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The psychological consequences of surgery in the first three years of life

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THE PSYCHOLOGICAL CONSEQUENCES OF SURGERY IN THE FIRST THREE YEARS OF LIFE

by

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A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

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Abstract

THE PSYCHOLOGICAL CONSEQUENCES OF SURGERY IN THE FIRST THREE YEARS OF LIFE

by

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This study was designed to investigate the persisting effect of an acute trauma, occurring during the first three years, on the latency age child, 6-10 years. The specific trauma was an acute surgical procedure, considered of benign or routine nature by parents and physicians. Typical procedures included hernia repair and tonsillectomy. These operations required only brief hospitalization, average stay was 2.8 days, without prolonged medical follow-up.

Children were selected from the New York Public Schools. Thirty-one children, including twenty-two boys and nine girls, constituted the surgical group. These

children had all experienced surgery during the first three years. Nineteen children, made up of twelve boys and seven girls, comprised the non-surgical, control group.

The dependent measures were derived from, the Draw-A-Person Test (DAP); Thematic Apperception Test, Children's Apperception Test, Children's Apperception Test-Supplement, (TAT, CAT, & CAT-S); and the Rorschach Test. A brief interview was held at the conclusion of the testing session to elicit any memories surrounding the surgery.

All projective tests were scored using standard methods. Results were analyzed statistically, multiple independent two-tailed t tests were executed to test for differences between the surgical group and the non-surgical control group.

Results from the projective drawing test (DAP) and the apperception tests (TAT, CAT, & CAT-S) indicated that the surgical group of children produced significantly more anxiety indicators than the control group.

Significant differences between the control and surgical group were found for six of the twenty variables of the Rorschach, including human movement (M) and the weighted color sum (ΣC) responses. These findings were interpreted as manifesting increased levels of anxiety in the surgical children.

All test findings support the hypothesis of increased anxiety following an acute traumatic event within the first three years.

For Dr. Milton E. Kapit

Below the surface-stream, shallow and light
of what we say we feel - below the stream,
as light, of what we think we feel - there
flows with noiseless current strong, obscure
and deep, the central stream of what we feel
indeed.

Schiller

Many years had elapsed during which nothing of Combray...had any existence for me, when one day in winter as I came home, my mother, seeing that I was cold, offered me some tea, a thing I did not ordinarily take...I raised to my lips a spoonful of the tea in which I had soaked a morsel of the cake. No sooner had the warm liquid, and the crumbs with it, touched my palate than a shudder ran through my whole body...An exquisite pleasure had invaded my senses...Whence could it have come to me, this all-powerful joy?...And suddenly the memory returns. The taste was that of the little crumb of 'madeleine' which on Sunday mornings at Combray...my Aunt Leonie used to give me...Immediately the old grey house upon the street rose up like the scenery of a theater...the whole of Combray and of its surroundings taking their proper shapes and growing solid, sprang into being, town and gardens alike, from my cup of tea.

Marcel Proust

With appreciation and remembrance of Dr. Arthur Arkin, my mentor, who inspired this work and suggested these words of Proust to signify the essence of our study. I truly appreciate the effort of Dr. William King, as he helped me to complete this work. I'd also like to thank Dr. Louis Gerstman for his continual assistance, especially with the statistical analysis of the data. I am very appreciative to Dr. Sylvia Brody for her caring and knowledgeable guidance. My particular thanks to my sister Charlene, who is so dear to me. Thank you: Mom, Dad, Sia, Thoth, Christine, Stefanie, Alison, D.J., David and Annette, Lucy and Susan. I wish to thank Ivy Vale-Wynand for typing it so well.

TABLE OF CONTENTS

PAGE

ABSTRACT..... iv

DEDICATION..... vi

ACKNOWLEDGEMENTS..... vii

LIST OF TABLES..... x

Chapter

I. INTRODUCTION..... 1

RELATED RESEARCH

Infant Research..... 8

Trauma..... 23

Surgery and Hospitalization in Childhood..... 28

II. METHOD

Subjects..... 43

Materials..... 48

Procedure..... 56

III. RESULTS

Draw-A-Person Test..... 63

Apperception Tests (TAT, CAT, & CAT-S)... 66

Rorschach Test..... 68

IV. DISCUSSION..... 77

APPENDICES PAGE

A. Letter Sent to Parents Requesting Child's Participation in the Study..... 96

B. Developmental Profile Form..... 98

C. Handler's Scoring Manual; Anxiety Indexes in the Draw-A-Person Test..... 100

D. Apperception Cards..... 113

E. "Surgical Memory' and Draw-A-Person Test of Surgical Children. Draw-A-Person Test of Non-Surgical Children..... 121

REFERENCES..... 273

LIST OF TABLES

TABLE		PAGE
1.	Surgical Procedures According to Gender.....	47
2.	Anxiety Indexes for Draw-A-Person Test Figures.....	65
3.	Anxiety Indexes for Apperception Cards (TAT, CAT, & CAT-S).....	67
4.	Rorschach Test: Whole (W) Response.....	69
5.	Rorschach Test: Large Detail (D) Response.....	70
6.	Rorschach Test: Percentage White Space (%S) Response.....	71
7.	Rorschach Test: Human Movement (M) Response.....	73
8.	Rorschach Test: Weighted Chromatic Color (ΣC) Response.....	74
9.	Rorschach Test: Achromatic Color-Form (C'F) Response.....	75

I. Introduction and Related Research

I don't remember the surgery, I do
remember the place where I was,
what it was like inside.
I was there for 3-4 weeks, funny
thing was when I came out of there
I had to wear a mask to stop
the bright light and rest my eyes.
I can still smell the ether.
You get scared when you go to the doctor,
'oh my god what's going to happen to me,'
your heart beats ninety miles an hour,
you're really scared that you are
going to die.
A lot of people get surgery for
bone diseases, not too great blood,
cancer, but not too many little kids
(get sick). Child diseases are hard,
like blindness or deafness,
you really can't do anything about it
(infant). If it's born the wrong way
you can do something, but if it's
born with a disease or
not developed enough or not enough
white blood cells
it dies.
I had quite a few things wrong with me;
my eyes were crossed, that would be
considered disabled, not a disease.
They had to operate on me and
it worked out, but they really
didn't have the technology.
I don't know exactly when I was born,
but in 1972 I was perfect, but
I had feet like frankenstein.
I had to wear special shoes.
I'm happy now that my feet were changed,
now I race. I have 20/20 vision, but
I always had good vision.
I had bad nightmares,
my dreams come true, like ESP,
so I don't want to think about it
because I'm perfect now.

JH

This study was designed to investigate the persisting effect of an acute trauma, occurring during the first three years of life on the latency age child. In this investigation I followed Glenn's (in press) definition of trauma. He suggests that the term trauma be restricted to mean "an overwhelming stimulation beyond the individual's capacity to deal with by his usual psychic mechanism" (sic).

The specific trauma whose effects I studied was an acute surgical procedure, considered of benign or "routine" nature by parents and physicians. Typical procedures included hernias and tonsillectomies. These operations required only brief hospitalizations without prolonged medical follow-up. This criterion serves to minimize confounding the memory of the original trauma with memories of the follow-up procedures.

Latency age children (6-10 years) were selected from the New York Public Schools. Latency was chosen because it is viewed as a period of emotional quiescence, a time when character development is in the process of consolidating. Shapiro and Perry (1976) speak of latency as that period when "the child of 7± 1 has reached a level of maturation... that permits autonomy...he has a new set of cognitive strategies to outwit and control his environment." These abilities allow the child in latency to better channel his feelings into ideas and verbal expression rather then enacting them.

Normal, healthy appearing children, intellectually functioning at grade level for age, were selected. A control group who did not experience an early childhood surgery was chosen from the same source. Boys and girls were accepted in both groups.

Much of the psychological literature on this subject reflects the recognition that an early trauma, as surgery, indicates anxiety. It is my hypothesis that this anxiety persists in accordance with the memory traces produced by the trauma, influencing the developing personality of the child. "If we accept the assumption that there are enduring, individual qualities about human beings and central themes determining the course of human biographies and that these enduring qualities are not always manifest in behavior then...diagnostic (projective) tests are an excellent way to learn about the intricate inner workings of people" (Rapaport, Gill, Schafer, 1968, p. 38). I used the following projective tests in this study: Draw-A-Person Test (DAP), Thematic Apperception Test, Children's Apperception Test and Children's Apperception Test Supplement (TAT, CAT, CAT-S), as well as the Rorschach. These projective tests are designed to explore and expose the affective state of the child and to define how the child perceives his environment.

The projective drawing test (DAP) gives the child a means to channel his wishes and fears, fantasies and pent-up impulses without the need for verbal expression.

The child's picture of a person emanates from pleasurable or unpleasurable experience with his own body (Siegel, 1987, p. 121). Anxiety is a major variable measured by the DAP test (Sopchak, 1970). Handler and Reyner (1965) reviewed the literature on anxiety indexes historically used in scoring the DAP test. After investigating the many indexes used for scoring anxiety, Handler (1967) chose the most reliable indicators and developed his own scoring system for anxiety. Sopchak used Handler's system and concluded that it was a valuable method for analyzing the presence of anxiety in children's drawings. I used Handler's indexes of anxiety in the scoring of the children's drawings in this study.

The Thematic Apperception Test (TAT) was devised by Murray in 1943. In the TAT an individual is presented with a series of standard pictures and encouraged to create and report stories about them. Rapaport, Gill and Schafer explained that "the characteristics, attitudes and strivings of the figures in the TAT stories are all products of memory... which order single experiences into patterns conforming with the emotional constellations of the subject's life. If any one affect or mood is overwhelming...it will spread to many or all of the characters in the stories" (p. 485).

Bellak (1949), following Kris's suggestion that children would identify themselves more readily with animals, conceived the Children's Apperception Test (CAT).

In the CAT, the child is shown a series of pictures of animal scenes and is asked to 'make-up' a story about what is happening in each picture. The CAT is designed to provide specific animal scenes, to evoke the child's response to particular emotional situations, as surgery, which are not common to all children's life experience.

Specific pictures were chosen from the TAT, CAT, CAT-S cards for use in this study. Byrd and Witherspoon (1954) found that in preschoolers, particular CAT cards elicited the responses that they were designed to measure, e.g. cards number 5 and 9 of the CAT most frequently evoked fear response. Witherspoon (1968) discussed results of CAT research, which found no gender difference in CAT responses in children ages 3-10. Statistically significant differences were more a function of a particular card's stimulus value than of age or grade.

Haworth's (1963) Schedule of Anxiety Indicators was used for the scoring for the presence of anxiety in the TAT, CAT, and CAT-S stories. Haworth (1966) reviewed studies which utilized the CAT. These studies evaluated 'normal' children's samples of CAT responses. They investigated variables as intelligence and sociometric status. Haworth summarized their efforts with the observation, although groups of children may vary in some respects in their CAT responses, the overall response concordance between diverse groups of 'normal' children are compellingly evident (pp. 62-88).

Rorschach (1921) discovered that visual perception is a function of the individual's personality. He designed the Rorschach Ink Blot Test, which allows reconstruction of the 'building units' of the personality from perceptual activity. Apparently, the process of responding to the amorphous ink blots begins with a perceptual experience which sets off associative processes (Rapaport, Gill, Schafer, p. 275). Rapaport (1950) concluded that the Rorschach as an association test reflects the individual's memory function, indicating the influence of affects, as anxiety, on the organization and recall of memories. The individual's task is to organize the ink blot in terms of his memory images. This process reveals the main regulating factors of his personality which are primarily of an affective nature. In this study, the Rorschach data was viewed only in terms of the effects of anxiety on the child's personality.

"The ambiguity of the perceptual stimuli and the readiness with which they evoke unconscious fantasy activity, and potential discharge of drive derivatives are fundamental concepts of the projective test" (Siegel, p. 87). The reciprocal relationship between mentation and perceptual experience is most important in projective tests. Psychometricians agree that a single projective test provides only a partial impression that can lead to distorted conclusions (Siegel; Bellak; Rapaport, Gill, & Schafer). The use of several projective tests elicits

supporting data which produces a convincing picture of the child and his affective state. Haworth (pp. 254-281) reported on several studies which compared findings from individual tests within the test battery. Experimenters reported substantial consistencies in diagnostic information derived from the various tests, which included the DAP, CAT, and the Rorschach.

A brief interview was held at the conclusion of the testing session to elicit any memories surrounding the event of the surgical trauma.

In keeping with the major foci of this study, the literature review is divided into three main topics: recent experimental findings in infant research, emphasizing the role of early memory and affect; trauma; an historical review and clarification of the traditional psychoanalytic definition; effects of early childhood surgery and hospitalization.

After completing a thorough search of the literature, I concluded that there were no other studies, in which latency age children who had surgery when three years of age or less, were evaluated. The studies I found included children of varying ages and developmental phases. Some

investigations were conducted in the hospital, however, they didn't include long-term follow-up post operatively. Some studies didn't include a non-surgical control group. Most reports did not employ quantitative tests to validate their hypothesis; rather, they presented interview or questionnaire responses completed by the parents, omitting direct contact with the child. In many instances the children's hospital stay was longer than in this study, where most of the children remained in the hospital for 1-2 days. Parents were not permitted to remain with their hospitalized child in most of these investigations. All of the children hospitalized in this research project were accompanied by a parent.

I. Infant Research Studies

This subject was reviewed with particular emphasis on areas relevant to this thesis. Questions as, "What is the felt quality of the infant's living experience...does the infant have an affect memory for his affective experiences?" (Stern, 1986, p. 91) are central issues in

this paper. My hypothesis, that as a result of a surgical trauma, the infant experiences anxiety[1], which persists and modifies the future course of his personality, is based on these preceding questions and their answers.

Describing the infant, with his capacities as observed, while understanding modern concepts about the affects and their relation to memory in early life, will lend clarity to the subject of the long-term consequences of a trauma experienced in early life.

1. Freud (1910) stated "Birth is both the first of all dangers to life and the prototype of all later ones that cause us to feel anxiety, the experience of birth has probably left behind in us the expression of the affect which we call anxiety." Freud said that physiological anxiety became transformed into psychic anxiety as a result of the infant's feelings of danger of being alone and helpless. He said states of helplessness existed from birth, however, preparedness for anxiety, the capacity to give the signal of anxiety doesn't arise until later in time (1926). Greenacre (1941, 1945/52) reported that in fetal and post-natal life untoward events produced "pre-anxiety responses." The pre-anxiety response form the organic components of later anxiety reactions. Greenacre stated that initial events in life produced physiological anxiety responses which causes life-long consequences in the individual, "predisposition to anxiety." Benjamin (1961) cited the prevailing view that a mature ego was required before the infant can experience anxiety. He asked, "when is the infant's ego mature enough to experience anxiety?". Yorke and Wiseberg (1977) suggested viewing anxiety along a developmental line from the diffuse somatic excitation of birth, with a pervasive psychic anxiety, to a more limited and adaptive signal anxiety. The emergence of anxiety from the matrix of physiological interrelationship during pre and post-natal life is a complex and controversial issue which is addressed in greater detail later in this paper.

"Having seen the impact of the first months of life on the infant and the ways in which this thereafter, affects parent-child relationships and feeds upon the child, it is impossible not to think in terms of the events of the months and years until three years as a primary determinant of subsequent psychological functioning" (Pine, 1985, p. 4).

Today, many psychologists maintain a sense of conviction that the past influences the present in some logical fashion. The earliest months and years hold a prominent place in their theories. Hunt (1979) described the first 3 years of life as the period when the achievement of initiative, trust, compassion, curiosity, as well as the precursors of competency occurs.

Psychoanalysts, regarding developmental theories, have drawn their conclusions from reconstructed clinical material and older outdated views of the infant (Stern, p. 5). Present day observational studies of infants and children growing up, while confirming analytic theory that the earliest experiences can have significant effects in later life, also enhances the developmental picture in ways that can profoundly affect our view of theory (Pine, 1985, p.4).

New scientific appreciation of the fundamental activity of the infant who moves toward increasing psychological complexity is emerging. Research has altered

our earlier static view of the infant's reality in which the world was a given, rather than something he actively constructed (Emde, 1985).

Recent Research Findings

Observers agree that the periods between birth and 3 months (to a lesser degree 5-6 months), 9-12 months and 15-18 months are times of great change for the infant. During these periods, there are found quantum leaps in overt behavior and subjective experience. Between the periods of rapid change there are times of quiet integration in the infant (Stern, p. 8).

Wolff's (1959) observation of infants around-the-clock led to a breakthrough in infant research. As a result of his study, Wolff discovered a period of "alert inactivity" in the infant, which exists from birth. It is during these time periods that the infant takes in external events when he is cognitively active. Conclusive experimental findings attest to the early responsiveness of the infant to his environment. The infant is interested in the human voice and face and he is able to discriminate facial gestures (Stern, p. 40). Brazelton (1980) stated that the "newborn is equipped with the capacity for processing complex visual stimulation" as well as the capacity to shut out disturbing visual stimuli. Neonates at 3 weeks of age show cycles of

interactions with their mothers. Hunt has observed that there appears to be an accumulation of shared information between mother and infant, the construction of a rudimentary form of communication.

The preceding description views the infant as a stimulus seeker, which challenges Freud's concept of the infant as a stimulus avoider (Stern, p. 44). Freud (1920) referred to the infant as "This little fragment of living substance...it would be killed by the stimulation emanating from (the external world) if it were not provided with a protective shield against stimuli" (p. 27). He described this protective shield, calling it the "stimulus barrier," suggesting that it allowed for the survival of the passive infant. With the discovery by Wolff, of the infant's periods of "alert inactivity," Freud's concept of the infant is untenable. The infant, like everyone else, had optimal levels of stimulation, above which, stimuli will be avoided (Stern, p. 233). Esman (1983) described the neonate as having an "innate, selective, maturing screening mechanism that admits stimuli of certain types and intensities under certain conditions." One prevalent view states that from birth the infant seeks out and responds to those stimuli which he can assimilate and excludes those that overtax his capacities (Esman). It is now generally accepted that mother is the buffer and facilitator,

providing the crucial responsibility for the monitoring of stimuli available to the infant during each phase in his early development (Stern; Emde, 1988). Mother serves as the intervening auxiliary person, who prevents the infant's exposure to overtaxing stimuli. While Freud viewed the stimulus barrier of the infant as a protection against danger, now we see mother as the protector of this active, participating infant. Of course this view suggests that the infant is more vulnerable to the trauma of surgery.

Consonant with the concept of the infant's need of the stimulus barrier is the analytic theory of the undifferentiated state of the newborn. Peterfreund (1978) defined this view of the infant, this state of undifferentiation, "the infant makes no discernible distinction between inner and outer stimuli and is unable to distinguish between himself and the surroundings...everything now known about infancy from behavioral and biological studies argues against this conception of the undifferentiated state and against the idea that, in the infant, the function and equipment for self-preservation are atrophied."

According to Stern, "the infant is predesigned to be aware of self...beginning at birth, there exists a preverbal sense of self" (p. 10). Emde described this initial self as a "prerepresentational" self. While it has been demonstrated that self-recognition occurs at 15-18

months, gender identity becomes consolidated in the second and third year and emotional object constancy becomes established at this time, the self is not simply acquired at this time. Rather, states Emde, it is an inherent, organizing process "whereby a vital set of synthetic functions increase in complexity and depth as development proceeds throughout life."

The presents concepts dramatically alter our view of the infant and the effects of early experiences on him. Infants begin to experience a sense of self from birth. They never experience a period of total self/other undifferentiation. There is no confusion between self and other in the beginning or at any point in infancy. They are also predesigned to be selectively responsive to external social events (Stern, chap.1). Presently, infants are seen as having an active memorial and fantasy life but they are concerned with events that actually happen. The infant from birth mainly experiences reality. According to Stern, the infant's subjective experiences "suffer no distortions by virtue of wishes or defenses but only those made inevitable by perceptual or cognitive immaturity or overgeneralization" (p. 225). In other words, reality experience precedes fantasy distortions in reality, in the infant. Coping mechanisms occur as reality-based adaptations. Stern asserts that defensive operations that serve to distort reality occur later in the infant's life,

after language and symbolic thinking is available (chap. 10). Utilizing this concept of the infant's psyche, a trauma in early life is realistically experienced and leads to the development of particular defensive operations, later in life.

As the pre-renaissance artists depicted the infant as a miniature adult, so the psychoanalysts described the 'psychological infant' as the reconstructed adult. We are now in the renaissance of developmental investigation where the infant is viewed as an independent entity with its own capacities.

Affects in Infancy

Experimental studies permit us to see how the infant might experience affects and changes in tension state as well as his perceptions of the external world that accompany affect and tension. It is after all the integration of all of these that constitutes the infant's experience (Stern, p. 45).

During the last decade there was an emphasis on linking the development of cognitive structures and affect. Theorists are now in accord that affects, not concepts, are the primary organizers of the infant's earliest experiences (Pine, p. 52). Emde proposed that the individual has an "affective core," which is biologically organized and

begins with the self. "Our affective core guarantees our continuity of experience across development in spite of the many ways we change." This subjective, affect based organization forms the "experimental matrix from which thoughts and verbalized feelings will later arise" (Stern, p.67).

Affects are initially experienced across two dimensions; activation, the intensity of the feeling, and hedonic tone, the degree to which the feeling quality is pleasurable or unpleasurable (Emde; & Stern, p. 55). By the age of 2 months the infant has had innumerable affective experiences, which have been observed in laboratory experiments. Using facial expressions as indicators, researchers have observed infants display discrete emotions as, happiness, fear, sadness, surprise, anger, disgust and pain (Emde; & Stern, p. 66).

Pine described affectively significant moments of experience, moments of intense internal need and satisfaction or frustration, which abound during the course of development and form memory and fantasy organizations. These organizations later become nodal points for subsequent consolidation of experience (Pine, pp. 40-53).

Affect Memory in Infancy

"Memory for affective experiences seems not to have to await the development of linguistic encoding vehicles"

(Stern, p. 93). Researchers and analysts agree that affect memories are formed from the first moments of life (Emde; & Stern). Gunther (cited in Stern, p. 94) described an example of cued memory recall for an affective experience occurring in the first days of life. He found that the infant has the memorial capacity to register, recognize and recall affective experience. Schur (1966) discussed early affective memory, presenting as an example, the ability of a 28 month old child, to verbalize in detail, an experience which occurred when he was 18 months and unable to verbalize. Infants can abstract, average and represent information preverbally, according to Stern, who utilized the concept of episodic memory to support his view (pp. 94-123). Episodic memory was described by Tulving (cited in Ornstein, 1978, p. 236) and refers to memory for real-life experiences. It includes actions, perceptions and affects as the main ingredients of a remembered episode. An episode occurs within one single physical setting. Repeated similar episodes create an expectation of actions, sensations and feelings that can be met or disrupted (Stern). Repeated similar episodes are averaged and represented in memory. If a deviation from this generalized episode occurs, the new specific episode is remembered (Stern). Nelson and Greundel (cited in Stern) found that a specific episodic memory forms if it is an unusual example, a partial disruption of the generalized episode. Stern suggested that

the advantage of the episodic memory system is, "it permits a dynamic view of organizing and reorganizing the growing network of self-experience" (p. 98). In other words, earlier experiences eventually get translated into words. Accepting this concept about early memory formation, an early trauma as surgery, certainly would be expected to be a deviation from the generalized episode, and disruptive enough to be remembered as a specific episode. At a later time this experience will become associated with language.

Anxiety in Infancy

Rank, in 1924 stated "it would seem that the primal anxiety-affect at birth, which remains operative through life...is from the beginning not merely an expression of the newborn's physiological injuries...but immediately acquires a psychical quality of feeling. This experienced anxiety is thus the first content of perception" (cited in Ramzy-Wallerstein, 1956, p. 177). Analysts have varying thoughts about the genesis of anxiety in humans. Schmale postulated that all affects evolve and differentiate out of a primary state of psychic disequilibrium or anxiety (cited in Krystal, 1974). Ramzy and Wallerstein (1956) stated "the neonate has internal tensions (homeostatis disequilibria) which are "perceived" not as discrete mental states, but as diffuse tensions on an undifferentiated biopsychological

level" (p. 175). They described the infant's ability to experience affect on a psychological level, as a developmental milestone. Szasz referred to the affect of the neonate as "undifferentiated pain-anxiety" (cited in Krystal).

Researchers have become involved in investigating the origins of anxiety in the infant. Rosen's work studying fetal brain development indicated that increased noise level as well as maternal excitement resulted in increased heart rate in the fetus. Rosen found that a quiet fetus began rolling about and kicking, when pressure was placed on the mother's abdominal wall. Rosen concluded, that even prenatally, the infant has the capacity for and may experience archaic anxiety (cited in Skerrett, Hardin, & Puskar, 1982).

In laboratory studies, it was found that facial displays of fear emerge at about 6 months of age. Fear, in the form of anxiety, results from the cognitive appraisal of an immediate future. Researchers concluded that the ability to anticipate an immediate future does not appear to be sufficiently present until about 6 months. Before 6 months, the infant is said to experience "primitive agonies," non-localized distresses that rely on affect appraisal only (Stern, p. 210). In other words the experience is felt as either pleasurable or unpleasurable (hedonic tone) (Emde; Krystal; & Stern). Memories of these early experiences (e.g. surgery) which elicit "primitive agonies" initially, are reorganized and elicit anxiety

after 6 months of age (Stern, p. 202). Spitz (1965) speaks of "stranger anxiety" which, he described as occurring at about 8 months, as the earliest manifestation of anxiety proper (pp. 150-156). Spitz related the ability to experience anxiety to the cognitive ability of the infant to make a judgment.

Analysts and researchers agree that in infancy affects are both the primary medium and subject of communication (Emde; & Spitz). Sullivan (1953) described the origin of anxiety in the infant as due to an emotional disturbance in the significant other person, the mothering one. This important other in the infant's life communicates the anxiety, which is then experienced by the infant (pp. 8-10). The infant observer gains a strong impression that the infant's own emotions are insufficient for guiding his actions. The baby looks to mother for emotional information and direction, according to Emde. Spieker's experiments found that the infant knows that the face showing happiness, that later displays fear, is still the same face (cited in Stern, p. 87). If mother shows fear, the infant reacts, too, and becomes wary. In infancy, the responsiveness of the parents act as a template, which shapes and creates initial intrapsychic experiences (Stern, p. 145).

Recognizing the concept that parental anxiety is communicated, absorbed, felt, and reflected by the infant, is crucial when considering the long-term effects of a

surgical trauma in early childhood. Anna Freud (1952) pointed out that "there are a few parents who do not... change their attitude to the ill child" (p. 263).

Stern described how children of 15-18 months have the capacity to begin to imagine or represent items in their minds in such a way that signs and symbols are able to be utilized. For the first time the child can maintain a formed wish of how reality might be, even though the wish might represent reality contrary to how it is. The wishes are formed from earlier memories and experiences, as well as present events in the child's life. Even if the infant's can't verbalize exactly what he wants, and knows, and fears, he can enact the feelings (pp. 163-167). At 15-18 months the child can be observed initiating defensive operations, which can distort reality, for the purpose of allaying or minimizing his anxiety.

Researchers present compelling observational data about infants, which bring understanding to Pine's enjoinder that present developmental work dramatically alters our view of analytic theory. The infant is no longer described as existing in the "twilight" of reality, unsure of its own existence, avoiding interchange with the environment. He is observed to be responsive, self-knowing, with the capability to experience and display affects such as anxiety. He also recognizes and incorporates anxiety displayed by a significant other in his life. Perhaps of most importance is the concept of episodic

memory which occurs in the neonate. In my judgment, Stern would consider a surgical trauma occurring in the preverbal phase of development to be a remembered episodic event. The anxiety produced from the surgery (primitive agonies in the younger infant) would serve to organize the infant's personality, and later, when symbolic reasoning and thinking takes place (15-18 months), a defensive structure would be formed in response to the affective memory of anxiety. Stern's concepts form a logical conduit, from the experience in early life to their later consequences. Pine's description of intense moments in childhood also lend clarity to our understanding that early significant events have an important role in the personality formation. Emde (1988) discussed the "specifically-experienced environment" of the infant. He stated there is a reciprocal relationship between the infant and his surroundings, including the infant care-giver one; this reciprocity influences the infant and the environment. Emde stated that the continuity of the environment is crucial to infant well-being.

