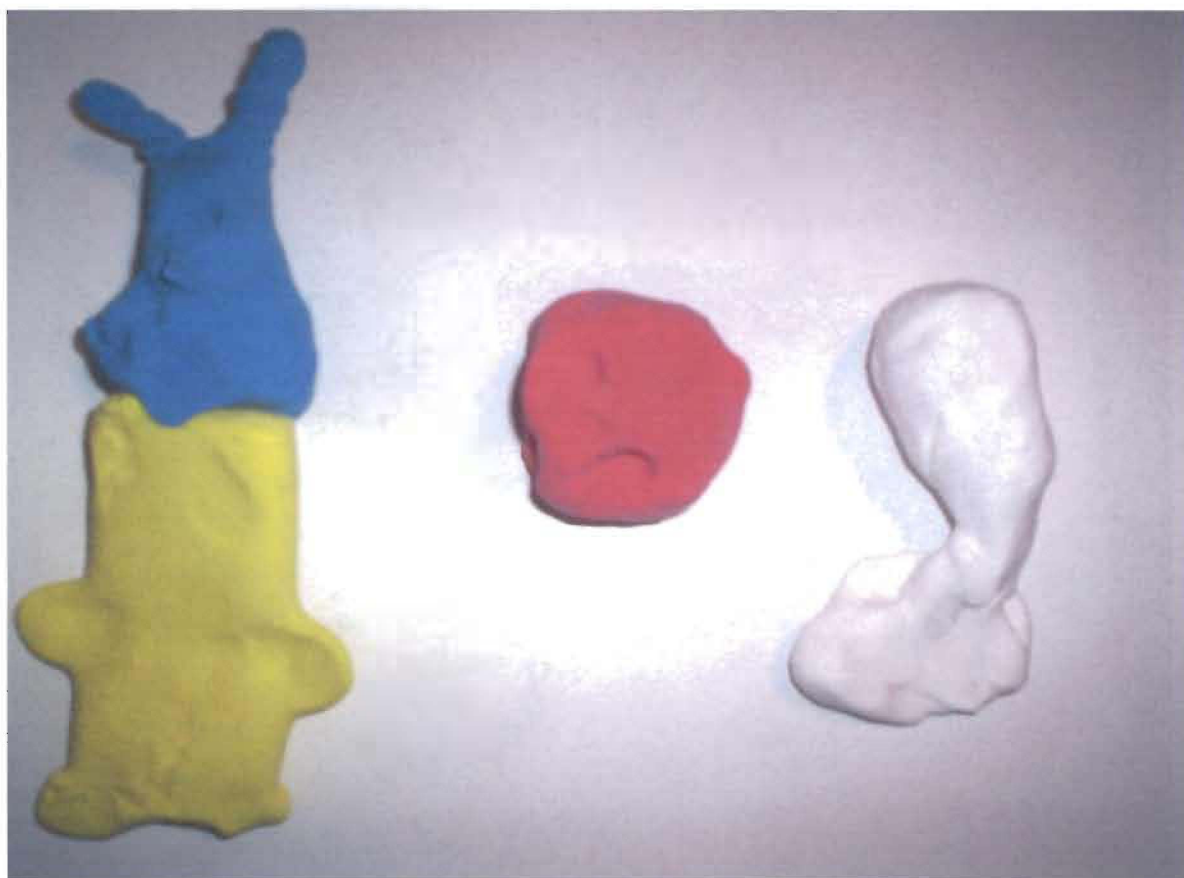


Figure F9. Mr. human, ant hill, and white tree.



Figure F10. Winter with Snowballs.

