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BODY IMAGE DISTORTION IN
" HOSPITALIZED CHILDREN

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PRESENTED TO
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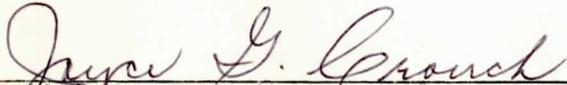
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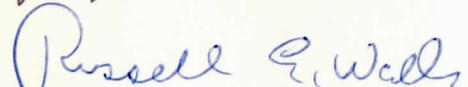
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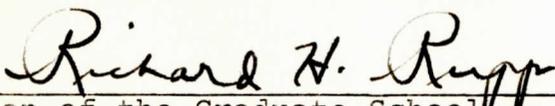
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ABSTRACT

Following the findings of Corah and Corah (1963), which indicated that body image distortion of physically ill children would be reflected in their human figure drawings and in an attempt to determine an objectively quantifiable measure of that distortion, the writer hypothesized that the index score (Wechsler Intelligence Scale for Children - Revised full scale IQ minus Harris-Goodenough Draw-a-Person IQ) would be higher, presumably indicating a greater degree of body image distortion, for hospitalized children than for physically healthy children.

Twelve hospitalized children, ages 6 - 12 years, and twelve school children, matched as to age, sex, race, general IQ scores, and parental level of education, were administered the WISC-R and the Harris-Goodenough Draw-a-Person test and the index score was determined.

A comparison of the mean index scores of the two groups did not support the hypothesis, showing no significant difference between the scores of the two groups.

The implication for future research are discussed, with emphasis on the control of possibly confounding variables such as previous hospitalizations, family support systems and drawing ability.

INTRODUCTION

The body image concept and its relation to emotional adjustment have been explored by a number of writers (Machover, 1949; Kolb, 1959). The figure drawings of physically ill and disabled children have often been used in studies of body image distortion, but no discernible pattern of omissions, distortions, shading, or malformations has been found (Abercrombie and Tyson, 1966; Burrows, 1964; Silverstein and Robinson, 1956.)

The importance of body image concept to the emotional adjustment of children with specific problems such as cystic fibrosis (Boyle et.al., 1976) and kidney transplants (Basch, 1963) has received a good deal of attention in recent years. Hospitalization itself, with its factors of separation and attending anxiety have also been investigated (Borenz, 1962; Prugh, 1953; Plank, 1962; Vernon et.al., 1965) but not in terms of body image concept as represented by human figure drawings. The problems of hospitalized children, including grief at separation from home, anxiety about body mutilation, submission to immobility, and altered locus of control (Plank, 1962; Borenz, 1962) are all situations which could affect the body image concept. Davenport and Werry (1970) have looked at the effects of general anesthesia and surgery in particular.

In studies which have used human figure drawings as a measure of body image distortions (Abercrombie and Tyson, 1966; Burrows, 1964; Centers and Centers, 1963; Johnson, 1972; Silverstein and Robinson, 1956) the only significant difference between ill subjects and healthy ones was on the self-portraits of children with visible deformities (Centers and Centers, 1963).

In an attempt to find a quantifiable technique for measuring body image distortion, Corah and Corah (1963) used an index score computed as Stanford-Binet mental age minus Goodenough mental age. Working from their findings that (1) there was no significant differences between the Binet mental ages of the healthy and the physically disabled groups or between the Binet mental age and the Goodenough mental age of the healthy group but (2) a significant difference between the Binet mental age and the Goodenough mental age of the physically disabled group and between the index scores of the two groups, they provide support for the assumption that body image distortion is reflected in figure drawings.

In the following review of the literature, the scarcity of relevant research concerning the body image concept of physically ill children is obvious as are the limitations of using very specific populations. Though even these results are not conclusively supportive, they do suggest

that human figure drawings can be employed to investigate the body image distortions of these children.