It is my opinion that we now have a truer sense of how the infant experiences reality. However, this important additional information, while giving greater credibility to the capabilities of the infant, is in consonance with the analytic view regarding the consequence of trauma.

II. Trauma: Traditional Analytic Views

A brief review of Freud's evolving concepts of trauma is necessary, as contemporary theorists have built upon his descriptions. The diagnostic criteria for trauma of the DSM III are based upon Freud's definition (Glenn, in press).

Freud and Breuer (1893) regarded trauma as "any experience which calls up distressing affects as fright, anxiety, shame or physical pain (p. 6). In 1917, Freud added that a trauma results when "an experience within a short period of time, presents the mind with an increase of stimulus too powerful to be...worked off the normal way" (p. 275). Relating the effect of trauma to the stimulus barrier, Freud (1920) described as traumatic "any excitations from outside which are powerful enough to break through the protective shield" (p. 29). Freud (1926) linked trauma and anxiety, "trauma is the state of psychic helplessness...a situation of helplessness that has actually been experienced...anxiety is the original reaction to the helplessness" (p. 166).

Attempts to distinguish the original trauma from its later consequence led to concepts of various types of trauma: Retrospective trauma, according to Sandler (1967), occurs when the perception of some particular situation evokes the memory of an earlier experience, which under

present conditions becomes traumatic (chap.5). Glover (1929) asserted that traumatic memories can have a screening function. When memories of experiences that are of traumatic significance, in fact cover earlier traumatic significance or even symbolize a series of traumatic events, they are called screen traumas. Kris (1955) proposed that it is rarely possible to distinguish the effects of a single traumatic experience, which he termed "shock trauma," and the effects of an accumulation of frustrating tensions which cause traumatic effects, which he identified as "strain trauma."

Retrospective, screen and strain trauma are theoretical constucts formulated by analysts to assist them in explaining either the overt re-emergence or persisting effects of a traumatic experience. Modern researchers' concepts are based on infant observational data. Emde described the "affective core" of the individual, which ensures a continuity of experience throughout life. Stern suggested that early affective experiences are organized and form the pool from which thoughts and verbalized feelings emerge. Pine referred to the importance of intense significant moments, around which the personality of the child is consolidated. Both groups of theorists arrived at the same conclusion: there is a persistence of the effects of the trauma. Presently, we have a more specific understanding for these effects, based upon observing the infant.

Furst (1967, chap. 1) described that in almost all traumatic events both internal and external stimuli are present and constitute a "complimentary series." The internal stimuli involve a separation from or loss of a loved, significant other. The external stimuli may be events too upsetting to be coped with, as accidents, illnesses, frustrations or deprivations. When the external events trigger or symbolize the fulfillment of pre-existing anxieties or fantasies, the traumatic event is experienced as either abandonment or, as in surgeries, castration fears (Anna Freud, 1967, chap. 8).

Trauma and Development

Freud (1939) discussed the importance of a trauma experienced in early childhood, "we give the name trauma to those impressions experienced early and later forgotten, to which we attach such great importance in the etiology of neurosis...the period between the ages of two and four seem to be of the most important...a time when the child is beginning to talk...the traumas are either early experiences on the child's body or sense perceptions" (p. 74).

Developmentalists are in accord that the individual is the most vulnerable in infancy and that traumas experienced early have a profound effect on later development. Anna Freud (1967) stressed that the traumatic event must be

viewed in relation to the whole of the developmental process to determine how far maturation and forward progress have been deflected from their course. Spitz (1965, p. 109) depicted the first year as a period of transition, a time most susceptible to serious life-long consequences as a result of a trauma. Rangell (1967, chap. 2) described the period prior to "self-object" differentiation, and before anxiety as a signal is achieved, as the time when the infant is most liable to experience a trauma. Blos (1960) found that traumatic body-image anxiety becomes a chronic affect when the young child experiences surgery. According to Greenacre (1967), a trauma occurring in the earliest months after birth undermines the mental development and distorts the rest of childhood.

Trauma and Anxiety

In 1926 Freud stated that the essence of the traumatic situation is the experience of helplessness, eliciting an immediate response of anxiety. With the repeated onset of a danger situation, a recognized, remembered and expected situation of helplessness, the signal of anxiety is given. Freud defined signal anxiety as a protective, warning mechanism. More recently, however, theorists ascertained that the affect of anxiety, if it is of enough intensity, may itself constitute a trauma (Yorke; 1986; Rangell; 1967).

Krystal (1978) suggested that the adult model of anxiety is inadequate, when considering the effects of an early childhood trauma, "it fails to convey the global distress occasioned by the...somatic, preverbal, timeless archaic effects of a young child." He observed in children that there persists a lifelong dread of the return of the trauma, along with an expectation that it will occur. Glenn (1984) concluded that the child, and later the adult, attempts to master the trauma as a way of alleviating his anxiety. His attempts at mastery involve causing a re-enactment of the trauma in a controlled form. This repetition causes him to be involved in painful experiences. This mechanism is performed in order to mitigate the feelings of anxiety, however, it may serve to enhance it.

Terr (1979) reported that children after they have a traumatic experience, manifest unconscious anxiety in their play, behavioral reenactments, and dreams. She found that short-lived traumatic episodes often are experienced and remembered as prolonged. Terr (1984) concluded, in order to ward off the feeling of helplessness, the child may construct as omen as a reason for the traumatic occurrence. Using the omen, the child gains some sense of control and thereby reduces his anxiety, while distorting reality.

III. Surgery and Hospitalization in Childhood

The research interest of this study dictates that the following review of the literature include studies about physically healthy children undergoing routine childhood surgeries, with brief hospitalizations. The review is ordered as follows: the immediate responses of surgery and hospitalization; retrospective analyses of the effects of surgery and hospitalization on children; clinical case presentations of adults who had surgery in childhood.

The Immediate Responses of Surgery and Hospitalization

Jackson, Winkley, Faust, Cermak and Burtt (1953) interviewed 140 children, 3-8 years of age, before and after tonsillectomy. They performed a 3 month follow-up. Their results indicated that the 3 year olds showed a higher incidence of minor behavioral disturbances that did not dissapate over time.

Jessner, Blom and Waldfogel (1952) interviewed 143 children, 3-14 years of age, who were undergoing tonsillectomies. All children were hospitalized for 2 days. A comparison of pre and post-operative interviews indicated that the operation was a stressful experience, activating childhood fears of abandonment, mutilation, pregnancy fan-

tasies, gender change, and death. Some of the children were followed for 4 years.

Blom (1957) observed that the hospital experience had a punitive meaning to the child. He described how the child is confined to bed or room, is restricted in his activities and diet, and is required to take medicine. Blom suggests that the child cannot distinguish between suffering from his illness and the treatment done to cure him. He observed that the young child reacts to pain as a punishment, which causes him to become anxious, depressed, guilty, enraged or submissive. Blom noted little differences in response between boys and girls.

Prugh, Staub, Sands, Kirschbaum and Lenihan (1952) investigated the impact of brief hospitalization, M= 8 days on children, 2-12 years of age. The authors did a 3 month follow-up study on the children to determine aftereffects of the experience. Two groups of 100 children were interviewed. One group was treated according to normal hospital routine, while the other was given additional psychological preparation for their hospital stay. Regardless of treatment, the most severe immediate reaction occurred in the 2-3 year olds. They found that the sex of the child did not account for response. At a 3 month follow-up, nearly one-half of the children under 4 years of age were still disturbed. The authors concluded that for the young child in the hospital, specific anxieties are aroused by the absence of a parent. This anxiety is exacerbated by fears

of attack, which overwhelm the child because of his limited capacity for understanding the experience.

Schaffer and Collender (1959) observed 76 infants, who ranged in age from 3-51 weeks, in order to study the reaction of short-term M= 2 weeks, hospitalization on infants of less than one year. The authors reported that the responses of the infants to hospitalization depended on their age. Those infants of 7 months and older displayed the same behavior described in other studies with pre-schoolers: negativism to staff, subdued behavior, withdrawal and considerable upset while in the hospital, with a period of disturbance after returning home. Infants who were less than 7 months old evidenced none of the behavior that the older infants displayed while in the hospital. Upon their return home, a dramatic upset was observed in most infants, but it was of brief duration. The authors concluded that whenever possible, surgery should be performed prior to 7 months of age. They explain their findings with the suggestion that separation anxiety does not exist prior to 7 months of age and so the infant does not notice mother's absence and is not upset by the experience. Pfeffer (1985) recommended that elective surgeries be completed prior to 7 months of age.

Visitainer and Wolfer (1975) tested variations of psychological preparation and supportive care designed to increase the adjustment of children hospitalized for tonsillectomies. Eighty-four children, 3-12 years of age,

were hospitalized for 3 days. There was a control group of children who did not receive any additional psychological support for the surgery. Previously, Visitainer and Wolfer had reported that young children of 3-6 years were consistently more upset and less cooperative in the hospital. No significant differences were found between those children whose parents remained overnight and those who did not. In this study, children's hospital adjustment was determined by blind ratings of behavioral upset, pulse rate, and time of first voiding after surgery. The authors found that regardless of psychological preparation and continuous supportive care, the younger children were significantly more upset and less cooperative than the older ones. This study did indicate that parental anxiety was mitigated by psychological preparation.

Cansever (1965) gave a battery of psychological tests including: projective drawings, the thematic apperception test, and the Rorschach, to 12 children who were between the ages of 4-7 years, before and 3-7 days after circumcision. He described his results as indicating that circumcision performed at this stage of development is perceived by the child as an act of aggression; specifically, castration. He concluded that this experience initiates regression of functioning, loosens previously hidden fears and anxieties, while giving a sense of reality to these fears.

Commentary

These in-hospital studies make an important contribution to the issue of the significant effects that surgery has on the child. The authors recognized that surgery is a traumatic event in the child's life, with far reaching untoward effects. Jackson et al., Prugh et al., and Jessner et al. all recommended long-term follow-up after surgery to determine the extent to which reactivation of the anxiety aroused by this experience occurs later in life. The studies also alerted pediatricians and other hospital staff about the seriousness of an operation, and how to more sensitively interact with the child. Some studies recognized the effect that parental anxiety had on the child. Jessner et al. found that anxious mothers who remained with their children in the hospital, transmitted their anxiety to the child. Prugh et al. observed certain "nuclear affects" in parents, ranging from realistic fear to guilt for causing their child's illness.

These studies, while important, uniformly lacked the use of a non-surgical or non-hospitalized control group. Several of the papers did not use any quantitative measures, relying on interviews with the child or, at times, only parents. While interviews are valuable, these implicitly assumed that overt behavior of the child was equivalent to underlying fantasies and affects. Most of these studies included a diversity of ages in their groups

of children, which means they were in varying developmental phases. Uniformly, the authors stated that children of 3 years or less are the most seriously affected by surgery, yet most studies did not focus on this particular age group, as does this study. Schaffer and Collender did observe infants of 1 year and less. However, their findings that babies of less than 7 months made no protest while in the hospital, which they interpreted as meaning that these babies were too young to experience separation anxiety, is not an acceptable explanation for the babies manifest behavior. Stern and other researchers attest to the infant's ability to feel loss within the first half year of life. The authors state that these infants are observed to exhibit a marked change of behavior when they return home. They dismiss the importance of this behavior, stating it is of very brief duration. I wondered why they couldn't see the lack of protest in the younger infants as a form of helplessness.

Retrospective Analyses of the Effects of Surgery and Hospitalization

Vernon, Schulman and Foley (1966) studied the post-hospital adjustment of children according to changes in their behavior 1 week after leaving the hospital. Three-hundred and eighty-seven children, 1 month-16 years of age, who remained in the hospital for an average of 8.8 days,

composed their study. Factor analysis of questionnaires completed by the parents revealed 6 orthogonal factors: general anxiety and regression; separation anxiety; anxiety about sleep; eating disturbances; aggression towards authority; apathy and withdrawal. Significant differences, which indicated psychological upset, were found for the total score and three factor scores: separation anxiety, sleep anxiety and aggression towards authority. The authors note that these findings are due to the behavior of children between the ages of 1 month and 4 years.

Levy (1954) reviewed 143 of his cases of children in order to study the emotional sequelae to surgery, most of which were tonsillectomies. He found that 50% of the children who had surgery between the ages of 12-35 months displayed post-operative symptoms as; night terrors, fears and anxieties. He concluded that the infant's feeling of helplessness in reaction to this trauma resulted in anxiety.

Fagin (1966) studied children's behavior after their return home from a brief hospital stay of 1-7 days. The children ranged in age from 18-48 months. Two groups of 30 children's behavior, as reported by their parents', was evaluated before hospitalization and 1 week and 1 month after their return home. In one group, mothers were permitted to remain with their children while they were in the hospital. The data indicated that the behavior of the group unaccompanied by their mothers was markedly disturbed

in comparison with overt behavior prior to their hospitalization. Children whose mothers had been allowed to remain with them showed no adverse effects.

Commentary

These studies of the post-hospital reactions of children support my hypothesis that persisting noxious effects are produced by the experience.

Levy's paper is a classic, he discusses in-depth case histories in which children display emotional symptoms, as helplessness, directly associated with their surgeries. Yarrow (1964) noted that surgery is traumatic because of the feelings of helplessness it arouses. It threatens the bodily integrity of the child, as well as arousing anxiety because of being in a strange environment, at times separated from mother and being left with unfamiliar people.

While Visitainer's and Wolfer's study did not find response differences in children whose parents were allowed to remain in the hospital with them, Fagin's study supported the importance of allowing parents to remain with children during hospitalization. It is now accepted that the presence of a parent can mitigate some of the fears surrounding the hospital experience. Even in the presence of mother, anxiety, including separation anxiety, persists

in the child. Mother isn't allowed to accompany the child to all procedures, nor can she prevent the painful aspects of the hospital and surgical experience. The hospital environment with its cacophony, is not home to the small child, who is used to the many daily "silent interactions" which occur between parent and child.

These studies reported utilized large numbers of children, which lends to their significance. Their data does suffer, in that in two of the papers the authors did not directly evaluate the children; they based their findings on the subjective responses of parents. The studies recruited children of varying ages; however, they did note that there were more serious effects found in the children who were hospitalized within the first 4 years of life (Levy; Vernon; Schulman; & Foley). In Fagin's study, where the mother's presence was found helpful to the child initially, there was no long-term follow-up of these children.

Clinical Case Presentations of Children Who Had Surgery

Falstein, Judas and Mendelsohn (1956) interviewed 6 children, preoperatively, who were hospitalized for herniorraphy. The authors state that hernia cases were selected because the children were not "sick" or symptomatic before the surgery. The children were chosen at random

after admission and ranged in age from 5-12 years. They reported results from the children's interviews: children developed fantasies about their impending surgery, which reflected their concerns about punishment, bodily mutilation, separation and castration anxiety.

Bernstein and Blacher (1966) argue that their observations must lead inevitably to disputing the view that the infant lives in an undifferentiated state, limited in his ability to retain and integrate memory traces. They describe a 2 year old child's quite accurate recollection of a traumatic procedure, a pneumoencephalogram, which occurred when she was only 3 months of age.

Blos (1960) presented his clinical evaluation of three boys, ages 8-9 years and 10 months, who had cryptochism (undescended testicles) and who had suffered a prior surgical trauma. The earlier surgeries included: removal of a scrotal tumor at 5 months of age; hernioplasty at 2.5 years; tonsillectomy at 4 years. Blos found that the earlier operation trauma served as the prototypical model for body-damage fear. Blos stated that every threat to the body integrity revived the original trauma, i.e., the child experienced the current danger in terms of the past traumatic event. Blos paraphrased the children saying "what I thought happened to me then (early surgery-anxiety) will certainly be repeated now" (p. 411).

Kennedy (1986) reported the case of a 13 year old boy who had a surgical trauma, a circumcision, when he was 2.5

years of age. Kennedy described that the youngster experienced his hospitalization and surgery as a vengeful attack and punishment. Kennedy concluded that his early trauma caused massive anxiety in the boy, which participated in the organization of his evolving personality.

Commentary

Jackson et al., in a study presented earlier, declared that it might be years before concrete evidence about the effects of hospitalization on the children become manifest. She was criticizing her own study, which included only a three month follow-up of children after surgery. I'm in agreement that there are long-term effects of a surgical trauma which cannot be determined by the overt behavior of the child at the time of surgery. Schmideberg (1950) asserts that presentations by children and adults, in analysis, which are regarded as fantasy material, often contains infantile memories of fears of bodily mutilation which are based on vague memories of illness and pain in infancy.

IV. Clinical Case Presentations of Adults Who Had Surgery in Childhood

Helene Deutsch (1942) found evidence in the analysis of adult patients that "operations performed in childhood leave indelible traces on the psychic life of the individual."

Niederland (1965) in his studies of adults who had congenital or acquired early, physical problems, as hernias, observed that a body defect which is determined early in life tends to remain an area of unresolved conflict, causing heightened castration fears and body mutilation anxiety to remain. He found that men were left with a distorted, incomplete and insecure image of their bodies, which was particularly intense when the surgeries in their childhood was a hernia or a problem in the genital region.

Miller (1950) and Lipton (1962) both cite clinical cases of adults who had experienced a tonsillectomy in early childhood. Both authors found that the surgeries were interpreted as punishment in childhood, and had left the adults anxious and fearful.

Weinberger and Kanter (1976-77) cited clinical examples of adults who had surgery when they were 3 years of age or less. The authors assert that their findings support their view that traumatic experiences occurring in the young child persist in the form of "somatic memory

traces." They found that this group of adults present with isolated physical symptoms, as headaches, which are direct residues of their surgery.

Commentary

Clearly, the analytic method presents with some shortcomings when compared to the experimental method as regards the accumulation of significant data to support or refute an hypothesis. The studies presented earlier involved up to three-hundred children in a study. The analysts base their findings on a handful of cases. While all studies discussed indicated some methodological limitation, the analytic method has even more difficulties. There are no control groups used. The child or adult who comes to therapy comes because they are experiencing an emotional problem, so the total population from which the data is drawn is skewed and not representative of the whole of society. The findings are based upon the subjective interpretation of the analyst. Nevertheless, the information accrued from child and adult patients reaffirms the data of experimentally designed studies and my hypothesis, that the effects of a traumatic experience persists and affects the individual throughout life.

Conclusion

The design of this review has been to define the psychological condition of trauma, specifically a surgical trauma; to indicate that surgery produces anxiety in the child of 3 years or less; to confirm that the infant is capable of remembering the event, which is integrated and distorted in memory, with time causing an alteration in the child's ideas about himself and his environment. Krystal (1978) described a condition which he termed "affective syndrome," where anxiety and depression alternate in the individual after a traumatic experience. Krystal found that depression results from the feelings of helplessness aroused by the experience. Stern poitnts out how the surgical experience disrupts the daily important interactions between infant and parent. These repetitive and necessary regulating mechanisms aid in the infant's developing sense of self.

II. Method

When I was 1 year old
I got my tonsils out.
I was screaming because
I didn't want to go to the hospital,
they stick needles
in your behind or arm,
that's the worst thing.
My parents told me but
I didn't understand them.
Either they cut your throat open,
which I doubt that they do,
or they open your mouth
and stick tools in there
and cut if off
or pull it out.
The only good part is the
jello, the ice cream and the presents.
I had to stay 7 days in the hospital
and my parents stayed, they just
went home once or twice.
They make you go to the bathroom
and then they see what's
going on inside of you.
They put this
black thing
over your mouth
to make you go to sleep
and watch you heart-beat on radar.
Then you sound like a frog
and they throw your tonsils away
or keep them for study.

JH

Subjects

The recruitment of children who had surgery within the first 3 years, as well as children who had not experienced surgery and could serve as the control group, was carried out in several public schools on Staten Island. The children were to be between the ages of approximately 6-10 years. As a general way of insuring that the children tested were of at least average intellectual potential, all children had to be at grade level for age. This pre-condition was necessary as projective test performance can be affected by extreme deviations in cognitive ability. Boys and girls were accepted in either group, as none of the previous studies on the effects of a surgical trauma found differences related to gender.

After meeting with a member of the school board, who granted permission for this study, I met with several principals, most of whom were cooperative and allowed me access to their schools. I presented my letter of introduction, which briefly described the purpose and procedure of this study (Appendix A) to the teachers of grades kindergarten through the 4th grade. The teachers distributed these letters to all their students. Approximately 3000 letters were dispersed. A permission slip was included in the letter, and when this was returned signed by a parent,

a follow-up form was sent to the parents to gain additional information about the child's surgery and early developmental history (Appendix B). This latter form was returned directly to me to maintain confidentiality. Parents of 32 children, who had a surgery during the first 3 years, agreed to allow the children to participate in my study[2]. Although the original proposal for this investigation included 20 subjects for each of the two groups, I accepted and tested all of the 31 children who had surgery, to enhance the power of the study. A substantial number of parents, of children who didn't have surgery, gave their permission for participation in my study. From this group 20 children were chosen to be the controls. The criteria used to select the 20 controls consisted of a general matching with the surgical group for age. In some cases, I was able to select a control child who was in the same class as the surgical child. Due to the time constraint imposed by the conclusion of the school year and the lengthy testing sessions of 2.5-3.5 hours for each child, only 19 control children, 12 boys and 7 girls, were tested.

2. 1 child was found ineligible, because her surgery was of a serious nature, which required a protracted period of convalescence.

Subjects' Background

The children in this study came from similar social and economic settings. Most of the children lived in privately owned homes in which both parents were employed in semi-professional positions. One-half of all the children were either the eldest or the only child in their family. This data may be understood with the knowledge that Staten Island is a growing community which provides an attractive environment for young families. The parents of 1 child in each group were divorced. Three of the children had been adopted in infancy. They included 1 boy in the control group and 2 boys from the surgical group. In the surgical group one of the girl's father was deceased. Statistical analyses of data from developmental profiles of the children found no significant differences in developmental milestones between the two groups. In both groups, however, about one-forth of their births involved a complication as: premature delivery, use of forceps, caesarean section or, initial fetal distress. All of the infants did leave the hospital with their mothers shortly after the birth. All of the male infants were circumcised shortly after their birth, either in the hospital at 1-2 days of age, or at home in a religious ceremony at 8 days of age.

Surgical Subjects

Of the 31 children who comprised the surgical group, 22 were boys and 9 were girls. A pediatric surgeon was interviewed about this disproportionate ratio of boys to girls in the study (Note 1). His experience indicated that boys and girls equally require surgery within the first three years of life. He noted, however, that boys have a significantly greater incidence of hernias at this age, as well as being at risk for complications arising from circumcision. Table 1. lists the surgeries of all participating children, with the number of boys and girls who experienced a particular surgery. Accordingly, 10 boys and 3 girls had hernia operations, while 3 boys required later recircumcisions.

Table 1

Surgical Procedures According to Gender

Surgeries	Boys	Girls	Total
Hernia	10	3	13
Eye	4	2	6
Tonsillectomy	2	2	4
Recircumcision	3		3
Pyloric Stenosis	1	1	2
Labial Cyst		1	1
Calf Hemangioma	1		1
Cardiac Catherization	1		1
Total Surgeries	22	9	31

Materials

Draw-A-Person Test

The presentations of the DAP test followed the format outlined by Machover (1949). Each of the drawings was scored for indices of anxiety, utilizing the Handler method (1967, Appendix C). Handler describes 20 indices of anxiety in his scoring manual. Studies using these anxiety indices include: Handler and Reyner (1966); Jacobson (1966); Nordquist (1966). These investigators found the Handler manual useful in determining anxiety. Handler (1967) reported interrater reliabilities ranging from .69-1.00, with a median of .87. Jacobson and Nordquist reported interrater reliabilities of .79-1.00 (cited in Handler, 1967).

The children's drawings were scored (+) or (-) for each designated index of anxiety in Handler's manual. Two raters independently scored all of the drawings. I served as a rater, however, the second rater, a doctoral candidate in clinical psychology, was unaware of which drawings comprised the control group or the surgical group. The interrater reliability for the same sex drawing was calculated to be $r = .82$ and for the opposite sex drawing it was $r = .75$.

Sims, Dana and Bolton (1983) reviewed the current status of research on indicators of anxiety in the DAP

test. They concluded that while further research is needed, presently Handler's system is a promising method for the determination of anxiety.

Goodenough's (1926) method of determining I.Q., using a projective drawing was followed to insure that all children were of at least average intellectual ability.

Thematic Apperception Test (TAT), Children's Apperception Test (CAT), & Children's Apperception Test-Supplement (CAT-S)

The Thematic Apperception Test (TAT) conceived by Murray (1935) is widely used for older children, adolescents and adults. The Children's Apperception Test (CAT) devised by Bellak (1949) is to be used with children between the ages of 3-10 years. It consists of a series of pictures depicting animals in various situations (see Appendix D). Careful, systematic investigation of the child's apperception stories provides information about his psychic structure, subjective experiences and fantasy life (Siegel, p. 119). Particular apperception cards were chosen to elicit anxiety, which is a derivative of the surgical traumatic experience. Freud (1916-17) described "at the 'nucleus' of an affect as the repetition of some particular significant experience."

A description of the 7 cards presented to each child is given below, with typical themes, as reported by Bellak

(1954). The cards are listed according to their order of presentation to the child.

1. TAT (card 1): A boys sits contemplating a violin which rests on a table in front of him. Themes elicited by this picture deal with feelings about the body-or-self image.

2. CAT (card 2): One bear is pulling a rope near one end while another bear and a smaller bear pull near the other end; the three figures appear to be on the top of a hill. Themes of body injury, fright and helplessness, as well as castration anxiety appear.

3. CAT (card 5): A darkened room with a large bed in the background; nearby are windows, a table and a lamp. In the foreground is a crib in which there are two baby bears; one seems to have his eyes open. Common themes are the siblings' mutual sexual exploration, loneliness, separation anxiety, and fear of abandonment.

4. CAT (card 7): A tiger with bared fangs and claws, leaping at a monkey who is also leaping through the air. The story informs about the child's fears surrounding aggression. The level of a child's anxiety can become apparent.

5. CAT (card 5s): A kangaroo stands on crutches and with a bandaged tail and foot. This picture prompts stories about the child's body-image, fear of injury, including castration anxiety. It elicits feelings about a physical handicap or a sense of inadequacy.

6. CAT-S (card 7s): A cat stands before a mirror looking at its image. This picture elicits ideas of body-image. Schilder (1935) defines body-image as "the picture of our own body which we form in our mind...the way in which our body appears to ourselves." The anxiety of the growing child who feels that his body has some shortcoming or defect is expressed here.

7. CAT-S (card 8s): A rabbit doctor is examining a rabbit child with a stethoscope; some bottles of medicine are visible in the background. Stories relate to fears and traumas connected with physical illness, operations, doctors and hospitalizations. The specific meaning of an impending or past surgery can be observed.

The children's apperception stories (TAT, CAT, CAT-S) were analyzed specifically for the amount of anxiety they elicited. All the stories were rated blind by one examiner, following Haworth's (1962) anxiety indexes. This procedure was followed in order to standardize the evaluation of the presence of anxiety in the stories. Anxiety,

in each story, was determined by the presence of themes constructed by Haworth, listed below:

1. The child hides from danger, runs away due to fear.
2. Fears outside forces, e.g. wind, ghosts, hunters, wild animals, monsters.
3. Dreams of danger.
4. Parent goes away or doesn't want child.
5. Slips of tongue by child.

A story was scored 1 if one or more of the themes were depicted, and if none of themes were found.

A few studies utilizing the CAT have reported reliability figures for repeat scorings by the same examiner. Butler (1961) reports 97% agreement after 1 month interval, when scoring the number of stories with expression of feeling (cited in Haworth, p. 27). Haworth (1963) rescored 30 protocols after a 1 year interval, using her CAT Analysis Schedule, and found a $\underline{r}$= .96 reliability coefficient.