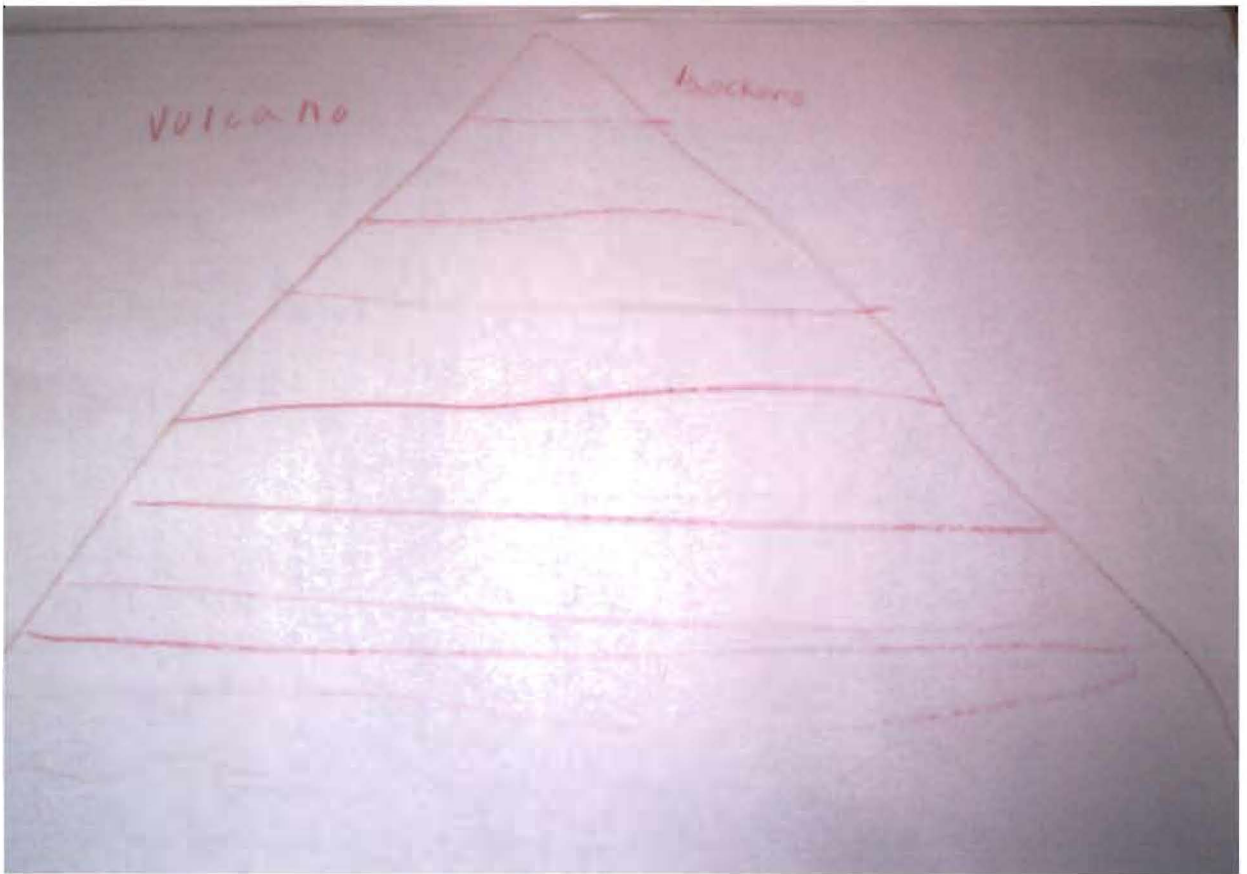


Figure F11. The volcano.

