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ABSTRACT

Many researchers have attempted to link children's drawings to intelligence. The Goodenough-Harris Draw-a-Man (DAM) and Draw-a-Woman (DAW) test has been accepted as an indicator of intelligence. This study, via examination of specific cases, explored the effect that instruction in drawing cartoons had on the DAM and DAW performance of 16 sixth-grade students in a full-inclusive class from a rural area of eastern Oregon. There was no overall effect of cartooning instruction, but when students' performances were analyzed by subgroup, those who had the lowest pretest scores on both the DAM and the DAW gained in their posttest performance. Students with average and above-average abilities did not improve. One table presents standard pretest and posttest scores, and eight figures illustrate examples of student drawings. (Contains 14 references.) (Author/SLD)

# The Effect of Cartooning Instruction in a Full-Inclusive Setting on Rural Children's Performances on the Goodenough-Harris Drawing Test: Selected Case Studies

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RUNNING HEAD: Cartooning Instruction

Abstract

Many researchers have attempted to link children's drawings with intelligence. The Goodenough-Harris Draw-A-Man (DAM) and Draw-A-Woman (DAW) test has been accepted as an indicator of intelligence. This study, via examination of specific cases, explores the effect that instruction in drawing cartoons had on the DAM and DAW performance of 6th Grade children in a full-inclusive class from a rural area of eastern Oregon.

# The Effect of Cartooning Instruction in a Full-Inclusive Setting on Rural Children's Performances on the Goodenough-Harris Drawing Test: Selected Case Studies

Adults have long been fascinated with young children's drawings. Across the country, household refrigerators are transformed into miniature art galleries, proudly displaying scribblings and drawings depicting odd little people, valued by both parent and child. A child's need to express herself on paper (or on any other available surface) seems to be universal. Research has shown the striking similarities among children's drawings from various cultures and times (Di Leo, 1970; Kellogg, 1970). There are definite developmental stages of drawing ability that all children pass through that can be correlated with age (Lowenfeld & Brittain, 1988). Several attempts have also been made to compare children's drawings with cognitive and intellectual development.

One of the most widely used approaches in linking drawing skill to cognitive development is through administration of the Goodenough-Harris Drawing Test (Harris & Goodenough, 1963). The section that follows briefly describes this test.

## The Goodenough-Harris Drawing Test

The Goodenough-Harris Drawing Test, otherwise known as the Draw-A-Person (DAP) Test, was developed to measure a child's cognitive development in a non-verbal manner. This test has several advantages: 1) it can be used on very young children, or those with limited English proficiency; 2) it is a non-threatening,

motivating activity that most children enjoy; 3) the desire to draw a human is universal among children; and 4) drawing the human form is the most common motif of young children (Di Leo, 1970).

Other advantages are that the DAP is easy to administer, and requires a minimal amount of time to collect and score (Strommen & Smith, 1987). Either in a group or individually, the child is asked to draw a whole person, while points are assigned for all depicted body parts. There is also a portion of the DAP where the child is asked to draw herself, but since there is no standard evaluation scale, it is not formally scored (Salvia & Ysseldyke, 1980). A revised DAP was developed by Naglieri (1988), but based on reviews offers little advantage over the original DAP other than more current norming samples (Cosen, 1989).

First developed by Goodenough (1926) as the Draw-A-Man (DAM) Test, the DAM was revised by Harris (1963) to include a Draw-A-Woman (DAW) which resulted in the development of the DAP. This revision addressed the lowered performances by females on the original DAM. Both Goodenough and Harris were able to demonstrate a correlation between sophistication in drawings and cognitive maturity by comparing the results of the DAM-DAW with intelligence quotients (IQs) obtained from the Stanford-Binet. Harris (1963) converted raw scores to standard scores with a mean of 100 and a standard deviation of 15, allowing for easier comparisons (Salvia, 1989). Harris updated the norming samples, revised the scoring scale, and established the DAW and DAP tests. However, he was

unable to extend the scale to include adolescents, finding little increase in scores after 12 to 14 years of age.