Body Image Concept

The majority of articles and studies dealing with body image distortion and means of evaluating it have taken as a major point of reference Machover's (1949) idea that "the process of drawing the human figure is for the subject . . . a problem not only in graphic skills, but one of projecting himself in all the body meanings and attitudes that have come to be represented in his body image." (p.35) The incentive for perfecting the technique has grown out of its use as a clinical tool rather than any strong theoretical stance. In her book, Machover has attempted to develop and present a system of analysis of drawings which in effect is a method of personality analysis. She includes an introduction to the technique, points out major areas for interpretation and uses illustrative case studies employing figure drawings to point up their application in clinical evaluation.

Kolb (1959) discusses the historical development of the body image concept and its close ties with neurology and with psychiatry. He also outlines the developmental process of body image and environmental attitudes which may affect it. The major portion of the work is concerned with actual changes in physical appearance, "phantom phenomena," and adaptations to such distortions.

Use of Human Figure Drawings

Before one focuses upon the use of an instrument, consideration must be given to its reliability and validity. Albee and Hamlin (1949) have investigated the reliability and validity involved in using judgments of figure drawings as measures of adjustment. Using the drawings of ten subjects ranked as to the degree of their maladjustment from normal to delusional psychotic, all of normal intelligence, fifteen clinical psychologists, divided into two groups, were asked to decide which drawings, in 45 pairings, represented the better adjusted individual. The linear correlation between the two groups of judges was found to be .995, significant at the .01 level. The rank order correlation between the rank of adjustment determined from the case reports and that of the fifteen judges was found to be .624, significant at the .05 level. In addition, linear correlation between the rank order of adjustment and the Wechsler-Bellevue Full Scale IQ were computed and found to be insignificant, suggesting that intelligence was not a major factor in determining the quality of the drawings. The results suggest that, as a measure of global adjustment, judgments of figure drawings are both reliable and valid as well as useful.

Emotional Stress of Physical Illness and Hospitalization

The stress of hospitalization on children and the anxieties associated with it have been addressed by many

authors. Emma Plank (1962), though directing most of her book toward guiding the professional team in establishing a supportive atmosphere for pediatric patients, presents in an empathic manner the new situations and problems faced by the hospitalized child. The brief case reports cited throughout the book help to point up these problems as well as those measures which may be taken to reassure the patient.

Children's reactions to illness, and hospitalization in particular, was investigated by Prugh et al. (1953). He found that age was a significant factor in the type of reaction. For children under three, hospitalization is seen as punishment or desertion. Those over three more frequently have strong fantasies concerning bodily mutilation and death fears and the older children see medical procedures as punitive measures related to earlier misbehavior.

Borenz (1962) discussed children's reactions to chronic illness and pointed out that the emotional implications of illness, both acute and chronic, are compounded by hospitalization and may affect not only their medical progress, but personality maturation as well. Factors which he listed as involved in the reaction to illness were the child's age, previous relationships with his family, the nature of the illness and the way the child

was dealt with by the medical personnel involved.

Davenport and Werry (1970) investigated the effect of general anesthesia, surgery, and hospitalization upon the behavior of children. Their subjects were divided into two groups in order to insure uniformity of length of separation from parents, type of hospital procedure and pain. One group was hospitalized for less than forty-eight hours with limited pain and the other experienced hospitalization and pain of greater duration and intensity. Each hospitalized child and those in the control groups (selected from children present for a routine physical examination at an outpatient clinic) were evaluated by their mothers on a behavioral questionnaire which yielded three major factors, (1) separation anxiety, (2) aggression toward authority and (3) apathy/withdrawal. The author found no support for the notion that a significant number of children suffer a psychological upset in a post-operative period of fourteen days.

Physical Illness and Body Image Disturbance

Many experimental studies and clinical reports have been based on the hypothesis that the body image distortions of the physically ill or disabled individuals will be evident in their figure drawings. Silverstein and Robinson (1956) studied same-sex, opposite-sex, and self-portrait drawings of 22 chronic poliomyelitis children with permanent paralysis

to the lower extremities in terms of "(a) omission of a portion of the legs; (b) external support for the drawn figure, e.g. by an orthopedic appliance; (c) marked discrepancy of the legs; (d) improper attachment of the legs to the trunk; and (e) unusual treatment of the upper body, with the legs judged to be within normal limits " (p. 334). When the drawings of the disabled children were compared with a control group matched with respect to age, IQ, and grade levels, 52 to 64 percent of the nine sets of evaluations were in agreement in distinguishing between the drawings of the two groups. Fifty-six percent of the selections would be expected to be in agreement on the basis of chance. The results suggest that the interpretation of figure drawings alone is not sufficient to determine an index of body image distortion of children with poliomyelitis when compared to normals.

