FACTORS CONTRIBUTING TO THE ADJUSTMENT OF SIBLINGS OF SCHIZOPHRENICS

by

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Abstract

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by

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This study, an outgrowth of family-oriented high risk research, provided information about the invulnerable individual: the person who grows up healthy and normal within a disorganized and pathological environment. It focused on the nonpsychotic sibling of the schizophrenic and identified developmental, environmental and demographic factors which contribute to his current level of psychological adjustment. The hypotheses explored (1) behavioral consistency over time; (2) the psychological implications for the sibling of being exposed to varying degrees and types of family psychopathology for varying lengths of time; and (3) the relationship between organicity in the schizophrenic and the adjustment of his sibling.

The data were collected 12 years ago at Hillside Hospital. This study concentrated primarily on 58 siblings of 46 schizophrenic patients, a subsample of the subjects in the original investigation. The siblings had been diagnosed

and independently rated as to level of adjustment. Life history information about the patients and siblings had been obtained by means of a detailed developmental questionnaire covering birth through adolescence.

The developmental data were factor analyzed. Representative variables from each factor were then selected for the subsample of nonpsychotic siblings, and their intercorrelations from one age range to another and with the current adjustment rating were examined.

The Consistency hypothesis was partially confirmed. The variables describing anxious and dependent behavior, including separation problems, and the variables describing school performance and attitude tended to best support the hypothesis. They showed a moderate to high degree of stability over time and achieved nominal significance when correlated with the current adjustment rating. The social variables, which focused on an ability to form and sustain friendships and peer relationships, showed little evidence of consistency over time. Ratings on the hyperactivity, unmanageability, and disobedience variables and on the asthma and allergies variables showed a moderate to high degree of consistency from early childhood through adolescence, but showed no significant relationship to current level of adjustment.

The schizophrenic individuals were included in post hoc

analyses of the data. A multiple discriminant analysis revealed that the Social factor strongly discriminated the schizophrenics from their nonschizophrenic siblings. The adjustment ratings of the nonpsychotic siblings were seen to be positively correlated with their scores on the Anxiety and Dependency factor and on the School factor; that is, good current adjustment was associated with lack of symptoms and/or earlier signs of good functioning in these areas. When the scores of the schizophrenics were combined with those of the former group, the Social factor emerged as much more strongly associated with the adjustment measure.

Those variables which are associated with better adjustment appear to indicate the presence of various forms of competence and ego maturity, not merely the absence of problems and symptoms. The behaviors expressed by the Hyperactivity factor and the Health factor appear to be related to temperament and/or to have some physical basis. While they may be highly stable for a considerable length of time, they appear to have little long range mental health implication.

For Hypothesis 2, two of the seven measures of sibling exposure to family psychopathology were positively correlated with level of current adjustment. Specifically, the greater the number of psychiatrically impaired family members, the more likely the sibling was to show signs of maladjustment

himself. Also, when both parents had psychiatric histories, the sibling tended to be rated as emotionally disturbed.

Siblings of schizophrenic patients who showed no evidence of neurological dysfunction were compared to siblings of patients with some organic impairment. An inverse relationship between neurological impairment in the schizophrenic and signs of psychopathology in his family was not demonstrated; Hypothesis 3 was not confirmed.

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CHAPTER I

INTRODUCTION

As a psychology intern at Hillside Hospital assigned to an inpatient unit for older adolescents, I participated several mornings a week in a patient-staff conference. At the beginning of each meeting, the nursing report was read aloud, including a descriptive account of the problems and symptoms of particular patients: Joe had started a fight in class; John refused to take his medication; Sue had not dressed herself or spoken to anyone all day; Mary believed that someone was stealing her clothes. This went on for months. Except that one morning, an adolescent--clearly distressed by what she had been hearing--made an astute comment: "You people never see anything good that goes on around here!"

I suppose I still remember this anecdote because her simple remark was for me an expression of a much larger issue and of what I feel to be one of the serious limitations or failings of clinical psychology and psychiatry at the present time: the emphasis on pathology and maladjustment, inadequacy and failure. Garmezy (1975) noted that Lois Murphy recognized in 1962 that the studies of childhood constituted a huge "problem" literature. Murphy believed too that clinical predictions tend to be too pessimistic because people do far

better as adults than is often anticipated. Still, as students of psychopathology, we are basically trained to look for and to expect the worst, and we readily confuse diagnosis with prognosis. Just as we are never surprised to learn that the parent of a psychotic youngster had once himself or herself been diagnosed as schizophrenic or that his or her sibling also shows signs of serious emotional disturbance, we always wonder whether (or when) the child of a schizophrenic individual will similarly break down. We tend to assume that there is an underlying dormant schizophrenic process which will eventually burst forth.

The literature on schizophrenia, including the recent research on individuals at risk for this syndrome, generally suffers from the same negative bias of which Murphy spoke. Struggling to understand the etiology of one of the most prevalent and serious mental disorders, estimated to affect one to three percent of the total population of the United States (Curran, 1976), this type of researcher selects a high risk group because he expects that the children and adolescents in such a sample are more "vulnerable," that is, that they have a greater likelihood of becoming schizophrenic than do individuals who are randomly selected from the general population. In this regard, it makes no difference whether he adheres primarily to a genetic, psychogenic, sociogenic or any other model of schizophrenia. The focus is on "producing" a greater number of cases for study and

thus on the manifestations of pathological behavior in the group.

Just as Murphy saw a need to study the positive ways that all children deal with life's challenges as part of normal development (hence her emphasis on coping efforts and the underlying "drive toward mastery"), a cry is being sounded by some of those familiar with or actively involved in risk research with schizophrenics and their families. That is, they are recognizing the need to study the "invulnerable" individual: the person who grows up healthy and normal within a disorganized and pathological environment; who displays strength, competence and good adjustment in the face of disadvantage (Anthony [cited in Scarf, 1972, in Flaste, 1977]; Bleuler, 1974; Garmezy, 1971, 1973, 1974b; Gunderson, Autry & Mosher, 1974; Heston, 1966; Shakow, 1972, 1973).

Garmezy in particular has become increasingly dedicated to studying invulnerables. Realizing that current psychological theory is unable to account for the phenomenon of invulnerability, he has expressed a need for a science of developmental psychopathology (cited in Pines, 1975). In addition, he has concluded (1971) that only when researchers focus their efforts on those youngsters who cope exceptionally well, and only when they can understand the sources of their strengths and the forces that enable them to adapt, will

it be possible to construct effective models of primary prevention designed to reduce the incidence of mental disorder. With this end in mind, Garmezy has moved from the study of schizophrenia into child development research, specifically the indepth study of competent children from slum backgrounds.

Given the emphasis on pathology that pervades the field, however, it is most frequently the case that the invulnerable family member is at best referred to in the literature only in passing. Empirical studies of schizophrenia which use the healthy sibling often use him just as a control subject. Theoretical discussions derived from the treatment of families of schizophrenics similarly tend to neglect the healthy members or make but a minimal effort to explain how they have survived amidst the rampant pathology that is depicted. Comments about invulnerable individuals are frequently presented as asides or afterthoughts. For example, after explaining that their psychiatric investigation was typical in its lack of concern with "the delineation of degrees of normal psychological health," Heston and Denney (1968) noticed "only in retrospect" that within their experimental (risk) group certain subjects not only exhibited no significant impairment but were actually more spontaneous, imaginative and creative than the control group (p. 371). Other researchers have alluded to similar findings (Anthony, 1972; Mednick and Schulsinger, 1968). On the basis of such observations Anthony was led to speculate that it might even be

possible to differentiate two groups of invulnerable persons: (1) a larger group who grow up normal and function adequately despite genetic, environmental or psychological disadvantage; and (2) a smaller subgroup of superior individuals whose "response to the terrible challenges life offered them has been not only adequate; it has been extraordinary" (cited in Scarf, 1972).

At this stage, however, this is all mere conjecture. And it is in response to this clearly-expressed need for more real information, more hard data about the siblings of schizophrenics, that the present study was designed. A more general review of the literature will clarify further how very much work needs to be done in this area.

CHAPTER II

CURRENT APPROACHES TO THE STUDY OF CHILDHOOD AND FAMILY PSYCHOPATHOLOGY

Toward the end of his exhaustive two part monograph on children at risk, Garmezy (1974b) explained that the review had basically dealt with failures of adaptation because "this is our literature" (p. 108). The situation has not changed appreciably since that time. As the present study focuses on "the sibling"--that is, on the healthy individual in a stressful setting--this review will attempt to do the same. In so doing, the limitations and deficiencies of this literature will be strikingly apparent.

The review has a dual objective. Its first aim is the more general: to present a conceptual framework, a context within which the design and assumptions of the study may be understood and seen to be relevant. Second, it will summarize and discuss the findings and speculations of researchers and clinicians about the sibling in a pathogenic family. While it may be useful on occasion to abstract or generalize from related material, to conjecture about invulnerable siblings on the basis of the abundant literature on schizophrenic and preschizophrenic individuals, the emphasis here will be on specific characteristics and traits which have been used to

describe the nonschizophrenic group, and the mechanisms proposed to explain their resistance to stress.

General Issues

In order to label a person as invulnerable, it is first necessary to understand how populations come to be defined as vulnerable or at risk. In addition, the issue of behavioral stability is directly pertinent to life history and risk research.

Psychiatric Status of Parents

When the genetic model is used to define risk, the starting point is a severely disordered parent; it is assumed that there is a heightened probability of subsequent disorder in the biological offspring. In its "purest" form, the criterion for this model is very stringent: the parent (most often the mother, occasionally both the mother and father) must be unequivocally diagnosed schizophrenic (e.g., Anthony, 1969; Bleuler, 1974; Erlenmeyer-Kimling, 1968; Heston and Denney, 1968; Mednick and Schulsinger, 1968, 1970). Given that this model has often been the basis for research on the etiology of schizophrenia and that these studies have frequently been directed by genetic theorists who stressed the role of biological factors in the transmission of this disorder, such specificity with regard to parental psychiatric status was appropriate. The anticipated

incidence rate for schizophrenic disorder in the offspring increases from one percent to ten percent when one parent is schizophrenic and approximates 35-45% when both parents are so diagnosed (Rosenthal, 1970). Children of such parents certainly comprise a high risk group.

As more data have been collected, increased recognition has been given to the importance of environmental factors in the development of schizophrenia. A once rigid heredity-environment dichotomy has given rise to a diathesis-stress model: an inherited, biological predisposition to disorder is seen as potentiated by environmental events (Meehl, 1962).* In addition, more attention has been paid to studies which define risk by parental diagnosis by researchers interested in family relationships and mother-child interaction. It has also become increasingly clear that it is often difficult to separate out the effects produced by genetic and environmental disadvantage, even in those cases in which the mother <u>is</u> manifestly schizophrenic. In order to partial out the characteristics specific for schizophrenia from those that may be present in any serious

*In formulating his theory of neurosis, Freud (1917/1963) recognized the importance of both constitutional and experiential factors. He spoke of a <u>complemental series</u> within which people were seen to have varying amounts of both predisposition to disorder and detrimental life experience, and speculated that--except at the extreme ends of the continuum--the two factors interacted to cause neurosis.

mental disorder, and which may be the result of atypical childrearing practices, researchers began to use more diverse control groups, to include nonschizophrenic psychiatric patients in their research designs (Pollack, Woerner, Goldberg & Klein, 1968, 1969; Sameroff and Zax, 1973; Stabenau, Tupin, Werner & Pollin, 1965; Weintraub, Neale and Liebert, 1975; Woerner, Pollack & Klein, 1971, 1973). The overall effect has been that children of neurotic depressives and personality disorders are being studied along with offspring of normal and variously psychotic mothers. Such a shift may in effect be considered as representing a relaxation or modification of the psychiatric diagnostic criterion of risk. The need for a broader definition of individuals at risk has also been explicitly stated (Mosher and Gunderson, 1973). Indicating that approximately 90% of adult schizophrenics do not have a schizophrenic parent, these authors suggested that researchers must focus too on non-genetically defined vulnerable groups.