Reliability

The DAP manual reports the following reliability data: total test internal consistency (median coefficient = .86), individual drawing internal consistency (median coefficient = .77) (Harris, 1963; Prewitt, Bardos, & Naglieri, 1989). The DAP internal consistency coefficient exceeds the suggested minimum of .80 for screening instruments (Bracken, 1987).

However, correlations between the DAP and measures of educational achievement have not produced robust outcomes. For children in grades one through six, Dunn (1967) found the DAM to correlate -.05 with the Iowa Test of Basic Skills Arithmetic subtest, and .03 with its language skills subtest. Teacher ratings of fifth grade students' reading abilities correlated .26 with the DAP (Pihl & Nimrod, 1976). Prewett, et al. (1989) found that the DAP did not correlate significantly with any areas of achievement measured by the Kaufman Test of Educational Achievement.

Racial/Gender Identity

Pertinent to the current investigation are studies connecting racial and gender identity with performance on the DAP. Based on Machover's (1949) supposition that in evaluating children's drawings of the human form it must be considered that "in some sense, the Figure drawn is the person" (p. 35). Schofield (1978) found that DAP outcomes differed along racial lines. White

children were more likely to draw human figures of the same race than African-American children, and they were less likely to draw African-American figures than African-American children were to draw whites. African-American children were more likely than whites to avoid giving clear indications of race in their figures. Kuhlman (1979) found similar drawing patterns between white and African-American adolescents.

## Developmental Traits of Drawing Ability

Children progress naturally through various stages of drawing ability until onset of puberty. After the ages of 12 - 14 years, many children stagnate in their drawing abilities especially without any specific training, resulting in numerous adults who continue to rely on "stick figures" to represent the human form. Harris (1963) speculated that this stagnation was evidenced, in part, because most children have stopped spontaneous drawings by this time, thereby reducing or eliminating their opportunities for further learning in the drawing medium.

This plateau in drawing skills is thought to be the result of the child's growing observation of the world around her. Until this stage, the child draws an object, not as she sees it, but as she feels about it; a representation, not a reproduction (Di Leo, 1970). A very young child will often draw a person with just the head, arms, and legs, but no body because those appendages are the most obvious and important parts to the child. The head is the center of vital activities: seeing, hearing, speaking, and eating.

The arms are needed for holding, the legs for moving. To a very young child, these overt details are the essential ingredients of being human. As the child matures, the body is added and only much later are realistic details such as correct proportion of body, head, and limbs, or gender differences noted (Di Leo, 1970).

The developing child becomes more aware of adult standards of representation, and is particularly impressed with hyper-realism. Abstract, cubist and expressionist styles are not appreciated by the middle-school age child, who is more concerned with making objects look "real." Unless a student is able to learn drawing skills at this stage, she is unlikely to continue to find pleasure in drawing and will probably not progress beyond this point. Instead, as children gain in reading and writing proficiency, language becomes the prime means of expression.

The students in this study are approaching this critical juncture in their maturation. As with other eleven and twelve year olds, they are just beginning to be reticent about displaying their drawings. If these children do not feel they have the skills to draw what they desire to express, by the time they reach 8th Grade, they will probably abandon drawing altogether, except for surreptitious doodles. Because of this trend, 6th Grade is probably the final grade level that the DAM and DAW would provide valid measures of developmental skills attainment.

## Method

Subjects.

The subjects in this study came from a full-inclusive class of 21 students, 12 males and 9 females. Of these 21 children, 15 were caucasian, 5 were Hispanic-Americans, and 1 was a Japanese-American student. This ethnic distribution closely paralleled the overall school population. Based on state of Oregon eligibility criteria, one student was identified as talented and gifted (TAG), one as learning disabled (LD), and four as mentally retarded (MR). Of this class of 21, 16 students (10 males and 6 females) completed both pre- and post-assessments. The difference of five students can be accounted for by absences on either or both days, students who transferred to other schools and, in the case of one of the MR males, his unwillingness to participate on a given day. This child preferred to draw trucks instead of people and would not comply with the instructions to draw people, despite many attempts at changing this reluctance. The examiner came to the conclusion that even if compliance was obtained in this ne instance, the compliance quite possibly would have been with much reluctance and the resulting drawings may have not reflected the student's actual skill level.