Light (1954) in a comparative study of TAT and CAT cards reported that two judges achieved a reliability of .88 when scoring the same TAT and CAT stories (cited in Haworth, p. 27). Haworth reported $\underline{r}$= .88 for two judges scoring 30 protocols following her Analysis Schedule for the CAT. Haworth described that two judges using her CAT schedule, agreed on the selection of 11 of the 15 experi-

mental children who displayed a high degree of anxiety (1966, p. 260).

Rorschach Test

The Rorschach is a widely used projective test, it is a systematic and standardized method for the purpose of assessing personality (Siegel, 1987, p. 91). In responding to the Rorschach, children gave clues about their intelligence, their ideas, their emotional adjustment, their basic personality structure, and most of all how they experience (Ames; Metraux; Rodell; & Walker, 1974, p. 6). I administered and scored the Rorschach, following the procedure described in Exner (1974). While it would be desirable to have individual raters do a blind analysis of the Rorschach data, it was not economically feasible. The organizing and interpretation of the Rorschach data was performed with the guidance of a recognized Rorschacher.

The Rorschach consists of 10 ink blots with various nuances of shading and color. The Rorschach data contains a report from each child of what he had seen or imagined when confronted with the 10 ambiguous figures, ink blots. The scoring process converts the child's responses into a systematic symbolic formula so that all responses may be studied collectively. Four basic categories for scoring were devised by Rorschach (1921) and are to date: 1) location, 2) determinants, 3) content, 4) popularity.

Location refers to the part of the ink blot used in the child's response. If the whole blot is used, the score is (W). If the normal or large detail area of the blot is used for the response, the score is (D). Infrequently used areas of the blot are scored (Dd). Use of the white space area of the blot is scored (S).

Rorschachers agree that the most important of the scoring decisions concerns the determinants, the features of the blot that contribute to the child's response. The nine categories used in the scoring of the determinants are: 1) form, 2) movement, 3) color, chromatic, 4) color, achromatic, 5) texture-shading, 6) vista-shading, 7) general shading, 8) pairs, and 9) reflections (Exner, pp. 69-72).

Two most significant determinants of the Rorschach are the Human Movement (M) response and Color, Form-Color (CF), and pure Color (C) response. Ames et al. (1974) defines the Human Movement (M) response as providing an index to the inner life of the child of the child. The quantity of (M) reflects the child's accessibility to his own "inner workings," his fantasies, his imaginings. The child who sees and uses the Human Movement (M) response displays a developing concept of self. "M seems to relate to the individual's most conscious, deliberate self concepts, as if he were saying, 'here is what people do (as opposed to animals); this is a part of my role as a person'" (Ames et al., p. 57). Ames found that the frequency of the (M) response increases in children until the 10th year.

Responses using the chromatic colors of the ink blots relate directly to the child's affect-state (Exner, Ames et al.). Ames et al. described color responses as a reflection of the child's openness to environmental stimulation (p. 65). Rorschachers note that depending on the child's control over his openness his color responses can show an affectivity displaying adaptive warmth, all the way to vulnerability, a loss of control, leading to violent emotional discharge (Exner; Ames et al.). The extent to which the use of color is controlled by form (F) reflects the degree of stability of affective urges. The form dominated color (FC) responses represent affective adaptiveness. Color-Form (CF) responses suggest less delay, less restraint imposed by form. In the pure Color (C) response, the environmental stimulus evokes an affective reply without any intervening self process, with a total disregard for form, producing a poorly integrated, emotionally labile response. Rorschach (1921) devised a formula to represent the extent of affective adaptiveness of the individual: ½C= .5FC + 1CF + 1.5C. Ames et al. found that at age 7 years there is a turning point in the color response pattern, there is an increase in the form (FC) dominated color responses.

The achromatic color determinant is scored FC', C'F, or C', according to the preeminence of form in the response. The achromatic response involves the use of the black, grey or white areas of the ink blot, as color. Rorschachers agree that the C' response is indicative of affective constraint.

Affective constraint is described as an expression of diffuse and deep emotions of pain, tension associated with anxiety (Exner, pp. 281-284). The C' response is due to the impact of depression, diffuse anxiety or feelings of helplessness which result from traumatic experiences (Siegel, p. 98).

The third category scored in the Rorschach is the content, which contains what the child sees in the inkblots. Ames et al. found that about one-half of all children's responses contain animals and animal details in them. Rorschachers conclude that animal and human responses appear more frequently than any other content classes (p. 77).

The fourth category concerns the use of popular responses (Exner, p. 216). The use of standard popular responses indicates the individual's capacity for conventional perception. In the child it shows a developing ability for socialization. Ames et al. found that at 5 years of age and thereafter, 25% of the child's responses are popular responses (p. 87).

In order to check the consistency with which workers could score the same children's records, two of the authors of Ames et al. exchanged a group of 40 records independently. They found a high degree of agreement, $r = .92$ for the main scored variables in the Rorschach.

Procedure

All 50 children were individually tested during the school day. Testing was conducted in an unused classroom;

both the examiner and the child sat at the teacher's desk. I administered all tests to all children, whereas, in order to limit experimenter bias, testing ought to be conducted by blind administration. Economic restrictions prevented my following this optimal method, however, all the children were presented with all tests in a standardized manner. The procedures for scoring the test data were not yet decided upon at the time of administration.

I initially asked each child if their parents had told them that they would be meeting with me. Invariably, the children responded "no" they hadn't been informed by their parents. I explained that their parents had given me permission to have their help in my science project. None of the children questioned my explanation and many verbalized pleasure at the opportunity to leave their class work.

The sequence of the projective tests given to the children followed a prescribed format (Exner, p. 23). The Draw-A-Person test was given first, followed by the TAT, CAT, and CAT-S stories, then the Rorschach test. The interview concluded the testing session, which lasted 2.5-3 hours. A prolonged testing situation requires the development of rapport between the examiner and the child. The examiner must be attuned to the child's feelings in the testing situation, which even in its most benign aspects arouses anxiety. Most children readily engaged in the tests and in friendly interchange with the examiner throughout the testing. Brief periods of relaxation were given when it was apparent

that the child was tiring. Some sessions were interrupted by lunch period.

Prior to each child's arrival, plain, white paper and sharpened pencils with erasers were placed on the desk, at the child's position. After seating each child was asked to "draw a person." When one drawing was completed and removed, the child was asked to draw the other sex, "now draw a male or female." After the completion of both drawings the child was asked several questions about each figure: "what is the figure doing, how old is the drawn figure, what might the figure say?" These questions were designed to elicit the child's attitude about himself and significant others (Machover, p. 31). The procedure for presenting the DAP test was designed by Machover (1949). Copies of the drawings can be found in Appendix E.

The DAP included a period of discussion, which allowed for the development of a relaxed atmosphere in preparation for the apperception tests. The cards were presented in a consistent manner to each child (TAT-1, CAT-2, 5, 7, CAT-S-5s, 7s, 8s). Each child was instructed "to make up a story about the picture presented," and the story should "tell what is going on or what the animals are doing now, what went on in the story before and what will happen later." I immediately recorded the child's stories, including any nuances expressed during the telling of the story. All pictures, other than the one the child was attending to, were kept out of sight to avoid distractions.

After a child gave a story, it was sometimes necessary to ask a question to gain clarification about the content.

Rorschach testers (Exner, p. 23) suggest that the Rorschach be the last test in the battery, as its intrinsic ambiguity arouses the most anxiety. Exner recommended that the subject and examiner sit side-by-side during the Rorschach as a means of attenuating subject anxiety. For the complete testing regime the examiner and each child were positioned side-by-side. During the administration of the Rorschach ink blots, the examiner discretely used a stopwatch to record the 'reaction time,' the time between the presentation of the card and the child's first response. The 10 cards were individually and sequentially presented, keeping the other cards from view. With each card the examiner asked "what might this be?" No other instruction was given. If questioned about the ink blot by the child, "should I use the whole thing?", I responded "whatever you like, different children see different things." When only one response was given to the first card, I commented that "some children see more than one thing on the cards," as a way of encouraging the child (Exner, p. 32). The cards were presented in turn 1 through 10 with the top side up. There was no time limit or maximum number of responses. The reaction time, all the responses and the position of the card, if rotated by the child, were all recorded by the examiner. This first part of the Rorschach is called the free association period. The inquiry period of the Rorschach followed immediately

after the last response to the 10th blot. The purpose of the inquiry is to clarify for the scorer where and what the child saw when he initially responded. I used a 'location' sheet, which has pictures of all the blots on it and allows for a permanent record of the location on the blots referred to in every response. The inquiry period was introduced by "I would like to go through the cards with you once again. This time I'm concerned with making sure that I understand where it is on the blot that you have seen something and I want to try to see it as you do." All locations and other clarifications essential for proper scoring of the free association response were recorded.

The final segment of the testing session included an interview with the child. My purpose was to observe what conscious recollections the children had about their surgical experience. No direct question about the child's surgery was asked, rather, the youngster was requested to talk about what happened when he was born in the hospital. Of the 31 children who had an early surgery, 27 made a spontaneous comment about their surgery (see Appendix E).

III. Results

When I was little
I had to have a hernia operation,
right here (lower abdomen).
My intestines were popping out,
it came out and the skin stretches
and if it's not fixed
you die.
It comes from eating too much.
I was operated on
for 2 full hours
when I was 11 months old.
I remember I was sick
in the hospital
and my parents were
sitting down.
They got there in time,
before it ripped,
when the intestines come out
and the skin gets too hard
and it rips.
They put a bandaid on you
and that holds it down, if
it pops out they have to
sew it down.
I had gas pains in my intestines.
I had to stay
in the hospital
for 2 weeks
and then it's like
nothing happened.
I don't even have a scar.

JS

The purpose of my study was to test the hypothesis that as a consequence of a traumatic experience, as surgery, within the first three years of life, an increased level of anxiety persists throughout development, in association with the child's unconscious thoughts of himself and the environment.

Projective tests, including the DAP, TAT, CAT, and the Rorschach were used to determine manifestations of increased anxiety in the post-trauma children. An essential feature of the projective test technique is its ability to evoke from the child an expression of his inner private world and personality processes (Siegel, 1987, p. 3-7).

Thirty-one children, including twenty-two boys and nine girls, constituted the surgical, post-trauma group. All children were between the age of 6 and 10 years. The mean M age for this group was 8.3 years, the standard deviation SD was 1.33. These children had all experienced surgery during their first three years. Nineteen children, made up of twelve boys and seven girls, comprised the non-surgical control group. These children were between the age of 5.75 and 10 years. The mean M age for this group was 8.46 years with a standard deviation SD of 1.25. This group served as the normative or standard value from which changes in anxiety were calculated.

I administered the projective tests to the children at their schools during the academic day. Subsequent

scoring of the collected data from the tests was completed by myself and a clinical psychology doctoral candidate. We independently rated the children's drawings, following Handler's scoring technique. All the apperceptive stories (TAT, CAT, & CAT-S) were blindly scored by the doctoral candidate, following Haworth's indicators of anxiety. I accumulated and transformed the raw data from the children's Rorschach's, following Exner's methods. The succeeding steps of organizing and interpreting the nuances of the Rorschach data was performed with the assistance of a recognized Rorschacher.

Test data was statistically analyzed under the direction of a statistician, utilizing the SPSS computer program. Multiple independent two-tailed t tests were executed to determine the presence of a significant difference between the mean M number score of the surgical group when compared with the M number score of the non-surgical control group. The 5% criterion of significance was considered to indicate a true measure of difference in the data.

Draw-A-Person Test

Following Handler's scoring manual, which describes 20 indexes of anxiety in the Draw-A-Person (DAP) Test, all children's drawings were scored 1 point for each index of anxiety present. The maximum score for an individual

drawing was 20 and the minimum, indicating that no anxiety was present, was 0. The doctoral candidate scored all the drawings blindly, while I also rated all the drawings. Interrater reliability scores for the two drawings were r= .82 and .75. Handler (1967) reported interrater reliabilities of .69-1.00, using his scoring technique. All the children in this study made two drawings[3], which were scored independently by both raters. After reviewing the initial scores, the decision was made to pool all the data from both raters and both drawings. Table 2 presents the M and SD number scores for the pooled anxiety indexes for all groups tested. The range for the anxiety is 0-80.

3. Initially, the results for the same and opposite sex drawings were to be presented separately. Since there were no differences in the findings when the data was presented separately, results of both drawings were combined.

Table 2

Total Anxiety Indexes for Draw-A-Person Test Figures.

	Boys			Girls			Total		
Group	N	M	SD	N	M	SD	N	M	SD
Surgical	22	38.41	8.00	9	35.00	8.56	31	37.42	8.17
Non-Surgical	12	35.33	5.23	7	29.14	5.27	19	33.05	5.95
Total	34	37.32	7.21	16	32.44	7.69	50	35.24	7.06

Note: Maximum score = 80

Table 2 summarizes the statistical findings, presenting the M and SD number scores for all the groups, after the anxiety indexes of both drawings for each child were combined.

When the surgical group M= 37.42 was compared with their non-surgical control peers M= 33.05, a significantly greater number of anxiety indexes was evidenced in the surgical group, t (48) + 2.02, $p<.05$.

The number of anxiety indexes produced by the group of all boys M= 37.32, was significantly greater than the number produced by the group of all girls M= 32.44, t (48) = 2.19, $p<.05$.

The group of control boys M= 35.33 accrued a significantly greater number of anxiety indexes in relation to the number produced by the group of control girls, M= 29.14, t (17) = 2.48, p.<.05.

Observation of the data from the children's drawings support the hypothesis that there is increased anxiety in the surgical group. All M number differences between the groups occurred in the predicted direction.

Thematic Apperception Test, Children's Apperception Test, Children's Apperception Test-Supplement (TAT, CAT, & CAT-S)

Each of the 50 children who comprised this study were presented with, and reported on, the 7 designated apperception cards (TAT, CAT, & CAT-S). All 350 stories were scored utilizing Haworth's 5 themes of anxiety indicators. A story was scored 1 if one or more of the themes indicating anxiety were present and a 0 if none were depicted. The range of the data is 0-7, where 7 indicates the maximum of anxiety indexes. A doctoral candidate in clinical psychology, blindly, scored all the apperception stories for the presence of Haworth's themes. Biersdorf and Marcuse (1953) found that one examiner achieved 95% agreement in retesting children with the CAT after a 2 week interval. Haworth (1963) rescored 30 children's CAT protocols after a 1 year interval, and she reported a reliability coefficient of r= .96.

Table 3 presents the M and SD for all groups in the analysis of the anxiety indexes found in the apperception stories. In the comparison of the surgical group, M= .77 vs. the non-surgical controls, M= .26, the surgical group indicated a significantly greater M number of anxiety indexes, t (48) = 2.15, $p<.05$.

When the group of surgical boys, M= .91, was contrasted with the control group of boys, M= .25, a significantly greater M number of anxiety indexes was found in the surgical boys, t (32) = 2.17, $p<.05$.

Table 3 displays that all M differences between groups occurred in the expected direction, with the surgical groups consistently indicating increased levels of anxiety.

Table 3

Anxiety Indexes in TAT, CAT, CAT-S

	Boys			Girls			Total		
Group	N	M	SD	N	M	SD	N	M	SD
Surgical	22	.91	.87	9	.44	.53	31	.77	.80
Non-Surgical	12	.25	.45	7	.29	.49	19	.26	.45
Total	34	.68	.81	16	.38	.50	50	.52	.63

Note: Maximum score = 7

Rorschach Test

The children's Rorschach results are presented following Rorschach's basic scoring categories of location, determinants, content and popularity. I used Exner's method for scoring all the protocols. Exner stated that scoring the Rorschach is more like coding data for entry into a computer than scoring in the usual manner. In the Rorschach there are no absolutely right or wrong answers, rather, responses are on a continuum, ranging from exceptional to poor. In a well adjusted child there may be a few poor responses, and exceptional responses may be found in records of disturbed individuals (Exner, p. 43). I performed the initial scoring step of converting the children's verbal responses into the systematic formula of the Rorschach, in order to collectively study the data. Subsequent analyses of the data was carried out with the guidance of a recognized, learned Rorschacher.

Location:

Ames et al. found that the Whole Response (W) occurs in the greatest proportion in preschoolers, with a gradual decline in number throughout childhood. They observed that boys produced a slightly greater proportion of whole responses (W) in their records than the girls (p. 54). Siegel suggested that the continued preponderance of whole responses (W) indicated anxiety, because the school age child is capable of having a more differentiated view of the world.

Table 4 indicates the mean M and standard deviation SD scores, for the number of whole responses (W), for all groups. A significantly greater number of (W) responses was found in the group of surgical girls, M= 8.11 when compared with their non-surgical peers, M= 5.14, t (14) = 2.18, $p < .05$.

Table 4

Rorschach Location Category: Whole (W) Response

	Boys			Girls			Total		
Group	N	M	SD	N	M	SD	N	M	SD
Surgical	22	8.09	2.71	9	8.11	1.83	31	8.10	2.45
Non-Surgical	12	7.83	3.49	7	5.14	3.53	19	6.84	3.66
Total	34	8.00	2.95	16	6.81	3.02	50	7.47	3.06

The number of Large Detail (D) responses increases with the age of the child. Increased Large Detail (D) response number number indicates the latency age child's ability to separate parts of his experience, which differs from the younger child's vague or global perceptions (Ames et al., Siegel).

Table 5 displays the mean M and standard deviated SD scores, found for Large Detail (D) responses when compared with the non-surgical control group M= 19.58, t (48) = 2.21, $p < .05$. The girls' surgical group, M= 12.33, had significantly fewer Large Detail (D) responses in comparison to the non-surgical girls, M= 23.14, t (14) = 3.15, $p < .01$.

Table 5

The Rorschach Location Category: Large Detail (D) Response

	Boys			Girls			Total		
Group	N	M	SD	N	M	SD	N	M	SD
Surgical	22	14.14	7.79	9	12.33	7.23	31	13.61	7.55
Non-Surgical	12	17.50	13.60	7	23.14	6.02	19	19.58	11.56
Total	34	15.32	10.14	16	17.06	8.60	50	16.60	9.56

Ames et al. found interrater reliability scores of r= .93 for the Rorschach location score, Whole response (W), and r= .92 for the Large Detail Response (D) (p. 42).

Rorschach (1921) concluded that the use of the White Space (S) on the ink blots represents negativism or an oppositional tendency. Siegel suggested that the use of the White Space (S) response in children represents unresolved conflicts with authority. Table 6 presents the mean M and standard deviation SD scores for the percentage of White Space (S) responses for all groups. The surgical girls' group M= 12.63, was found to have a significantly greater percentage White Space (%S) response in comparison to the non-surgical girls' group, M= 7.04, t (14) = 2.35, $p < .05$.

Table 6

Rorschach Location Category: White Space (S) Percentage

(S%=S Response/Total number)

	Boys			Girls			Total		
Group	N	M	SD	N	M	SD	N	M	SD
Surgical	22	9.13	6.42	9	12.63	4.79	31	10.15	6.13
Non-Surgical	12	7.28	6.20	7	7.04	4.60	19	7.29	5.53
Total	34	8.48	6.31	16	10.18	5.38	50	8.67	5.83

A review of the Rorschach location scores (W), (D), and (S) evidences a consistency, in that the M differences between the experimental and controls occurred in the expected direction. These findings lend support to the hypothesis that the children who experienced an early surgical trauma present increased indicators of anxiety.

Determinants:

The child's awareness and ability to deal with problems within himself, rather than through an overt expression or direct interaction with the external environment, is one measure of maturity. The development of internal resources essential to personality integration can be identified by the child's Movement and Color response type and number.

Ames et al. reported finding an interrater reliability score, $r = .96$, for Human Movement (M) response. The M and SD number scores for (M) responses for all groups of children are presented in Table 7. Significantly fewer (M) responses were produced by the surgical group, $M = 1.77$, in comparison to their non-surgical peers, $M = 2.80$, t (48) = 2.00, $p < .05$.

Table 7

Rorschach Determinant Category: Human Movement (M) Response

	Boys			Girls			Total		
Group	N	M	SD	N	M	SD	N	M	SD
Surgical	22	1.91	1.63	9	1.67	1.44	31	1.77	1.63
Non-surgical	12	2.83	1.95	7	2.71	2.29	19	2.80	2.01
Total	34	2.24	1.78	16	2.00	2.00	50	2.29	1.82

ℰC is the index devised by Rorschach to evaluate the extent of control in the affective state of the individual, (ℰC= .5FC + 1CF + 1.5C). Ames et al. in this study achieved an interrater reliability, r= .92 for ℰC. Table 8 indicates that M and SD number scores found for ℰC in this study.

Significant findings include: The whole surgical group, M= 3.29, t (48) = 2.03, $p < .05$. The surgical girls' group, M= 5.06, exhibited a significantly higher ℰC in relation to the control girls' group, M= 2.34, t (14) = 3.29, $p < .01$.

Table 8

Rorschach Determinant Category: Weighted Chromatic Color Response

(ΣC)

	Boys			Girls			Total		
Group	N	M	SD	N	M	SD	N	M	SD
Surgical	22	4.61	3.11	9	5.06	2.10	31	4.74	2.83
Non-surgical	12	3.83	1.85	7	2.34	.56	19	3.29	1.65
Total	34	4.34	2.73	16	3.88	2.09	50	4.02	2.24

The (M) and (ΣC) results which showed that the surgical group produced fewer (M) and a greater (ΣC) supports my hypothesis as Ames et al. associates maturity with the increased production of (M) and a decreased value for (ΣC).

Ames et al. included the achromatic color response in their broader category, which involves using blackness and darkness in the response. They observed that children infrequently referred to these responses. Children ranging in age from 5.5-7.0 years produced M= .5 responses, while children between the ages of 8-10 years produced a M= .1-.2 responses.

Table 9 displays the M and SD number scores for the achromatic Color-Form (C'F) response for all groups. The results show that the whole surgical group, M= .32, produced significantly more C'F responses than their control group, M= 0, t (32) = 2.15, p=<.05.

Rorschachers, including Ames et al. and Siegel, associate achromatic color responses with anxiety. This result supports the hypothesis of the study that the surgical group has remaining anxiety.

Table 9

Rorschach Determinant Category: Achromatic Color-Form Response (C'F)

	Boys			Girls			Total		
Group	N	M	SD	N	M	SD	N	M	SD
Surgical	22	.36	.58	9	.22	.44	31	.32	.54
Non-surgical	12	0	0	7	.14	.38	19	.05	.23
Total	34	.24	.50	16	.19	.40	50	.19	.39

The third scored category of the Rorschach Test involved the content of the response. No significant differences were found between any of the groups tested in this study. Ames et al. stated that animal responses are the most frequently given, at every age. in childhood and in most adults. The children in this study produced 45-50% animal responses, which is within the normal range as described by Ames et al. (p. 76).

The fourth scored category was the popular response. No significant differences were found between any of the groups for this category. All groups produced a M number of popular responses within the normal range as defined by Ames et al. (p. 86).

Of the 22 Rorschach variables examined, significant differences between the surgical group and the non-surgical control group were found for 4 of them. These findings were in the direction consistent with the hypothesis that early trauma is positively correlated to later indicators of anxiety. Of the remaining 18 variables, 16 showed numerical differences in the predicted direction and two displayed differences in the opposite direction.

IV. Discussion

I picked up a big rock
when I was 2 years old and fell
and had to go to the hospital.
They put stitches
inside and outside.
I had an operation
over here (abdomen).
I remember taking the stitches
on the outside out,
because it hurt
when they did it and
I couldn't stay still.
The ones on the inside
(stitches) stayed in.
I didn't feel nothing
when I had the operation
cause they put stitches
inside all around.
I think about it sometimes
but I can't picture it
in my head.
There's a little scar.
I want to remember it so
I won't have to be scared
about it. I won't pick up
a heavy rock so my hernia
pops out of my skin.
I remember a lot of machines,
a lot of cabinets where they got
the medicine and bandages.
When the surgery was finished
Day stayed and slept with me.
My mother came to visit.

BS

The results of my study support the hypothesis that a surgical trauma incurred within the first three years of a child's life produces anxiety which persists and can be observed in the latency age youngster.

Kris (1950) said that a child's development proceeds normally only if certain ideal conditions are met. He concluded that while it wasn't certain what constituted 'ideal conditions,' it was obvious that they allowed for a wide variability. Anything departing too far from the norm, however, causes an interference in development. A 'developmental interference' is defined as whatever disturbs the typical unfolding of a child's development (Nagera, 1966, p. 17).

Nagera cited examples of developmental interferences: separation from mother, hospitalization, and surgical intervention. These accidental events lead to emotional upheavals at a time when the child may not have sufficient resources for coping. The younger child is described as most influenced by the impact of the developmental interference (pp. 29-30).

Children react to the upheavals caused by developmental interferences with anxiety, which can lead to a loss of certain age-appropriate autonomous age achievements (Freud, A., 1963).

Nagera asserted that an event which influences development will show its effect not only at the time it

occurred, but frequently disturbs the child's later stages of development (p. 19).

While renowned theorists in the Kris Study Group (1950) were in agreement as to the psychological consequences of 'interferences' on the child's development, a recent report entitled "Infants' sense of pain is recognized, finally," revealed that to date surgeons operate on newborns without the use of anesthesia (Boffey, 1987). Medical research has found evidence that children after even minor surgery display increased levels of catecholamines (Note 2). Catecholamine production has been linked with stress (Cooper; Bloom; Roth; 1978).

Arkin (Note 3) presented a review of the practice of neonatal circumcision. Arkin commented "a crucial factor in general human insecurity is castration anxiety. Psychoanalytic observation has repeatedly demonstrated that such anxiety is intensified by any type of childhood surgery, let alone that performed directly on the genital." Arkin's review brings into questions the possibility of long range sequelae resulting from unconscious memories of the trauma of neonatal circumcision. He stated one possible positive outcome of an early trauma could be an enhanced ability to endure stress in later life. Arkin's treatise emphasized the need for studying the long-term effects of circumcision because "the incidence of all forms of illness, and mental illness is higher in boys than in girls; if circumcision is a trauma...this would have clinical implications."

The Draw-A-Person projective test gives the child an opportunity to "tell" his feelings without having to use words to explain them. The child's pictures allow for a direct access to his world of subjective experience (Siegel, p. 121). Each child's drawings reflect his personal experience with his body. I specifically used Handler's method for scoring anxiety in the children's drawings, because he incorporated the substantiated signs of anxiety historically used by psychometricians, while allowing for quantifying of the data. The results shown in Table 2 included three significant findings: 1) the total surgical group produced more anxiety indexes than the control group; 2) all boys (surgical and controls) displayed more anxiety than all girls; 3) control boys evidenced more anxiety than control girls. Certainly, the main finding, that the surgical group produced significantly more anxiety than the control group, supports the hypothesis of my study. Although non-significant, the M anxiety scores indicated a range in which anxiety in the control girls < surgical girls, control boys < surgical boys. The observation that the surgical girls and the control boys produced about the same M anxiety score has several implications. Recalling Arkin's ideas about the long-term effects of circumcision, all the boys in this study were circumcised, which may indicate that they were initially anxious and surgery increased their anxiety level.

Alternatively, perhaps the girls are constitutionally less anxious than boys, at least in the non-verbal expression of anxiety. Parental expectations and attitudes towards their infants may vary according to the gender of the baby. Sullivan (1953) stated that infants became less anxious as a result of their mother's anxiety. Mothers of two boys, who participated as surgical subjects, described in detail their sons' painful recircumcision experiences. The mothers reported they were still upset about the manner in which the procedure was carried out on their sons.

The results of the apperception tests (see Table 3), which included the TAT, CAT, and CAT-S, support my hypothesis that an early childhood surgical trauma produces anxiety which endures and can be detected at a later time in the child's life.

The two significant findings were: the whole surgical group portrayed greater anxiety than the control group; the surgical boys' group generated more anxiety themes in their stories than the control boys' group. Actually, the surgical boys' group produced the biggest M number score for anxiety of all the groups. This result correlates with the projective drawings where the surgical boys M number score was found to be the highest of all groups studied.