Garmezy (1974a) reviewed longitudinal prospective studies of children of mentally ill parents and concluded that, in general, children of neurotic parents show an increased incidence of neurotic behavior but rarely exhibit severely psychotic symptomatology; children of psychotic parents show a wider range of emotional disorder. For purposes of the proposed study with its focus on invulnerability

in the face of pathology and disorder, the specific outcomes are less important than the fact that there is substantial evidence that when parents have a diagnosable psychiatric condition, including but not restricted to schizophrenia, their children are more prone to some form of psychopathology.

Cowie (1961) found that children whose parents had developed an affective psychosis early in life were more disturbed than were those whose parents had become ill with the same disorder late in life. A genetic theory was proposed to explain these findings. However, an equally plausible explanation is that consistent interaction with a disturbed parent over time is pathogenic, that is, that such prolonged exposure constitutes a high risk situation for all of the offspring.

Risk Defined by Family Attributes

An alternate strategy for selecting children at risk is the psychogenic model. This model stresses psychological influences, although it does not necessarily exclude genetic factors. One general type of study of this kind uses as its subjects children or adolescents who already show serious emotional difficulties. It is assumed that these youngsters will contribute substantially to the future pool of adult psychopathology, including schizophrenia. The follow-up studies of Robins (1966) and Shea (1972) fall into this category. An ongoing longitudinal research project at UCLA is

similarly focusing on symptom configurations in disturbed adolescents, empirically defining and then contrasting four such groups, two of which have tentatively been selected as high risk (Goldstein and Rodnick, 1975).

The UCLA Project is also in the tradition of those investigators who have focused on family treatment and family studies of schizophrenics, who view the family as a social system in which disordered communication and faulty relationships between individual members are the major factors which are likely to potentiate severe psychopathology in the child. Concepts such as the double bind (Bateson, 1960), pseudomutuality (Wynne, 1970), and marital schism and marital skew (Lidz, 1969; Lidz, Cornelison, Fleck & Terry, 1957), familiar in family therapy literature, are used to define and describe family situations of increased risk. The concept of parental communication deviances (or transactional style deviances) put forth by Wynne and Singer has proven to be particularly relevant and useful in carrying out research. Recent empirical studies strongly suggest that such parental deviances are a far more subtle yet consistent indicator of schizophrenic symptomatology in the offspring than is parental psychopathology as it is usually defined, i.e., by psychiatric symptoms and traditional psychiatric diagnostic categories. These transactional style deviances, classified along an amorphous-fragmented continuum, are exemplified on one hand by shifts in the object

of attention, blurring of meaning and irrelevant meanings, which cause vague drifting of a discussion and, on the other hand, by modes of communication which are cryptic, use odd spatial and temporal vantage points and include the intrusion of primary process material. Because the parent's way of communicating is so markedly disturbed, the child's ability to learn the language and to maintain the attention so essential for coherent expression of ideas is impaired (Wynne & Singer, 1963).

Using Rorschach evaluation procedures which he and Singer systematized in order to identify communication deviances, Wynne (1972) studied the parents of schizophrenic patients, neurotics and normals. His results showed that the parents of schizophrenics consistently had a frequency of communication deviances above the total group median whereas the other two groups had scores below this median with practically no overlap present. Also, although none of the total of 48 parents of 24 schizophrenic offspring was diagnosed as more severely disturbed than neurotic, all of these parents had high communication deviance scores. Their scores were in fact higher than those of their children, although the latter group presented more clinical signs of disturbance.

In a similar study (reported by Gunderson et al., 1974), Wynne and Singer administered Rorschach tests to 25 pairs of

parents from an earlier adoptive study conducted by Wender, Rosenthal and Kety (1968). Wender et al. had concluded that the biological parents of schizophrenics were significantly more disturbed than the adoptive parents of schizophrenics, and that the least disturbed group was a matched control group of adoptive parents of normal siblings. In examining the Rorschach protocols for evidence of communication deviance, however, Wynne and Singer were not only able to predict with 100 percent accuracy which parents had schizophrenic children, but they found as well that adoptive parents of schizophrenics had the most deviant communication, followed in order by the biological parents of schizophrenics and the adoptive parents of normals. They concluded that deviant communication in the parents is specific to the occurrence of schizophrenia in the offspring. Their findings certainly suggest that the presence of parental communication disorder marks the children as at risk.

Recent reviews and summaries of direct observational studies of families of schizophrenics (Jacob, 1975; Goldstein and Rodnick, 1975) cited numerous studies which have attempted to evaluate the quality of communication in these families. The data generally suggest that schizophrenic families communicate with less clarity and accuracy than do normal families.

There is also research to support the position of Wynne

and Singer that the level or severity of parental psychopathology per se, including overt manifestations of psychosis and other traditional symptomatology, is not the best--or even an especially good--predictor of schizophrenia in the offspring (Rutter, 1966; Fischer, 1971; Bleuler, 1974). Perhaps the most accurate summary statement that can be made at this time is that parental communication difficulties and parental psychopathology appear to make independent contributions to the pathogenesis of schizophrenia.

It has been argued that the observed communication deviance may only be a response to the presence of the schizophrenic offspring, that it may not predate the offspring's symptomatology (Gunderson et al., 1974; Liem, 1976). On the basis of some very recent work at UCLA (Jones, 1974), however, some researchers have ruled out the hypothesis that family transactional style deviances are solely reactions to psychosis in the offspring (Goldstein and Rodnick, 1975). In the Jones study, parents with deviant transactional styles were identified by means of TAT responses but, although their adolescent male offspring were emotionally disturbed, no children were as yet schizophrenic.

It has also been argued that the very disturbed atmosphere of the families of many schizophrenic children can always be explained by the destructive impact of these highly disturbed youngsters. The findings of Goldfarb's extensive

research on childhood schizophrenia (1961) contradict this notion. In his investigation, Goldfarb attempted to measure as objectively as possible (1) the degree of organicity or brain damage in schizophrenic children, and (2) the degree of "family adequacy," as assessed by participant observation of family interaction rated on a 7-point scale. Comparison of the two resulting scales revealed an inverse relationship between family pathology and degree of neurological impairment in schizophrenic children: the organic schizophrenic child was more likely to belong to a family that was more psychologically intact than the family of a non-organic schizophrenic child. Thus, the data suggest that psychosocial or interpersonal factors, the family itself, might be the major source of the deviance in the non-organic child. If the reverse were true, that is, if the child's disturbance inevitably caused a "breakdown" in the family, both groups should show relatively equal family adequacy scores or the families of the organic youngsters, the children with the lower adaptive capacity, should demonstrate the least family adequacy or the most psychopathology.

Goldfarb's original finding that the mothers of schizophrenic children with neurological difficulties were far less seriously disturbed than the mothers of non-organic childhood schizophrenics was not confirmed when he expanded his study to include a larger sample of children and parents (Meyers

and Goldfarb, 1962). However, in her study of deviant thinking in parents of schizophrenics, in which parental "deviance scores" were obtained from Rorschach responses scored as by Wynne and Singer, Golden's (1974) findings strongly supported the existence of two distinct groups, comparable to those originally noted by Goldfarb. The low-deviant parent group showed little or no deviant thinking and their schizophrenic offspring showed a great deal of neurological impairment. The much larger high-deviant group showed evidence of subtle cognitive and interpersonal difficulties; their children showed little neurological symptomatology.

Campion and Tucker (1973) cited numerous studies which suggest that there is a group of schizophrenics who are neurologically impaired. On the basis of their twin studies, Pollin, Stabenau and Tupin (1965) have concluded that vulnerability to schizophrenia appears to result from a combination of organic and psychological factors. For purposes of the proposed study, however, the effect of any organic dysfunction on or within the larger family system is more to the point. In this regard, the findings of Goldfarb have raised the question of a relationship between the degree of neurological impairment in a disturbed child and the degree of psychopathology or mental health of his parents. Taken further, a related question remains: How, if at all, is the presence in one child of (1) schizophrenia or (2) schizo-

phrenia plus organic dysfunction related to his sibling's degree of vulnerability to emotional disturbance? In reference to the first situation, Wynne (1969) hypothesized that when one offspring in a family develops schizophrenia, siblings, especially younger ones, can be regarded as at high risk. But the studies cited by Alanen (1966) showed mixed results; this finding has not been confirmed in all investigations. One tentative finding is pertinent to the second part of the question: Meyers and Goldfarb (1962) found that the siblings of their organic subgroup of schizophrenic children achieved a higher mean adjustment rating than the siblings of the non-organic subgroup. Because the incidence of diagnosed schizophrenia in the siblings was so small, the authors felt that no definite conclusions could be drawn without further study.

Consistency of Behavior over Time

It is not the intention of this review to summarize and discuss all of the studies of behavioral continuity and of prediction of mental health and illness from earlier behavior which have been done. The issue of behavioral stability, which has long concerned developmental psychologists, is now seen to be a crucial factor in risk research. In light of this, some of the assumptions and conclusions drawn by previous researchers which pertain most directly to the focus and hypotheses of the present study will be cited

briefly.

Pointing out that there has always been an explicit assumption that certain adult motives, attitudes and behaviors are established in childhood and are likely to remain a permanent part of the individual, Kagan and Moss (1962) set out to discover what these stable responses or behaviors are and to identify the developmental periods during which they become manifest. They found developmental consistency for a number of traits (e.g., passivity and dependency; aggression; achievement and recognition; sexuality and social interaction), although the results were not uniformly striking for all traits at all times or in both sexes.

Kagan and Moss also noted the emergence of derivative behaviors: behaviors which have been transformed in the course of development and which ultimately substitute for the early childhood responses to which they are related. However, proceeding along traditional lines, they looked at basically the same specific behaviors over time.

Departing from this framework, Livson and Peskin (1967) sought to predict adult psychological health through an evaluation of the collective predictive power of clusters of behavioral measures obtained during an age span of 5 - 16 years. They found that only one developmental period (ages 11, 12, 13) had significant multiple correlations with adult

health.

It seems safe to conclude at this point that many behaviors do show stability over time (Garmezy, 1974). In the area of temperament, traits appear to be highly stable from the beginning. That is, each child appears to have a genetically-linked individual style of response to stimuli (e.g., active-passive; introverted-extroverted) which may be identified in early infancy and which persists through later periods of life (Kohlberg, LaCrosse & Ricks, 1972; Thomas, Chess, Birch, Hertzig & Korn, 1963). For many other traits or responses, one is more likely to find consistency over time if the behavior is measured in later childhood or early adulthood (Block, 1971). Following an exhaustive review of prediction studies, Kohlberg et al. (1972) concluded that one is more likely to accurately predict a "healthy" outcome than a "sick" one, and that the best predictors of the absence of adult psychopathology and maladjustment are the presence of various forms of competence and ego maturity, not the absence of problems and symptoms as such. Children who have attained an adequate level on a trait of direct adaptational significance seldom backslide and lose what they have gained, although children who are at a low level on such traits may well move in a positive direction as they mature. Generally speaking, traits of ego weakness, such as poor cognitive development and intellectual failure, and

poor social adaptation at home and in school, are more prognostic negative traits of children than are individual symptoms (i.e., withdrawal, shyness, irritability).