Instrumentation.

The students were administered the Draw-A-Man/Draw-A-Woman Test (referenced as the *Goodenough-Harris Drawing Test*) (Harris, 1963) in a pre- and post-test format. The test was administered to

the class as a group in accordance with test manual guidelines, and scored according to scales presented in the manual. The purpose of the DAM/DAW test is to assess cognitive development and intellectual maturity of children ages 3 to 15 years. It is not a timed test and was normed on 275 urban and rural children from a geographically representative population. One limitation of the DAM/DAW is that the norming sample reflected the population of the United States in 1950 (Compton, 1980). Thus, current demographic, familial, and other sociological changes in the population were not represented in the established norms.

Procedures.

Between the pre- and post-assessment administrations of the DAM/DAW, a series of lessons on cartooning were taught to the class. These lessons consisted of:

- a 45 minute draw-along videotape presentation on basic cartooning techniques;
- classroom instruction on cartooning; and
- various cartooning worksheets augmenting classroom instruction on facial features, expressions, hands and feet, motion, clothing, and accessories (e.g. hats/caps).

As closure to the unit on cartooning, the each student had to create his/her own comic strip with characters, story, and dialogue. This comic strip was drawn in a "Sunday feature-length" format.

## Results

Data will be examined both quantitatively and qualitatively to reflect both dimensions of the DAM/DAW.

Quantitative Analysis.

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Insert Table 1 about here

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Table 1 displays the pre- and post-test standard score results of the DAM and DAW. Of the sixteen students completing both pre- and post-tests, six showed post-test gains on the DAM (with two students achieving identical pre- and post-test scores), while seven showed post-test gains on the DAW (with two students achieving identical pre-/post-test scores). All six students who improved on the DAM post-test also improved on the DAW post-test.

Overall, there was no significant difference in DAM pre- and post-test results, $X$=97.9 and $X$=97.4, respectively, or DAW pre- and post-test results, $X$=97.1 and $X$=97.9, respectively. There was no significant difference between pre-test standard score means on the DAM ($X$=97.9) and the DAW ($X$=97.1). However, in comparing DAM pre-test standard score scores between the six students who showed gains on the DAM post-test, and the eight students who exhibited DAM post-test declines, there was a significant difference in means, $X$=87.5 and $X$=109.5, respectively, $t$=2.56, $df$=12, $p$<.05. A similar comparison between the "gainers" and "decliners" on the DAW showed a non-significant difference in means ($X$=88.7 and $X$=107.6,

respectively), $t$=1.34, $df$=12, $p$>.05.

Qualitative Analyses.

From the pre-/post-test standard scores in Table 1, it is evident that a wide range of drawing abilities were demonstrated. As would be expected, the most immature drawings were completed by the students with mental disabilities. Selected student samples wherein specific drawing qualities are discussed are examined below. In all figures, the DAM drawings appear on top with the pre-tests displayed on the left and post-tests on the right.

Student 1.

Insert Figure 1 about here

Figure 1 displays the drawings of a thirteen year-old Japanese-American female with mental retardation and other disabilities (including systemic lupis erythematosus, currently in remission; attention deficit disorder; petit mal seizures; and poor eyesight). Her scores on the DAM and DAW tests improved primarily from the addition of clothing. These standard scores are slightly below her Weschler Intelligence Scale for Children-Revised (WISC-R) standard score of 67.

Student 2.

Insert Figure 2 about here

The drawings in Figure 2 are the work of an eleven year old Hispanic female with mental retardation and cerebral palsy. Her figures show some lack of motor control which would be common among children with cerebral palsy. Her post-test scores declined due, primarily, to omission of fingers and depiction of the DAW post-test figure in generic attire (e.g. shorts), rather than traditional feminine attire (e.g. dress/skirt).