The presented M number scores in Table 3 reflect the cumulative anxiety themes from all 7 apperception cards. When I examined the number of anxiety themes elicited by each individual card, I realized that several of the

apperception pictures were not useful for the determination of anxiety with these children in this study. Siegel pointed out that the anxiety elicited by the projective tests will be displayed in connection with childhood worries as: parental abandonment, loss of love, separation anxiety, and fear of bodily injury or castration anxiety. The anxious child may flee from psychological issues that evoke anxiety. Siegel stated that the anxious child's flight can be detected in the content of his apperception stories, which show a passive conformity or a stereotypic theme (p. 145). The CAT-S pictures (5s and 8s) explicitly depict injuries and bandages, a medical doctor and medicines. These pictures were specifically chosen because they contained evocative medical scenes. We thought that the surgical children would produce thematic material surrounding the trauma of their early surgery, in response to these cards. Apparently, these blatant medical, injury scenes frightened the children, and their stories reflected avoidance of the thematic material.

The CAT card (5) which pictures a darkened room with a large bed in the background, a crib in the foreground in which are two baby bears, evoked the greatest number of anxiety themes in the surgical children's stories. Freud (1926) described separation anxiety as the cause of the increased anxiety of a child who is left in the dark without his loved one. Bellak and Haworth suggested that this picture arouses oedipal fantasies, which cause the child to

have increased fears of bodily harm or castration anxiety. The apperceptive process involves the assimilation and transformation of feelings and ideas about the apperception picture. This process utilizes the residual feelings of the child from his past experience. Therefore, both developmentally experienced worries which arouse anxiety, separation and bodily concern, were expected to be recalled by the child as a result of the surgical trauma.

The CAT-S picture (7s) is a scene of a cat looking in the mirror. Bellak and Haworth found that this picture evoked anxiety in the surgical group of children. This finding correlates with the increased anxiety found in the projective drawings of the surgical children. In both projective tests, drawings and story creation, the children who experienced early surgery expressed anxiety about their bodies.

The basis for this study is the hypothesis that as a result of a traumatic surgical event, within the first three years of life, enduring anxiety can be observed in the latency age child. The effects of persisting anxiety are twofold: it impedes to some extent the child's fulfillment of his aspirations, and delays his emotional maturation (Siegel, Note 4). The Rorschach Test provides a method for determining the effects of anxiety on the child's development, by allowing for the clearest picture of the building units of the child's personality (Ames et al.; Siegel). Four basic

scoring categories of the Rorschach are: location, determinants, content and popularity. The results from the children's Rorschachs are reviewed in order of category.

The M number results found for the location of the blot used by the children in their responses are seen in Tables 4 and 5. The older child is able to view the world in a less global and more discrete manner. According to Rorschachers, this increased awareness by the child allows for a shift in response approach from the more general (W) to the more specific (D) response. The experts agree that the ratio of W:D responses is cognitively predictable, following a developmental pattern until adulthood.

The significant findings for the location responses included: the surgical girls' group produced more (W) and less (D) responses when compared with their control peer group. The whole surgical group presented fewer (D) responses than the control group. A review of location (W, D) results indicated that, in all instances, the surgical children have produced a proportionally greater number of (W) responses to (D) responses than the control children. This observation supports the notion that the persisting anxiety in the post-surgical children impedes to some degree, cognitive maturation. It's important to note that none of the children in this study produced any aberrant location responses indicative of a serious distortion or loss of perception of reality, as described by Rorschach.

The M number scores for the White Space (S) response are seen in Table 6. The surgical girls' group produced a significantly greater number of (S) responses than their control peers. The use of (S) response has historically been associated with a passive form of negativism or oppositionalism. My results may indicate that the girls post-surgical group express their anxiety in this manner, while the surgical boys do not.

The determinants are the features of the ink blots that contribute to the child's response. The Human Movement (M) responses are indicative of fantasy within the context of a sound tie to reality; empathy and personal awareness, decisive criteria in the estimation of creative abilities (Siegel, p. 169). Rorschachers agree that (M) responses require reasoning, imagination and the ability for high level conceptualization (Exner, pp. 259-263). The descriptions indicate that the child requires both emotional and cognitive maturity for the (M) responses. In the result section, Table 7 displays the M number scores of (M) for all groups. The total surgical group produced significantly fewer (M) responses than the non-surgical controls. Ames et al. found that (M) increases steadily in children from 2-10 years. A reasonable conclusion about these findings is the presence of anxiety in the surgical group has impeded their emotional maturation, which is reflected by the fewer Human Movement (M) responses they

produced in comparison to their non-surgical peer group.

Schachtel (1941) asserts that the connection between color and feeling, emotion, affect, has been recognized throughout history. "The existence of such a connection between color and affect can be experienced by many, if not most, of those who are not 'insensitive to the charms of color'; it as been testified to by the customs of many nations and tribes, by the long history of art and poetry and,...by a number of scientists" (p. 393). Rorschach used the connection between color and affect on the ink blot test. Five of the blots have colors and the way the child handles color is understood to reflect his mode of managing his affects. (Σ C) indicates the intensity of the child's affective life. Ames et al. found that with an increased use of Form-Color (FC) responses and a decline in (CF & C) responses at about age 7 years, the (Σ C) value diminishes (p. 67).

The discovery of Ames et al. that the child of 7 years produces color responses which are form dependent, have a regard for reality, coincides with other psychological conclusions that, at latency, the child is able to solve problems through an inner process, of thought, rather than an outward action (Freud, 1905).

Table 8 displays the mean M scores of (Σ C) (.5FC+1CF+ 1.5C) for all groups. The total surgical group had a significantly greater value for (Σ C) than the controls. The surgical girls (Σ C) was higher than the control girls.

These results substantiate the hypothesis that the surgical trauma has left the children with residual anxiety. Their anxiety has caused a 'slow-down' in their development of emotional control and maturity. The greater value of (ɛC) in the surgical children suggests that they are more 'turned outward' and less directed to inner events than their non-surgical peers (Ames et al., p. 63).

Rorschach considered (ɛC) as representing the extratensiveness of the individual, which was balanced by his introversiveness indicated by (M). Rorschach used the ratio M:ɛC as a means of viewing the adult's personality. He described the extratensive person as one who uses interaction between himself and his world for gratification of his basic needs. The introversive person uses his inner life for the satisfaction of his important needs. Rorschach noted that he was describing personality, which isn't necessarily correlated to the behavioral manifestations of the person.

Ames et al., in their research, found that the value of (ɛC) exceeds (M) until the 10th year, when (ɛC) and (M) approximate each other. They regard the increase in (M) response with the decrease in the value for (ɛC) as signifying a maturational process in children. A glance at Tables 7 and 8 shows that in all surgical groups the M:ɛC ratio indicates a predominance of (ɛC). The control groups, M:ɛC ratios, are approaching parity. These results

provide an example of the greater maturity of the controls, who did not have an early surgical experience.

The third scored category of the Rorschach Test involves the content of the responses. I utilized several scoring protocols in order to analyze the content for anxiety or manifestations of anxiety. Elizur (1949) presented a scoring system for anxiety and hostility in the content. Three scorers independently rated the children's Rorschach responses, however, no significant differences were obtained. Fisher and Cleveland (1968) described their method for analyzing body-image boundary anxiety as depicted in the content responses. After, scoring by two raters and statistical analyses, no significant differences were found between any of the children's groups, in regard to Fisher's barrier-penetration scale for body-image boundary anxiety. Lastly, we used Exner and McCoy's (1980) criteria for their experimental score for "Morbid Content" depicted in the Rorschach responses of the children. Exner used the Morbid Content (MOR) as one of five variables which are indicative of childhood depression. After scoring the children's content for these variables, no significant differences were found among the groups.

The fourth scored category of the Rorschach is the Popular response. No significant differences were found, and all the groups of children indicated an average M number of Popular responses (Ames et al., p. 86).

Of the approximately 20 major variables of the Rorschach Test, significant differences between the experimental and control groups in this study were found in 6 variables. While the significant findings are quite meaningful, it is important to recognize that all of the children are average boys and girls. A surgical trauma of the nature and intensity investigated in this study does not ordinarily produce extreme emotional psychopathology. Assuredly, an early childhood surgery produces conscious and unconscious memories and fantasies to which the child responds with enduring anxiety, which, to varying degrees, impedes developmental momentum.

A developmental history was completed by the parents, regarding the major developmental milestones in the child's life. The profile included 17 questions, beginning with the delivery and birth process for mother and infant. Recognizing that parents reports are subjective and not necessarily reliable, the profiles indicated that all the children began life without major differences. One significant variation between the experimental and control groups was observed from the analysis of the profile data: the control children were reported to lift their heads at a M number score of .7 months, while the surgical group lifted their heads at a M number score of 1.6 months. According to Sheridan's (1980) report on the normal range of developmental progress, both groups of children fall within the normal expected range for newborns' capacity to lift their head.

A medical history which included 9 questions was contained on the developmental profile. This brief medical section was used to verify that the basic prerequisites for participation in the study by all the children was met. I asked the parents of the surgical children, "do you feel that there are any changes in your child following the surgery?" Most parents responded "no," however 7 parents offered detailed comments. Several parents described that their children were frightened after the hospital and surgical experience. One parent observed that her child was angry when he returned home after surgery. Another parent described her child's experience as a panacea, she said, "he was 100% improved," referring to his disposition, post-operatively. This parental attitude is reminiscent of one described by Lipton (1961) and Levy (1945), who discussed the prevailing parental view that surgery was a cure-all for a range of problems, of their children, from doing poorly in school to disobeying at home.

The final segment of the testing included an interview with the children, in order to learn about any conscious recollections, fantasies, and fears they had about their hospital, surgical experience. In recent studies, Terr (1979, 1983, 1984) described various signs that children evidence after a traumatic experience. Terr observed that children both experience and remember brief traumatic episodes, as occurring over some prolonged time period. Terr cited other post-traumatic symptoms,

including: recurrent dreams about the event, as well as associations to the traumatic event, which the child regards as "omens," which become the means he uses retrospectively, to gain mastery over the effects of the trauma's effects.

Some children's responses are cited here as they are illustrative of Terr's description of her observations of children after a traumatic experience. Of course, the children's statements are not quantitative data, however, their comments lend support to the hypothesis that children who have experienced surgery early in childhood, have an observable residual anxiety.

During the interview, several children recalled remaining in the hospital for periods ranging from 5 days to 3 weeks, while parental reports indicated actual hospital duration of 1-2 days. Anna Freud (1965) explained that the child experiences a given time period not by the actual duration as measured by an adult, but by his subjective, inner experiencing of each situation. Anna Freud listed absence of the child's mother and childhood hospitalization as two examples of subjective experiences which are significant during childhood. Terr suggested that the child prolongs the time period of the trauma as a means of gaining some control over it.

In the interview, several children mentioned their dreams about the surgical event. One youngster said that

he had the dream first, and then he experienced the hospitalization and the surgery as he had in the dream. Two children recalled that first they had the surgery and then they dreamt about it. They reported that the dream was a repetition of the surgery. Another youngster told me that he had a bad nightmare and "bad dreams come true like ESP so I don't want to think about it (surgery) because I'm perfect now."

Several of the children who experienced a herniorrhaphy ascribed some personal activity of theirs (omen) which was to blame for the surgery. One child uttered, "if it's not fixed you die, it comes from eating too much." Two others blamed themselves for picking up something that was heavy, which caused the need for surgery. One child denied culpability stating, "I wasn't picking up anything heavy...I was helping my father."

The responses cited here and others provide evidence that the children remain curious and worried about what was done to them, why it was done specifically to them, could they have avoided it and lastly, what are the enduring aftereffects. A careful reading of the recollections of the children indicates all of the thoughts I have listed above.

This study was innovative in its focus on children, who had surgery within the first 3 years of life. Yet in evaluating the strengths and weaknesses of this experiment,

I recognized that many crucial developmental events occur during the first 3 years. The use of limited temporal increments; successive 3 month intervals could specifically identify the relationship between effects which become observable at a later time, with the level of the child at the time of the traumatic event. The better informed we become about pre- and postnatal affective and cognitive life, the more likely it is that we will recognize the effects of early trauma on later childhood and adulthood. Piontelli (1987), with the use of ultrasound technology, extended infant observation to prenatal life. She suggested that it may be possible to detect some character traits prenatally.

Originally, Dr. Arkin and I were to investigate the long-term effects of one particular type of surgery. The difficulty in recruiting subjects encouraged a broadening of our original proposal, to include various acute and routine surgical procedures. We planned to only accept boys as subjects for the study. Due to the difficulty in locating subjects, because no gender affect has been reported in the literature, boys and girls were accepted.

In retrospect, there is a possibility that different surgical procedures effect children with more or less intensity. Operations, as hernia repair, involve incisions, stitches, and possibly external scarring. Tonsillectomies do not require external incisions nor is their external scarring. A surgery on one area of the body may be more

evocative of anxiety, than in another region. Arkin suggested that circumcision, which directly effects the genitals, may produce long-term bodily anxiety.

Initially, 3000 letters were sent to parents inviting their participation in the study. Parents of 32 children, who experienced an early surgery, responded. The study's response rate for the surgical subjects was 31%, which is about 10 times greater than the expected rate. Although the letter sent to parents offered to share the findings of the study with them, none of the parents inquired about the results.

A recent documentary described a pediatric surgeon's awareness and sensitivity of the young child's fears about hospitalization and surgery. The surgeon permitted the toddler's mother to accompany her 2.5 year old son throughout the tonsillectomy procedure. Mother cuddled her son to sleep, scrubbed and entered the operating suite, and was at her boy's bedside when he awoke, in the recovery room, able to comfort him.

In considering the traumatic effect of surgery, it's important to note that the surgical procedure is only one factor among several hurtful and upsetting aspects of the total experience, for the child. The child is unable to distinguish between the pain caused by his bodily illness, and the necessary pain inflicted upon him to effect his recovery. In some instances, the child may not experience

incipient pain (hernia) with the illness, yet the 'cure' is painful. The surgeon's action whether he performs minor or major surgery, is interpreted by the child in terms of his fantasies, which reflect his stage of psychological development (A. Freud, 1950).

Parental responses to his illness can be confusing and frightening to the child. Mother's anxiety about her child's health can cause her to neglect the child's emotional needs. Several studies, reported on, described separation from mother as the most important factor, with the children who were within the first years of life. I suggest that even in mother's 'presence' in the hospital, the child may suffer considerable anxiety. Mother, in the hospital is important and comforting, yet she cannot be the protective provider of the 'holding environment' that she is usually.

In conclusion, the presented data is consistent with the hypothesis that the effects of trauma within the first three years are detectable during the latency years.

APPENDIX A
Letter Sent to Parents Requesting Their Participation in the Study

THE CITY COLLEGE
OF
THE CITY UNIVERSITY OF NEW YORK
NEW YORK, N.Y. 10031

THE PSYCHOLOGICAL CENTER
DEPARTMENT OF PSYCHOLOGY
Dr. Arthur Arkin, M.D.

(212) 690-6602, 3, 4

October 1981

Dear Parents;

We are initiating a study in an area of child development which requires investigation. We are comparing boys and girls who have had a surgical procedure before the age of two and one-half years, without later hospitalizations.

The study, which includes paper and pencil tasks, as drawing and story-telling, by the child, will take place in the school. We can share all our findings with you.

We consider this an essential endeaver that can benefit children who have had surgery and those who will require it.

Thank you very much for your cooperation.

Sincerely,

Marijane Lehr, PhD. (cand.)

Please sign and return to grade teacher. If you have any questions or comments, enclose below with your telephone no..

____My child had surgery and participation in the study is granted.

____My child has not had <u>any</u> surgery.

____Permission for participation is denied.

_____

signature.

APPENDIX B
Developmental Profile: Completed by Parents of Participating Children

THE CITY COLLEGE
OF
THE CITY UNIVERSITY OF NEW YORK
NEW YORK, N.Y. 10031

THE PSYCHOLOGICAL CENTER
DEPARTMENT OF PSYCHOLOGY
Arthur Arkin, M.D.
Marijane Lehr, PhD. (cand.)

(212) 690-6602, 3, 4
November 1981

Dear Parents;

Thank you for your cooperation in our study. Please be assured that all responses will be held in strict confidence. We ask you to complete the questionaire below to insure the accuracy and validity of our findings. Most questions require a brief response however please elaborate whenever you feel it necessary.

Developmental History of the Child: _____ child's name

Birth Date: Birth Weight:
Type of Delivery: Anesthesia:
Complications:
Premature or Term (month):
Circumcision: (include age, where procedure was performed)

Breast or Bottle Fed: Age at weaning to glass:
List approx. age when Baby first:
lifted his head
sat up by himself
stood up
crawled
walked
'first smile'
'first word'
toilet training: Bladder Bowel
first loved object or toy (include age, what it was)
Number of Brothers and Sisters with ages:
Family Unit (include marital status):

Medical History (for all participants):

Type of surgery:
Age at Time of surgery:
Length of hospital stay:
Was a parent permitted to remain with child during hospital stay:
Number of follow-up M.D. office visits, related to the surgery, extending over what period of time:
Do you feel that there are any changes in your child following the surgery:
Non-surgical hospitalizations: (incl. reason and length of stay)

List Childhood illnesses requiring M.D.: (incl. age)

APPENDIX C
Scoring Manual of Handler: Anxiety Indexes in the *Draw A Person* Test

APPENDIX D
Apperception Cards: TAT-1, CAT-2,5,7, CAT-S-5s,7s,8s

APPENDIX E

"Surgical Memory" and Draw-A-Person Test of Surgical Children.
Draw-A-Person Test of Non-Surgical Children

Surgical Subject: JH

Gender: Boy

Age at testing: 10 years

Surgery: Bilateral Eye Muscle Repair

Age at surgery: 18 months

Hospital stay: 2 days

"I don't remember the surgery, I do remember the place where I was, what it was like inside. I was there for 3-4 weeks, funny thing was when I came out of there, I had to wear a mask to stop the bright light, and rest my eyes. I can still smell the ether. You get scared when you go to the doctor, 'oh my god what's going to happen to me, your heart beats ninety miles/hour, you're really scared that you are going to die.' A lot of people get surgery for bone diseases; not too great blood, cancer, but not too many little kids (get sick). Child diseases are hard, like blindness or deafness, you really can't do anything about it. If it's born the wrong way you can do something but if it's born with a disease or not developed enough or not enough white blood cells it dies. I had quite a few things wrong with me: my eyes were crossed, that would be considered disabled, not a disease, they had to operate on me and it worked out, but they really didn't have the technology. I don't exactly when I was born, but

in 1972 I was perfect, but I had feet like frankenstein. I had to wear special shoes. I'm happy now that my feet were changed, now I race. I have 20/20 vision, but I always had good vision. I had bad nightmares, my dreams come true like ESP, so I don't want to think about it because I'm perfect now."

Surgical Subject: KK

Gender: Boy

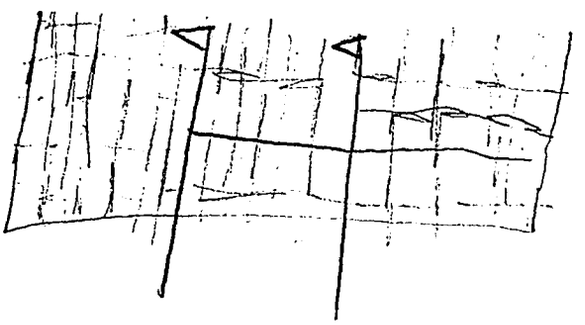
Age at testing: 10 years

Surgery: Hernia

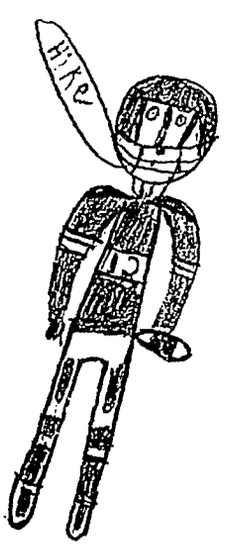
Age at surgery: 3 years

Hospital stay: 3 days

"I had surgery when I was three years old, my parents told me the day before that I had to have it. I had the surgery at 1 A.M. They put you to sleep, take you to the surgery room, wake you up, there's a lot of people there and then they put you to sleep again, and open your side and then I don't know what they do, they move things around and then they bring you back to your room. You wake up and wonder if anything has been done to you, you went to sleep in your room and you woke up in your room. I didn't want to leave the hospital, I had toys, I slept in a crib for 2 days. There were 4 or 5 other kids with hernias, and some others were waiting for x-rays. Once, the day after the surgery, I had a dream that I went to sleep, went to surgery, woke up, went to sleep, they opened my side and I went back to my room, just as it happened. That's about it. I never discuss it with my parents. My mother might be telling her friends about it and I prefer that she didn't. You're supposed to be too young to remember."



Steelers



Surgical Subject: SMcK

Gender: Boy

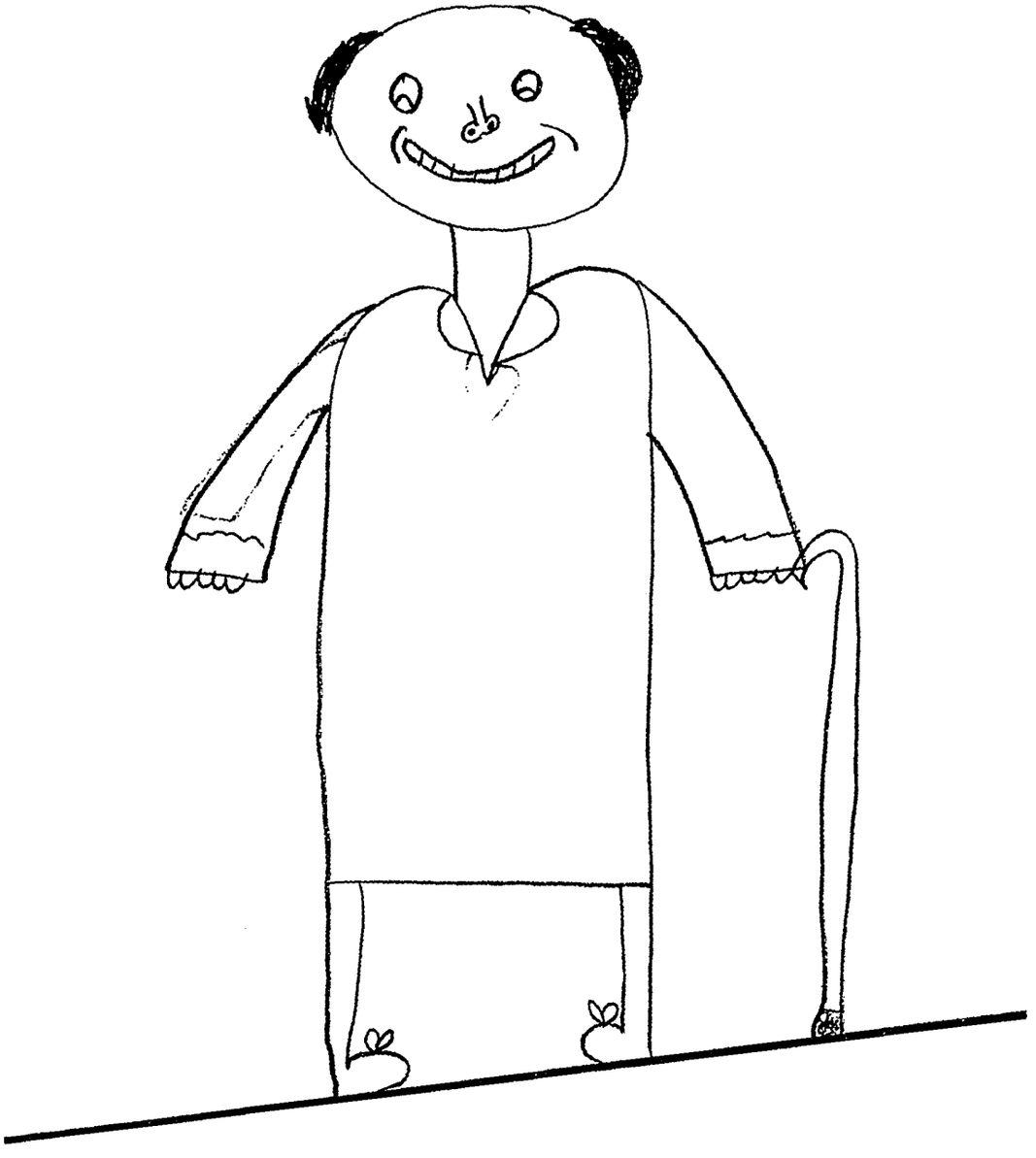
Age at testing: 9 years, 7 months

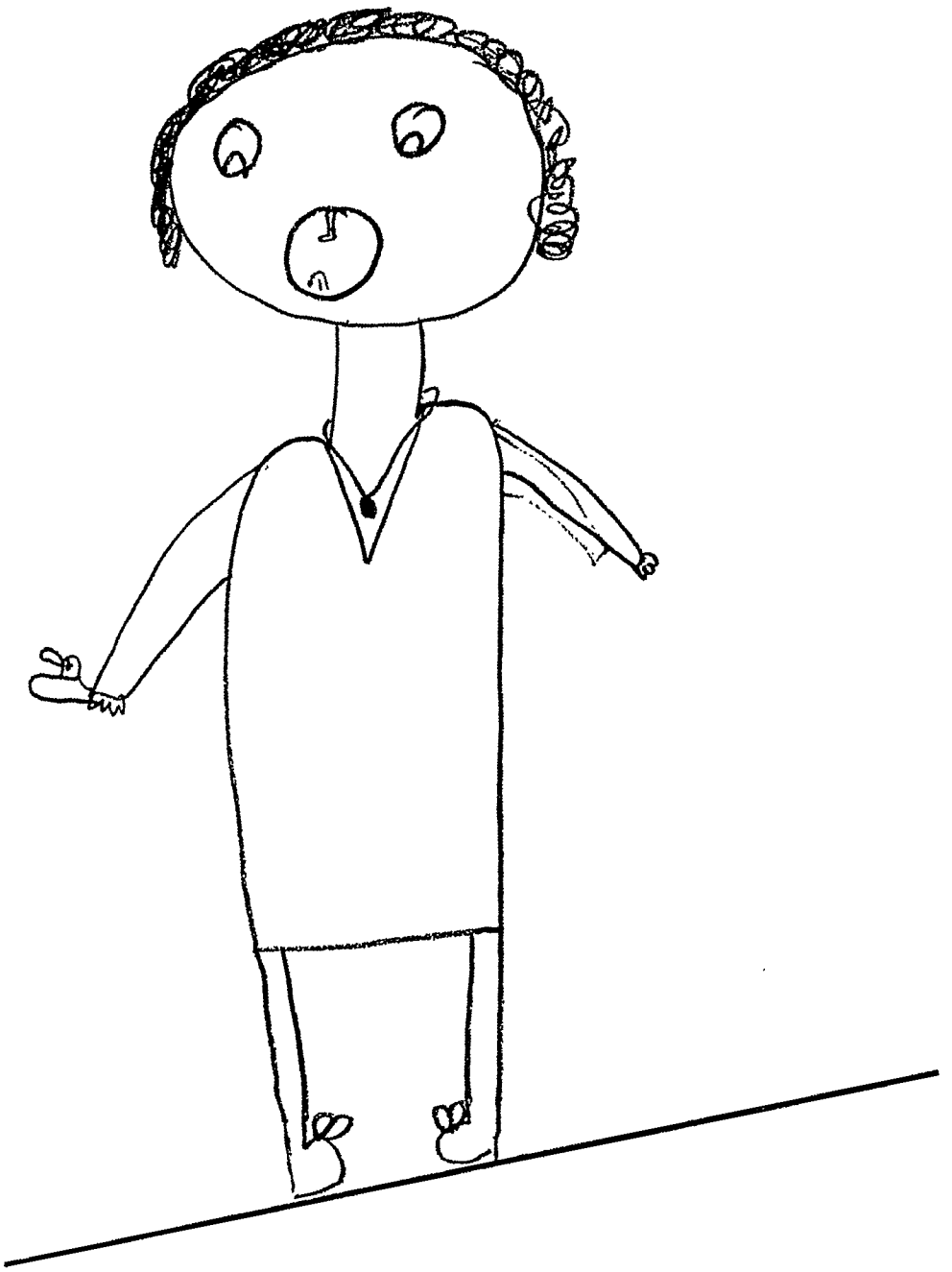
Surgery: Hernia

Age at surgery: 3 years

Hospital stay: 3 days

"I had to have surgery, can't remember the name of it, when I was 3 years old. I wasn't picking up anything heavy, we were camping, and I was helping my father with the trailer and I was moving something. They carried me in something to the hospital. I remember staying in the hospital, staying in something that looked like a carriage that you put food in, like an A&P cart. I got ice cream and toys when I was there. The doctor goes into your stomach and he looks into the body and stuff with all the veins and blood and he sees all the tissues in the heart. The blood is controlled blood."