In another study with poliomyelitis patients, Johnson (1972) studied the drawings of four groups of adults. Group I was composed of 15 individuals with paralytic residuals; Group II was composed of 17 individuals with functional recovery; control Groups I and II were matched for age, sex, marital status, education, occupation, and locality. The drawings of all four groups were scored on the basis of size, completeness, area of disability, and movement. The

permanently paralyzed group drew significantly smaller figures than their matched controls. There was no significant difference in any other area or between Group II and their controls. Again, there is little evidence to support the use of figure drawings as a means of measuring body image distortions.

Centers and Centers (1963), working on the assumption that the body images of amputee children and non-amputee children, as represented by figure drawings, would differ in the area of the missing limb, used the drawings (person, opposite-sex person, and self) of early amputees and those of a control group matched for age, sex, intelligence, and approximated socioeconomic level. Clinical psychologists were asked to decide whether the drawings were done by amputee or non-amputee children, to rank (1, 2, or 3) their level of confidence in their decision, and to note the cues and signs used in making the decision. The null hypothesis was rejected for the self-portrait at the .001 level using chi square. The major cues noted by the judges were gross deformities in or failure to draw a limb. These results offer minor support for the research hypothesis. They also suggest a realistic representation on the draw-a-person test by amputees of their own bodies and those of groups.

Burrows (1964) used a group of ten non-standardized tests on a group of cerebral palsied children (ages 4 to 14) with multiple diagnostic classifications and a matched normal group to determine if body scheme disturbance was a frequent problem with the cerebral palsied children. His conclusions, drawn from statistical or clinical data not reported in the study, were that cerebral palsies appear to gain a concept of body image later chronologically than normals and that the frequency of body scheme distortion is sufficient to necessitate routine evaluation of the function because of its close ties with therapeutic and educational progress.

In yet another study of cerebral palsied children, Abercrombie and Tyson (1966) obtained mental age scores for twenty-five cerebral palsied children on the WISC performance and verbal scales, Goodenough Draw-a-Man and a copying test taken from the Bender-Gestalt. The Goodenough and copying mental ages were also obtained for 23 "normal" six year olds. The mean mental ages and the ranges were given for these tests as well as the mean difference and the range of differences for the WISC performance--WISC verbal, WISC verbal--Goodenough, WISC verbal--copying, WISC performance--Goodenough, WISC performance--Copying, and Goodenough--copying. The greatest mean difference was

found between the WISC verbal and copying mental ages (2.9) and the least difference between the Goodenough and the copying mental ages (0.3) for the cerebral palsied children. The mean difference between the Goodenough and copying mental ages for the normal children was 0.9. From this listed information and unreported statistical analysis, the authors concluded that the Goodenough Draw-a-Man test does not give evidence of body image distortion but of general difficulty in drawing.

Two clinical studies, one with cystic fibrosis patients (Boyle et al., 1976) and one with kidney patients (Basch, 1963) have addressed themselves to the importance of body image concept to the overall emotional adjustment of these patients.

Boyle et al. (1976), in hopes of establishing effective guidelines for helping adolescent and young adults with cystic fibrosis, found that body image concept, as well as interpersonal relationships, interfamilial communication about cystic fibrosis, and parental behavior as viewed by the patient were related to the level of emotional adjustment. The lack of statistical analysis of the data, comparison to a normal group, and the clear definition of terms weaken the impact of the article, but the suggestions for further study make it extremely valuable.

The integration of a "new organ" into the total body concept was found by Basch (1963) to be important not only to psychological adjustment, but to physical health as well. Looking at sixteen case studies of recipients of parental organs, sibling organs, and cadaver organs, the author reported many individual reactions to transplantation. In all cases reported, if the new kidney was seen to belong to someone else, rather than as a part of the patient, there were emotional problems ranging from increased dependence to psychotic withdrawal and physical problems up to and including death.