Student 3.

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Insert Figure 3 about here

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The child who completed the drawings in Figure 3 was a highly verbal eleven year old who had suffered a stroke when he was seven. This stroke resulted in multidisabilities, including mental retardation, triplegic spastic cerebral palsy, a lack of bowel and bladder control, and the need for bilateral leg braces. While no IQ scores were available on this child, his verbal skills seemed commensurate with the non-disabled sixth graders in the class. While drawing the post-test DAM, Student 3 remarked that it was a picture of "my dad with fists." When asked if his dad "had fists" very often, he quietly replied, "yes." Previously, during an art lesson, Student 3 had remarked that his dad did not like the drawings he brought home because they "looked like a baby" had done them.

Student 4.

Insert Figure 4 about here

The drawings in Figure 4 were done by a twelve year old girl with learning disabilities. Her specific deficit area was in reading, with problems in both decoding and comprehension. She was very hesitant about completing the drawing tasks, and only proceeded when she was assured that she only had to do her best. Her improvement on both the DAM and DAW resulted from the addition of fingers and feet on the post-test drawings. She was aware of transparency as evidenced in the DAW post-test. After the skirt was drawn, she erased the upper thighs on the female figure so they would not show through the skirt. In addition to the inclusion of feet and fingers, her post-test drawings improved aesthetically due to better facial features and more pronounced hair.

Student 5.

Insert Figure 5 about here

The drawings in Figure 5 were completed by a male talented and gifted (TAG) child. He demonstrates the ability to incorporate the basics of the lessons on cartooning into his drawing. In all four drawings he is able to portray a specific type of personality or mood. The reason that he lost a few standard score points on his

post-test figures was due to his omitting some details (e.g. eyebrows on DAM, hips on DAW) for creative purposes.

Students 6 and 7.

Insert Figure 6 about here

Insert Figure 7 about here

The drawings in Figures 6 and 7 were completed by identical twin males. The twin who drew Figure 6 sits, in class, at the same table as the TAG student who drew Figure 5. There is a degree of friendly competition at that table, particularly between the students who drew Figures 5 and 6. The other twin (who drew Figure 7) sits at a table with the trainable mentally retarded child who enjoys drawing trucks, but who otherwise has difficulty staying on task. The twin who drew Figure 7 also has difficulty staying on task and did not appear to put forth much effort during either test. Interestingly, Student 7 earned the higher grade of the two twins in art. Student 6 (as depicted in the drawings in Figure 6) shows specific influences of the cartooning lessons in his post-test figures. The facial features are almost an exact replication of one lesson. Also, the addition of the necklace, earrings, and shoes are all from the cartooning lessons and contributed to his higher standard scores on the post-tests.

Student 10.

- - - - - - - - - - - - - - - - -

Insert Figure 8 about here

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The drawings by Student 10 in Figure 8 are presented for one specific reason. On the DAW post-test, the woman is depicted in an office chair profile. In rating DAM and, in particular, DAW drawings it is important to consider sociological changes that have occurred in the 30 years since the test was developed. For example, more women are involved in the workforce, so depicting a woman in a job-related setting would not be considered unusual by 1990s standards. However, such a depiction actually contributed to the student's loss of points on the post-test.

## Discussion

Of the full-inclusive class that was the focus of this study, there was no overall effect of cartooning instruction on student performance on the DAM and DAW. Howvever, when the students' performances were analyzed by sub-group, those students who had the lowest pre-test scores on both the DAM and DAW gained in their post-test performance. Questions arise as to the nature of this discrepant drawing improvement phenomena. Some possible reasons as to why this occurred are:

- the students with more initial drawing ability tended to include more "cartoonish" features into their post-test drawings, but did not improve in drawing figure form;

- extra teacher time devoted to students with less initial ability "took away" from time for instructing students with average and above-average drawing ability; or
- the drawing medium, itself, may hold greater importance for students who possess less verbal skills, thus they may have placed greater emphasis and effort on improvement.