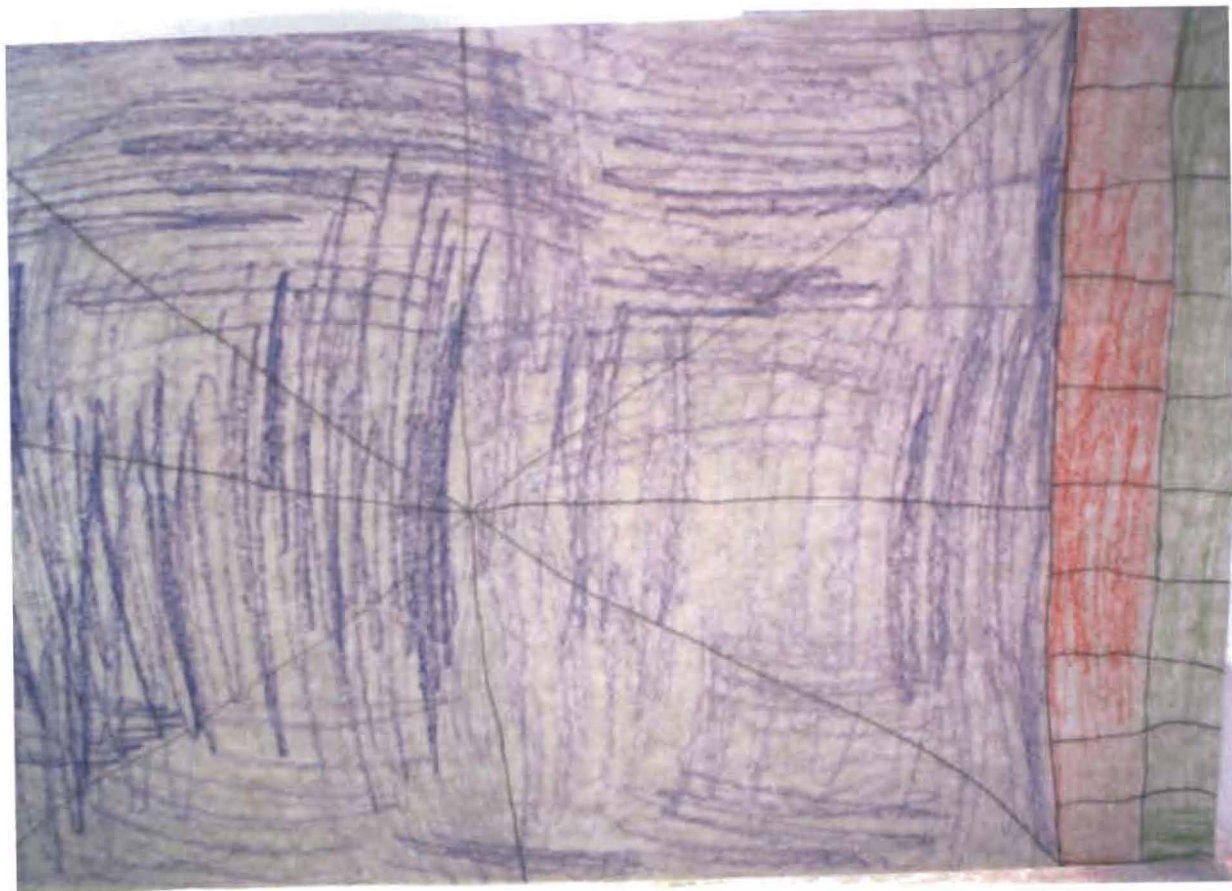


Figure F12. Colors and Ladders.



Figure F13. The rainbow-rainer.



Figure F14. The hammerhead shark in the ocean.
(Actual size: 3 inches)



Figure F15. The swordfish in the sea.
(Actual size 4 inches)



Figure F16. Like the other one, kind of.
(Actual size 5 inches)



Figure F17. The kite that's flying up in the sky.
(Actual size: 5 inches)

Appendix G: Art work, Lily and Rose



Figure G1. Tree.



Figure G2. Nature.



Figure G3. Moon half sun.

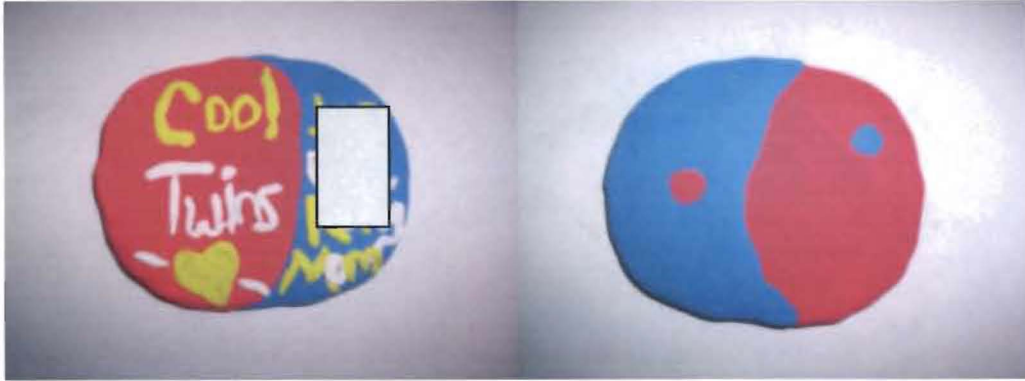


Figure G4. No title and back of piece.



Figure G5. No title.



Figure G6. Beach and day out.

Appendix H: List of Tables

Table 1

The Four Categories of Art Therapy Assessment

The Art	Art-Making Process	The Narrative	The Process
Use of materials	Context	Art work's content,	Affect
Media choice	Directions &	according to the artist	(Beginning, middle,
Form (schema)	materials offered	Artist's verbal	end of session)
Line quality	Project completion	description of work	Cognitive
Placement of	time	Title given by artist	(followed directions,
objects, design	Mistakes	Content according to	graphic attempts)
& shape	(erasing, crossing	the art therapist	Researcher's
Use of space	out, throwing	Client-specific	observations
Color choices	project away,	representations	
Emphasis with	starting over)	Continuity of	
Materials	Total number of	verbalizations &	
Paper	works created in	representations	
Orientation	each session	Verbalizations	
Material		during the session	
manipulation		Graphic indicators	

Table 2

Mary-Kate and Ashley: Emerging Themes in the Art Work, Process, and Verbalizations

Themes of Similarity	Themes of Differences
Color use and order	“Mistakes”
Schema and imagery	Use of space and materials
Behavior while making art	Intent/purpose of art work
Paper Orientation	

Table 3

Johnny and Tiger: Emerging Themes in the Art Work, Process, and Verbalizations

Themes of Similarity	Themes of Differences
Schema and imagery	Use of space and materials
Narrative	Intent or purpose of art work
Pressure	Confidence with materials
Paper orientation	

Table 4

Lily and Rose: Emerging Themes in the Art Work, Process, and Verbalizations

Themes of similarity	Themes of differences
Emphasis with materials	Graphic development
Schema and imagery	Color use
Paper orientation	Affect during art making

I, Jennifer D. McCreight, hereby submit this thesis to Emporia State University as partial fulfillment of the requirements for an advanced degree. I agree that the Library of the University may make it available for use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying with involves potential financial gain will be allowed without written permission of the author.

Jennifer D. McCreight
Signature of Author

5-12-06

Date

The Art Making of Identical Twins: A Qualitative Inquiry
Title of Thesis

Day Cooper

Signature of Graduate Office Staff Member

5-12-06

Date Received

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