The review of the literature to this point has yielded no truly usable measure of body image distortion except with a few carefully selected populations. The following two articles do attempt to establish a quantifiable technique with which to measure an individual's conception of this body.

Kurtz and Hirt (1970) used the Body Attitude Scale to measure the differences in the body attitudes of a group of 21 ill females and 20 healthy females matched in terms of education and social class but not age. Significant differences at the .05 level as determined by t tests were found on the Evaluative and Activity dimensions of the scale and so support the idea that variations in physical health are related to variations in global body attitudes.

Corah and Corah (1963) compared a group of children with cleft palate and cleft lip and a group of non-handicapped children selected from a large group of new entries into a school system on the basis of their proximity in chronological age and Binet mental age to the impaired group. The 1937 Revision of the Stanford-Binet, Form L and figure drawings (same sex) were administered to each child. Mental ages for both groups were computed and the Binet mental age minus the Goodenough mental age was used as an index of body image distortion. The differences between the Stanford-Binet and the Goodenough mental age were significant to the .05 level for the cleft palate group, but not for the normal group, as determined by t tests. The differences between the index scores of the two groups, also determined by a t test, were found to be significant at less than the .02 level. These results support the assumption that body image distortion will be reflected in figure drawings.

Though there are some design problems, specifically in the selection of the "normal" group and the use of one set of standardized instructions and another set of standardized norms, this study suggests a more reliable measure than the method of rating figure drawings and its extension to other populations appears supportable.

An excellent review of the literature concerning the psychological adjustment of physically ill children by Vernon et al (1965) pointed out five major areas for improvement of research in the field. The use of reliable, valid and adequately described measures of psychological adjustment, the minimization of confounding of important etiological variables through controls or systematic manipulation, the use of a non-hospitalized control group, the use of blind observers, and the use of statistical methods for analysis and interpretation were suggested as a means of improving the quality of future research. It is with these suggestions in mind that the present work is undertaken.

THE PROBLEM

It is the purpose of this study to determine a measure of body image distortion for hospitalized children which may be useful in determining a component of their level of emotional adjustment and may also be used in evaluating treatment programs aimed at helping these children adjust to hospitalization and their own illnesses.

Children being treated in small county hospitals were chosen to avoid the confounding factors of established therapy programs found in many medical centers and to insure the relative availability of parents both for consent purposes and consistent family support for the hospitalized child.

An index score similar to that used by Corah and Corah (1963) is employed in this study, but rather than the Stanford-Binet mental age, a WISC-R IQ score is used. In this way not only the full scale IQ, but also verbal and performance IQ are tested against each other across groups.

Using a statistical comparison of mean scores, this study is designed to test the following hypotheses:

- 1) The index scores of the hospitalized group will be significantly higher than those of the non-hospitalized group.
- 2) There will be no significant difference between the full scale WISC-R IQ scores of the two groups.

- 3) There will be no significant difference between the verbal WISC-R IQ scores of the two groups.
- 4) There will be no significant difference between the performance WISC-R IQ scores of the two groups.
- 5) The Harris-Goodenough Draw-a-Man IQ scores of the non-hospitalized group will be significantly higher than those of the hospitalized group.

METHOD

Subjects

The hospitalized group (Table 1, p. 17) was composed of 12 occupants of pediatric wards in three North Carolina county hospitals. They were white children age 6-12 who were not critically ill. Diagnoses included minor surgery, bronchial asthma, intestinal infection, and dermatitis. Length of hospitalization at the time of testing ranged from two to six days.

The 12 subjects (Table 2, p. 18) who made up the non-hospitalized group were randomly selected from groups of students in public schools, each group being matched with a hospitalized child with respect to sex, age (within 6 months), grade level, race, parent's combined years of education (within 4 years) and general IQ levels as determined by group scores in cumulative educational records. None of the subjects in the pool from which selection was made had been hospitalized within the last three years.

Procedure

School or hospital, parental and individual permission for testing was obtained for each subject. Permission forms were included in the subject's medical or school records.