Sibling Studies: Specific Findings

Relatively little attention has been paid to the non-psychotic child or children in the family in which one or more offspring are diagnosed schizophrenic, even in those formulations of schizophrenia which focus on patterns of family interaction. Some researchers have addressed themselves to the question of why--if the family milieu exerts such a deadly pathogenic influence on one child--all of the children are not seriously affected, only to conclude that the problem is not as great as it seemed at first because in fact so many of the siblings are severely disturbed. Lidz, Fleck, Alanen & Cornelison (1963) stated: "Any intent to compare the development of the schizophrenic patient with that of 'normal' siblings had to be modified greatly for the simple but incontrovertible reason that only a small minority of the siblings could be considered reasonably well adjusted" (p. 2); 18 out of their sample of 24 siblings were felt to demonstrate serious emotional problems. Beyond this, marked personality constriction and/or flight from the family were noted to be strikingly characteristic of these siblings, particularly of the ones who had made reasonably good adjust-

ments (Lidz and Fleck, 1960; Lidz et al., 1963; Lidz, Fleck & Cornelison, 1965). Alanen (1966) similarly reported that the siblings of schizophrenic patients whom he studied were frequently borderline psychotic or psychopathic. He concluded that even "the healthiest siblings, who still fell within the bounds of the 'normal,' had also been 'infected'--judging from psychological tests at least--by some degree of latent schizoform elements" (p. 441). This conclusion is reminiscent of Meehl's (1962) concept of schizotaxia. Likewise, Bateson's distinction between overt and covert schizophrenia has been interpreted to mean that all of the children in these families "really" are schizophrenic (Mishler and Waxler, 1968).

As was pointed out earlier, other researchers have come upon evidence, albeit often by chance, which is at odds with such a dismal picture and which suggests that a significant number of truly invulnerable siblings do exist. In addition, there have been a few important studies which have specifically focused on the nonschizophrenic sibling (either exclusively or in comparison with the designated patient). These studies have further challenged the conclusion of pervasive psychopathology in the offspring and have suggested important ways in which the siblings may differ, as well as possible reasons for these differences. As the emphasis in the present study is on the nonpsychotic sibling, the main

findings of this research will be presented in terms of this sibling, in terms of its implication for healthy development.

In a study designed to explore the problem of why one child in a family develops schizophrenia while another does not, Lu (1961) intensively interviewed fifty chronic schizophrenic patients and their nonschizophrenic siblings and found evidence that the patients and siblings could be differentiated on the basis of their respective relationships with their mother. Specifically, the nonschizophrenic sibling--unlike the patient--was not emotionally entangled with his mother; he was not especially sensitive to her expectations, wishes and feelings, or was able to disregard them, and he did not have especially strong feelings, either positive or negative, toward her. Even as a child, he spent a fair amount of time cutside of the home, had many friends with whom he regularly interacted and had strong ties with other people both within and outside of the family. He was characterized as more assertive, aggressive and independent than the patient who, in contrast, was dominated and overprotected by the mother on whom he was very dependent. The author speculated that as an infant the schizophrenic patient may have been selected by the mother for special attention because he was in some way unusual, sick, more excitable or more prone to cry, or because the mother was undergoing severe personal difficulty during this time. The data further indi-

cated that in adolescence the patient began to experience great conflict over the issue of dependence and independence in relation to the mother. The siblings were able to avoid serious conflict at that stage by (1) participating in more activities that kept them out of the house, such as dates, clubs, friends; (2) going to school or working some distance from home; (3) marrying early, in some cases; (4) ignoring the mother's domination, if unable to leave home physically. As he had already been exposed since childhood to a wider range of experiences, he was more flexible and better able to adapt to new situations and to integrate different role patterns so as to achieve a unified sense of self.

Stabenau, Pollin and their co-workers have done many family studies with identical twins discordant for schizophrenia as a result of which they have proposed a theory of vulnerability to severe psychopathology which is based on an interaction of constitutional and psychological factors (Mosher, Pollin & Stabenau, 1971; Stabenau & Pollin, 1970; Pollin, Stabenau & Tupin, 1965). They have consistently found a pattern of life history differences which distinguish the schizophrenic patient from the nonschizophrenic co-twin. The former twin has been found to be biologically less competent than his co-twin from the start (i.e., often to weigh less at birth, to show more neonatal difficulties). The caretaker, usually the mother, perceived this infant as more vulnerable, less apt to survive, and thus as more in

need of her, and so he became the focus and recipient of most of her worry, attention and involvement. While on one hand the smaller twin did manifest some real need, the clinical evidence strongly suggests that this situation basically occurred because the mother attributed to one of the twins certain aspects of herself about which she was in conflict and which she was unable to tolerate. This process of projective identification and the pattern which developed as a result of it is felt by the authors to be a major factor in determining early on which twin will be less psychologically healthy as an adult. Their data show that as the vulnerable twin develops, he tends to perform less adequately and to be seen as the less competent, capable and strong sibling. By comparison, the nonschizophrenic twin is described throughout the course of his development as more independent and separate, and as capable of engaging in rebellious or conflictual behaviors, such as acting out or arguing with a parent. He tends to do better in school, to display additional creative talents, and to have more and more meaningful friendships outside of the family, which he is able to initiate. With his co-twin, he plays the leader role and makes decisions for both of them. As time goes on, the gap between them widens, with the nonschizophrenic twin characterized as developing the more effective and flexible coping mechanisms, as being the more differentiated and autonomous, and as having

the more positive self-image and the stronger ego.

The similarities between these findings and those of Lu (1961), as far as maternal involvement and individual sibling traits are concerned, is apparent. Bowen's concept of the development of schizophrenia (1960) is also very similar to that put forth by Stabenau and his colleagues. Bowen noted too that, although he initially believed that all of the siblings were enmeshed in the family problem, he had come to feel that the process essentially involves only the mother, father and patient, that other siblings are always able to withdraw in some way from the conflict. Meissner (1970) similarly concluded that a child can escape the pathogenic influences in his family if the involvement of one or more of his siblings has sufficiently stabilized the family system. Prout and White (1956) also characterized the nonschizophrenic sibling as able to stand on his own two feet, compared to the passive and dependent patient.

Relatively recent work by Mosher, Pollin and Stabenau (1971) was described as an attempt to clarify the relationships among four variables in the families being studied: (1) psychopathology; (2) identification; (3) thinking and cognitive style; and (4) dominance-submissiveness. Clinical ratings of each variable, on a 7-point scale, were compared to independent objective test measures of similar variables, when such measures could be found. The MMPI Ego Strength

Scale (Barron) was selected as a measure of global psychological health and tended to validate clinical measures of psychopathology in the twins. The clinical findings of this study were in line with those previously reported, although they provided some additional underlying detail of the process by which the schizophrenic twin is differentiated from his co-twin. Focusing here on the healthier development, the nonpsychotic twin frequently appeared quite strongly identified with the healthier, clearer thinking parent. The authors felt that this identification may have served to protect him from severe psychopathology because he had a greater experience of cognitive clarity in comparison to the sibling who later became schizophrenic. On the other hand, although they did not usually develop a thought disorder, the nonschizophrenic twins reportedly did sometimes show restricted flexibility and creativity. It was not clear, however, to what data the authors were referring to support the latter statement.

Hoover and Franz (1972) attempted to answer the critical question of why one offspring in a family becomes schizophrenic while others do not by evaluating 30 schizophrenic patients and their 57 siblings along three dimensions: (1) degree of illness; (2) degree of functional impairment; and (3) degree of family entanglement. Following an interview, the two investigators independently rated each subject

on a 5-point scale for each variable. The degree of illness rating took into account such factors as anxiety, hostility, constriction, symptoms, and a clinical estimate of pathology. The functional impairment scale measured how effectively the subject performed on a job or at school as well as in social relationships. The nonschizophrenic siblings scored significantly lower on all three variables, with 86.8% showing the lowest levels of functional impairment and 58.8% demonstrating low levels of illness. According to the authors, these data strongly suggest that the siblings of schizophrenics are not very different from young people in the general population. Also, the degree of illness in individual siblings could not be related to exposure to family-wide pathology; there was great variation in degree of illness within families.

While most of the schizophrenic subjects showed high levels of family entanglement, a significant number of well siblings (33%) did too. Six patterns of sibling/family interaction could be identified. The largest group of siblings (51%) was embroiled in the family but were struggling to get free. Many of these siblings would be diagnosed as suffering from neuroses or character disorders. A second sibling cluster (19%) related well to other people, participated in a wide range of activities outside the home and maintained a substantial measure of autonomy and individuation

from the family. A third group (16%), on the other hand, isolated themselves from family entanglements, but achieved their noninvolvement at some cost to themselves in that they tended to form relationships slowly, to be underachievers, and to be aloof or even hostile people. The remaining 14% of the siblings either remained contentedly enmeshed within the pathogenic family (4%), showed a delinquent orientation (5%), or narrowly missed becoming schizophrenic themselves (5%). The authors considered these sibling groups to represent possible maneuvers for avoiding schizophrenia in a pathological family situation. Although such a specific conclusion may not yet be thoroughly justified, given the limitations of the study (Gunderson et al., 1974), the data do point out a direction for future research.

Addressing the same problem of how one sibling is "singled out" to develop schizophrenia, but taking a different approach from Lu (1961), Stabenau and his colleagues, and Hoover and Franz (1972), Waxler and Mishler (1971) attempted to test experimentally a commonly-held etiological theory: that the family interacts differently with the sick and well child. In a two-part experimental situation, two parents and their schizophrenic adolescent or young adult offspring discussed items on which they disagreed while their interactions were recorded for later analysis. The same procedure was repeated with the same parents and a well sibling

who was close in age to the patient. When the sessions which included the schizophrenic child were compared to sessions involving a control group of matched normal parents and their normal offspring, the patients' families showed more pathology on almost all measures of interaction. However, a direct comparison of the parents' interaction with the schizophrenic offspring to their interaction with the well sibling revealed no significant differences on any variable. The hypothesis in question thus received no positive empirical support. This finding is consistent with Sharan's (1966) conclusion of no difference in the degree of parental support given to the schizophrenic and well child.

CHAPTER III
AN OVERVIEW OF THE STUDY

Aim

The present study can be seen primarily as an outgrowth of family-oriented high risk research and, as noted earlier, as a response to an explicitly stated need for more information about invulnerable siblings. It has nothing to say about the causes of schizophrenia, nor does it make any attempt to shed light on or resolve the longstanding heredity-versus-environment controversy. Rather, by focusing on the siblings of schizophrenic persons instead of on the patients themselves, it makes an attempt to answer such questions as the following:

(1) Do the siblings of schizophrenics in fact fall into two or more distinct and identifiable subgroups, exhibiting noticeably different degrees of psychological health and adjustment?

(2) What characteristics and experiences do the individuals in these subgroups have in common which may have contributed to their relative levels of adjustment?

(3) How do the siblings compare to schizophrenic patients in terms of these factors?

The state of the literature necessitated that this investigation be descriptive and exploratory. It was hoped that by describing the siblings in as much detail as possible within the limitations of the study, it would be possible to generate some firm hypotheses pertinent to the most basic and difficult problem: how the well sibling has been able to escape his brother's fate and to avoid psychosis.

Design and Hypotheses

The study approached this topic and sought to answer the above questions from a developmental point of view, using retrospective life history information, demographic variables and diagnostic data which were analyzed statistically. Three hypotheses were derived from the literature reviewed above. Because what is known about the sibling of the schizophrenic on the basis of empirical research is scanty and inconsistent, the hypotheses were of necessity quite general.

Hypothesis 1: Nonschizophrenic siblings with signs of desirable early behavior will continue to show this high level of functioning, whereas those who do poorly from the start are likely to make a poor adjustment in adolescence and early adulthood.

This hypothesis grapples with the issue of behavioral consistency over time. It predicts that an individual's

level of adjustment is apparent early in life and that this level is maintained as he grows older and develops. Desirable behavior refers, in a positive sense, to indications of an ability to function effectively and competently in various situations (e.g., with friends, with family, in school, on one's own), as well as to absence of problems and symptoms.

