

CHAPTER THREE

Research Method

The research hypothesis that guided this study was a therapeutic art program targeting behaviors associated with learning disorders will contribute to an increase in age-appropriate art skills; sound gestalts, figure/ground discrimination, and detail elaboration. In this chapter the research design, rationale and procedures used in this study are presented. Sampling procedures, description of the assessment used, explanation of the procedures used, rationale for art interventions, discussion of internal validity, and description and justification of statistical qualitative techniques are included in this chapter.

Research Design

This study utilized a quasi-experimental, one-group pretest post-test design, with both qualitative and quantitative characteristics (Carolan, 2001). "This design is specifically used for pilot studies and to test the effectiveness of new programs and treatments or to evaluate the necessity for further research of a program or treatment" (Rosal, McCulloch-Vislislis, & Neece, 1997, p. 31). Such an outcome study, or treatment effectiveness research, investigated the influence of an art therapy treatment to produce therapeutic transformation in children with delays in visual perceptual development (Rosal, 1992).

Fourteen first grade children received a pretest, 20 weeks of a therapeutic art and received a posttest. The objective of the research study was to demonstrate improved perceptual experiencing due to the therapeutic art program designed to promote visual perceptual development.

Sampling Procedures

The participants of this study were volunteer subjects, from a convenience sample of students at a southeastern university research school. Seventy-four elementary-age

children (grade 1) were administered an art-based assessment (Troeger, 1992) as a pretest to screen for learning disorders. Fourteen children whose artwork contained graphic indicators of skills below developmental level (1SD below the group norm) were chosen to participate in a 20-week therapeutic art program. After both the Parents Informed Consent Form (see Appendix E) and the Child Assent Form (see Appendix F) were signed, the children were scheduled for weekly sessions.

Data Gathering Methods

The art-based assessment utilized in this study was Troeger's (1992) Art Skill Assessment for Special Education Students (TASS; see Appendix B). The TASS has been published (Anderson, 1992), empirically tested (Arrington, 1992), and was the primary instrument in several research studies conducted by Florida State University doctoral students (Byers-Floyd, 1997; Dunn Snow, 1999). The assessment has been used to determine a student's developmental level in art, testing both two-dimensional and three-dimensional representations. The TASS (Troeger, 1992) was based on Brigance's (1979) inventory of art skills and Chapman's (1978) theories of art development.

This assessment tool provided a scale that indicated art skills a six-year-old child would have upon entering the first grade. Chapman provided evidence that by the age of five, most children can learn to use art materials to draw and paint realistic and imaginary images, can learn to cut geometric shapes, and can accurately assess how much glue to use in adhering shapes to paper.

For this study, the TASS (1992) was modified for the young client population by deleting two items in the clay skills evaluation (roll clay into slab with rolling pin; add appropriate amount of water to keep clay in good working condition), and substituting the use of plasticene rather than ceramic clay. Quantitative information for this research study was created by assigning a numerical value to

each of the four categories assessed by the TASS, based on the quantity of art skills demonstrated within each category. The TASS was both the pretest and posttest assessment tool of this study, and a comparison of the test results was predicted to determine if the children's art skills had improved (Appendix A).

There were four techniques used to collect qualitative data: (a) review of descriptive field notes; (b) a content analysis of artwork and participant narrative, was implemented to ascertain emotional themes, associated with learning disorders, which were common to the study participants; (c) interviews were conducted with classroom teachers of the 14 study participants, to confirm observations by the art therapy team and to discuss mutual concerns; and (d) through case studies of individual study participants. These results were compiled to provide evidence of improved art and visual perceptual skills and reduced emotional concerns among the 14 study participants.

Explanation of Procedures

Seventy-four elementary-age children (grade 1) were screened by a team of 11 art therapy graduate students for perceptual delays. The assessment tool was the TASS, as both the pretest and posttest instrument. Children with behavioral concerns were referred for assessment by classroom teachers and/or counselors through use of the Art Therapy Referral Checklist developed for this study (Appendix C).

The TASS required four sessions to complete, and covered both two-dimensional and three-dimensional art skills (drawing, painting, cut paper collage and clay). Art skills were evaluated by an educational team including the art therapist, classroom teacher, guidance counselor, and principal, if possible.

The screening was predicted to identify children whose artwork contained graphic indicators of more than six months developmental delay, which is a criterion of nonverbal

learning disorders (Thompson, 1996). In order to determine age-appropriate levels, each art skill area had a total score for demonstration of factors mastered. If a participant demonstrated art skills at a level that was 1 standard deviation (*SD*) below the mean for 2 or more of the 4 media tested, that individual was included in the visual perceptual development promotion program. Fourteen children identified as experiencing visual perceptual delays were invited to participate in a 20-week therapeutic art program designed to promote perceptual development.

Weekly 45-minute visual perceptual development therapeutic art sessions were scheduled with no more than four children in a group. The groups met for 20 weeks of art therapy experiences designed, according to Uhlin's (1972) theory, to significantly improve perceptual experiencing through the use of reversed object-ground materials (Cheyne-King, 1990).