Surgical Subject: RM

Gender: Boy

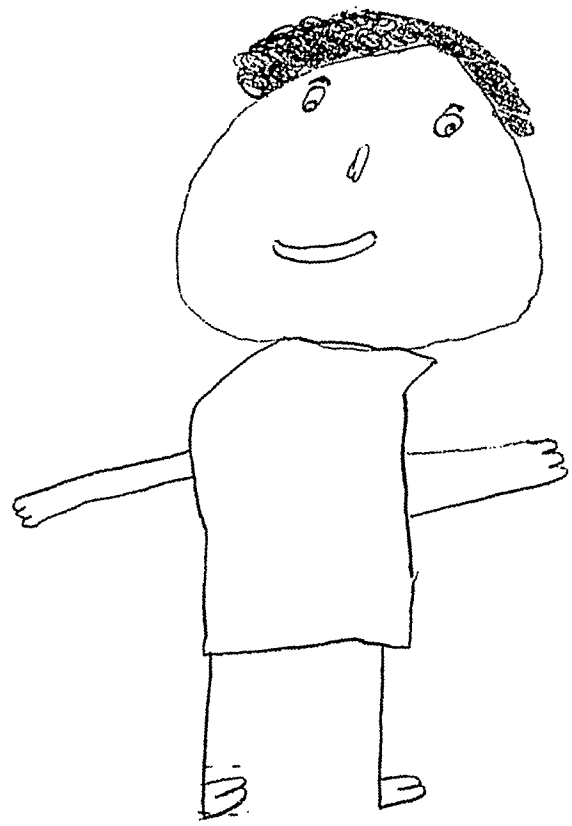
Age at testing: 9 years, 6 months

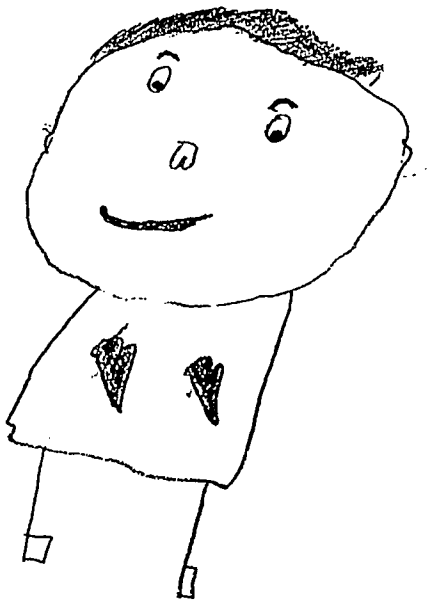
Surgery: Hemangioma of Left Calf

Age at surgery: 8 months

Hospital stay: 5 days

"When I was 2-3 years old I went to the hospital. There was a muscle tangled in my leg, my veins were tangled up in my leg. I had surgery, my parents stayed with me. I remember they tried to untangle the veins but they couldn't. My leg still bothers me. If I hit it, it swells. I play baseball, basketball and my leg is okay. Only if I hit it hard it bothers me."





Surgical Subject: SS

Gender: Boy

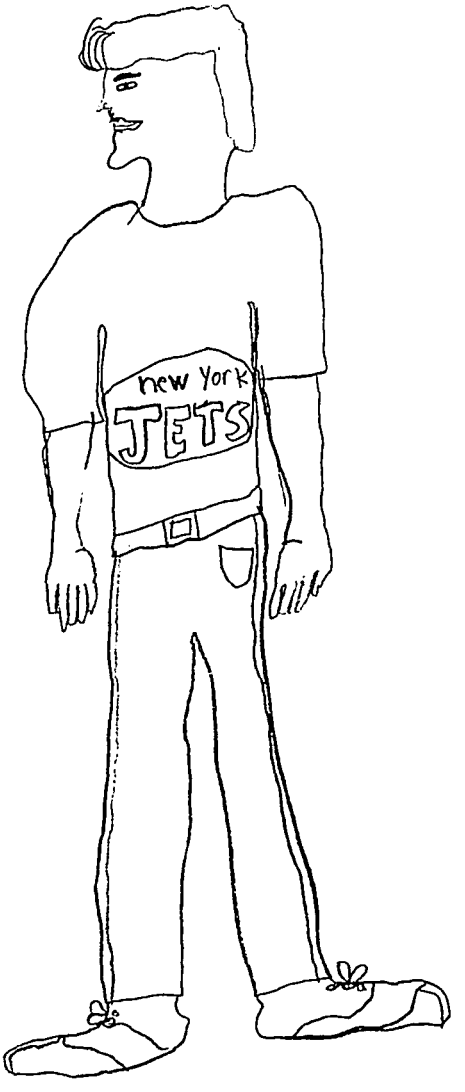
Age at testing: 9 years, 5 months

Surgery: Repair Laceration of Right Lower Eyelid

Age at surgery: 2 years, 6 months

Hospital stay: 3 days

"When I was 2 years old and flying a kite, a most serious thing happened to me. I was looking up and I fell and the bicycle wire went into my right eye. I felt like I was a little blind. My mother took me to the hospital. She was a nurse and she stayed with me. They put a patch on my eye for a while. I remember seeing the doctor when I was in the hospital. He was coming out of the operating room, he had blood on his hands, he was delivering a baby, the baby was all blue. I didn't see the mother with the open stomach. The baby had this pipe line where it gets food from the mother, it was all grey. I was little so I don't remember much and also they give you an injection so you forget. I had all patches on my face from here (lateral cheek) to my nose."


new York
JETS

Surgical Subject: JF

Gender: Boy

Age at testing: 9 years, 4 months

Surgery: Hernia

Age at surgery: 2 years

Hospital stay: 2 days

"I don't remember being in the hospital when I was 2 years old. Doctors' work is very sickening. If you are a surgeon and they have a man's body opened to see if his lungs have cancer, you have to see all those ugly parts, the heart.

I'd like to be a shark. You get a lot of food and you are king of the water and you are tough."

Surgical Subject: PC

Gender: Boy

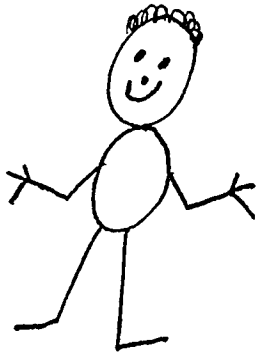
Age at testing: 9 years, 2 months

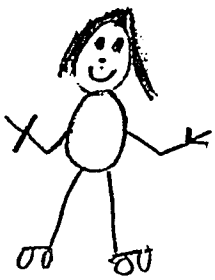
Surgery: Tonsillectomy

Age at surgery: 2 years, 6 months

Hospital stay: 1 day

"When I was young, very young, I had my tonsils pulled and they give you jello after it. First, they give you sleeping gas and then you wake up and I was crying like crazy. My parents brought in something for me to eat, they visited me everyday. After I had the operation I had to stay in the hospital for a while. They did the operation and then everything started happening; the truck stopped and wouldn't start again; my father was driving fast and didn't have time to get to the brakes and ad an accident and hurt his shoulder, wrist and leg. If I didn't have the operation then, I'd had to have it later and if I felt it now it could hurt really much more. Your tonsils are somewhere in the back of your mouth under your teeth."





Surgical Subject: RMcM

Gender: Boy

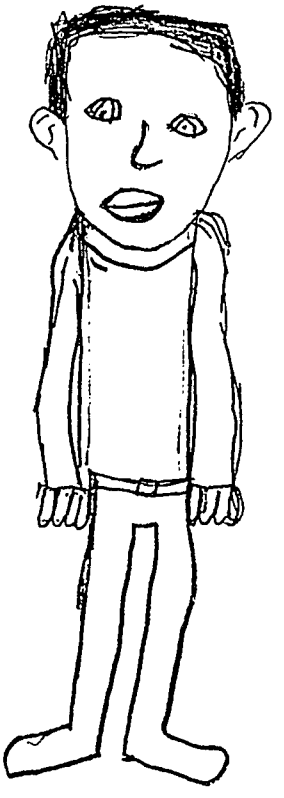
Age at testing: 9 years

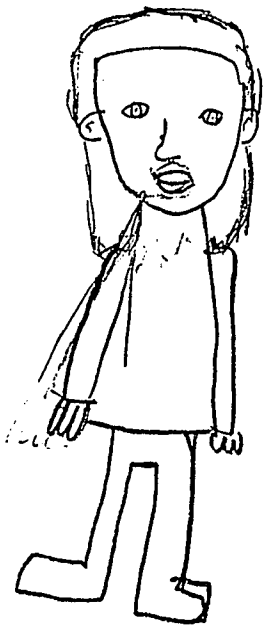
Surgery: Hernia

Age at surgery: 2 years

Hospital stay: 3 days

"I had an operation when I was 2 years old. There was this guy in the bed next to me, he was a big guy, and when I just came in he asked me if I wanted a piece of gum. I used to go to the playroom in the next room. I stayed in the hospital 2-3 weeks. My mother stayed with me and sometimes my father would come. I had like a big bump and it was going straight. They just put me to sleep. I had to blow into this big bubble, it felt like you were in a room that you couldn't get out of. Then in a few days you go home. You have to just lay down and don't move around. The stitches didn't ave to come out, they stayed in. First, I had a dream about it and then it happened. When I face that way I have bad dreams. When I get gas pains even now, I think that it's from the operation."





Surgical Subject: JG

Gender: Boy

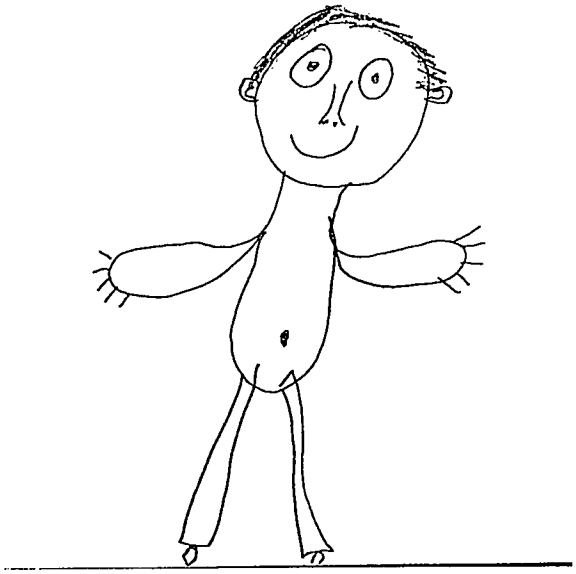
Age at testing: 8 years, 11 months

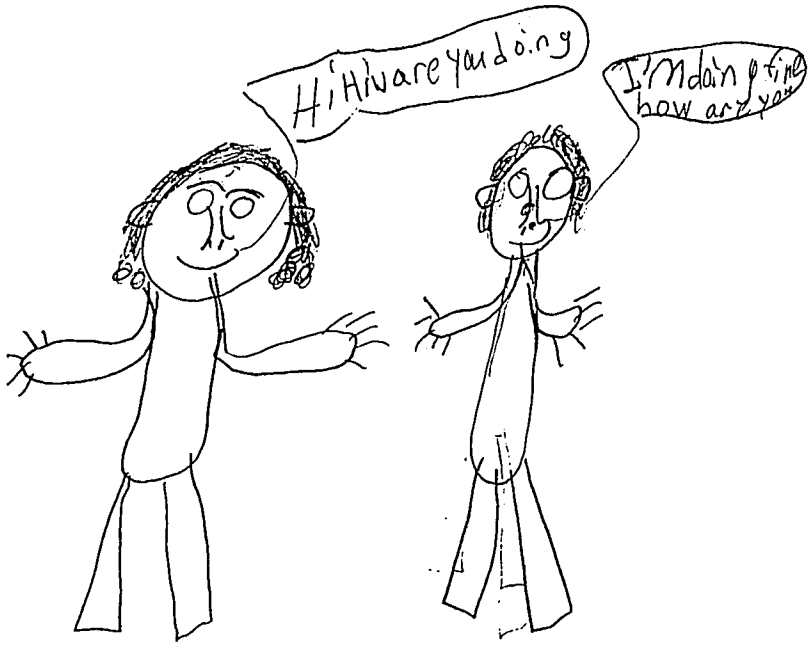
Surgery: Hernia

Age at surgery: 1 year

Hospital stay: 1 week

"When I was little I had to have a hernia operation right here (lower abdomen). My intestines were popping out, it came out and the skin stretches and if it's not fixed you die. It comes from eating too much. I was operated on for 2 full hours when I was 11 months old. I remember I was sick in the hospital and my parents were sitting down. They got there in time, before it ripped, when the intestines come out and the skin gets too hard and it rips. They put a bandaid on you and that holds it down. If it pops out they have to sew it down. I had gas pains in my intestines. I had to stay in the hospital for 2 weeks and then it's like nothing happened. I don't even have a scar."




Hi Hi! are you doing
I'm doing fine how are you

Surgical Subject: JS

Gender: Boy

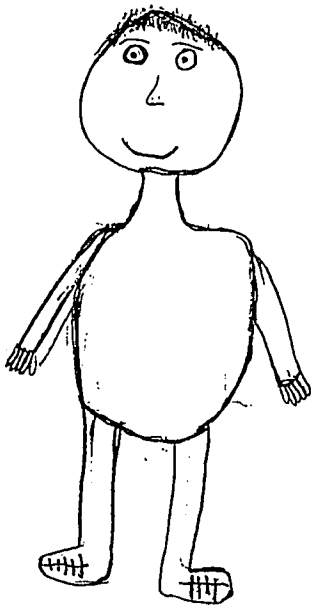
Age at testing: 8 years, 11 months

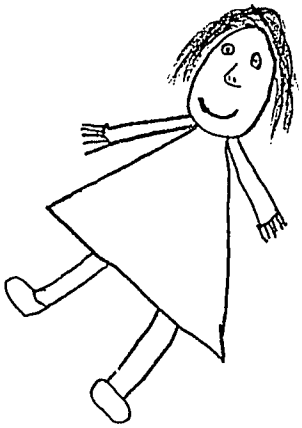
Surgery: Hernia

Age at surgery: 2 years, 3 months

Hospital stay: 1 day

"When I was 2 or 3 years old I was still a baby, I was in the hospital. I stayed in a crib. Sometimes my mother would come and stay and sometimes my father. I was sleeping a lot there. I ask her (mother) if I ever had stitches and she said yeah. I don't like doctors because they see gross things like stitches in your stomach and when your stitches are all fresh it looks like someone is sewing your skin together."





Surgical Subject: BT

Gender: Boy

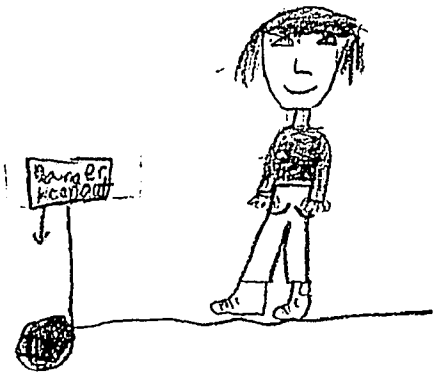
Age at testing: 8 years, 7 months

Surgery: Hernia

Age at surgery: 11 months

Hospital stay: 4-5 days

No memory reported.



Surgical Subject: GH

Gender: Boy

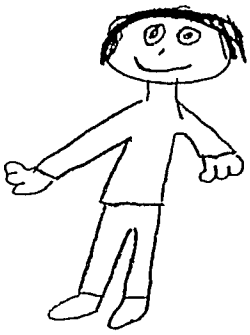
Age at testing: 8 years, 6 months

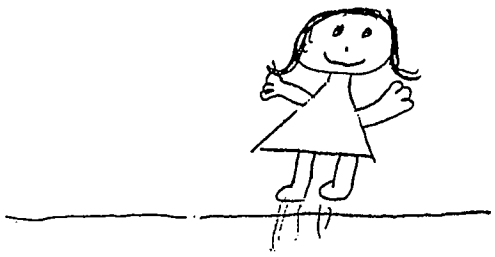
Surgery: Recircumcision

Age at surgery: 2 years

Hospital stay: 2 days

"I don't like doctors. I don't remember being in the hospital."





Surgical Subject: JH

Gender: Boy

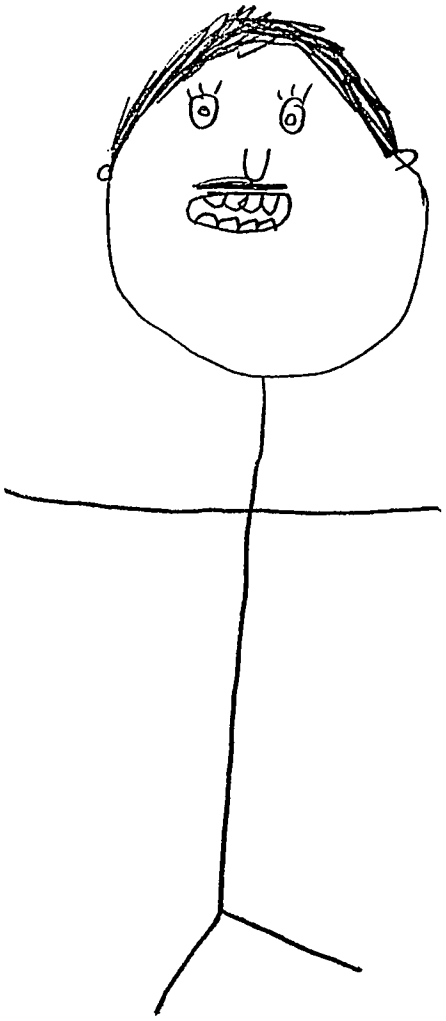
Age at testing: 8 years, 2 months

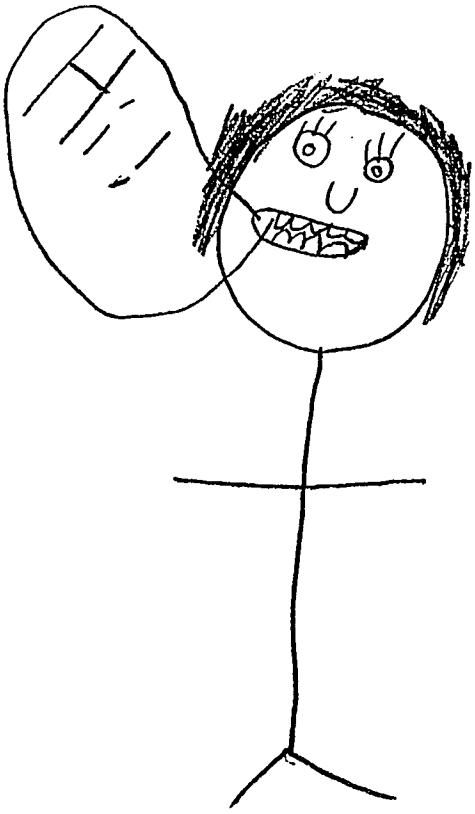
Surgery: Tonsillectomy

Age at surgery: 2 years, 6 months

Hospital stay: 2 days

"When I was 1 year old I got my tonsils out. I was screaming because I didn't want to go to the hospital, they stick needles in your behind or arm, that's the worst thing. My parents told me but I didn't understand them. Either they cut your throat open, which I doubt that they do, or they open your mouth and stick tools in there and cut it off or pull it out. The only good part is the jello, the ice cream and the presents. I had to stay 7 days in the hospital and my parents stayed, they just went home once or twice. They make you go to the bathroom and then they see what's going on inside of you. They put this black thing over your mouth to make you go to sleep and watch your heart-beat on radar. Then you sound like a frog and they throw your tonsils away or keep them for study."




HI

Surgical Subject: NH

Gender: Boy

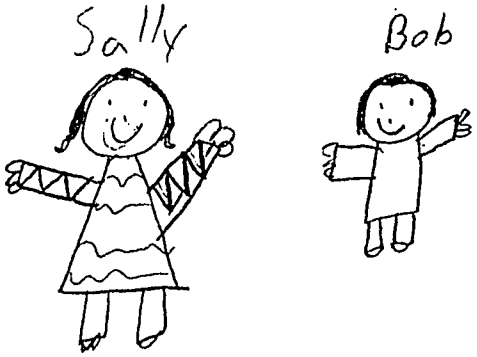
Age at testing: 7 years, 8 months

Surgery: Recircumcision

Age at surgery: 8 months

Hospital stay: 1 day

"I don't think that I ever went to the hospital. When you get hurt, other people may think that it hurts a little, but it hurts a lot. When I was 4 years old I got bit on the face by a dog and my mother and father weren't home, we had a babysitter. The police came but I didn't go to the hospital. I like doctors because they help people, they save lives."


Sally
Bob

Surgical Subject: PG

Gender: Boy

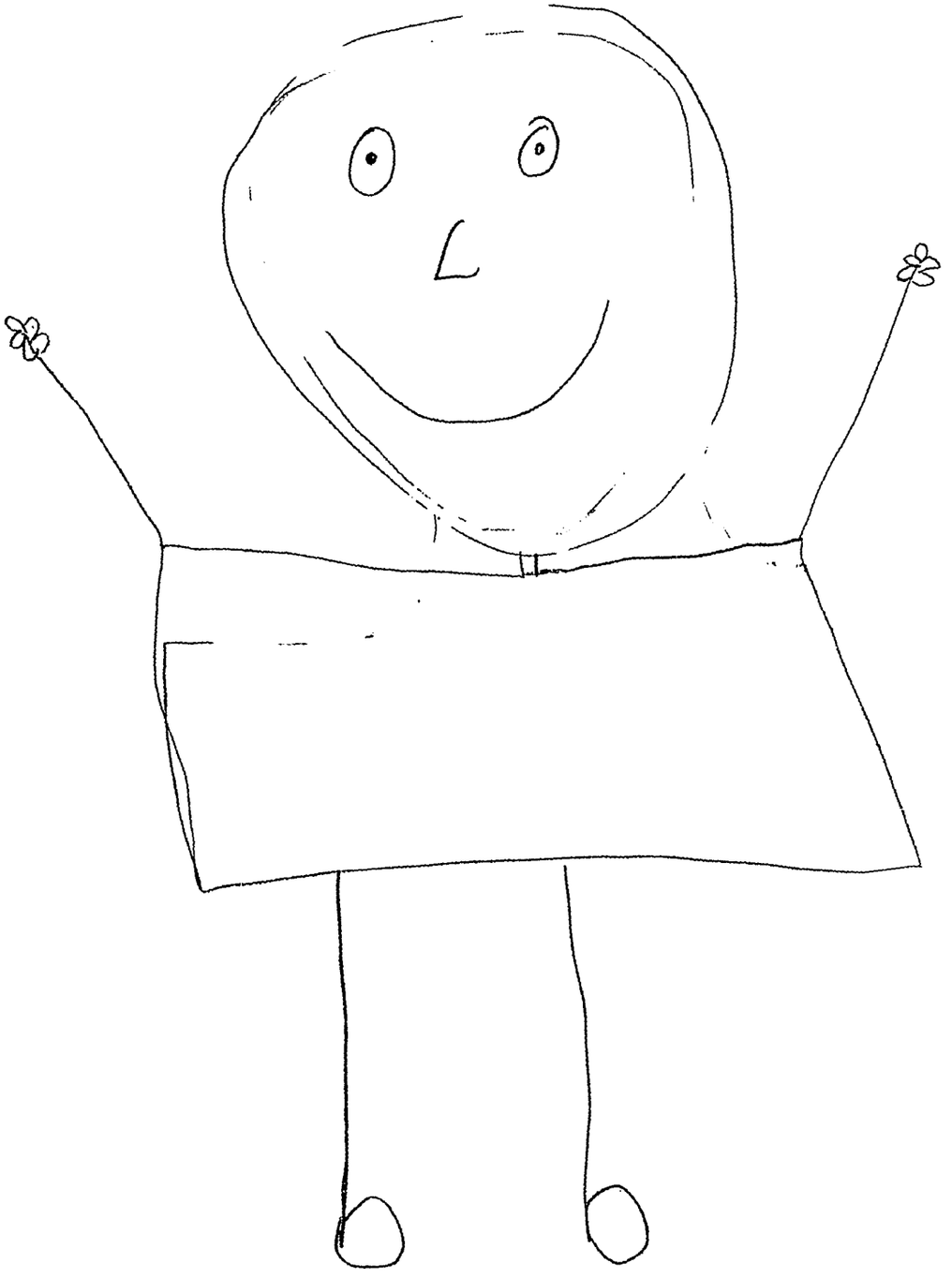
Age at testing: 7 years, 8 months

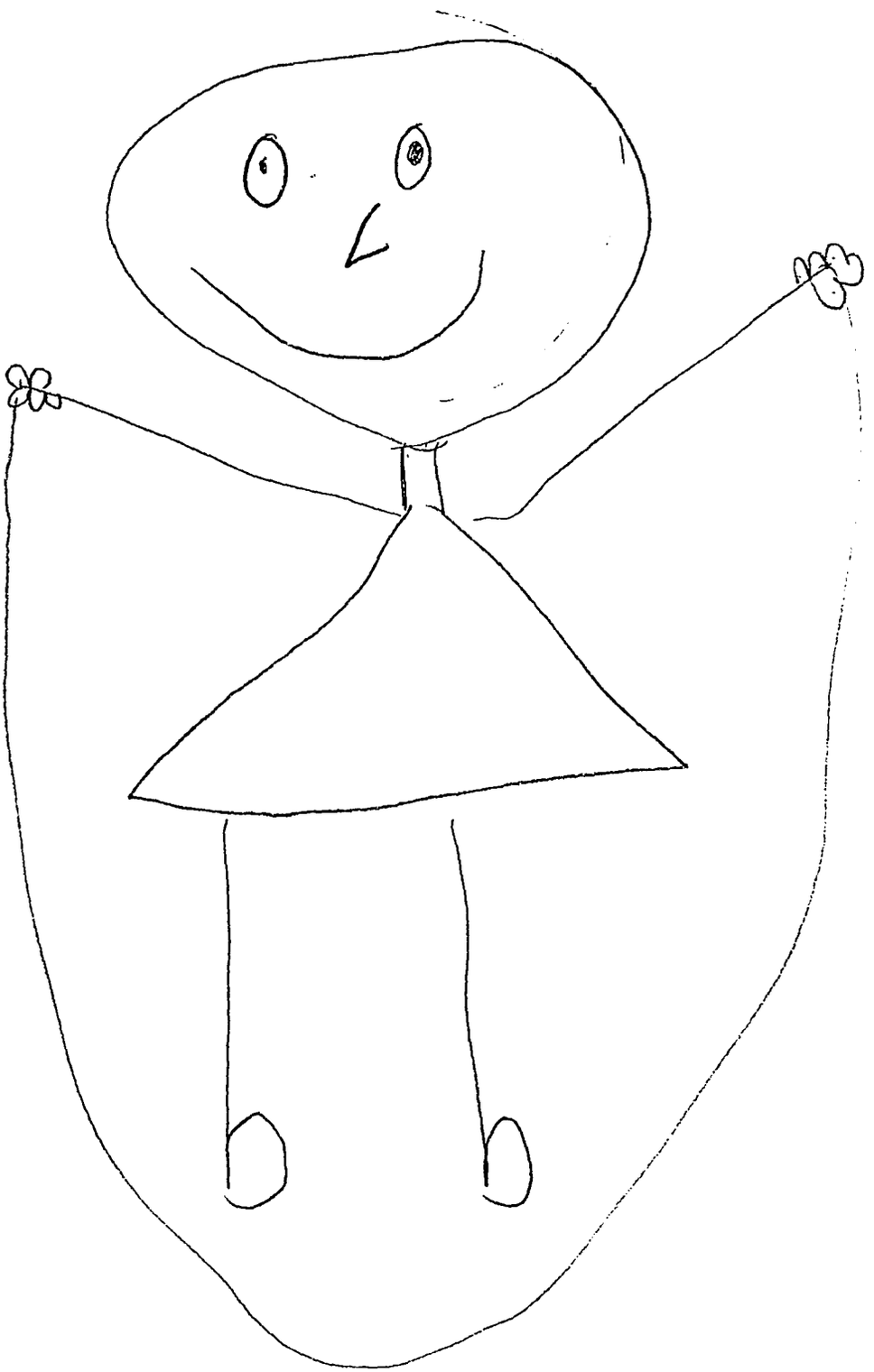
Surgery: Pyloric Stenosis

Age at surgery: 5 weeks

Hospital stay: 5 days

"They cut me open and I don't know what they did inside. I couldn't digest milk when I drank it. I think about the surgery and what did they do."