Since this study was conducted in a full inclusive classroom setting a question arises regarding the evaluation of student performance. How does a regular teacher evaluate (and ultimately assign marks or grades) to students enrolled in a class with such varying abilities? Should grades/marks be based on improvement? If so, this approach will tend to inflate the absolute attainment of lower ability students, while diminishing the absolute attainment of those with initial higher abilities. Another approach would be to evaluate students based on their absolute performance. In so doing, the improvement of those students with less initial abilities would be diminished, while performance declines of higher ability students may be masked.

In summation, in a non-verbal skill area (drawing) students with disabilities made improvements in a full inclusive classroom setting, while those with average and above-average abilities did not improve. In initiating full inclusive instruction, teachers must not devote a disproportionate amount of time to students with disabilities if that time allotment interferes with the progress of

"regular" students. In addition, these teachers will have to determine a representative means for evaluating students with vast array of ability levels.

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Table 1

Pre- and post-test standard scores on the DAM and DAW

| | DAM | | DAW | |
|---|---|---|---|---|
| Student | Pre | Post | Pre | Post |
| Student 1 | 62 | 65 | 50 | 59 |
| Student 2 | 87 | 78 | 88 | 71 |
| Student 3 | 68 | 68 | 63 | 60 |
| Student 4 | 69 | 81 | 60 | 71 |
| Student 5 | 133 | 130 | 138 | 130 |
| Student 6 | 97 | 106 | 100 | 113 |
| Student 7 | 100 | 94 | 85 | 85 |
| Student 8 | 120 | 112 | 138 | 130 |
| Student 9 | 114 | 109 | 116 | 126 |
| Student 10 | 105 | 94 | 113 | 97 |
| Student 11 | 106 | 113 | 116 | 124 |
| Student 12 | 101 | 106 | 93 | 119 |
| Student 13 | 90 | 103 | 86 | 90 |
| Student 14 | 97 | 97 | 98 | 90 |
| Student 15 | 100 | 89 | 94 | 94 |
| Student 16 | 117 | 114 | 115 | 107 |