Hypothesis 2: For the nonschizophrenic siblings, the longer that an individual is exposed to emotionally disturbed family members at home, and the greater the degree of family pathology, the more likely he is to show signs of maladjustment himself.

This hypothesis involves the issue of how risk may accurately be defined and, more specifically, the psychological implications for the sibling of living in a family which includes at least one severely disturbed member (i.e., his schizophrenic brother or sister).

Hypothesis 3: When the schizophrenic individual shows significant evidence of neurological impairment (which may actually be the basis of his illness), his nonschizophrenic siblings are less likely to show signs of psychological disorder.

Hypothesis 3 is an exception to Hypothesis 2. The issue of whether there is an inverse relationship between family pathology and organicity in the schizophrenic offspring is indirectly related here.

Data Analyzed

All of the data which were analyzed and examined in this study were collected over ten years ago by a team of investigators at Hillside Hospital. Their extensive research program entitled "Schizophrenics and Nonschizophrenics and their Siblings" centered on efforts to evaluate the role of early history factors on the course and outcome of schizophrenia (Pollack et al., 1968, 1969, 1970; Woerner et al., 1973). A great deal of the information that they gathered, however, was never analyzed; even more was never submitted for publication. It was the intention of the author to concentrate most of her efforts on that portion of the data which had remained virtually untouched. It should be realized too that the siblings of the schizophrenic patients (along with nonschizophrenic patients) were control subjects in the original research project. As these healthy (or nonhospitalized) siblings were the focus of the present investigation, and as different questions were being asked, it was apparent from the start that the statistical treatment of the data would be quite different from the ways in which the data were initially handled.

Limitations of the Study

Working with precollected data from a project not specifically geared to one's own hypotheses has obvious draw-

backs and limitations. In addition, the developmental information which was used is retrospective and therefore has other specific limitations which have been discussed at length in the literature (Garmezy, 1974a; Roff, 1970; Ricks, 1970). It has been pointed out, for example, that even normal mothers' recollections of the early years of their childrens' lives tend to be inaccurate, and that their lack of reliability is heightened when they are asked to recall events and behaviors associated with anxiety or otherwise negatively charged. The data which were examined in the present study were collected from mothers during the time that one child was hospitalized. Thus, not only was this an emotionally difficult period but it was also one during which differences between the sick and the well child would probably have been accentuated by the parent. The retrospective data must therefore be viewed as recollections or perceptions which are likely to be highly subjective, rather than as objective facts of development. Still and all, in view of the size of the sample, the thoroughness and scope of the original design, and the high level of competence of the researchers who initiated it, the advantages of reanalysis were felt to outweigh the limitations in the data.

CHAPTER IV

METHOD

Subjects

The subjects in the initial study consisted of a total of 127 patients admitted to Hillside Hospital from November 1, 1965 to October 31, 1966 and their 184 siblings. The present study focused primarily on 58 of the 64 siblings of the schizophrenic patients, a subsample of the original larger sample who met the criteria enumerated below.

Patients

Consecutive admissions to the hospital during the one year period were included in the original study if they (1) were between the ages of 15 and 35 inclusive; (2) had a biological sibling between the ages of 13 and 37; and (3) had a mother who had reared both the patient and his or her sibling and was available for interview at the hospital. All subjects were white, and their parents were predominantly in the middle socio-economic class. Of the 127 patients who met these criteria, 46 were diagnosed as schizophrenic, 68 as personality disorder, 7 as psychoneurotic, and 6 as affective disorder. The procedures for making these diagnoses are discussed below.

Siblings

The 184 siblings who were included in the original study were all of the full, biological siblings of the index patients who fell within the required age range. Interviews were conducted with 148 of these individuals. There were 64 siblings of schizophrenics, 104 siblings of personality disorder patients, 9 siblings of neurotics, and 7 siblings of patients with affective disorders.

Diagnostic Summary and Demographic Variables

Patient Diagnosis

Patients were interviewed jointly by a psychologist and a psychiatrist during the fourth week of their hospitalization; no psychotropic medication had been given to them during the preceding three weeks. Diagnoses were made independently at the end of the interview and then reviewed by another psychiatrist at the end of the study. Any discrepancies were reconciled at a joint conference. The diagnosis of schizophrenia was made conservatively; there was unequivocal evidence of a thought disorder in all cases.

Sibling Diagnosis

Sibling diagnoses were made on the basis of previous treatment history (past records were obtained) or, if the sibling had had no psychiatric treatment, on the basis of a

psychiatric interview. Diagnoses spanned the entire range of psychiatric classifications, including "normal" and "normal but not well adjusted."

In addition to diagnosis, the interviewers independently rated each sibling as to severity of disorder. These ratings, together with the treatment history, were subsequently translated into the following three broad categories: (1) normal or adequate functioning: (a) free of current symptoms, with no history of psychiatric treatment or of impaired functioning which would have warranted treatment; (b) having only a mild degree of current or past psychiatric symptomatology; (2) moderately impaired functioning: having current psychiatric disorder or a history of outpatient psychiatric treatment or impairment of functioning which would have warranted outpatient treatment; (3) severely impaired: having a history of psychosis or disorder severe enough to have warranted hospitalization, whether or not the sibling was actually hospitalized. Those siblings who could not be interviewed in person (36 out of the total of 184) were diagnosed and given a rating of severity on the basis of information obtained from parents and records from treatment facilities.

For purposes of the present study with its emphasis on healthy functioning, the 3-point severity classification was expanded into a 5-point rating of current sibling adjustment

which also took the diagnostic formulation into account. The five categories are as follows: (1) normal: free of current symptoms; no history of psychiatric treatment or impaired functioning; (2) normal, but not well adjusted: mild degree of current or past psychiatric symptoms; (3) moderately impaired functioning: having current psychiatric disorder or a history of outpatient treatment or impairment which would have warranted outpatient treatment; included most individuals diagnosed as neurotic or personality disorder; (4) severely impaired: having current psychiatric disorder or a history of disorder (other than psychosis) severe enough to have warranted hospitalization, whether or not the sibling was actually hospitalized; included individuals diagnosed as neurotic or personality disorder but given a rating of 3 using the original 3-point scale; (5) most severely impaired: displaying symptoms or having a history of psychosis, whether or not the individual was actually hospitalized. All of the schizophrenic patients were automatically given a rating of 5. In addition, five of their siblings who were diagnosed schizophrenic and one who had a diagnosis of manic-depressive psychosis also received this rating. All six of these siblings had in fact been hospitalized at least once. Of the remaining 58 siblings, 44 had never received psychiatric help and 10 had had treatment only in late adolescence or early adulthood,

within one to five years of the time of data collection.

Additional Patient and Sibling Diagnostic and General Information

In addition, the following information was obtained for both patients and siblings: age of first treatment, age of first hospitalization, number of previous hospitalizations, age of onset of psychiatric disorder, and the presence of neurological signs. The age of onset was determined by the psychologist and psychiatrist; the determination was independent of when the treatment or hospitalizations began. Four periods of onset were used: childhood, early adolescence, late adolescence, and adulthood. The rating of neurological dysfunction (none, moderate, or severe) was based on gross signs apparent from the history and/or on observation or interview. No neurological examination was done.

Basic factual data obtained for both patients and siblings included sex and sibling position.

Parental Psychiatric Information

The mother and father of each patient was assigned to one of the following four categories on the basis of his or her psychiatric status and history: (1) Normal: free of obvious psychiatric impairment, without any history of treatment for psychiatric disorder; (2) Impaired: having no

history of treatment but judged to have unequivocal evidence of psychiatric impairment (e.g., alcoholism, psychopathy); (3) Outpatient Treatment: current or past treatment for psychiatric disorder; (4) Hospitalized: current or past hospitalization for psychiatric disorder. Parents' reports of their treatment histories, records from treatment centers, and social worker notes in the patients' charts were the main sources for these ratings. An occasional parent was rated Impaired on the basis of contact with the research psychologist. Parental ratings were considered by the research team to be more conservative than sibling ratings, for the interviews with the parents were not intensive psychiatric evaluations but were primarily for the purpose of obtaining historical information about the patients and siblings.

The interviewing psychologist also rated the parents for the presence or absence of "communication disorder" during her contact with them. Notes were kept to document the basis on which each such determination was made. This rating was made independently of the measure of psychiatric status noted above.

Developmental Data

Historical information about the patients and siblings was derived from retrospective reports by parents, obtained by means of a detailed developmental questionnaire covering approximately 400 items from birth through adolescence (including health, behavior and personality). This questionnaire was filled out by the mother, and was elaborated and clarified in an interview with the psychologist. The information was subsequently coded on a developmental history coding form on the basis of a 3-, 4- or 5-point rating scale, depending on the item in question. A low score on this scale indicated the absence of a symptom or problem or the presence of a desirable trait or coping behavior. The questionnaire is included in the Appendix.

In addition, a structured patient-sibling interview was given separately to the patient and the sibling or siblings. The questions on this form compared the patient and his brother or sister in terms of a number of past traits and behaviors.

Additional information about the original research project, including other types of data gathered and the results obtained, may be found elsewhere (Pollack et al., 1968, 1969, 1970; Woerner et al., 1971, 1973).

In order to test the hypotheses of the present study, a great deal of statistical analysis was done. The ways in which the data were analyzed and the findings of each analysis will be described in the next chapter.

CHAPTER V

DATA ANALYSIS AND RESULTS

The results of this study are presented in terms of the various analyses which were made in order to test the significance of different kinds of developmental, environmental and demographic variables as predictors of the level of current adjustment of a group of invulnerable individuals, all of whom have at least one sibling who is diagnosed schizophrenic. The individual formulations are expressed in Hypotheses 1 - 3. Preceding a description of the results of these hypotheses, however, and essential to a more specific formulation of Hypothesis 1, the Consistency hypothesis, is a presentation and explanation of the results of a series of factor analyses which were done. Following a summary of the results of this hypothesis is a description of the post hoc analysis of information derived from the factor analysis which puts the issues of behavioral stability and prediction of adjustment into a broader perspective.

Factor Analyses

Given that the information needed to test the Consistency hypothesis was embedded in a 400-item developmental

history questionnaire, it was first necessary to organize and simplify this massive amount of data. The investigator was initially able to reduce the data to slightly more manageable proportions by discarding items which were of minimal interest and which received little or no attention in the literature on psychological adjustment (e.g., variables pertaining to physical maturation and development). Furthermore, detailed information on sleeping and eating habits and long lists of specific psychiatric symptoms were generally omitted, although a total score for each age period within each of these categories was retained. The remaining 227 items were then submitted to factor analysis, a central aim of which is the "orderly simplification of a number of interrelated measures" (Child, 1970, p. 1). Because the number of developmental variables was so large, it was decided for statistical reasons to include all 311 patients and siblings each time the data were factor analyzed. While this procedure served to improve the quality of the factor analysis, it also substantially increased the number of bits of information to be processed by the computer. Therefore, a powered vector factor analysis computer program was initially used because it was fast, relatively inexpensive, and capable of handling the huge collection of data.

Following the first statistical analysis, all items with communalities of less than .09 were discarded.

(Communality is the common factor variance or the extent to which each variable has something in common with all other variables.) Given the retrospective nature of the data, it was felt that variables having low communalities would be relatively poor candidates as indicators of a generalized healthy process, and would probably contain mostly error variance. Based on the findings of the first factor analysis, the 138 variables which remained were again factor analyzed using a PSTAT computer program. The instructions called for five factors to be extracted. Both Varimax and Quartimax orthogonal rotations were performed in order to make these factors psychologically interpretable. Factor scores or coefficients were also obtained for the subsample of 110 schizophrenic patients and their siblings on each of the five Varimax factors.