During the 20-week therapeutic art program, the art therapist was responsible for monitoring the treatment processes of each child. Each subject had his/her own process portfolio to house artwork and provide concrete visual evidence of progressive learning.

At the end of the 20-week therapeutic art program, a 4-week posttest using TASS (1992) was administered. The results of the pretest and posttest were compared with the objective of demonstrating improved art skills and age appropriate visual perceptual skills.

Rationale for the VPTAP

The art activities designed to promote visual perceptual development in the Visual Perceptual Therapeutic Art Program (VPTAP) can be found in Appendix D.

Once the children's developmental levels in art had been determined, a treatment plan was designed to promote age appropriate visual symbol systems, visual communication and visual-motor perceptual development, as well as addressing any emotional issues that can correspond with a

delay in visual perceptual development diagnosis. The subjects were paired according to their skill levels, and a third higher-functioning student added to the group to encourage risk-taking and promote creativity.

In order to help children with visual perceptual delays improve the ability to accurately observe their environment, therapeutic art activities were presented using a reversed field-ground experience (Cheyne-King, 1990; Drachnik, 1995; Uhlin, 1972). According to this adaptive and developmental approach to art therapy, children with neurological impairments would improve the ability "track" lines when applying white chalk, pastels, and/or paint to black paper. Therefore, drawing, painting and even writing letters (to remediate dysgraphia) on black paper would be beneficial to children with perceptual delays.

To improve time-on-task and improve hand-eye coordination, reversing the field-ground experience and working with white materials on a black surface was beneficial. Drawing, painting, and creating collage in this manner encouraged improvement in fine motor skills and were useful in the remediation of dysgraphia (Uhlin, 1979).

The treatment plan for improving the children's self-esteem included encouraging the students to pose for one another as drawing models. In addition, the art therapist also volunteered to model for the students.

Trusting a peer to trace around a student's body fostered a willingness to take risks. Using that body tracing to create a self-portrait also promoted self-acceptance. Other projects that encouraged the students to take risks were crayon resist and crayon etching. The children's ability to control the outcome was limited in these projects and encouraged experimentation.

Helping the children learn to control their impulses can be promoted through three-dimensional projects. Cut paper collage was another project that fostered appropriate behavior in a controlled art-making activity.

Learning to understand cause and effect could also be a result of three-dimensional projects. In addition, art-making activities with clay were beneficial for providing visual evidence of the consequences of one's actions. Sculpting clay animals and hand building clay pottery fostered accepting responsibility and promoted impulse control and appropriate behavior.

Discussion of Internal Validity

There were numerous threats to the internal validity of this quasi-experimental research design. Among the concerns were the subjects themselves. During the study, none of the 14 pretest participants were lost due to family moves. There was no evidence of sabotage on the part of any participating students. Several children did experience psychological changes during the study (parental separation, death of a sibling), and 2 students were placed on stimulant medication to treat diagnosed attention deficit disorder (ADD). There were a number of the children who qualified for a high IQ/enrichment program (12 out of 74 students).

The second major threat to this study was eliminated with the setting being consistent throughout the study. Both the pretest and posttest, as well as the 20-week art therapy intervention program, was administered at the Florida State University School.

The third threat was due to the small sample size. "A recommended minimum number of subjects is 100 for a descriptive study, 50 for a correlational study, and 30 in each group for experimental and causal-comparative studies" (Frankel & Wallen, 1996, p. 111). This study began with 74 pretest subjects, but only identified 14 who qualified for inclusion in the visual perceptual promotion program. Such a small sample limited the ability to generalize the results to the overall population of young children experiencing visual perceptual development delays.

The fourth threat, instrumentation, was due to the lack of testing for reliability and validity of the TASS (1992)

for the 4-week art-based assessment. Efforts in this study to provide evidence of reliability were hampered by a small sample, and the expectation of improved results between the pretest and posttest screenings, which meant the test score variable was not stable. This criterion-reference, developmentally-based test had been published (Anderson, 1992), and had been empirically tested to demonstrate value in assessing art skill levels through use in various settings (Arrington, 1992; Byers-Floyd, 1997; Dunn-Snow, 1998). However, because no reliability or validity has been established for this instrument, generalization of the results of this study to the overall population was negatively impacted. "Unless the instrumentation used is reliable, meaningful relationships (perhaps causal) with other variables will not be found" (Frankel & Wallen, 1996, p. 162).

In addition, the TASS was altered for this research study to provide a numerical value for the total art skills evaluated in each category, which created the structure to collect quantitative data for pretest and posttest findings (see Appendix B). This is the first research study to utilize the TASS as an outcome resource through a quasi-experimental one group pretest posttest design, and qualifies as a fifth threat to the internal validity of this study.

To control for historical events, a sixth threat, subjects were paired according to art skill levels, and a third higher-functioning student added to the group in an attempt to spread out any positive and negative effects. Concerns about maturation and developmental improvements were addressed by comparing the study results with those of normal children.