Table 1

Description of Hospitalized Subjects

Case No	Sex	Age Yr-Mo	Grade	Combined Parents' Education (yrs.)	Diagnosis	Days in Hospital
1	F	11-4	5	31	Asthma	4
2	F	10-4	4	24	Fracture, left arm	2
3	M	8-2	2	32	Asthma	6
4	F	6-3	K	34	Mononeucleosis	6
5	M	6-3	K	31	Intestinal infection	3
6	M	11-8	6	36	Fracture, right leg	3
7	F	7-6	2	24	Tonsillectomy	2
8	M	8-9	3	24	Hernia repair	3
9	F	9-6	4	28	Dermatitis	4
10	F	6-4	K	32	Tonsillectomy	2
11	M	6-5	1	28	Appendectomy	2
12	M	11-9	6	28	Appendectomy	2

Table 2

Description of Non-Hospitalized Subjects

Case No	Sex	Age Yr-Mo	Grade	Combined Parents' Education (yrs.)
1	F	11-0	5	30
2	F	9-10	4	24
3	M	8-1	2	32
4	F	6-2	K	32
5	M	6-0	K	28
6	M	12-2	6	35
7	F	7-5	2	24
8	M	8-3	3	24
9	F	9-11	4	28
10	F	5-6	K	28
11	M	6-5	1	28
12	M	11-5	6	28

The WISC-R and the Harris-Goodenough Draw-a-Person Test were administered in that order according to standard procedure to each subject either in his/her own hospital room or in the testing room in the school. The following instructions preceded each testing situation: "I would like for you to do some things with me. Please try to do your best and let me know if you get tired."

All tests were administered by the writer over a six-month period and were scored according to standardized criteria, the Harris-Goodenough being scored by an un-informed, certified school psychologist. The index score (full scale WISC-R IQ minus Harris-Goodenough IQ) was then computed for each subject (Tables 3 and 4, pp. 20 and 21).

Table 3

WISC-R Full Scale, Verbal, Performance IQ,
 Goodenough IQ, and Index Scores of Hospitalized Subjects

Case No	WISC-R Full scale IQ	WISC-R Verbal IQ	WISC-R Performance IQ	H-G IQ	Index Score
1	100	88	112	115	-15
2	110	111	108	108	2
3	96	90	104	82	14
4	126	131	115	115	11
5	134	128	132	117	17
6	138	137	130	128	10
7	111	107	106	101	10
8	93	100	91	89	4
9	120	123	111	123	- 3
10	114	115	109	107	7
11	129	127	126	86	43
12	131	131	124	128	3

Table 4

WISC-R Full Scale, Verbal, Performance IQs, Goodenough
IQ, and Index Scores of Non-Hospitalized Subjects

Case No	WISC-R Full scale IQ	WISC-R Verbal IQ	WISC-R Performance IQ	H-G IQ	Index Score
1	103	105	102	108	-5
2	107	112	101	101	6
3	91	90	95	93	-2
4	121	124	112	118	3
5	138	136	131	129	9
6	136	125	138	134	2
7	110	109	109	103	7
8	92	90	96	86	6
9	118	122	108	112	6
10	115	115	111	121	-6
11	132	128	129	128	4
12	128	123	129	116	12

RESULTS

Using t tests with the .05 level established as the acceptable level of significance, the index scores of the hospitalized group did not prove to be significantly higher than those of the non-hospitalized group ($t=1.414$) offering no real support for the hypothesis that a component of the reactions to the stresses of physical illness and hospitalization would be evident in this measure of body image distortion. There were no significant differences between the two groups on the full scale WISC-R IQ ($t=.0206$), verbal WISC-R IQ ($t=.0139$) or performance WISC-R IQ ($t=.0112$) confirming the null hypothesis in all cases. The Harris-Goodenough IQ scores for the non-hospitalized group did not prove to be significantly higher than those of the hospitalized group ($t=.4416$) offering no support for the hypothesis that the disturbance in body image for the hospitalized group would be evident in the Goodenough scores alone. Table 5 (p. 23) gives a summary of these results.