Tables 1 - 5 list separately the significant factor loadings for (or those variables which highly correlate with) each of the five factors obtained following a Varimax rotation of the 138 variables from the developmental history questionnaire submitted to the final factor analysis. To be on the cautious side, an arbitrary criterion of $\pm$ .40 was used to determine the significance of factor loadings; it is highly unlikely that a correlation of this magnitude would occur by chance ($p < .001$). It should be remembered that each variable was rated on a 3-, 4- or 5-point scale, with

Table 1

Significant Factor Loadings for Varimax Factor I

Variables	Ages	Rotated Factor Loading
Excessive crying, irritability	Birth - 2	.494
Needed help with small problems	5 - 12	.443
Sought approval	5 - 12	.431
Demanded attention	5 - 12	.444
Needed to be near mother	5 - 12	.444
Crying, moping	5 - 12	.403
Easily angered	5 - 12	.468
Excessive response to disappointment	5 - 12	.465
Complained of sickness	Elementary school	.404
Frequent minor illness	2 - 5	.492
Frequent minor illness	5 - 12	.512
Frequent minor illness	12 - 16	.505
Frequent minor illness	Unspecified	.506
Eating problems	5 - 12	.484
Eating problems	12 - 16	.412
Eating problems	Unspecified	.488
Slept in parents' bed or wanted parents with him	Unspecified	.470
Sleep problems	2 - 5	.512
Sleep problems	5 - 12	.538
Sleep problems	12 - 16	.534
Sleep problems	Unspecified	.572
Fears and worries	2 - 5	.691
Fears and worries	5 - 12	.691
Fears and worries	12 - 16	.681
Fears and worries	Unspecified	.705
Obsessive traits	5 - 12	.406
Obsessive traits	12 - 16	.402
Overall deviancy	2 - 5	.424
Overall deviancy	5 - 12	.401

Table 2

Significant Factor Loadings for Varimax Factor II

Variables	Ages	Rotated Factor Loading
Social vs. introverted interests	5 - 12	.459
Many friends	5 - 12	.625
Close friends	5 - 12	.485
Friendships (overall)	5 - 12	.540
Time spent with friends	5 - 12	.499
Informal leadership (organized activities for friends)	5 - 12	.574
Children called for him	5 - 12	.549
Invited to parties	5 - 12	.593
Left out by children	5 - 12	.481
Social participation (total)	5 - 12	.726
Difficult to tell his feelings	5 - 12	.444
Made new friends easily	5 - 12	.672
Uncomfortable with new people	5 - 12	.596
Difficulty starting conversation	5 - 12	.565
Hesitated to join groups	5 - 12	.638
Mother felt child was shy	5 - 12	.586
Others felt child was shy	5 - 12	.544
Enjoyed activities	5 - 12	.414
Stuck up for own rights	5 - 12	.469
Overall deviancy	5 - 12	.567
Overall deviancy	12 - 16	.532
Overall deviancy	Unspecified	.522

Table 3

Significant Factor Loadings for Varimax Factor III

Variables	Ages	Rotated Factor Loading
Hyperactive	2 - 5	.546
Unmanageable (Wild, overexcited)	2 - 5	.758
Hyperactive	5 - 12	.522
Distractible	5 - 12	.419
Impulsive	5 - 12	.452
Unmanageable	5 - 12	.760
Excited for no reason	5 - 12	.566
Uncontrollable when angry	5 - 12	.644
Screamed, kicked	5 - 12	.516
Hurt self	5 - 12	.528
Change in relations with parents and authority	12 - 16	-.538
Conduct problems	Elementary school	.534
Conduct problems	J.H.S.	.460
Did not follow rules or obey parents	2 - 5	.631
Did not follow rules or obey parents	5 - 12	.617
Did not follow rules or obey parents	Unspecified	.443
Nervous habits and symptoms	2 - 5	.440
Nervous habits and symptoms	5 - 12	.429
Nervous habits and symptoms	12 - 16	.400
Nervous habits and symptoms	Unspecified	.457
Overall deviancy	2 - 5	.551

Table 4

Significant Factor Loadings for Varimax Factor IV

Variables	Ages	Rotated Factor Loading
Mood change	12 - 16	.499
Change in relations with parents and authority	12 - 16	.664
Learning problems	Elementary school	.404
Grades	J.H.S.	.508
Attitude	J.H.S.	.646
Learning problems	J.H.S.	.447
Grades	H.S.	.644
Failures	H.S.	.490
Attitude	H.S.	.760
Learning problems	H.S.	.529
Overeating	12 - 16	.403
Did not follow rules or obey parents	12 - 16	.542
Did not follow rules or obey parents	Unspecified	.482
Stealing	12 - 16	.517
Stealing	Unspecified	.508
Lying	12 - 16	.596
Lying	Unspecified	.550
Bad language	12 - 16	.406
Bad language	Unspecified	.404
Overall deviancy	12 - 16	.584
Overall deviancy	Unspecified	.483

Table 5

Significant Factor Loadings for Varimax Factor V

Variables	Ages	Rotated Factor Loading
Allergies	2 - 5	.594
Allergies	5 - 12	.794
Allergies	12 - 16	.722
Allergies	Unspecified	.753
Asthma	2 - 5	.577
Asthma	5 - 12	.757
Asthma	12 - 16	.732
Asthma	Unspecified	.783

a low score indicating the absence of a problem or symptom or, more infrequently, the presence of an ability or other positive behavior, and a high score signifying the reverse. Therefore, each variable listed represents a salient dimension or continuum which contributes to the factor; it is not a description of a fixed behavior.

Factor I describes dependent, fearful and anxious behavior with a tendency toward excessive emotional response and perhaps toward somatization which is manifest in early and middle childhood. Factor II might be labelled the Social factor. It focuses on an ability to form and sustain friend-

ships and peer relationships, to handle group situations and to feel comfortable in the presence of other people which is apparent from middle childhood on. Factor III describes impulsive, hyperactive, uncontrollable and disobedient behavior in early and middle childhood. Factor IV includes academic problems, a poor school attitude and more generalized rebellious and antisocial behavior which occurs in adolescence. Finally, Factor V is a Health factor which specifically involves having allergies and asthma from early childhood through adolescence.

It is apparent from the listings that each of these factors involves at least one developmental period; some (such as Factor V and, to a lesser extent, Factors III and IV) even include specific behaviors which are seen in two or more consecutive time periods. However, in order to test Hypothesis 1 as it is stated, it was also necessary (1) to examine if or how strongly these behaviors are correlated with the measure of current adjustment and (2) to look for behavioral stability in the group of nonpsychotic siblings of schizophrenic patients, a subsample comprised of the 58 siblings who had adjustment ratings of 1 to 4. Representative or marker variables from each factor were therefore selected, and their intercorrelations across time and with the current adjustment rating were examined for this subsample. Pearson's product-moment correlation method was used. Given the format

of the developmental history coding form, it was not possible to follow every behavior through every time period or age range. When no data were available for a particular variable during a particular span of years, this period was generally omitted from the analysis. In some cases, a similar variable was substituted in the intercorrelation.

Hypothesis 1: The Consistency Hypothesis

The individual correlations of five representative variables selected from and/or related to Factor I are shown in Table 6.

With a sample size of 50, a Pearson *r* coefficient of .262 is required for significance at the .05 level of confidence and a correlation of .346 is required at the .01 confidence level. Even though the actual sample size was slightly larger, these significance levels were selected.

As can be observed in Table 6, Hypothesis 1 was supported for two of the variables under consideration: frequent minor illness and school refusal. For each of these two variables, responses relating to different ages were positively correlated, indicating mothers' recall of consistency in the children's behaviors. In addition, when the variable at each age range was correlated with the current adjustment rating, nominal significance was achieved ($p < .05$). The hypothesis was partially confirmed for the three other

Table 6

Correlation Matrices of Ratings on Factor I Variables and Current Adjustment Rating (N = 58)

Name and Age Range of Variable	1	2	3	4
1. Excessive crying, irritability (birth - 2)				
2. Crying, moping (5 - 12)	.336*			
3. Mood (12 - 16)	.097	-.056		
4. Current adjustment rating	.093	.287*	.302*	
1. Frequent minor illness (birth-2)				
2. Frequent minor illness (2 - 5)	.396**			
3. Frequent minor illness (5 - 12)	.396**	1.000**		
4. Frequent minor illness (12 - 16)	.262*	.703**	.703**	
5. Current adjustment rating	.307*	.331*	.331*	.300*
1. Refused to go to school (Elementary)[a]				
2. Refused to go to school (JHS)	.501**			
3. Current adjustment rating	.303*	.287*		
1. Fears and worries (2 - 5)				
2. Fears and worries (5 - 12)	.736**			
3. Fears and worries (12 - 16)	.774**	.852**		
4. Current adjustment rating	.303*	.248*	.183	
1. Need to be near mother (5-12)				
2. Self-reliance (12 - 16)	.346**			
3. Current adjustment rating	.265*	.190		

Note. Column numbers represent different variables in different blocks down the page.

[a]This variable is not included in Table 1 because its correlation with Factor I was .39 (or less than .40).

*$p < .05$

**$p < .01$

variables related to Factor I. However, only manifestations of excessive emotionality during middle childhood and adolescence achieved nominal significance when correlated with current adjustment ($p < .05$), and the reverse was true for variables describing fears and worries and dependent behavior. That is, indication of a need to be near mother in middle childhood showed some ability to predict adjustment; an adolescent measure of self-reliance showed no such association.

In Table 7, the separate intercorrelations of four representative variables selected from Factor II are presented.

Hypothesis 1 was not confirmed for the social variables from Factor II. When intercorrelated, these variables failed to show evidence of being strongly associated. Only the social participation variable, rated for childhood and for adolescence, achieved nominal significance when correlated with current level of adjustment.

The respective intercorrelations of three marker variables extracted from Factor III are shown in Table 8.

Hypothesis 1 was partially confirmed only for the hyperactivity variable which showed consistency over time and some ability to predict adjustment. For all three variables from Factor III, behavioral manifestations in early and middle childhood were highly correlated. In the cases for which an adolescent rating was available, however, there was either no correlation or a nominally significant negative one

Table 7

Correlation Matrices of Ratings on Factor III Variables and Current Adjustment Rating (N = 58)

Name and age range of variable	1	2
1. Social vs. introverted interests (5-12)		
2. Interests (12 - 16)	.040	
3. Current adjustment rating	.214	.131
1. Friendships (5-12)		
2. Friendships (12 - 16)	-.009	
3. Current adjustment rating	.049	.091
1. Social participation (5-12)		
2. Group participation (12 - 16)	.177	
3. Current adjustment rating	.285*	.337*
1. Mother felt child was shy (5-12)		
2. Group participation (12 - 16)	.187	
3. Current adjustment rating	.090	.337*

*$p < .05$

Table 8

Correlation Matrices of Ratings on Factor III Variables and Current Adjustment Rating (N = 58)

Name and Age Range of Variable	1	2	3
1. Hyperactive (2 - 5)			
2. Hyperactive (5 - 12)	.553**		
3. Current adjustment rating	.180	.390**	
1. Unmanageable, uncontrollable (2 - 5)			
2. Unmanageable (5 - 12)	.900*		
3. Relations with parents and authority (12-16)	-.372**	-.372**	
4. Current adjustment rating	.190	.210	.132
1. Following rules and obeying parents (2-5)			
2. Following rules and obeying parents (5-12)	1.000**		
3. Following rules and obeying parents (12-16)	-.052	-.052	
4. Current adjustment rating	.219	.219	.308*

*$p < .05$

**$p < .01$

($p < .01$) between behavioral occurrence in childhood and behavior from age twelve on. Only the adolescent measure of obedience achieved nominal significance when correlated with the current adjustment rating ($p < .05$).

In Table 9, the separate intercorrelations of three variables representative of Factor IV are shown.