Figure 1

*Figure 2*

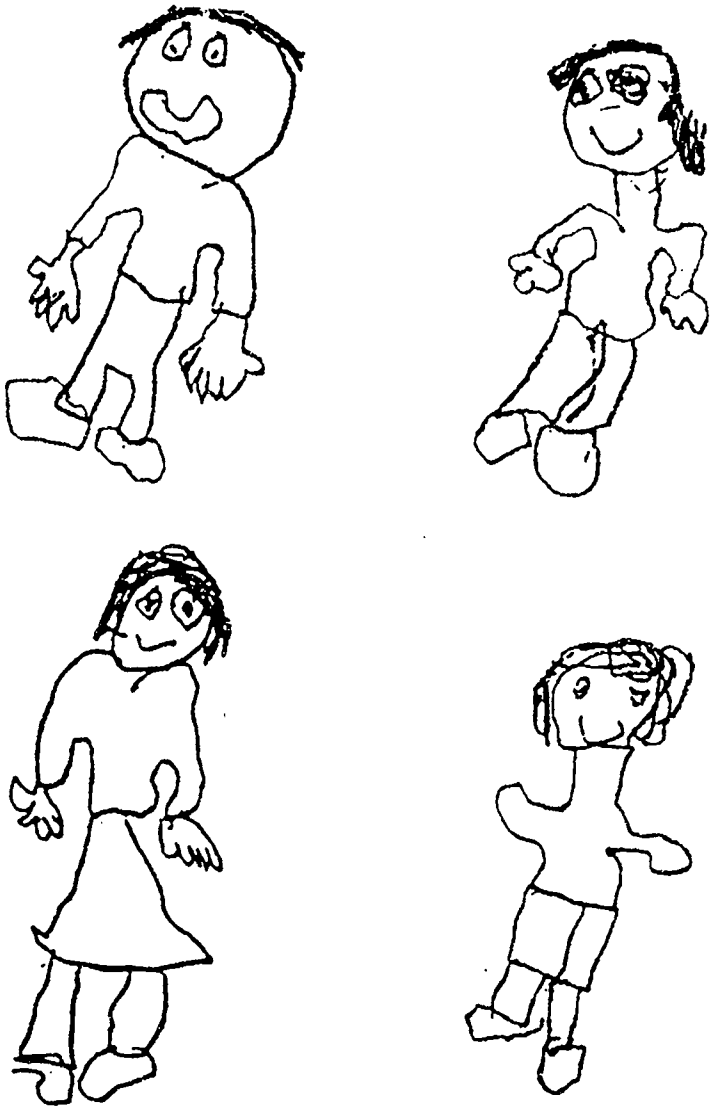

*Figure 3*

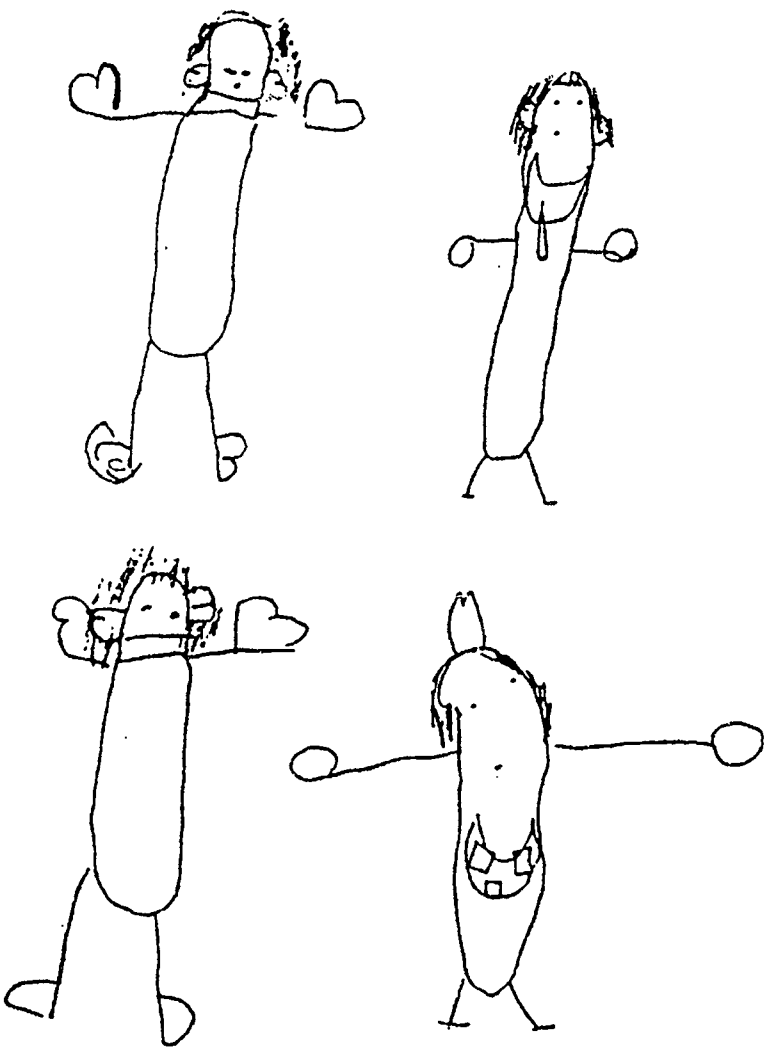