Table 5

Comparison of the Various Measures From the Two Groups

		Hospitalized Group	Non-Hospitalized Group
WISC-R Full Scale IQ	Range	93 to 138	91 to 138
	Mean	116.83	115.91
	SD	14.62	15.52
	<u>t</u>		.0206 ns
WISC-R Verbal IQ	Range	88 to 137	90 to 136
	Mean	115.66	114.91
	SD	15.88	13.84
	<u>t</u>		.0139 ns
WISC-R Performance IQ	Range	91 to 132	95 to 138
	Mean	114.0	113.91
	SD	10.49	14.09
	<u>t</u>		.0112 ns
Harris Goodenough IQ	Range	82 to 128	86 to 134
	Mean	108.25	112.41
	SD	15.2	14.8
	<u>t</u>		.4416 ns
Index Score	Range	-15 to 43	-6 to 12
	Mean	8.85	3.5
	SD	8.80	3.5
	<u>t</u>		1.414 ns

DISCUSSION

The results of this study do not support the hypotheses that an index based upon the discrepancy between the Harris-Goodenough scores and those obtained from an intelligence test, in this case the WISC-R, or the Harris-Goodenough alone is reliable in measuring distortions of the body image as did the results of Corah and Corah (1963). Though non-significant, the difference between the index scores of the two groups is substantially higher than the differences on any other single measure. It is of interest that given the same differences and an increased number of subjects, projected results would approximate those of Corah and Corah (1963). The lack of significant differences on the other three measures - full scale WISC-R IQ, verbal WISC-R IQ and performance WISC-R IQ - confirmed the null hypothesis that the groups would not vary significantly on these measures.

There were factors, such as family size, child rearing practices, previous experience with hospitals and drawing ability which, though considered, were not controlled and may have had a substantial effect on the results. Initially, a control for drawing ability was included, but subsequently deleted due to fatigue in the hospitalized subjects. In addition, the hospitalized group in this study included five

children who had been hospitalized previously. The nature of this earlier experience with illness and hospitals could have had a strong effect on the reactions of these subjects to their present hospitalization. There was also a surprisingly high level of education among the parents of the subjects. All parents had a minimum of a high school education. It must be suspected that this level of education influenced the preparation for hospitalization and support during its course for these subjects, two factors of extreme importance in adjusting to physical illness and hospitalization (Plank, 1962). It must also be noted that the hospitalized subjects in this study were in many instances not visibly ill, experienced few invasive procedures such as intravenous feeding, nasogastric intubation or catheterization and were in all but one case (the fracture, right leg) totally ambulatory, if restricted.

An extended study with greater attention paid to previous experience with illness and hospitals and preparation for hospitalization as well as an increased number of subjects may result in very different findings. The inclusion of a drawing ability or visual motor integration task could add to the findings an indication of the effect of drawing ability on the Harris-Goodenough IQ scores and the index scores. The addition of a correlational design

could be used in determining what relationship, if any, exists between the WISC-R subtests and the index scores.

Though in no instance was the index used in this study supported as a valid means of measuring body image distortions, the idea that these distortions somehow manifest themselves in human figure drawings is one demanding further study. Whether the physical stress of being ill and the emotional stresses of separation, body mutilation and invasion fears, and submission to immobility affects the body image concept is also an area worthy of more intensive investigation.

References

- Abercrombie, M. L. J. and Tyson, M. C. Body image and draw-a-man test in crebral palsy. Developmental Medicine and Child Neurology. 1966, 8, 9-15.
- Albee, George W. and Hamlin, Roy M. An investigation of the reliability and validity of judgements of adjustment inferred from figure drawings. Journal of Clinical Psychology. 1949, 5, 389-392.
- Basch, Samuel H. The intrapsychic intergration of a new organ: a clinical study of kidney transplantation. Psychoanalytic Quarterly. 1963, 42, 364-384.
- Borenz, Harold F. Children's personality reaction to chronic illness. The Wisconsin Medical Journal. 1962, 61, 551-554.
- Boyle, Ivy R., Di Sant'Agnese, Paul A., Sack, Sallyann, Millican, Frances, and Kulszycki, Lucas L. Emotional adjustment of adolescents and young adults with cystic fibrosis. The Journal of Pediatrics. 1976, 88, 318-326.
- Bruning, James L. and Kintz, B. L. Computational Handbook of Statistics. Glenview, Illinois: Scott, Foresman and Company, 1968.