Surgical Subject: RL

Gender: Boy

Age at testing: 7 years, 4 months

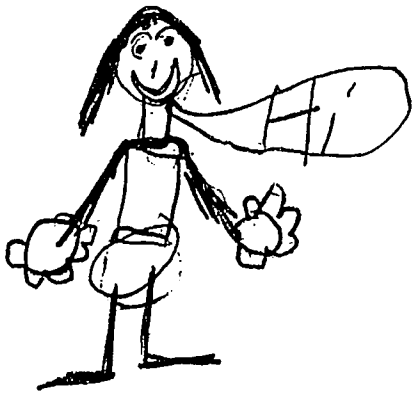
Surgery: Bilateral Ocular Muscle Repair

Age at surgery: 2 years, 6 months

Hospital stay: 3 days

"I had an eye operation and I was in the hospital. They had, like a cage, a crib with a top on it. They had me in this crib when I was going to have my eye operation. I didn't want to be there. I remember when I was in that cage. My parents came at visiting hours, I had to eat in a wheelchair with a desk, my mother helped to feed me and I hated what they gave me to eat. Sometimes, now I can make things blurry.

I had another brother but he was dead. He came out when he wasn't supposed to. He was born right after me. It happened a couple of weeks after I was born."



Surgical Subject: EG

Gender: Boy

Age at testing: 7 years, 4 months

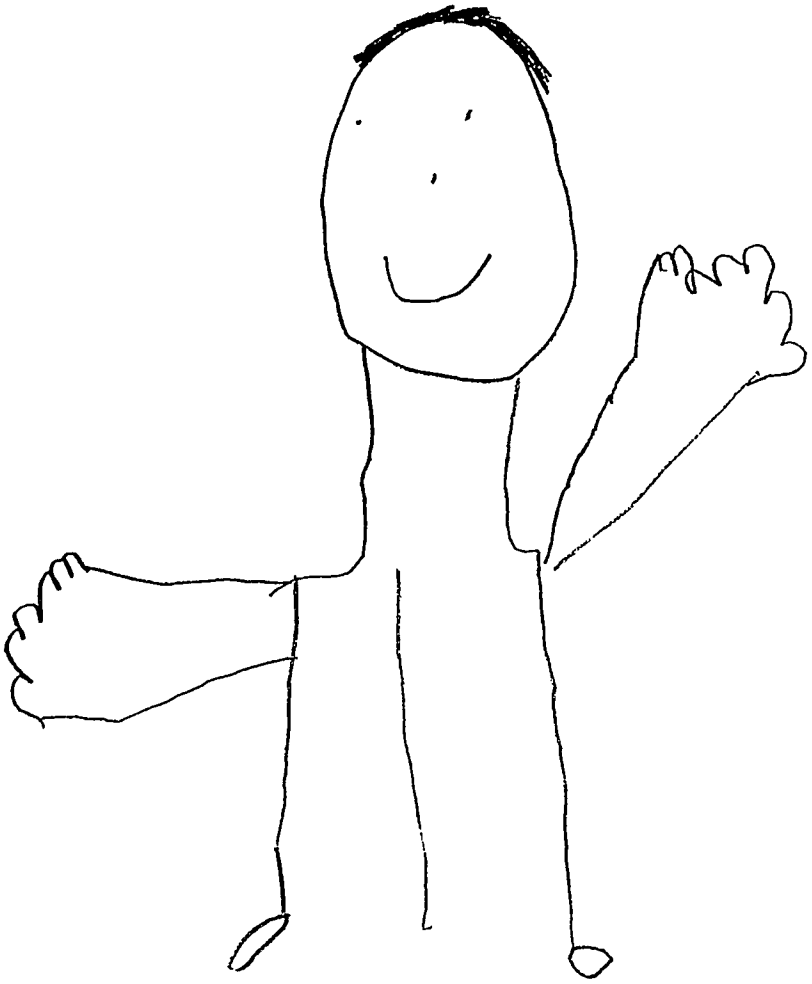
Surgery: Hernia

Age at surgery: 2 years, 6 months

Hospital stay: 2 days

"When I was little I picked up something heavy, I picked up a heavy child, and I had to go to the doctor and be checked out. They took me away and I had a doll on my bed. They took me to another room, my mother was there and my father, too. My mother was crying, my mother was sick. My father came back once and gave me a toy. Someone gave me a doll.

My brother was supposed to be a girl but he wasn't. My grandmother was 80 years old. I don't know where she is now, her birthday passed already, she's dead."



Surgical Subject: AA

Gender: Boy

Age at testing: 6 years, 9 months

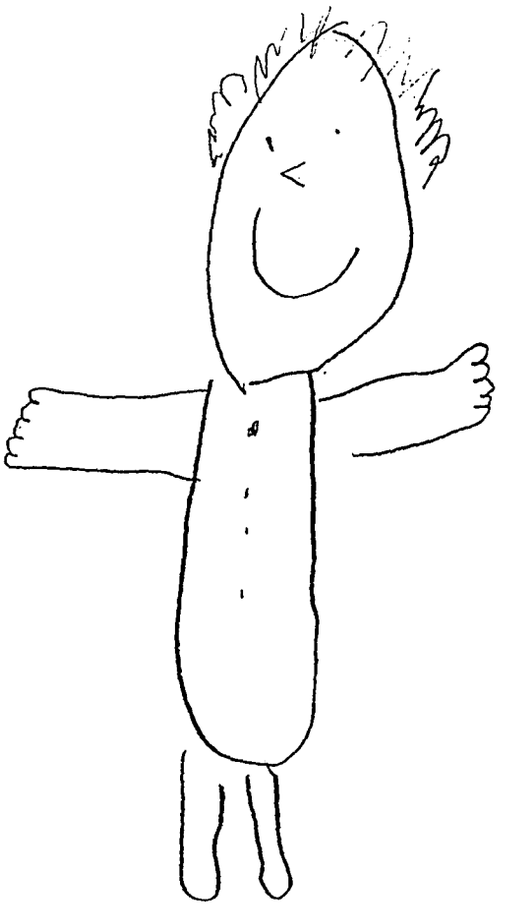
Surgery: Cardiac Catherization

Age at surgery: 6 weeks

Hospital stay: 10 days

"When I was 2 years old I went to the hospital. My heart wasn't growing and I still have it. You couldn't talk in the hospital, that one kid was sick so you couldn't talk. Some kids say 'you had to go to the hospital' and I say 'I didn't' and they lie and make fun, I mean that some kids who went to the hospital say they didn't but they did.

I have a cap-gun in my school bag without caps and it's louder than my friend's ray-gun."



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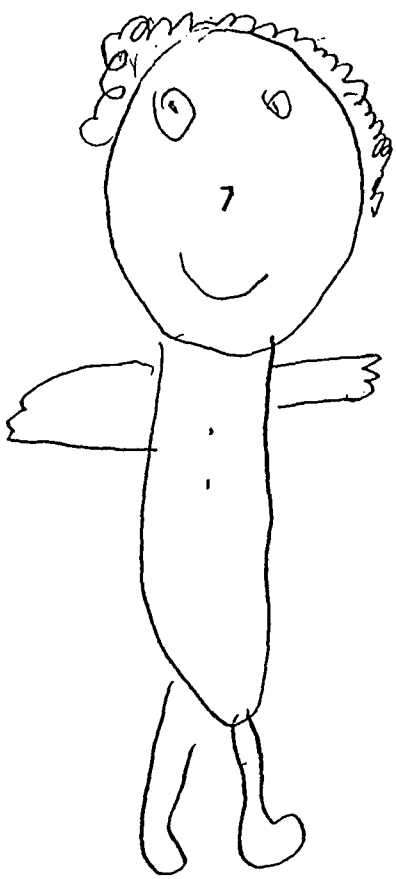


4

Surgical Subject: SMcC

Gender: Boy

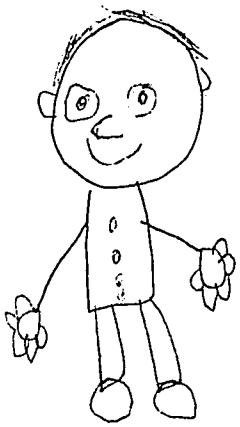
Age at testing: 6 years, 7 months

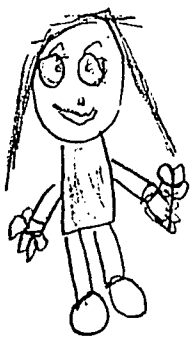
Surgery: Hernia

Age at surgery: 1 year, 10 months

Hospital stay: 3 days

No memory reported.





Surgical Subject: RB

Gender: Boy

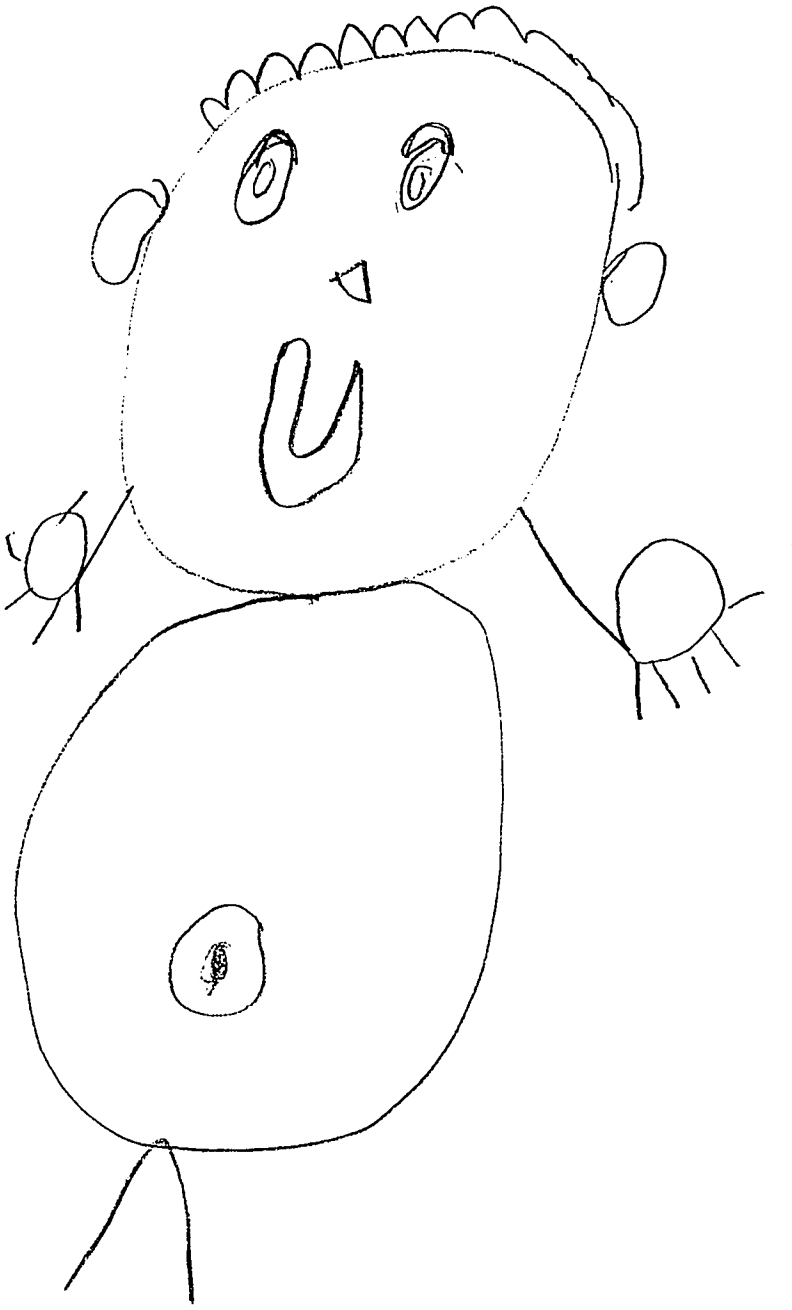
Age at testing: 6 years, 6 months

Surgery: Hernia

Age at surgery: 3 months

Hospital stay: 2.5 days

"My mother is a doctor, a nutritionist. In the hospital they took x-rays, there was some machine. Sometimes doctors are nice sometimes they are not. I don't remember what happened in the hospital."



Surgical Subject: JG

Gender: Boy

Age at testing: 6 years, 5 months

Surgery: Recircumcision

Age at surgery: 5 months

Hospital stay: 1 day

"I went to the hospital once for stitches but I don't remember where. I go to the doctor for a check-up. She checks my eyes, ears, throat and checks to see if I am sick."

Surgical Subject: DM

Gender: Boy

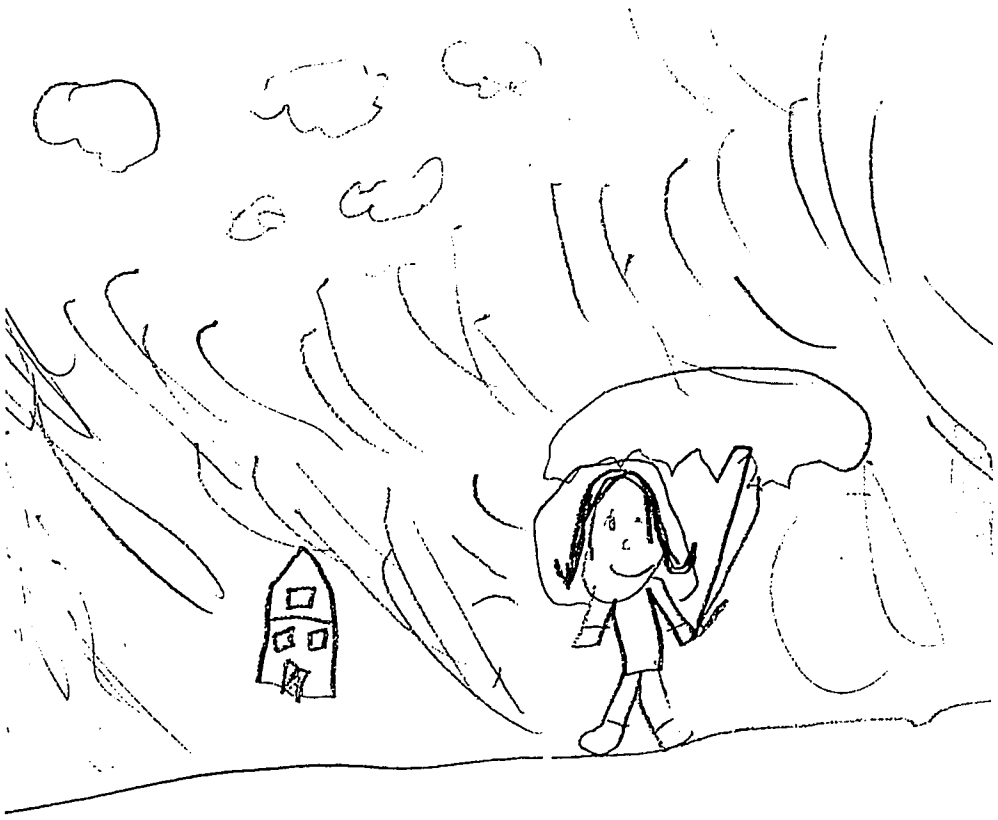
Age at testing: 6 years

Surgery: Congenital Hemangioma above Right Eyebrow

Age at surgery: 2 years

Hospital stay: 1 week

"I have an eye doctor and an ear doctor."



Surgical Subject: CO

Gender: Girl

Age at testing: 9 years, 11 months

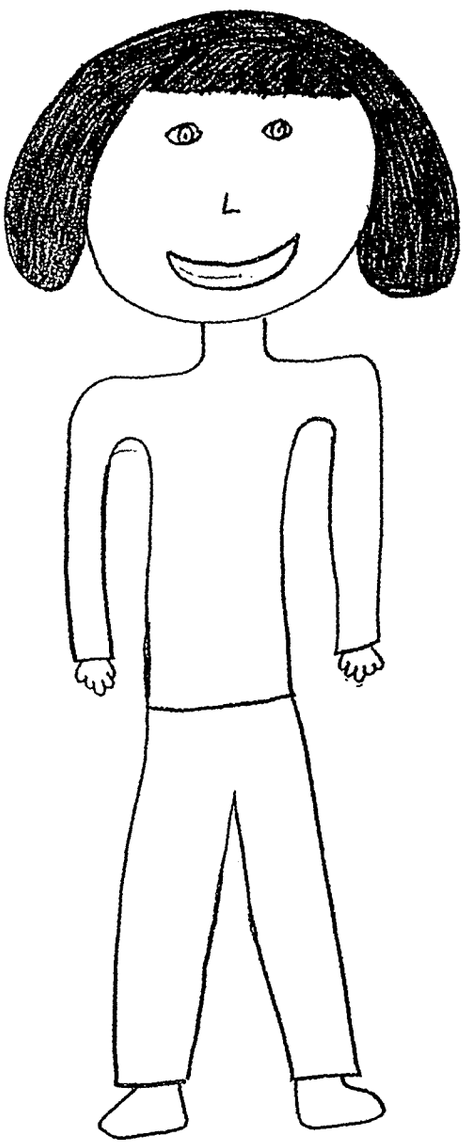
Surgery: Removal of Mucous Cyst, inside lower lip

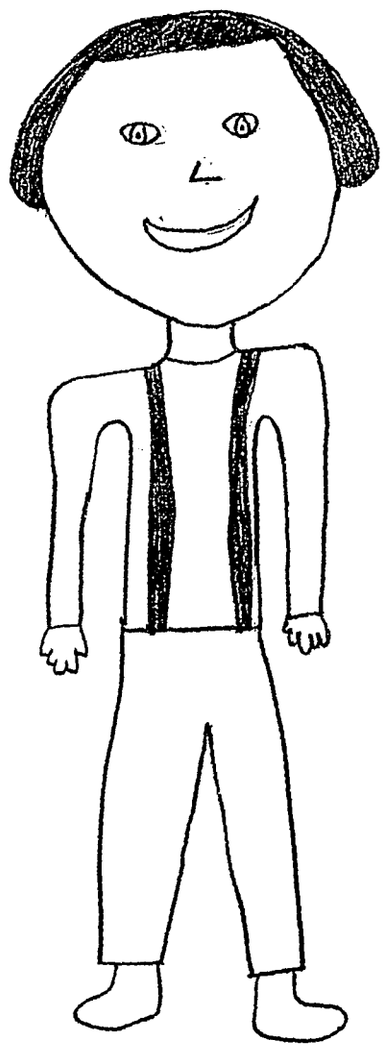
Age at surgery: 1 year, 6 months

Hospital stay: 1 day

MEMORY

"I had a pimple growing over here (inner lower lip), I was a year and a half and the doctor said I have to get that out because, he said, 'it will bother her when she gets older.' One thing I really remember, I cried. Sometimes I think about it and I feel it."





Surgical Subject: TN

Gender: Girl

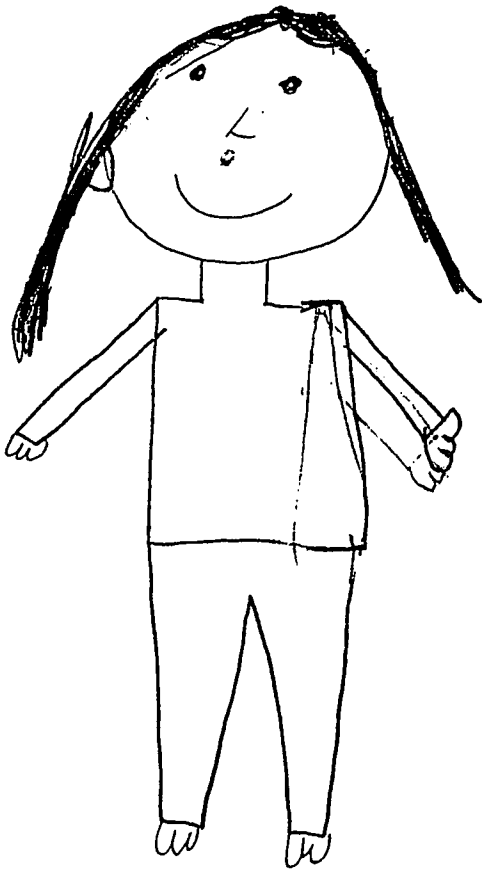
Age at testing: 9 years, 11 months

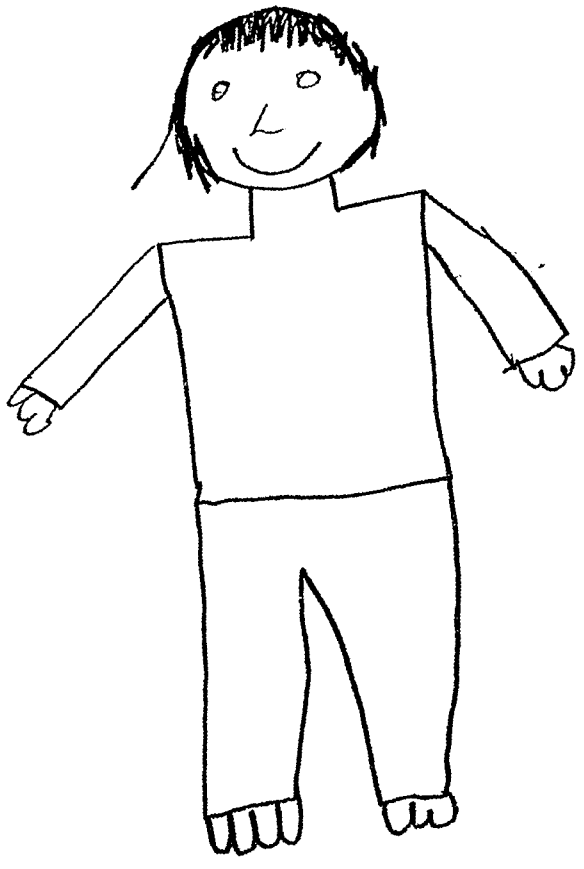
Surgery: Removal of Cyst from Left Eyelid

Age at surgery: 1 year, 6 months

Hospital stay: 1.5 days

"I had an operation on my eye, there was this thing they had to operate off, I don't know which eye it is, you look in my eyes, the both of them, see the left one and see the scar. All I had was 8 stitches. I was in a crib in the hospital. They put you in a crib unless you are over 3 years old. I think they put me to sleep. My sister always asks the same question when we are riding our bikes real close, she asks, 'what happened to your eye.'"





Surgical Subject: MA

Gender: Girl

Age at testing: 9 years, 6 months

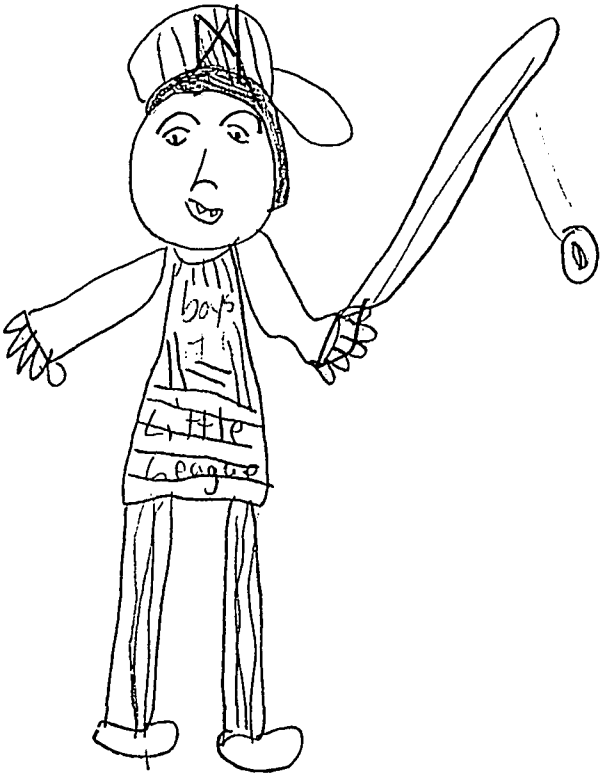
Surgery: Tonsillectomy

Age at surgery: 2 years, 6 months

Hospital stay: 1 day

"When I went to the hospital they put me to sleep, my father stayed there, my mother had to stay home and take care of my brother. My father held my hand so that I wouldn't be frightened. The instruments have to go down. I never want to go to the hospital again. I don't tell anyone, I'll talk to you about it, but you know I have to be careful.

I never felt important as a child, you know when they want you to wash your face they just do it with the cloth. Now they expect you to wash your own face. For the first year, the baby has no thoughts, after that you begin to learn."


boys
little
league

Surgical Subject: MR

Gender: Girl

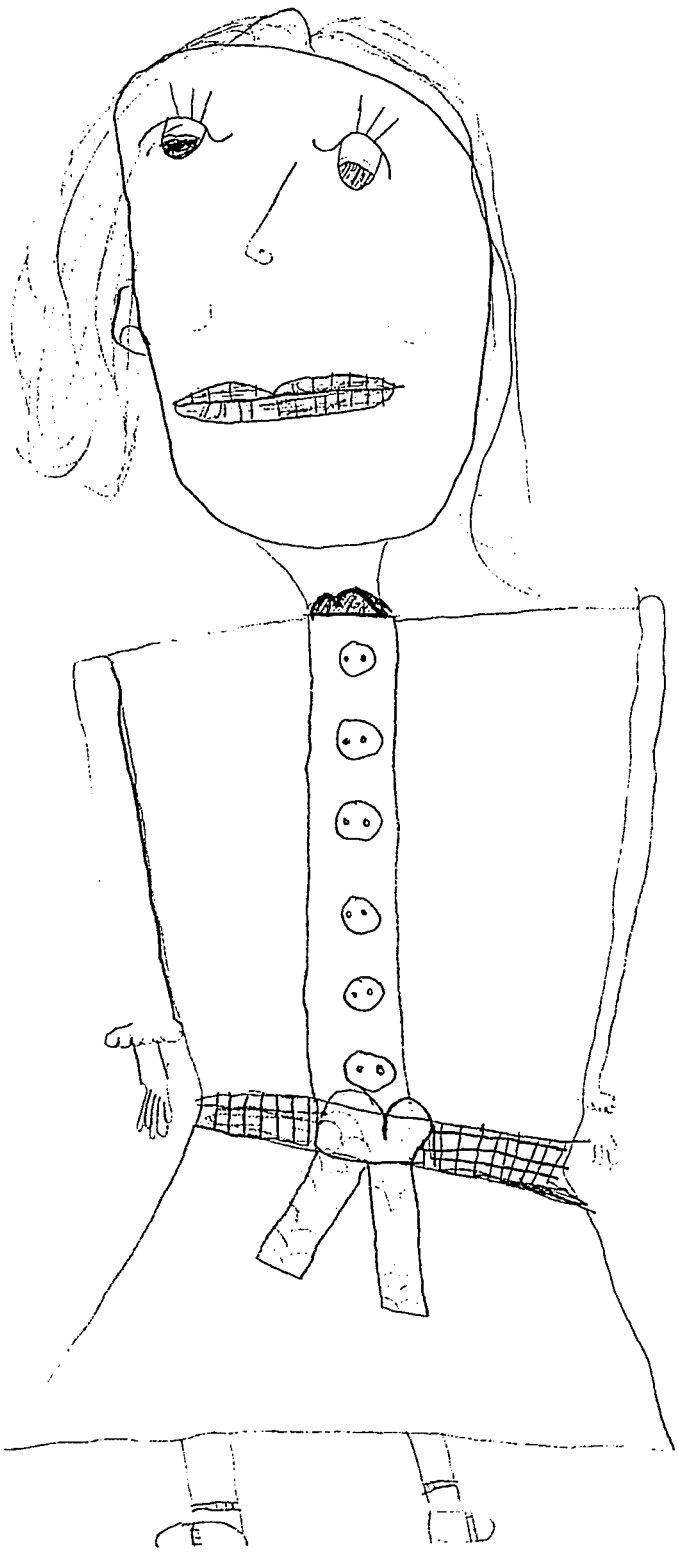
Age at testing: 9 years, 6 months

Surgery: Tonsillectomy

Age at surgery: 3 years

Hospital stay: 2 days

"When I got my tonsils out, when I was 3 or 4 years old, I didn't want anything to eat and if I drank orange juice it burned. They put me to sleep, I don't really know what they did because I was asleep. I would get scared if they ever did tell me about it. My mother knows and her mother, because they were waiting for me when I came back from having my tonsils out. They cut it open, then they gave me a lot of ice. I was in a crib, in a big room, with 10 to 12 other children. Most of them had casts and their legs were up on a spring, to keep both of them up. I couldn't talk to them, they were spaced together and I couldn't lift my head. The nice thing is that you don't have to do it again."