*Figure 4*

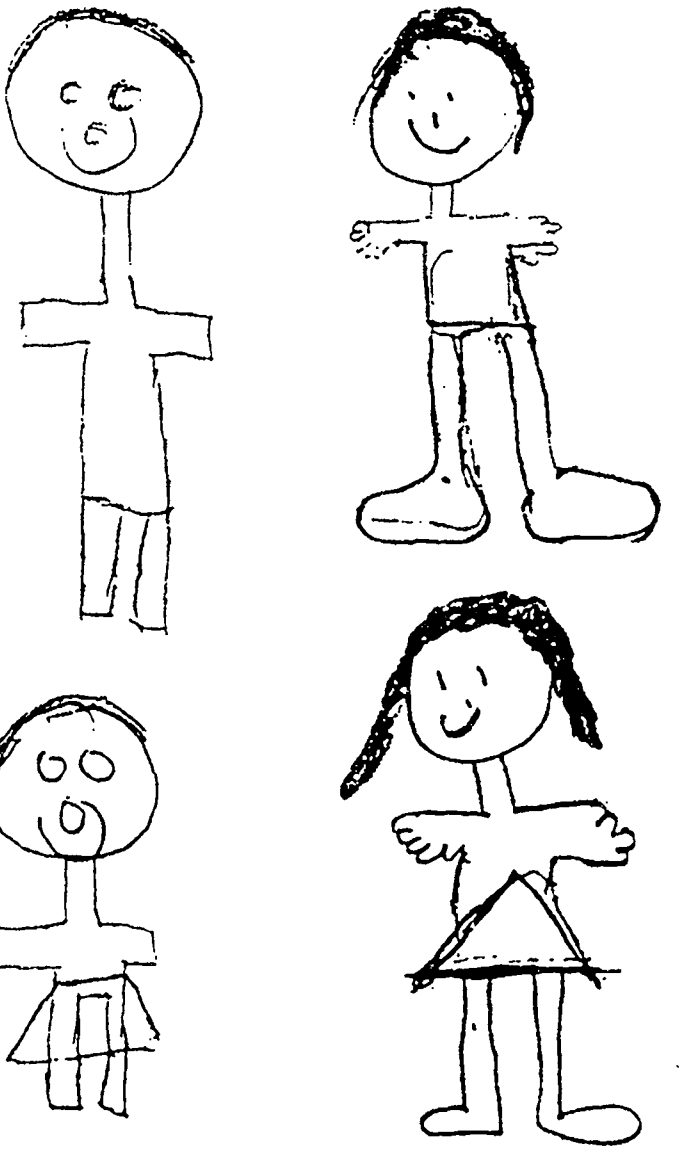

*Figure 5*