Children with exceptionally high scores were referred to the guidance counselor for assessment by the gifted teacher, and included in a gifted/enrichment program created by one of the art therapy masters' level students.

Methods of Data Analysis

Quantitative Methods

The statistical information was created by assigning a numerical value to each of the 4 categories assessed by the TASS, based on the number of art skills demonstrated within each category. Then the data was broken down into the 4 categories assessed (drawing, painting, cut paper, clay), with a mean score and standard deviation calculated for each category on both the pretest and post-test (Glass & Hopkins, 1996). Further, a *t*-test was applied to each test category using a .01 level of significance (Frankel & Wallen, 1996). Finally, the results were evaluated to determine if improved perceptual experiencing had been demonstrated.

Both descriptive and inferential statistics were utilized in this overview of statistical procedures. Descriptive statistics were utilized to summarize the categorical data from this study through frequency polygons, in the form of boxplot graphs, to illustrate the difference in proportions of each art skill category. The means for both the pretest and posttest scores were compared, as well as a comparison of the number of study participants whose art skills were below age-appropriate level before, and after, participation in the art therapy promotion program.

Further, an estimate of effect size test (*Eta*) was conducted to determine the magnitude of difference between the means of the pretest and posttest results. The effect size (*ES*) assessed the size of the divergence to determine if the difference was statistically significant (Frankel & Wallen, 1996). Lipsey (1990) summarized the power of published educational studies to be small (.13), medium (.47), and large (.73) effect sizes (as cited in Glass & Hopkins, 1996). Many researchers regard an *ES* of $\geq .50$ to be an important finding (Frankel & Wallen, 1996).

Inferential statistics were used, through a *t*-test of

correlated means to compare the pretest and posttest scores in each skill category. The *t*-test was the parametric technique utilized to determine if the students' art skills had improved, and if the study results were statistically significant (Fraenkel & Wallen, 1996). This technique is used to analyze two samples that are related, such as, when the same group has received both a pretest and posttest. The means of each art skill category were compared using a .01 ($p = .01$) level of significance. This level of significance is customarily used in educational research to analyze as unlikely any outcome that has a probability of .01 or less, therefore, a real difference does indeed exist (Frankel & Wallen, 1996).

In conclusion, the quantitative results were used to test the effectiveness of the VPTAP. Further, the statistical techniques were implemented to analyze the results for statistical significance, and to determine if the therapeutic art program was positively impacting the study participants in all four art skill areas.

Qualitative Techniques

The qualitative information for this study was created through a content analysis of the artwork and participant narratives to document improved art skills and self-perception. Descriptive field notes were reviewed to ascertain emotional concerns, often associated with learning disorders, which were in evidence among the study participants. In addition, interviews were conducted with the classroom teachers of the study participants, to confirm observation of improved perceptual-motor skills and discuss emotional concerns. Furthermore, case studies were provided to provide examples of themes common to the study participants and improved art skills. An example of the qualitative techniques used in this study can be found in Appendix E.

Each study participant had an individual portfolio of artwork created in the promotion program, subject

narratives, field notes of therapist observations during each session, and personal assessment of progress form. A content analysis was performed on the artwork to ascertain improved art and visual perceptual development skills, as well as any graphic indicators of emotional or neurological concerns.

The researcher adopted the role of participant-as-observer, thereby observing study participants' artmaking process and behavior, as well as evaluating the completed art products (Fraenkel & Wallen, 1996). Descriptive field notes were created after each session, to document mastery of art and visual perceptual skills, as well as record observations of artmaking and behavior (Fraenkel & Wallen, 1996). These field notes illustrated a detailed description of what occurred and in what order, and included points of clarification, such as art projects that would be helpful for each child's further development.

In addition, the researcher was present to write down the children's narratives that accompanied the art projects. Narratives dictated by the study participants to accompany artwork were analyzed for evidence of improved self-perception, as well as expressions of emotional issues. Descriptive field notes included observations on the study participants' behavior, facial expression and gestures during the story dictation. Particular attention was paid to subject mood, amount of physical activity, attention span, interactions with adults, and interactions with peers.

Further, informal interviews were conducted with classroom teachers to confirm research team observations and concerns. The researcher strove to establish an environment of mutual respect with each of the classroom teachers and school administrators. Once created, this atmosphere of cooperation enabled the researcher and teachers to freely discuss their mutual interests in the study participants. Descriptive field notes reconstructed these conversations and the activities that precipitated the discussions.

Finally, case studies were presented to provide graphic evidence of improved art and visual perceptual development skills. In addition, the case studies confirmed emotional and neurological concerns shared by numerous study participants. Descriptive field notes were included to provide detailed descriptions of activities, dialogues, and behavior during the creation of artwork and storytelling.

In conclusion, qualitative techniques were implemented to provide additional evidence of improved art and visual perceptual development skills in the therapeutic art program participants. With a study sample of less than 100 participants, generalization of quantitative findings to the general population was limited. Therefore, qualitative results provided graphic and narrative evidence of progress and improvement.