33

Surgical Subject: JF

Gender: Girl

Age at testing: 9 years, 2 months

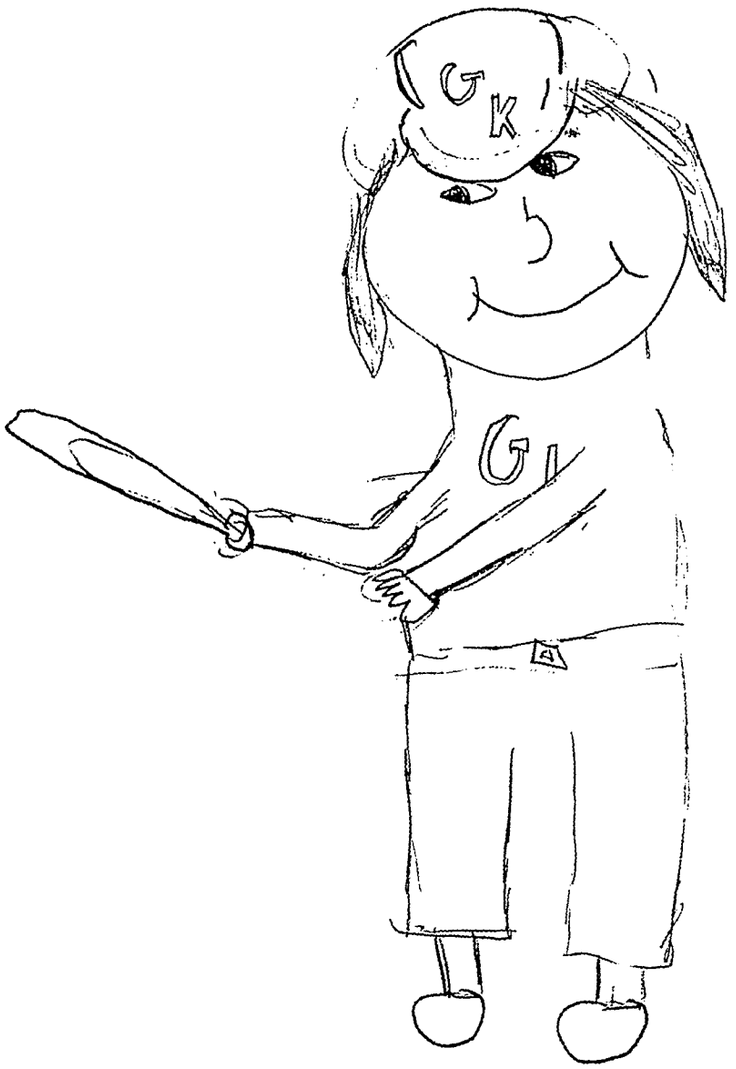
Surgery: Clearance of Blocked Tear Duct

Age at surgery: 10 months

Hospital stay: 2 days

"When I was 1 year old I had an eye operation because I couldn't cry out of it. It's scary, now if someone gets hurt, to comfort them, I say, 'I don't care, nothing so great about surgery,' but it was scary, I don't like blood.

Jamie is not a nickname, Stacey (older sister) wanted that name because she wanted a boy."



Surgical Subject: LMM

Gender: Girl

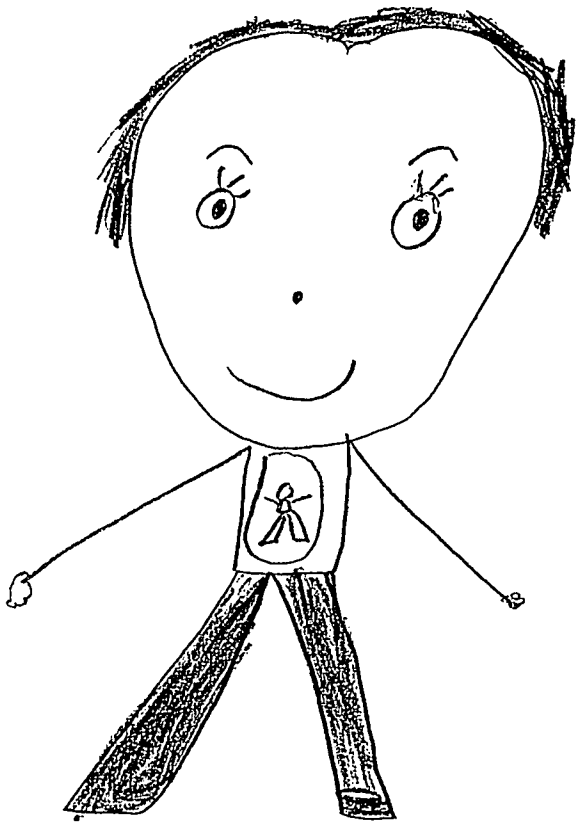
Age at testing: 7 years, 9 months

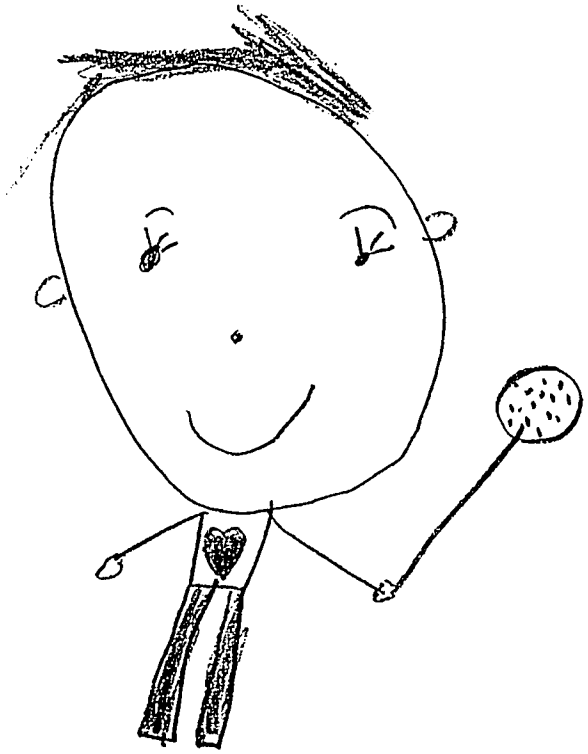
Surgery: Hernia

Age at surgery: 2 years, 11 months

Hospital stay: 1.5 days

"I had a hernia when I was a baby, my mother was crying hard. She had my baby sister. I had to stay in the hospital for 5 weeks. They said, don't stay on your stomach. I hate doctors. I remember my mother crying hard. When I was born I had a cherry mark right here (cheek)."





Surgical Subject: BG

Gender: Girl

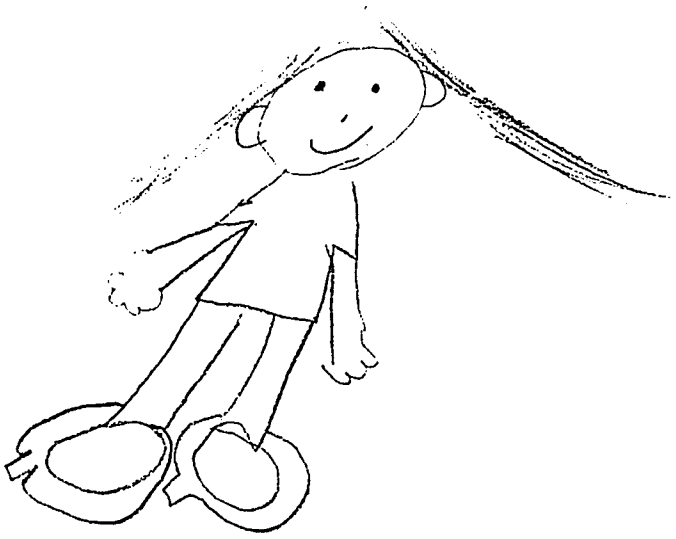
Age at testing: 7 years, 3 months

Surgery: Hernia

Age at surgery: 2 years, 6 months

Hospital stay: 3 days

"I picked up a big rock when I was 2 years old and fell and had to go to the hospital. They put stitches inside and outside. I had an operation over here (abdomen). I remember taking the stitches on the outside out, because it hurt when they did it and I couldn't stay still. The ones on the inside (stitches) stayed in. I didn't feel nothing when I had the operation cause they put the stitches inside all around. I think about it sometimes but I can't picture it in my head. There's a little scar. I want to remember it so I won't have to be scared about it. I won't pick up a heavy rock so my hernia pops out of my skin. I remember a lot of machines, a lot of cabinets where they got the medicine and bandages. When the surgery was finished Dad stayed and slept with me. My mother came to visit."



Surgical Subject: JLB

Gender: Girl

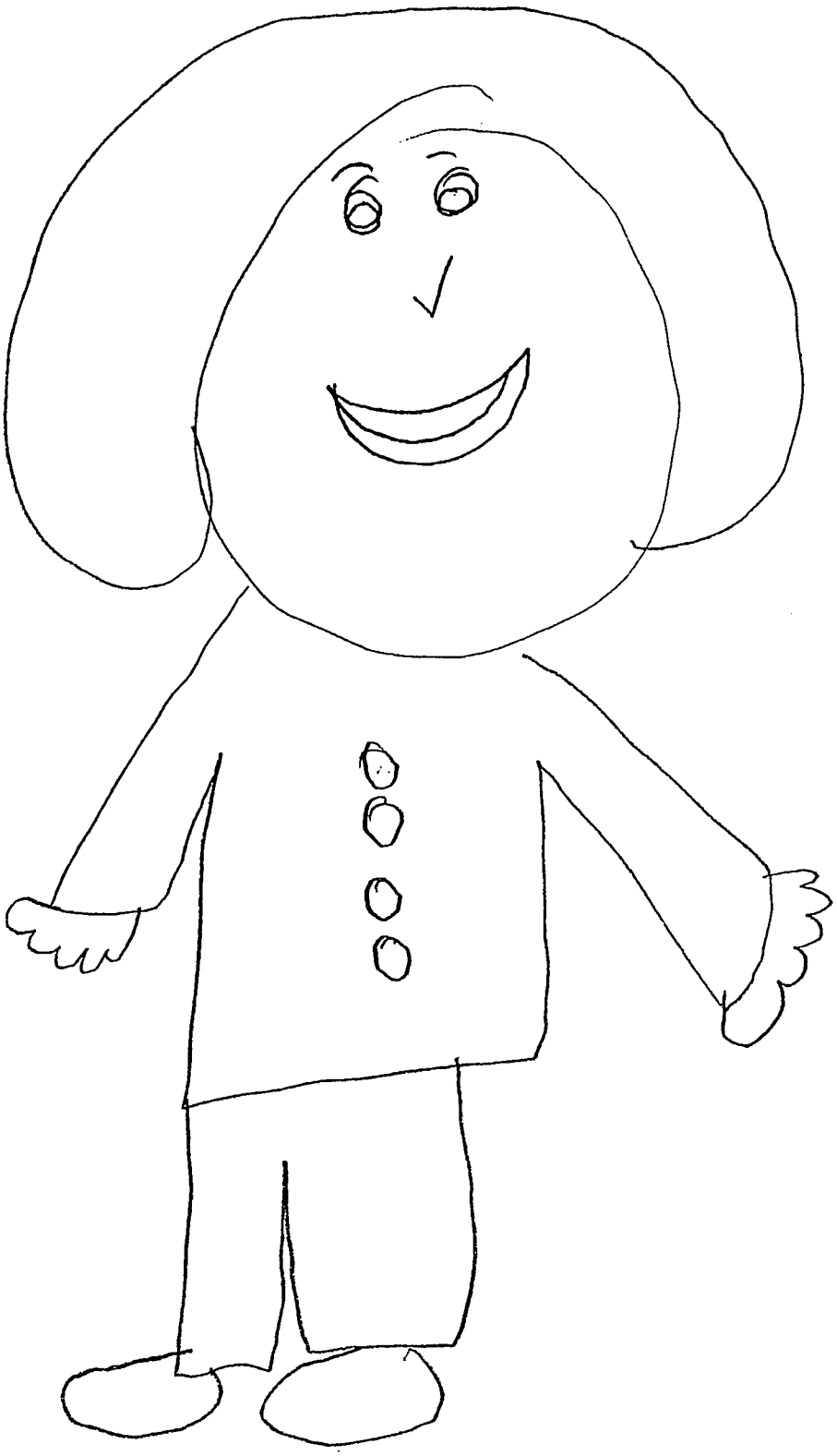
Age at testing: 7 years, 2 months

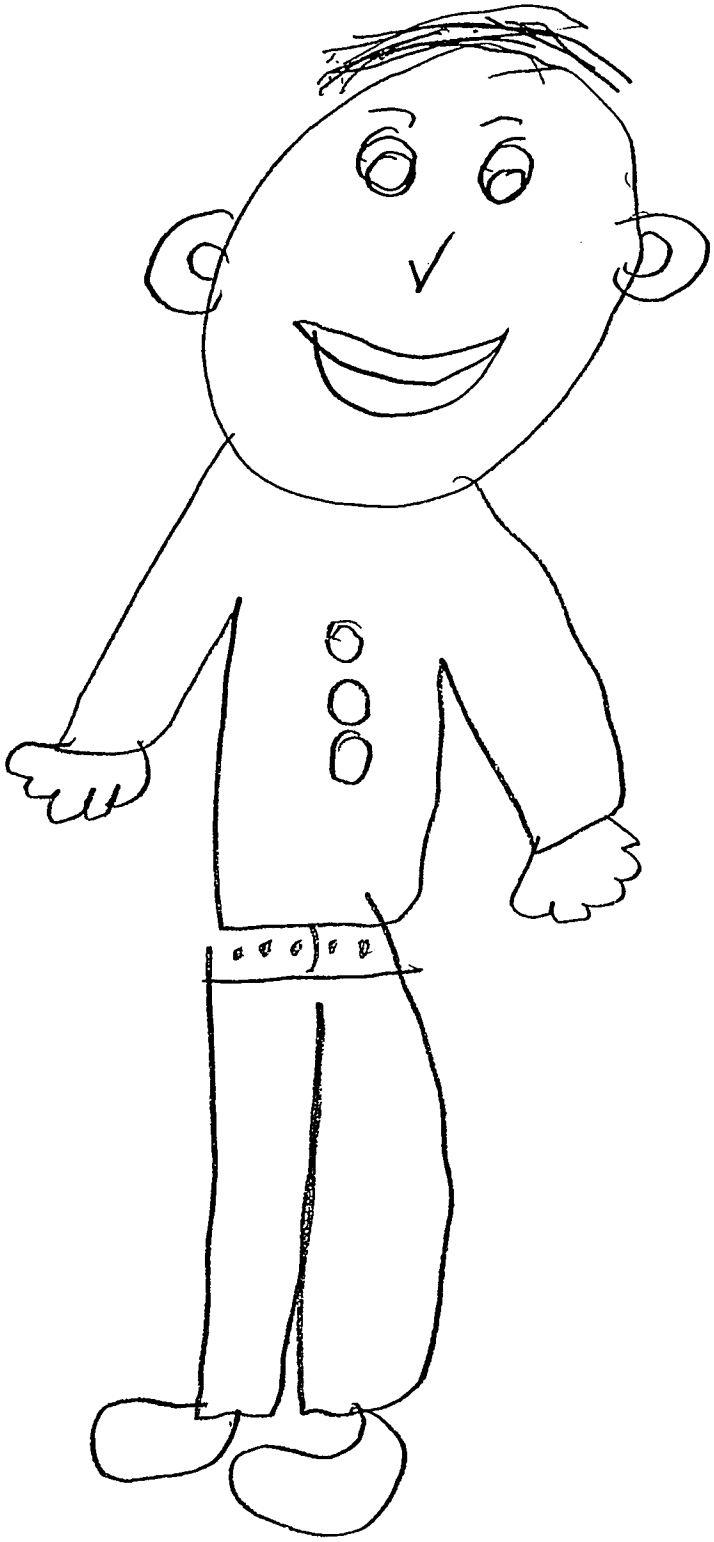
Surgery: Pyloric Stenosis

Age at surgery: 6 weeks

Hospital stay: 2 weeks

"I was in the hospital when I had an operation, when I was a baby. They made me go to sleep and they did something. Every time I ate I spit out the food and I didn't want to eat it."





Surgical Subject: PS

Gender: Girl

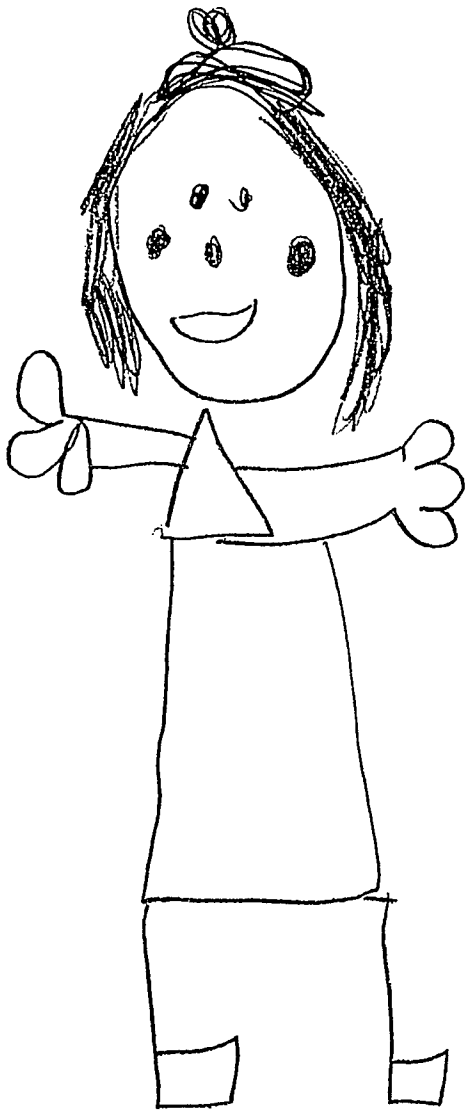
Age at testing: 5 years, 7 months

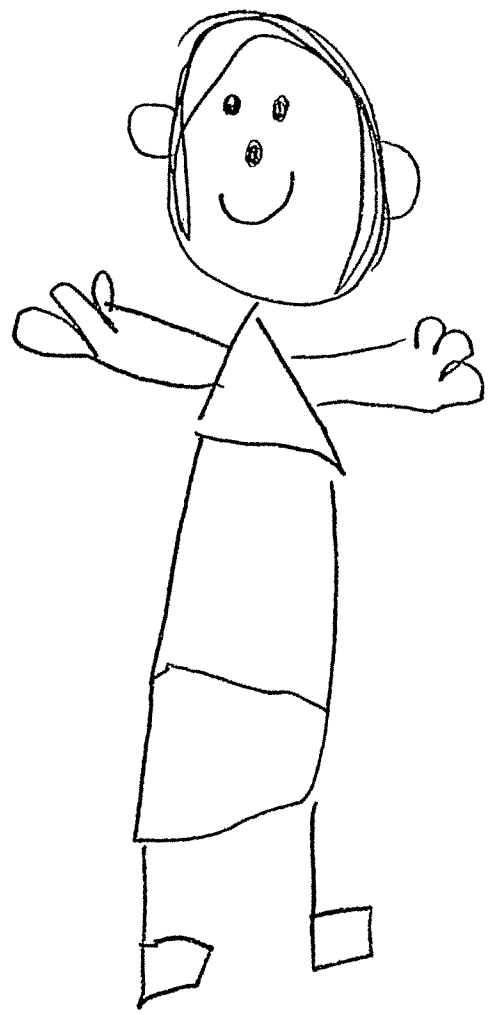
Surgery: Hernia

Age at surgery: 9 months

Hospital stay: 1 day

"I got sick and I went to the hospital and the doctor was nice to you. I remember getting cold water on my head when I was sick."