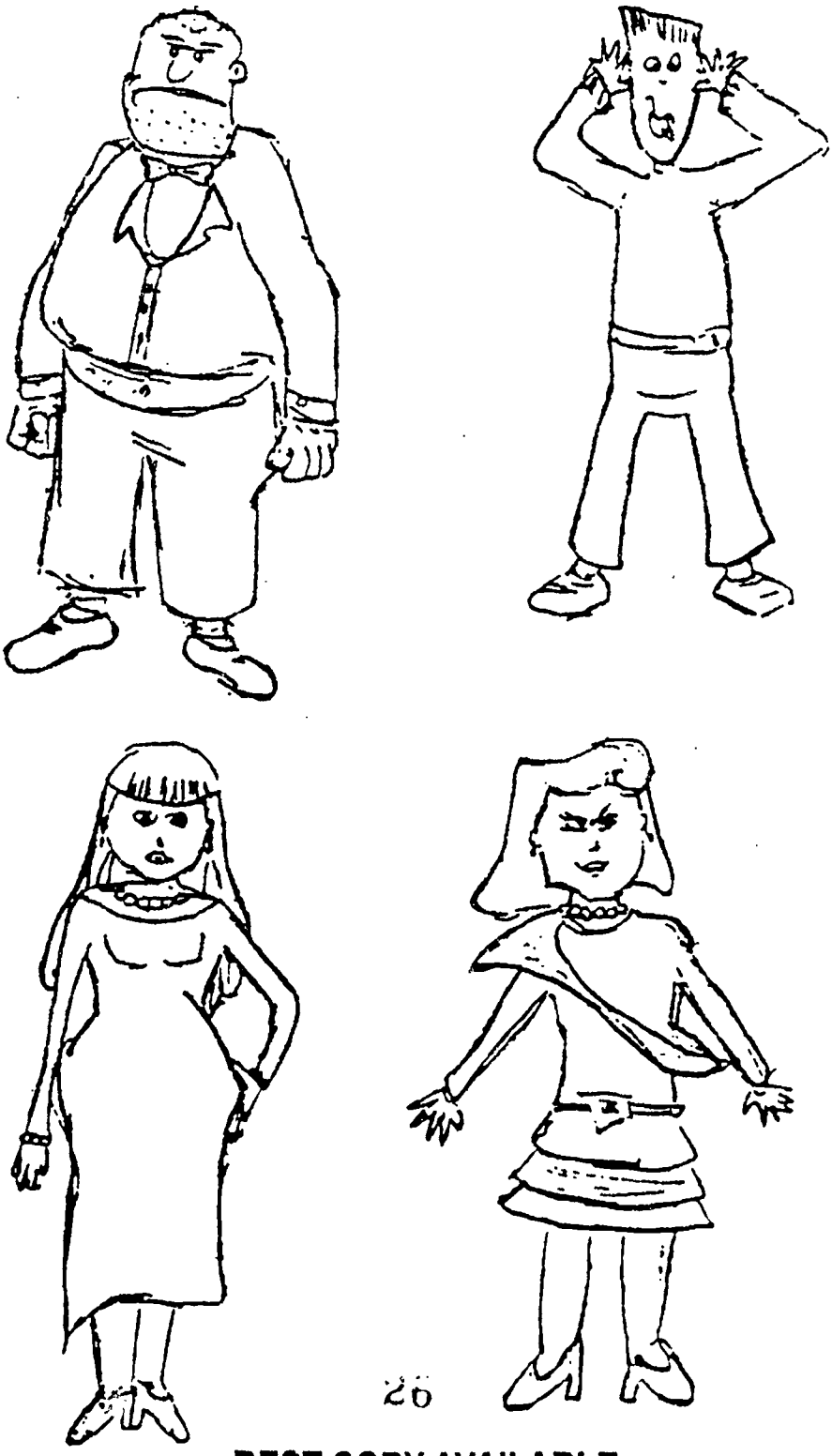

*Figure 6*

*Figure 7*

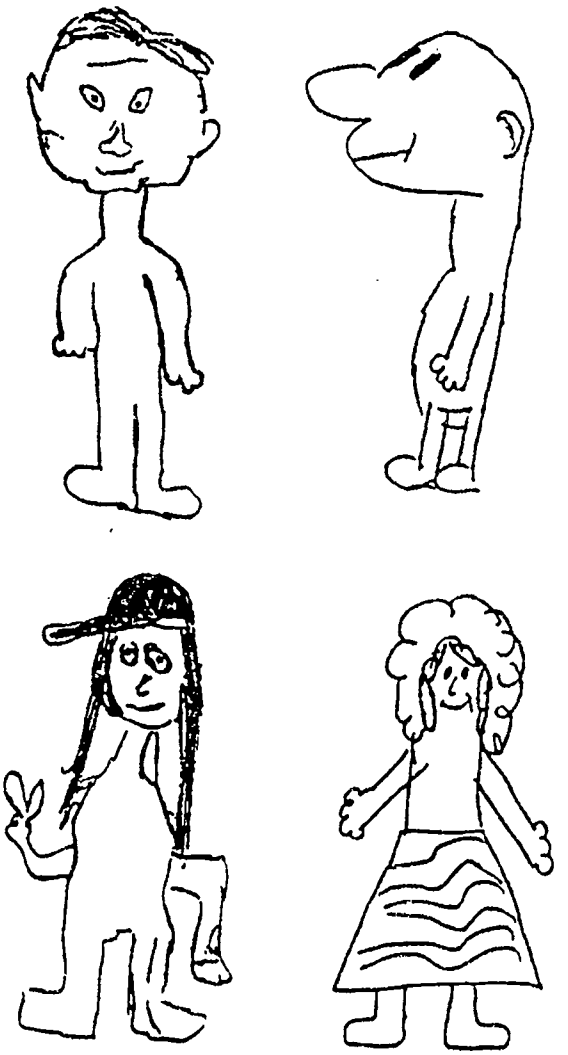

*Figure 8*