As the table indicates, Hypothesis 1 was partially confirmed for all three school-related variables. More specifically, while all three variables demonstrated stability over time, in no case was an elementary school behavior significantly correlated with current adjustment level. The later the time period to which a rating referred, the more predictive it was of current adjustment. All behavioral measures in high school achieved nominal significance at at least the .05 level of confidence when correlated with adjustment.

The intercorrelations of the two variables which comprise Factor V, asthma and allergies, are shown in Table 10.

Both of these variables demonstrated the same pattern: they were highly intercorrelated over time but were not at all associated with current adjustment. Hypothesis 1 was therefore not confirmed for these two variables.

Table 9

Correlation Matrices of Ratings on Factor IV Variables and Current Adjustment Rating (N = 58)

Name and Time Span of Variable	1	2	3
1. Learning problems (Elementary school)			
2. Learning problems (J.H.S.)	.458**		
3. Learning problems (H.S.)	.529**	.656**	
4. Current adjustment rating	.148	.262*	.436**
1. Grades (Elementary school)			
2. Grades (J.H.S.)	.639**		
3. Grades (H.S.)	.555**	.885**	
4. Current adjustment rating	.010	.244	.310*
1. School attitude (J.H.S.)			
2. School attitude (H.S.)	.987**		
3. Current adjustment rating	.327*	.337*	

*$p < .05$

**$p < .01$

Table 10

Correlation Matrices of Ratings on Factor V Variables and Current Adjustment Rating (N = 58)

Name and Age Range of Variable	1	2	3
1. Allergies (2 - 5)			
2. Allergies (5 - 12)	.683**		
3. Allergies (12 - 16)	.607**	.894**	
4. Current adjustment rating	.065	.112	.036
1. Asthma (2 - 5)			
2. Asthma (5 - 12)	1.000**		
3. Asthma (12 - 16)	1.000**	1.000**	
4. Current adjustment rating	-.143	-.143	-.143

*$p < .01$

Hypothesis 1: Summary

On the basis of the seventeen separate intercorrelations which were examined, Hypothesis 1, the Consistency hypothesis, was partially confirmed. The five groups of variables, extracted from the factors previously obtained by factor analysis, revealed differing degrees of behavioral stability and varying ability to predict current level of adjustment. The overall trends were as follows:

(1) The variables describing anxious and dependent

behaviors (related to Factor I) and the school-related variables (from Factor IV) tended to best support the hypothesis. Most of the Factor I variables showed a moderate to high degree of consistency, and behavioral manifestations in at least some developmental periods achieved nominal significance when correlated with the current adjustment rating. All of the Factor IV variables were highly intercorrelated over time. Later occurrences of the behaviors, especially those seen in adolescence, tended to be more strongly associated with current adjustment than behaviors which occurred at earlier stages of development.

(2) The social variables from Factor II showed little evidence of consistency over time. Only social participation was associated with adjustment.

(3) The ratings on the hyperactivity, unmanageability and disobedience variables (related to Factor III) showed a moderate degree of consistency over time but limited ability to predict adjustment.

(4) Both asthma and allergies (Factor V) were highly stable from early childhood through adolescence, but they showed no significant relationship to current level of adjustment.

Post Hoc Analyses Related to Hypothesis 1

Although there were no hypotheses at the onset of the study which applied specifically to the schizophrenic patient subgroup, some analyses of the factor analyzed developmental data have been done in order to investigate possible differences between the schizophrenic individuals and their siblings in terms of their developmental histories as perceived and recalled by their mothers. These explorations were viewed as potentially helpful in better understanding the phenomenon of invulnerability.

Multiple Discriminant Analysis

Using the scores which had been obtained for all subjects on each of the five factors, a multiple discriminant analysis was performed to see whether any of the factors was able to discriminate the schizophrenics from their nonschizophrenic siblings. For purposes of this investigation, all individuals who were diagnosed schizophrenic (and therefore had an adjustment rating of 5) were compared to individuals with all other diagnoses (adjustment ratings of 1 to 4). The one subject who was diagnosed as having an affective psychosis and had a rating of 5 was not included. The total number of subjects was 109, of whom 51 were schizophrenic and 58 were not. In the univariate analysis, the two groups were simply compared on each factor separately. The multivariate analysis con-

sidered each factor minus the effects of the other four so as to determine its independent contribution. The results of this two-part analysis are presented in Table 11.

Table 11

Univariate and Multivariate F Values and Probabilities for Each Factor

	Univariate F	Probability	Multivariate F	Probability
Factor I	5.70	.0187	1.40	.2402
Factor II	26.50	.0000	20.51	.0000
Factor III	0.53	.4701	0.13	.7148
Factor IV	5.71	.0186	6.17	.0146
Factor V	0.37	.5440	0.06	.8103

As is apparent in the table, whichever way the data were analyzed, Factor II strongly discriminated the schizophrenic from the nonschizophrenic siblings. In fact, when all of the subjects were assigned by computer to either the schizophrenic or the nonschizophrenic group on the basis of the size of their scores on this factor, 83 out of 109 or 76.1 percent were assigned to their original or correct group; the schizophrenic and nonschizophrenic distributions showed very little overlap. As an independent predictor, Factor IV also discriminated the two groups to some extent, although certainly not as clearly as

Factor II did.

Patient-Sibling Interview

In order to obtain a different viewpoint and to check the validity of the mothers' perceptions of their offspring, selected responses on the Patient-Sibling Interview were totalled. Only those answers which compared the schizophrenic patients and their nonpsychotic siblings were used. The following three items were considered:

(1) Which one of you was more outgoing?
(2) Which one had more friends?
(3) Who got along better in school socially?

The results of this informal procedure are in line with the results of the multiple discriminant analysis. In response to the first question, 80 percent of the group of patients and siblings stated that the sibling was more outgoing. A large majority of this subsample also described the sibling as having had more friends and as having been more social in school (82 percent and 79 percent, respectively).

Correlations of Factor Scores with Adjustment Ratings

As sibling adjustment was the focus of the study, the final statistical analysis of the factor analyzed data was geared in this direction. The five factor scores were correlated with the current adjustment rating (1) for nonschizophrenic siblings only (N = 58); (2) for all schizophrenic individuals and all of their siblings (N = 110). The results of these correlations are presented in Table 12.

Table 12

Correlation of Current Adjustment Rating with Five Factors for Two Groups

	Nonschizophrenic Siblings (N = 58)	All Schizophrenics and Siblings (N = 110)
Factor I	.354**	.282**
Factor II	.134	.414**
Factor III	.230	.120
Factor IV	.330*	.283**
Factor V	.024	-.049

*$p < .05$

**$p < .01$

As can be observed, the adjustment ratings of the nonschizophrenics were positively correlated with their scores on Factor I and Factor IV. The former correlation achieved nominal significance at the .01 level of confidence; the latter at the .05 level. When the scores of the group of schizophrenics were combined with those of the nonschizophrenic group, scores on Factors I and IV continued to be significantly correlated with adjustment, but the Factor II score emerged as much more strongly associated with this variable. This finding is consistent with the results of the intercorrelations presented earlier and with the results of the multiple dis-

criminant functions reported above, although the latter analyses did not involve any measure of adjustment. All of these findings will be evaluated and their implications discussed in a later section.

Hypothesis 2: The Exposure to Illness Hypothesis

To test this hypothesis, seven separate correlations were carried out. Each item below, appropriately rated, was correlated with the 5-point rating of current sibling adjustment using Pearson's product-moment method.

(1) Relative sibling position, that is, whether the sibling is older or younger than the schizophrenic patient. (It was predicted that a younger sibling would be more likely to show signs of pathology.)

(2) Years of exposure to psychotic brother or sister prior to age 16 or current age, whichever comes first. The age that the schizophrenic patient first received psychiatric treatment was used to determine when he became ill, unless the data indicated that the age of onset preceded the age of first treatment. As the original data were not in numerical form, a median age was assigned to each onset period to make statistical calculations possible. The ages were as follows: childhood - age 9; early adolescence - age 14; late

adolescence - age 18.

(3) Psychiatric status or history of the parents. Each mother and father was rated separately, and a joint rating was also obtained, so that three correlations could be done. Evidence of any impairment or any psychiatric treatment was taken to indicate that the parent was not psychiatrically normal.

(4) Total number of impaired family members, counting as impaired any parent not assessed as psychiatrically normal and any sibling with an adjustment rating of 3 or more.

(5) Presence or absence of communication disorder in the parents.

Prior to testing this hypothesis, the ratings of psychiatric status or history of the mother and of the father were correlated with the parental communication disorder rating. The resulting Pearson r coefficients were -.059 and .120 respectively. These negligible correlations indicate that the two measures are independent.

The results of the seven correlations which were carried out to test Hypothesis 2 are presented in Table 13.

Table 13

Correlation of Current Adjustment Rating with Measures of Family Psychopathology and Pathological Exposure for Nonschizophrenic Siblings (N = 58)

	Measures	r
1.	Relative sibling position (Sibling is younger than patient)	.020
2.	Number of years of exposure to schizophrenic patient	-.108
3.	Psychiatric status or history of mother (Mother is psychiatrically impaired)	.255
4.	Psychiatric status or history of father (Father is psychiatrically impaired)	.177
5.	Both parents are psychiatrically impaired	.276*
6.	Total number of psychiatrically impaired family members	.355**
7.	Presence of communication disorder in either parent	.236

*$p < .05$

**$p < .01$

The hypothesis was confirmed for two of the seven measures of sibling exposure to family psychopathology. Specifically, for the nonpsychotic siblings, scores on the current adjustment rating scale were positively correlated with total number of psychiatrically impaired family members and with evidence of psychiatric problems in both parents. Stated another way, the greater the number of emotionally disturbed people at home, the more likely this sibling was

to show signs of maladjustment himself. This association achieved nominal significance at the .01 level of confidence. Also, when both his mother and father had psychiatric histories, this sibling tended to be rated as emotionally disturbed. This correlation was nominally significant at the .05 level. Further inspection of Table 13 reveals that the correlation of two other variables with the sibling's adjustment rating approached statistical significance. These two measures are psychiatric status of the mother alone and evidence of communication disorder in either parent.

Hypothesis 3: The Organicity Hypothesis

Siblings of schizophrenic patients who showed no evidence of neurological dysfunction were compared to the siblings of those patients who did show some organic impairment (whether designated moderate or severe). It was predicted that the siblings in the first group would be more likely to show signs of psychological disorder than siblings in the second group. A negative correlation between presence of neurological signs in the patient and the adjustment rating of the sibling was therefore expected. The correlation of these variables yielded a Pearson r coefficient of .148, which is not statistically significant. Hypothesis 3, the Organicity Hypothesis, was thus not confirmed.

The final hypothesis which was tested was not listed

formally because, although it is theoretically related to Hypothesis 3, it does not pertain directly to sibling adjustment. This hypothesis predicted that when the schizophrenic patient was neurologically impaired his parents would show less psychopathology than the parents of nonorganic schizophrenics, an inverse or negative correlation. The ratings of psychiatric status or history were used to determine the presence or absence of parental psychiatric impairment. Three parental situations were delineated and each situation was correlated separately with the presence of organic dysfunction in the patient. The results of these three correlations are shown in Table 14.

Table 14

Correlation between Neurological Signs in the Schizophrenic Patient and Three Measures of Parental Psychiatric Impairment (N = 58)

	Measures	r
1.	Mother has a psychiatric history	.133
2.	Father has a psychiatric history	-.070
3.	Both parents have psychiatric histories	.047

None of these correlations are statistically significant. Therefore, this hypothesis was not confirmed.