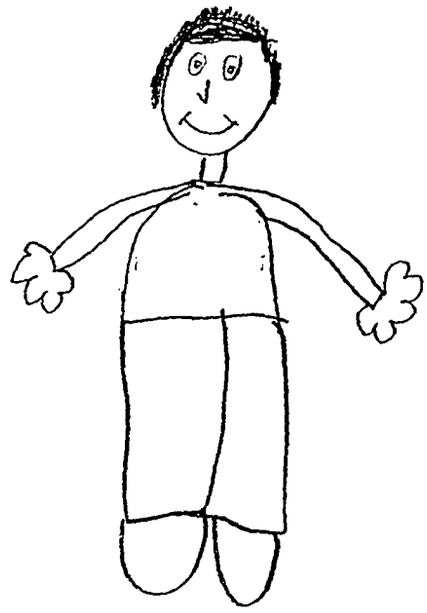


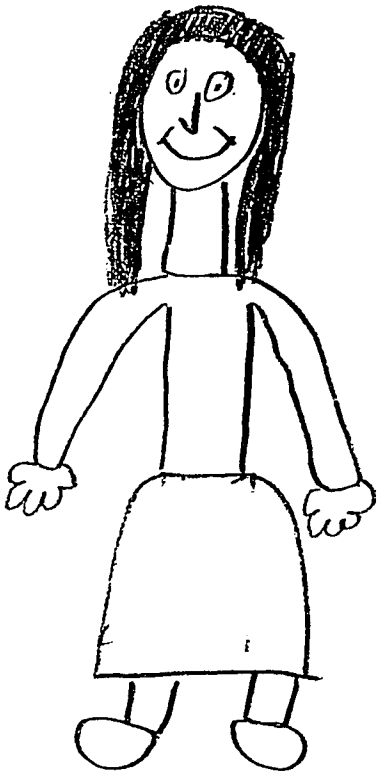


Non-Surgical Subject: LR

Gender: Boy

Age at Testing: 10 years

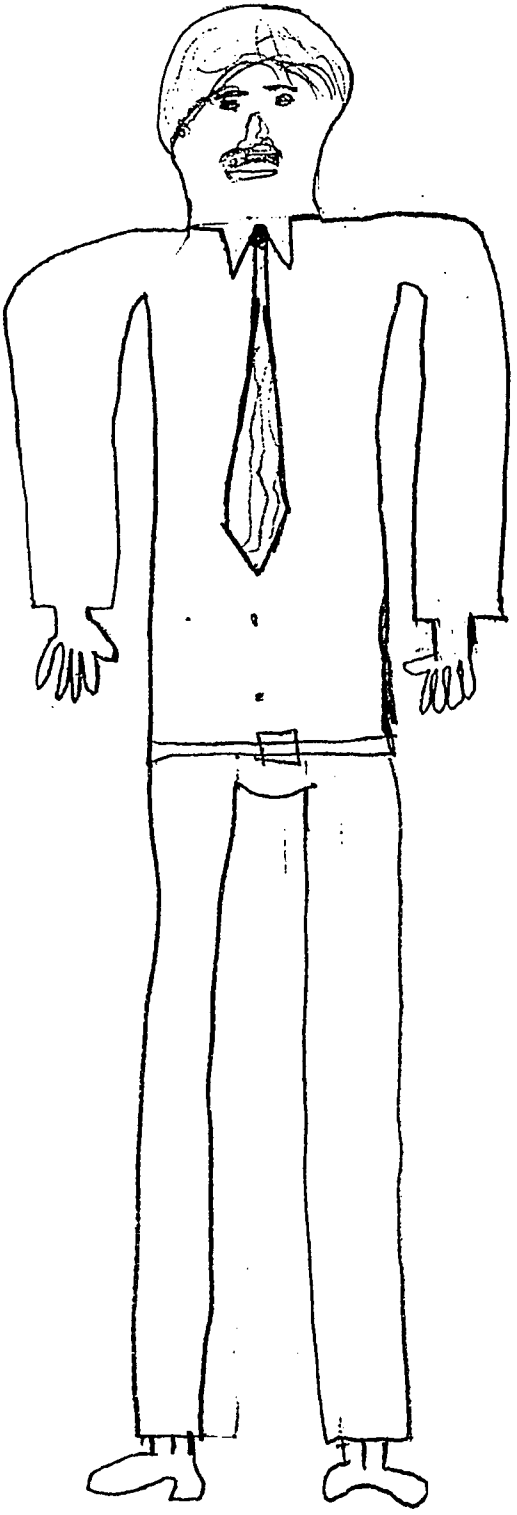


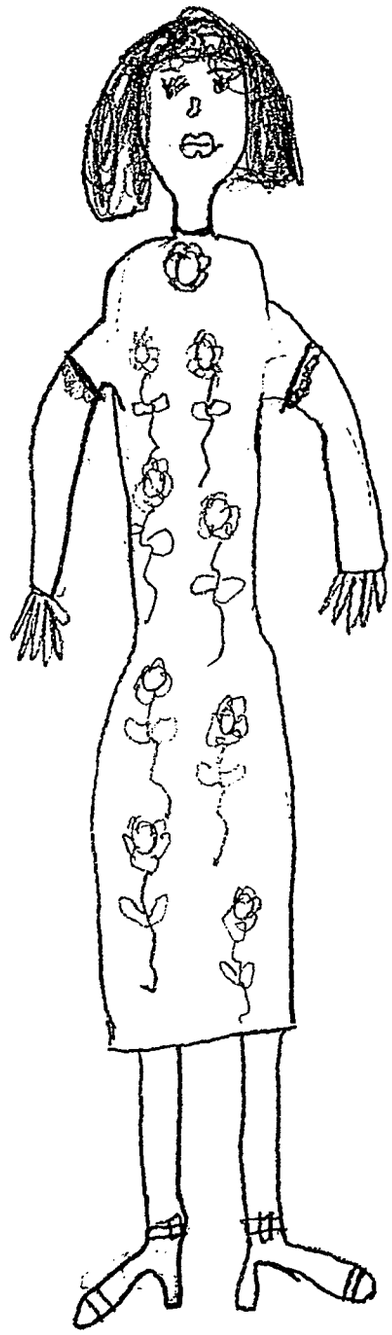


Non-Surgical Subject: DL

Gender: Boy

Age at Testing: 9 years, 11 months

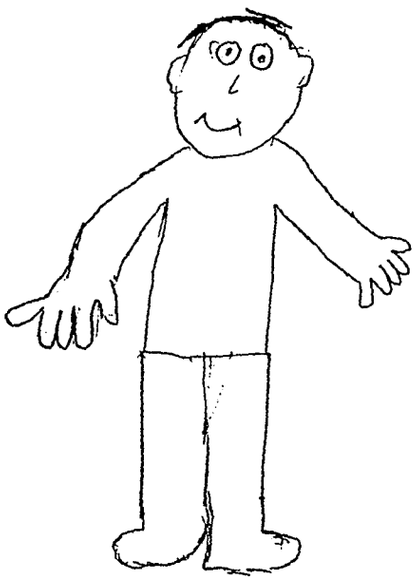




Non-Surgical Subject: JS

Gender: Boy

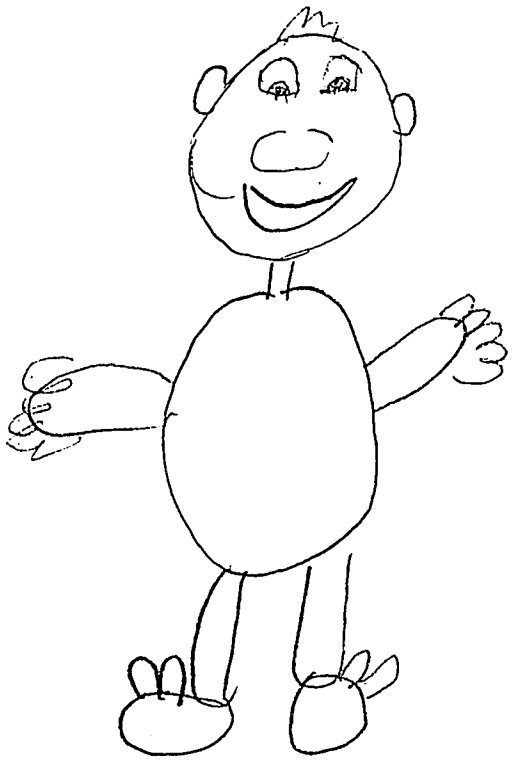
Age at Testing: 9 years, 1 month

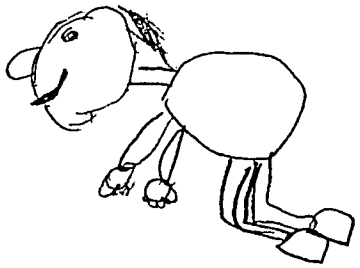


Non-Surgical Subject: ML

Gender: Boy

Age at Testing: 9 years

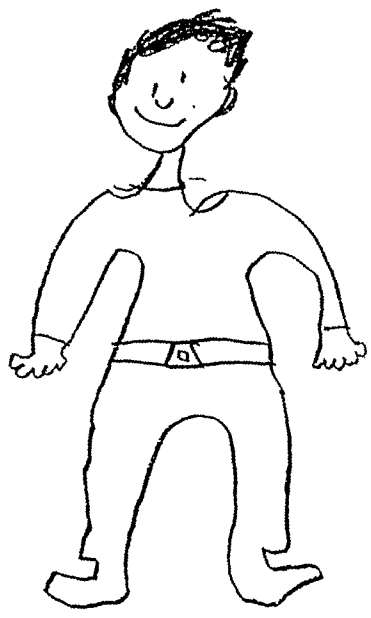


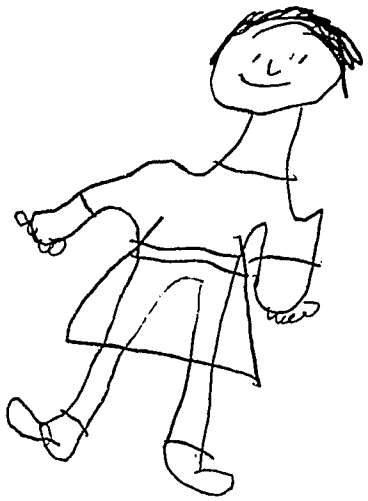


Non-Surgical Subject: TR

Gender: Boy

Age at Testing: 8 years, 11 months

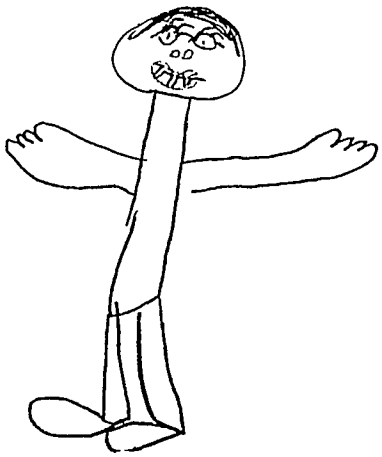




Non-Surgical Subject: JB

Gender: Boy

Age at Testing: 8 years, 11 months



Non-Surgical Subject: AS

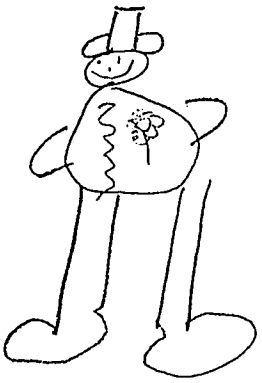
Gender: Boy

Age at Testing: 8 years, 6 months

Non-Surgical Subject: DT

Gender: Boy

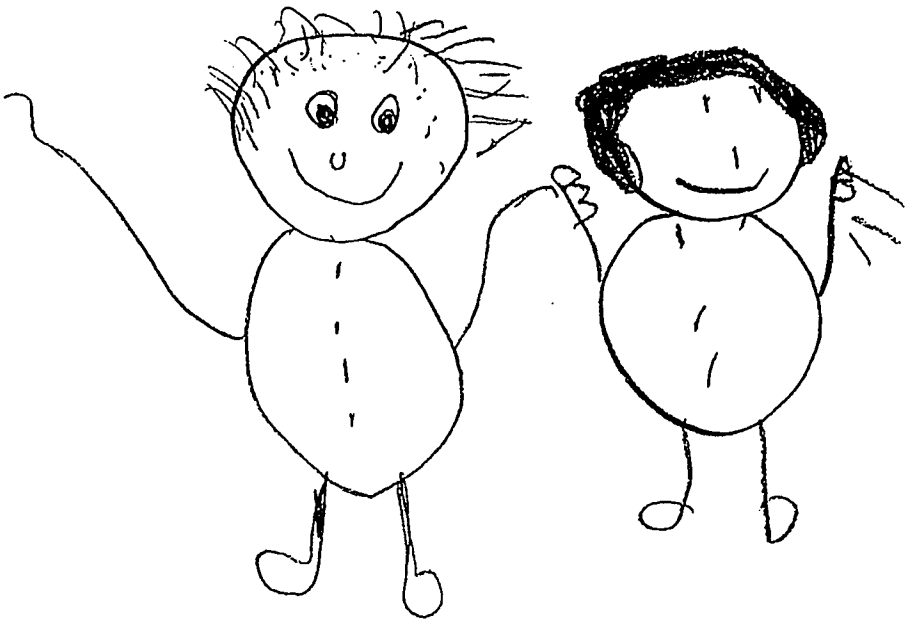
Age at Testing: 7 years, 11 months

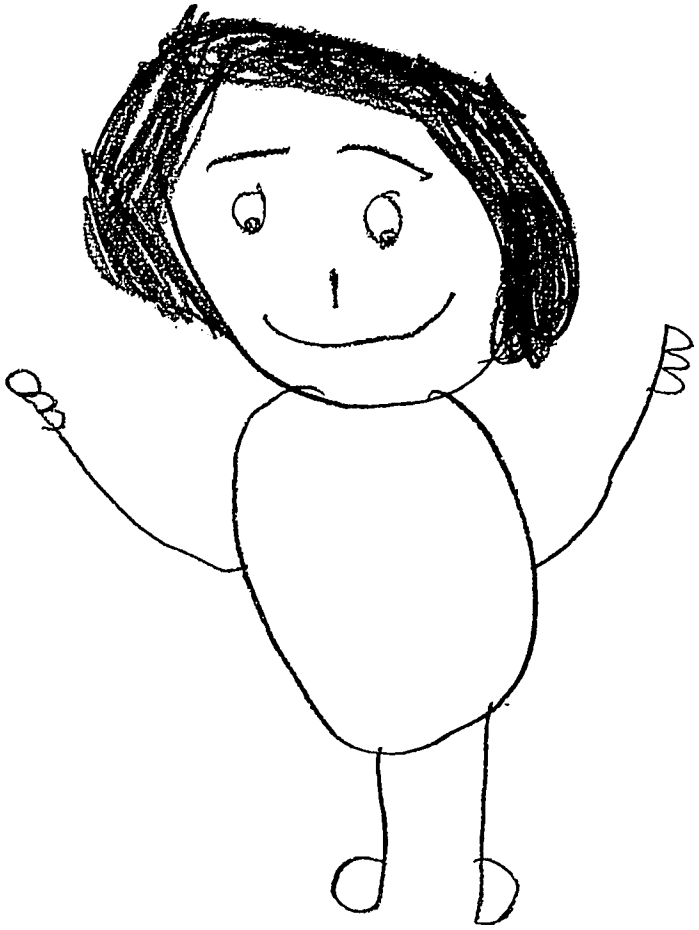


Non-Surgical Subject: TV

Gender: Boy

Age at Testing: 7 years, 9 months

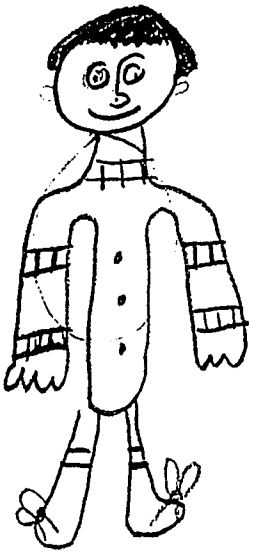


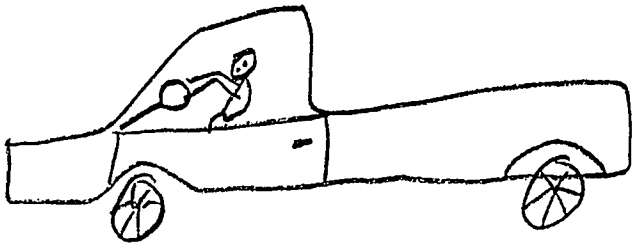


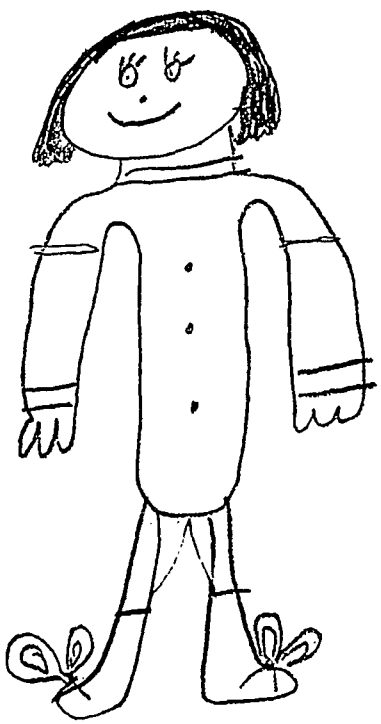
Non-Surgical Subject: BK

Gender: Boy

Age at Testing: 7 years, 6 months



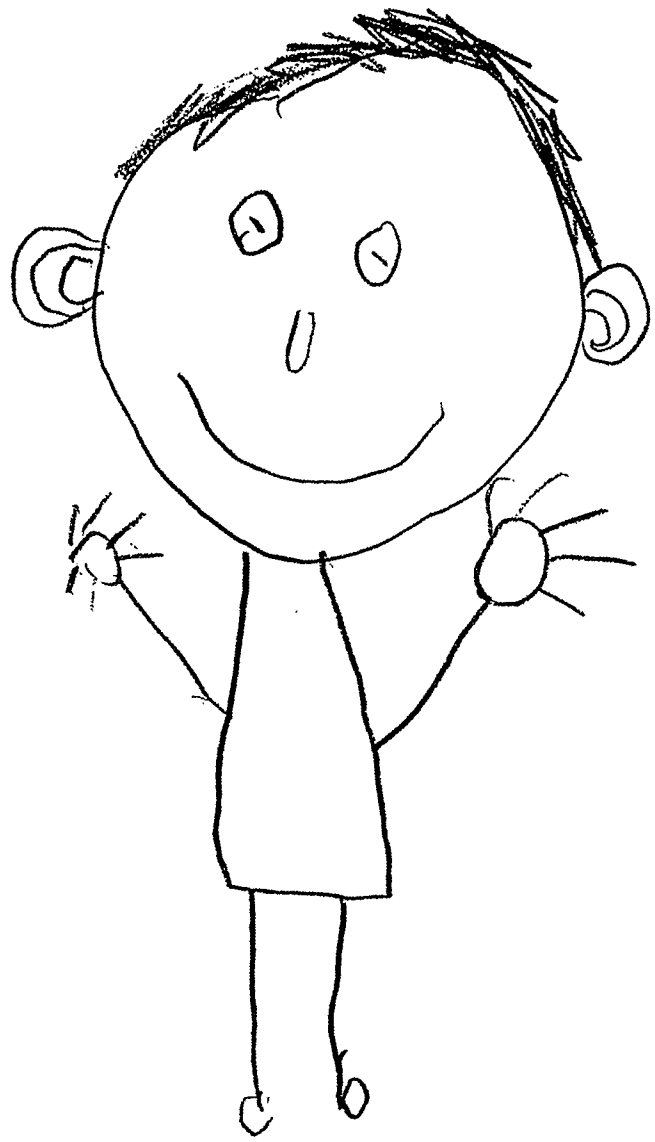




Non-Surgical Subject: AG

Gender: Boy

Age at Testing: 7 years, 10 months



Non-Surgical Subject: JM

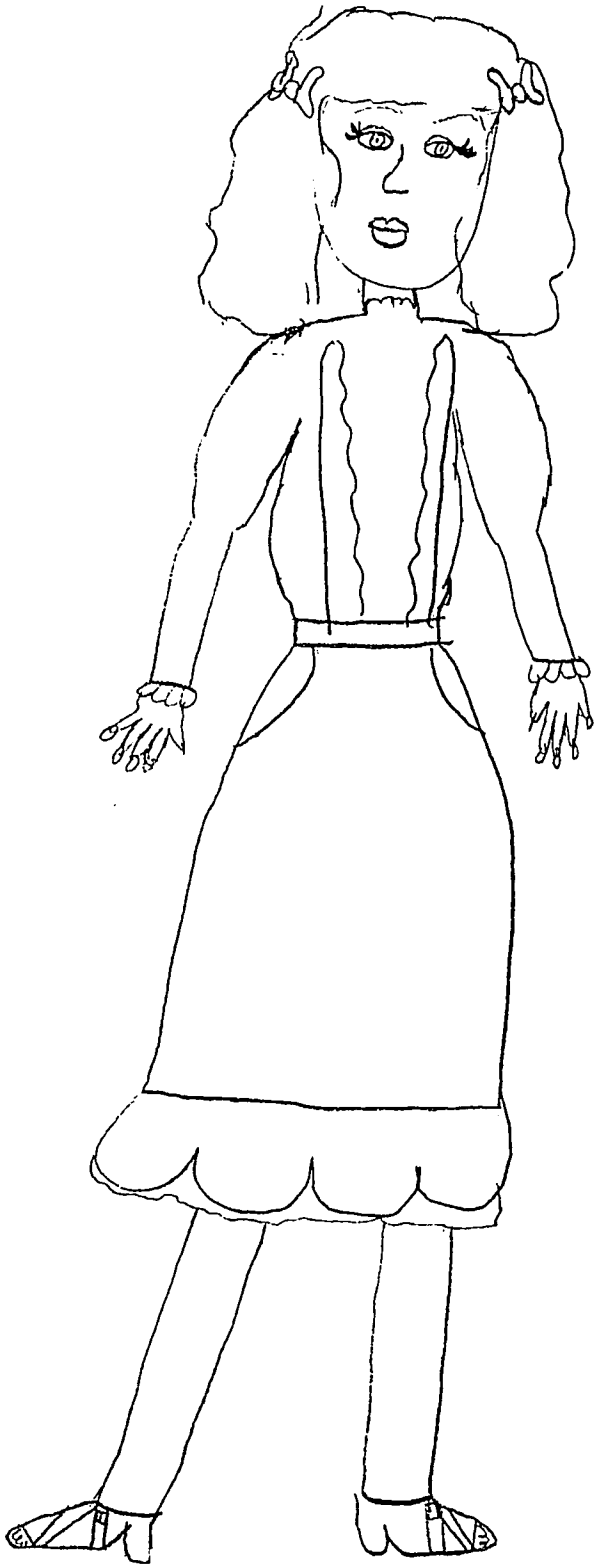
Gender: Boy

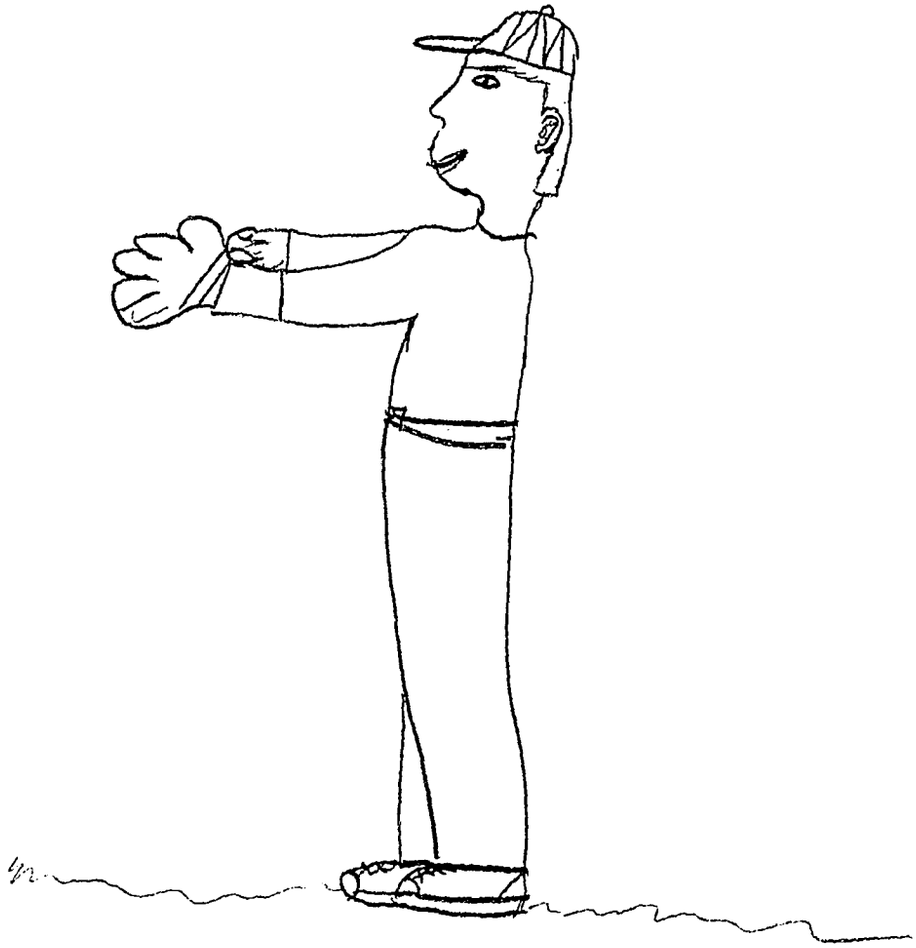
Age at Testing: 6 years, 8 months

Non-Surgical Subject: AL

Gender: Girl

Age at Testing: 10 years

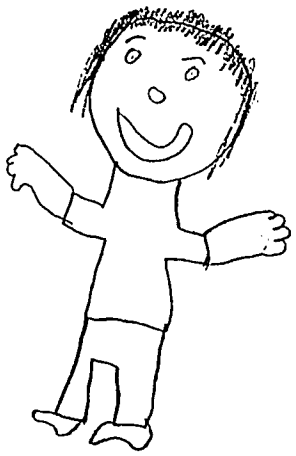


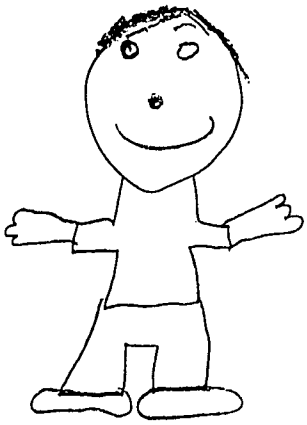


Non-Surgical Subject: TV

Gender: Girl

Age at Testing: 9 years, 11 months

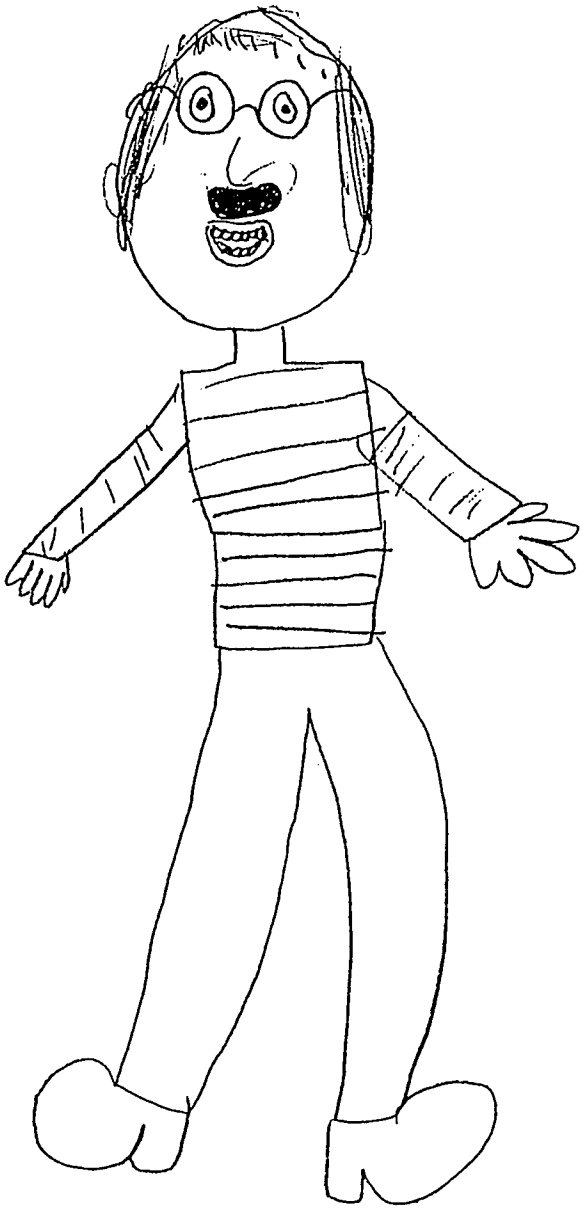




Non-Surgical Subject: AT

Gender: Girl

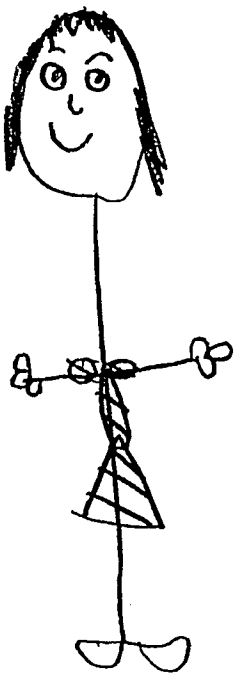
Age at Testing: 8 years, 11 months

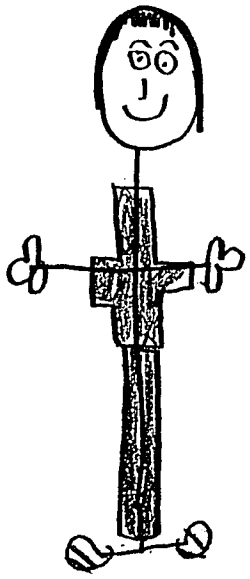


Non-Surgical Subject: BK

Gender: Girl

Age at Testing: 8 years, 4 months





Non-Surgical Subject: AA

Gender: Girl

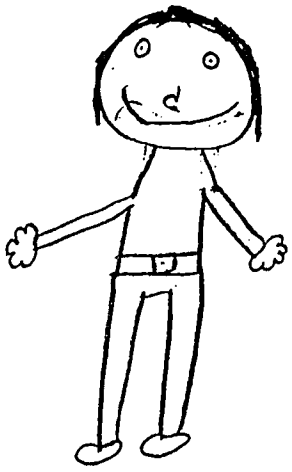
Age at Testing: 8 years, 3 months


14

Non-Surgical Subject: K Di F

Gender: Girl

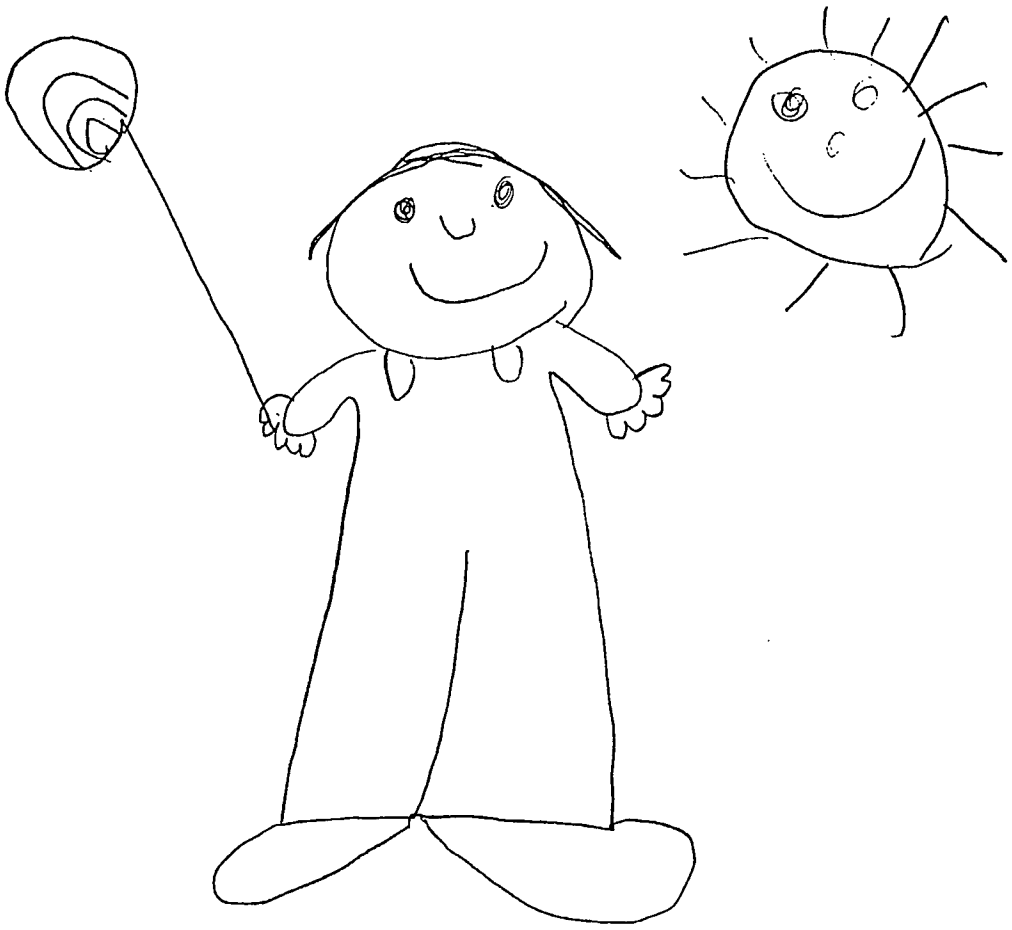
Age at Testing: 8 years, 3 months



Non-Surgical Subject: KH

Gender: Girl

Age at Testing: 5 years, 7 months



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