- Burrows, N. B. An investigation of body image disturbance in cerebral palsied children as against the unimpaired. Australian Occupational Therapy Journal. 1964, 11(4), 26-35.
- Centers, Louise and Centers, Richard. A comparison of body images of amputee and non-amputee children as revealed in figure drawings. Journal of Projective Techniques and Personality Assessment. 1963, 27(2), 158-168.
- Corah, Norman L. and Corah, Patricia Laney. A study of body image in children with cleft palate and cleft lip. The Journal of Genetic Psychology. 1963, 103, 133-137.
- Davenport, H. T. and Werry, J. S. The effect of general anesthesia, surgery and hospitalization upon the behavior of children. American Journal of Orthopsychiatry. 1970, 40, 806-824.
- Johnson, Frank A. Figure drawings in subjects recovering from poliomyelitis. Psychosomatic Medicine. 1972, 34, 19-29.
- Kolb, Lawrence C. Disturbance of the body image. In S. Arieti (Ed.), American Handbook of Psychiatry (Vol. 1). New York: Basic Books, Inc., 1959.
- Kurtz, Richard and Hirt, Michael. Body attitude and physical health. Journal of Clinical Psychology. 1970, 26, 149-151.
- Machover, Karen. Personality Projection in the Drawing of the Human Figure. Springfield, Illinois: C. C. Thomas, 1949.

Plank, Emma N. Working with Children in Hospitals.

Cleveland, Ohio: The Press of Western Reserve University, 1962.

Prugh, Dane G., Staub, Elizabeth M., Sands, Harriet H., Kirschbaum, Ruth M. and Lenihan, Ellenora A. Study of the emotional reactions of children and families to hospitalization and illness. American Journal of Orthopsychiatry. 1953, 23, 70-106.

Silverstein, A. B. and Robinson, H. A. The representation of orthopedic disability in children's figure drawings. Journal of Consulting Psychology. 1956, 20, 333-341.

Vernon, D., Foley, J., Sipowicz, R., and Schulman, J. The Psychological Responses of Children to Hospitalization and Illness: A review of the Literature. Springfield, Illinois: Charles C. Thomas, 1965.

Appendix A

Sample Parental Permission Form

This study has been designed in an attempt to establish a valid measure of emotional adjustment as seen in human figure drawings. Such a measure may prove to be of value in determining the efficacy of presently existing pediatric recreational therapy programs and encourage the establishment, within medical facilities, of other such programs aimed at the total treatment--medical and emotional--of the pediatric patient.

Actual data collection involves the administration of two tests to hospitalized children six to twelve years old and to a matched group of school children who have not been hospitalized within the past three years. The tests are the Wechsler Intelligence Scale for Children--Revised (WISC-R) and the Harris-Goodenough Draw-a-Person Test. The WISC-R is a measure involving ten verbal and performance subtests requiring the subject to respond verbally and by manipulating blocks, picture cards and puzzle pieces. The Harris-Goodenough consists of having the subject spontaneously produce a human figure drawing. The entire administration takes about an hour and a half and is not generally held to be threatening or stressful.

Though both tests yield intelligence quotients, individual scores will not be used in the data interpretation, but as a means of comparing the two groups. Subjects will be identified only by age, sex, and physical diagnosis thus maintaining the integrity and personal anonymity of each child. All test data is to be held in the strictest confidence and destroyed following its interpretation.

As the evaluation of functional intellectual levels of individual children is not the aim of the administration of either test, IQ scores may be invalid in this respect and will not be reported under any circumstances.

Kimball Royster

 I understand the study in which my child, _____ has been asked to take part and do hereby give my permission contingent upon his/her own consent.

I also understand that test results will be held in the strictest confidence and that the examiner is not bound to reveal individual test scores.

 _____ Relationship
 _____ Date
 _____ Total combined years of parents' education
 _____ M.D.*
 _____ Date

*this section was omitted from forms for school children