CHAPTER VI

DISCUSSION

The purpose of this dissertation was to take a closer look at the psychological adjustment of nonpsychotic siblings of schizophrenic individuals and, more specifically, to identify some of the developmental, environmental and demographic factors which appear to contribute (1) to the attainment of a high level of adjustment by some siblings, as compared to other members of their subgroup; and (2) to their invulnerability as a group to the severe psychopathology manifested by their schizophrenic brothers and sisters. A discussion of the findings described in the last chapter, the implications of these results, and tentative directions for future research are presented.

Limitations of Follow-Back Analysis

Some limitations of retrospective data, such as their subjective nature and the possibility that they may present a highly distorted picture of reality, have already been discussed. In addition to these considerations, there is a technical issue which becomes apparent in attempting to interpret the results: whether adult outcomes may in fact be predicted from childhood behavior on the basis of follow-back studies. In contrast to follow-up or prospective

research which selects types of children or traits in childhood and then follows them into adulthood to determine the outcome, follow-back analysis (a form of which was done here) selects types of adult adjustment outcome and works "backward," analyzing childhood records of various sorts to determine traits or symptoms associated with the particular outcomes. Some researchers have concluded that, although follow-back or retrospective studies may yield reliable knowledge as to correlations between child and adult behaviors, it is highly questionable whether they can yield predictive probabilities (Kohlberg et al., 1972; Roff, 1970; Ricks, 1970). They point out that a genuine statistical association is not necessarily a predictor since one is dealing with two very different regression lines in predicting back and predicting forward. The predictive inferences which were drawn from the data in the last chapter and which will be suggested in this section must therefore be viewed as tentative conclusions that might not be supported by subsequent follow-up longitudinal studies.

The Consistency Hypothesis

As was previously noted, Hypothesis 1 received some (although not complete) empirical support. Because the five groups of variables, extracted from the factors obtained by factor analysis, revealed differing degrees of behavioral

stability and varying ability to predict (or at least varying strengths of association with) current level of adjustment, it is important to examine each trend separately in order to see its individual implication in the phenomenon of invulnerability. The information obtained in the post hoc analyses, which involve both the schizophrenic and nonschizophrenic subgroups, will be discussed together with the other results pertaining to Hypothesis 1.

Factor V Variables

Taking first those findings which did not confirm Hypothesis 1, the data from the present study suggest that the fact that an individual has asthma or allergies (Factor V) provides no information about his psychological functioning. More precisely, although these conditions may have been symptomatic of some underlying psychopathology during childhood or adolescence, their long-range predictive ability in this area appears to be negligible, at least within a high risk population. Kohlberg et al. (1972) stressed that much stably predictive symptomatic behavior is really temperamental and has little direct or long-range negative mental health implication. It is probably more accurate to label asthma and allergies as symptoms which have some biological basis or component rather than as truly temperamental traits, but the conclusion to be drawn seems identical.

Factor III Variables

The variables or behaviors which comprise Factor III may be understood in a similar way. Hyperactivity and lack of control as expressed by this factor appear to have some organic basis and to be related to temperament, rather than to primarily indicate the presence of emotional disturbance. Certainly such behaviors can be a source of friction at home and in school. The large number of children referred to mental health clinics for treatment with these symptoms as the presenting problems shows this to be the case. However, the syndrome does not appear to be directly related to schizophrenic outcome or to subsequent maladjustment in non-psychotic siblings. The correlational data suggest too that this factor is composed of what Kohlberg et al. (1972) called developmental-adaptational traits, that is, problem behaviors which decline steadily with age throughout childhood. The factor appears to primarily be tapping impulsivity, distractibility and resulting problems with authority figures which are present in early and middle childhood but which diminish as the child develops. Not only does this form of disobedience seem unrelated to rebellious, acting out behavior in adolescence, but it should be clearly differentiated from what is frequently called childhood antisocial behavior with its negative implications for adult mental health.

Factor I Variables

Correlation of scores on Factor I with current adjustment rating, as well as the pattern of individual correlations of Factor I variables across time, suggest that behaviors indicating dependency and anxiety, including separation problems, are quite strongly associated with subsequent level of adjustment in high risk children. This was true for the nonschizophrenic subgroup and also for the combined group of schizophrenic and nonschizophrenic siblings. These results are consistent with earlier-cited findings of studies which have focused on the nonschizophrenic sibling; most referred in some way to the issue of dependency in attempting to differentiate the well and sick siblings (Hoover and Franz, 1972; Lu, 1961; Pollin et al., 1965; Stabenau et al., 1971). In their extensive review of the literature on predictability of adult mental health, Kohlberg et al. (1972) concluded that there might be a predictive relationship of fears, nervousness, irritability and temper (one aspect of Factor I) to schizophrenia, but they saw little relationship to other forms of adult disorder. These authors were also generally unimpressed by the predictive value of overdependent behavior. The dependency of children who later became psychotic was viewed as a side issue rather than the primary problem which brought them into treatment.

One reason why the present results differ so much from

those reported by Kohlberg et al. may be because they pertain to a high risk sample. In a highly pathogenic environment, the ability to function in an independent, autonomous manner, to separate oneself in some way from the family system, is likely to be crucial to one's psychological survival. This would not seem true to the same extent in a normal family. It is therefore not surprising that the current results suggest that people who have become schizophrenic tended to be more fearful and dependent as children than their siblings, and that the better adjusted nonschizophrenic siblings tended to be more autonomous youngsters than the nonschizophrenics who are currently less well adjusted.

Because the developmental questionnaire was largely problem-oriented and there was not any additional biographical information about individual siblings, one can only speculate about the particular positive maneuvers by which each invulnerable person achieved some measure of independence and psychological separation from the family. In A Mingled Yarn, a detailed account of life within a family that produced a child who later became schizophrenic, Parker (1972) expressed her belief that what "saved" Amy, the one invulnerable sibling, was the availability of good parent-surrogates throughout her life and her own capacity to seek them out. Further research which focuses on this issue, and which will provide information about the processes of identification and separation as

manifested by the invulnerable sibling, is sorely needed.

Factor IV Variables

As expected, the findings indicated that school achievement in adolescence (a Factor IV variable) is strongly associated with subsequent adjustment. Kohlberg et al. (1972) suggested that this developmental-adaptational trait is a good gross predictor of adult adjustment because it involves a number of ego strength factors, including attention, sense of competence, achievement, motivation, delay of reward and analytic cognitive style. In the present study, underachievement and a poor school attitude, signs of ego weakness, were found to be correlated with relative maladjustment within the nonschizophrenic subgroup or, put another way, invulnerability appeared to be associated with good school performance and attitude. Factor IV was also related to schizophrenic outcome. It is likely that school difficulty and failure is both a cause and an effect of impaired ego functioning. In any event, results such as these suggest that psychoeducational intervention aimed at the cultivation of positive attitudes toward learning in the early school years and at the improvement of learning skills would bring about an increase in the level of adult adjustment.

Factor II Variables

Contrary to expectation, neither Factor II nor the social variables which comprise it was found to be significantly correlated with the adjustment of nonschizophrenics. However, this factor, which focuses on the ability to form and sustain friendships and peer relationships, strongly discriminated the schizophrenic from the nonschizophrenic siblings. The latter finding is certainly consistent with all clinical data and empirical findings; peer difficulties and isolation from peers are frequently identified as part of the preschizophrenic picture. It is interesting too that sociometric ratings by children of their peers tend to be sounder and more accurate measures of adult adjustment than the clinical impressions of psychologists and psychiatrists (Kohlberg et al., 1972). This observation lends further support to the validity of the present findings, specifically those which were based on the patient-sibling interview form.

The intercorrelations of Factor II variables which were presented should not be taken to indicate that peer relations have nothing to do with adjustment in nonschizophrenics; many or most of these individuals actually had low scores on these variables (indicating good social functioning). The social items were simply not able to discriminate the very well adjusted invulnerables from those that were less well adjusted but not psychotic. Stated differently, the fact that a

child has peer relationships is a sign of ego maturity and as such it is strongly associated with (and may even predict to) a nonschizophrenic outcome. However, this factor does not appear to provide any additional information about how well adjusted an invulnerable sibling will be.

Prediction of Future Adjustment

Before leaving Hypothesis 1, it should be recognized that, even though the findings suggest that many behaviors are fairly stable over time, level of current adjustment is not necessarily the same as level of future adjustment. How one functions psychologically is not a fixed condition, like being a high school graduate. In addition, the 58 nonpsychotic siblings who were given adjustment ratings of 1 to 4 ranged in age from 14 to 29 years, with a median age of 21. A teenager and a person in his or her middle to late twenties are in very different developmental phases and are dealing with very different issues and concerns. Using Erikson's (1950) framework, the adolescent is in stage five, trying to establish a sense of ego identity, whereas the young adult is struggling with the task of the sixth stage: to achieve intimacy and avoid isolation. Therefore, an adjustment rating of 1 at age 14 does not have the same meaning it has at age 28 because the 14-year-old has not come as far and faced as many developmental crises. This fact seems particularly important in dealing with a high risk sample. It is not unlikely that

some of these individuals may be paying a price which is not apparent in their earlier years, even on the best psychiatric examination, and which is not yet completely understood. Some of these persons may actually prove over time to be much less invulnerable. Anthony (cited in Flaste, 1977) has speculated that as a result of the terrible stresses to which this group has been subjected, many of these individuals may find it especially difficult to have really close and intimate interpersonal relationships, an issue that the majority of subjects in this study were just beginning to confront at the time that the original adjustment ratings were made.

The Exposure to Illness Hypothesis

Hypothesis 2 was confirmed for two of the seven measures of sibling exposure to family psychopathology. The findings indicate that the greater the number of emotionally disturbed family members, the more likely the nonpsychotic sibling is to show signs of maladjustment himself. Also, when both his mother and father show evidence of psychiatric impairment, this sibling tends to be rated as emotionally disturbed. In addition, the correlation of two other variables with the sibling's adjustment rating (psychiatric impairment of the mother alone and presence of a communication disorder in either parent) approached statistical significance. It would therefore seem premature, on the basis of these results alone, to reject this hypothesis as it pertains to all of the

remaining measures.

In coding the psychiatric status of the mother, all evidence of impairment was lumped together; a mother who had been hospitalized for a schizophrenic breakdown was not differentiated from a mother who was in outpatient psychotherapy. In addition, in the initial data-gathering stage, neither of the parents received a formal psychiatric interview. It is therefore possible that if the mothers, in particular, had been evaluated more critically and their psychiatric ratings had been coded in a more differentiated fashion, Hypothesis 2 might have been confirmed for this variable as well.

Similarly, the communication disorder rating was made rather informally. The use of a detailed, if not standardized, scoring form, such as that used by Wynne and Singer to rate deviant thinking in Rorschach responses, might have made the interviewer more sensitive to nuance and so might have revealed subtle indications of communication disorder in parents who were otherwise felt to show no such signs. Then too, as not all of the fathers were interviewed, not all could be evaluated for the presence of communication disorder. The total number of parents with communication disorder picked up in this study may seriously underestimate the actual situation in the high risk population. Whereas the present results suggest that parental psychopathology as

traditionally measured predicts relative level of sibling adjustment slightly better than does the presence of parental communication disorder, the "balance of power" might shift if more careful communication deviance ratings were made on every parent. More definitive results require additional research.

The Organicity Hypothesis

Finally, neither Hypothesis 3 nor its corollary was confirmed; an inverse relationship between neurological impairment in schizophrenics and signs of psychopathology in members of their family was not demonstrated. Once again, the problem may not be with the validity of the original hypotheses but with the measure of assessment. Only a gross measure of organicity was made. A neurological examination was not performed and psychological testing was not used to determine the presence of organic signs. In general, because the original study was not geared to the hypotheses formulated by the author, the collection of certain kinds of data was not carried out as rigorously as would have been desirable. The revisions noted above in reference to Hypotheses 2 and 3 represent some directions for future empirical research.

Further Suggestions for the Study of Invulnerables

High risk research is currently moving away from follow-back analysis in favor of longitudinal studies. There are obvious advantages in studying invulnerable siblings by this method. It would appear that longitudinal research projects currently under way, such as Mednick and Schulsinger's Danish study, are already providing an enormous amount of data for analysis on this high risk subgroup, for most of the people on whom they collect data never manifest severely abnormal behavior. These researchers are interested in the etiology of schizophrenia, however, so that (as was encountered in this study) their focus may be generally problem and symptom-oriented. It is hoped that more researchers, like Garmezy, will set out expressly to learn about the strengths and areas of competence that enable some individuals to survive and even to thrive in the face of extraordinary adversity.

In addition to the need to specifically collect and analyze objective and empirical data on invulnerable individuals, there is much potentially valuable information to be obtained using clinical techniques. Throughout my work on this dissertation, I wished that I could have interviewed members of the nonschizophrenic subgroup to learn why they thought that they were functioning so much better than their siblings. As noted earlier, one especially productive line

of inquiry involves the existence of surrogate-parents and role models outside of the home. If this is an experience which is in fact shared by many and/or the best-adjusted siblings, it suggests a need for particular sorts of therapeutic interventions in high risk families aimed at preventing and moderating emotional disturbance in the children.

Clinical psychologists are also needed in risk research to administer psychological tests to the invulnerable subgroup, both to provide more information about their coping strategies and ego strengths and to explore the possibility that some or all of these individuals have paid a greater psychological price than is readily apparent; that they bear more scars than can be seen on the surface.

Finally, it would be useful to compare the invulnerable child or adult not only to his or her schizophrenic sibling but to a matched sample of normal individuals growing up in nonpathological environments. Specific emphasis might be placed on the quality of the adjustment that each is able to make at successive developmental periods.

Concluding Remarks

The present results, all of their various limitations aside, tend to support Anthony's speculation (cited in Scarf, 1972) that there are at least two groups of invulnerable persons. Given that the data indicate a statistically signi-

ficant association between psychopathology and (1) number of emotionally disturbed family members; and (2) psychiatric impairment of both the mother and father, it is possible to label as the ultra-high-risk families in this sample those in which there is more than one impaired person and/or both parents have psychiatric problems. Studying the subgroup of 58 nonschizophrenic siblings from this point of view, it turns out that there are eight individuals who are diagnosed as psychiatrically normal (have an adjustment rating of 1) even though they have been exposed to at least two impaired family members. One of these eight comes from a family where three members are emotionally disturbed, including both parents; she fits into both ultra-high-risk categories! There is another subgroup of four persons who are diagnosed as normal but not well adjusted (with an adjustment rating of 2) who have three or more psychiatrically impaired family members. One of these people comes from a family with four disturbed members, including both parents, so that he too falls into both risk categories. It seems too arbitrary at this point to really distinguish between these two groups, to declare for example that the first is substantially healthier than the second. What does seem clear, however, is that all twelve of these individuals are apparently coping in a superior fashion despite their exposure to extremely pathological environments. All of the nonschizophrenic siblings in this study may be thought of as invulnerable. These few individuals seem to be

super-invulnerable!

Anthony (cited in Flaste, 1977) illustrated this distinction with a story of three dolls: one made of glass, the second of plastic, and the third of steel. They are each hit by a hammer. The first breaks. The second is scarred. But the third gives off a fine, metallic sound.

To paraphrase Anthony's conclusion, it is that sound that requires further investigation.

APPENDIX

DEVELOPMENTAL QUESTIONNAIRE

HILLSIDE HOSPITAL

This questionnaire is concerned with the early life of your child _____who is now a patient at Hillside Hospital.

As his parents, you are in a position to help us to understand as much as we possibly can about your child.

It is often difficult to remember things that happened many years ago, but we hope that you will think these questions over carefully.

You will have an opportunity to discuss your answers in a personal interview later on.

HILLSIDE HOSPITAL

This questionnaire is concerned with the early life of your child _____ (name), _____ (brother, sister) of _____ (name) who is now a patient at Hillside Hospital.

We are also interested in understanding as much as we possibly can about his brothers and sisters.

You will have an opportunity to also discuss your answers to this questionnaire in a personal interview later on.

Birth to Six Months

During the first six months of life, how was the child fed?

___Breast ___Bottle

Did the child have any difficulties in sucking? ___Yes ___No

Describe:

What kind of an appetite did the baby have during the first 6 months?

For milk: ___Good ___Fair ___Poor

For solids: ___Good ___Fair ___Poor

During the first six months of life, how much did your child sleep during the day?

___Took regular naps

___Slept very little

___Slept a great deal

___Sleep during the day was irregular

During the first six months of life, how did he sleep at night?

___Slept soundly during the night

___Was awake a lot during the night

___Sometimes slept well, sometimes poorly

During the first six months, how often was he sick with colds, sore throats or other minor illnesses?

___very often ___occasionally ___rarely or never

Was there any other feeding or sleeping difficulty during the first six months?

___Yes ___No

Describe:

During the first two years of life, did the child have any of the following? Indicate whether the condition was mild, moderate or severe, at what age it began, and how long it lasted.

	Mild	Moderate	Severe	Age	How Long
Colic	___	___	___	___	___
Vomiting	___	___	___	___	___
Diarrhea	___	___	___	___	___
Constipation	___	___	___	___	___
Allergies	___	___	___	___	___
Eczema (skin rash)	___	___	___	___	___
Sleep problems	___	___	___	___	___
Over-eating	___	___	___	___	___
Poor appetite	___	___	___	___	___

During the first two years, how often was he sick with colds, sore throats or other minor illness?

___Very often ___Occasionally ___Rarely or never

During the period from birth to two years, how much did the child cry?

___A great deal ___A moderate amount ___Very seldom

In general, was it easy to stop his crying? ___Yes ___No

Was he a sleepy baby ___Yes ___No

How active was he?

___Constantly moving ___Moved around a great deal ___Moderately active ___Very inactive

	Yes	No
Could he be alone for quite a while?	___	___
Did he want to be held a lot?	___	___
Was he usually contented and easy to care for?	___	___
Was he easily upset by loud noises, bright lights or other sudden changes?	___	___
Was he easily upset by changes in routine?	___	___
Did he bang his head in the crib or high chair?	___	___
Did he rock himself in the crib or high chair?	___	___

In general, how did he respond to people?

___Friendly ___Indifferent ___Frightened

Was he unusually frightened of strangers?	___	___

At what age?_____ For how long?_____

What important things about the first two years of your child's life have not been mentioned?

At approximately what age did this child first do the following?

Sit up without support _____

Stand up without support _____

Walk without support _____

Say a few words _____

Speak in sentences _____

Once he began speaking, did he ever stop using words for any period of time?

___Yes ___ No

If yes, at what age?_____ For how long?_____

Did he stutter or stammer? ___Yes ___No

At what age?_____ For how long?_____

	Yes	No
Did he lisp or mispronounce letters like S, L, R, Th?	___	___
Were his words distinct and clear?	___	___
Was his speech jerky (not smooth)?	___	___
Did he have difficulty expressing himself in words?	___	___
Was his speech unusually rapid?	___	___
Was his speech unusually slow?	___	___
Did he speak in an expressionless tone?	___	___

Describe anything else that was unusual about his speech:

	Yes	No
When walking or running:		
Did he fall more than other children?	___	___
Could he run as fast as other children his age?	___	___
Did he often bump into things when he moved around?	___	___
Did he seem to have accidents or get hurt more than other children?	___	___
Was there anything else unusual about the way he walked or ran?	___	___
Describe:		
Did he often drop, spill or knock things down?	___	___
Did he have unusual difficulty lerning to tie shoe laces or manage buttons?	___	___
How good was he at using his hands in making things?		
___Very good ___Average ___Poor		
As a young child, before he went to school, was he unusually active, seeming to be always in motion?	___	___
Did he climb and run excessively?	___	___
Did he have to be watched constantly to prevent him getting into dangerous situations or hurting himself?	___	___
Did he carry out activities at an unusually fast rate; for example, did he typically run instead of walk?	___	___
During his school age period (6 to 12 years) was he unusually fidgety and restless, always moving some part of his body, never able to stay still for a moment?	___	___
Was he able to sit still without fidgeting or moving around at least 1/2 hour at a time:		
While reading or watching TV or movies?	___	___
While eating a meal?	___	___

	Yes	No
Was he easily distracted from what he was doing, frequently jumping from one activity to another?	___	___
Did he typically act on the "spur of the moment," doing things without thinking of the consequences?	___	___
Did he ever get wild, over-excited and hard to control in his behavior:		
At home?	___	___
At school?	___	___
While playing outdoors?	___	___
In public places?	___	___
Was it very difficult to get him to follow rules or pay attention to limitations or prohibitions?	___	___
Was he unusually inactive, sitting still or staying in one place for long periods?	___	___
Did he behave as if he did not have much pep or energy?	___	___
Did he seem to get tired easily and need a lot of rest?	___	___
Was he frequently listless and uninterested in activities?	___	___

Five to Twelve Years

Please answer the following questions according to the behavior which was most typical of your child during the five through twelve year age period (when he was in elementary school).

Which of the following did the child usually do in his spare time? Check those which are applicable:

Take part in outdoor sports of games with other children. ___

Play games or do things indoors with other children. ___

Play games or do things indoors alone. ___

Build or make things with his hands. ___

Collect things like stamps, dolls, coins, rocks, etc. ___

Play a musical instrument. ___

Draw or paint pictures. ___

Make up or write stories, poems, plays (not for homework). ___

Watch TV, listen to radio or records. ___

Read comics. ___

Read books. ___

Study. ___

Daydream. ___

Other (list):_____

_____

_____

List any special hobbies or interests which he maintained over a long period of time.

List any special talents or outstanding skills; for example, music, photography, swimming, etc.

List any prizes, awards or other recognition he received for these skills.

	Yes	No
Did he have a lot of friends?	___	___
Did he have one or more close friends?	___	___
Did he ever keep friends for as long as a year at a time?	___	___
Did you approve of most of his friends?	___	___

If no, explain:

Did he play with children of his own age?

___Usually ___Sometimes ___Rarely or never

Did he play with younger children?

___Usually ___Sometimes ___Rarely or never

Did he play with older children?

___Usually ___Sometimes ___Rarely or never

Did he usually play with children of:

___His own sex ___Opposite sex ___Both sexes

How much time did he spend with other children (other than siblings) after school?

___Almost none

___A little (2-3 hrs. a week)

___Some time almost every day

___Almost all of his free time

To what, if any, organized or informal groups or clubs outside of school did he belong?

___Scouts ___Hobby clubs

___Athletic club or teams ___"Y"

___Religious clubs ___Other_____

Did he go to most of the meetings? ___Yes ___No

Did he participate in most activities? ___Yes ___No

Was he ever an officer or leader in school or club activities? ___Yes ___No

List and give age:_____ _____

_____ _____

Did he organize activities for his friends, i.e., make plans, suggest projects and things to do?

___Rarely or never ___Sometimes ___Often

Did other children call for him or come to your home to play with him?

___Rarely or never ___Sometimes ___Often

Did he go to other children's homes to play?

___Rarely or never ___Sometimes ___Often

Was he invited to parties or other group activities?

___Rarely or never ___Sometimes ___Often

Did other children tease him, call him names, or "pick" on him?

___Rarely or never ___Sometimes ___Often

Did he complain that other children didn't like him?

___Rarely or never ___Sometimes ___Often

Was he left out of group sports, games, or other activities by children in school or in the neighborhood?

___Rarely or never ___Sometimes ___Often

How much time did he usually spend along after school; for example: in his room reading, studying, listening to radio or T.V.?

___Almost all of his time every day ___Some time

___Quite a lot of time every day ___Little time

Did he spend a lot of time daydreaming or doing nothing when he was alone?

___Yes ___No

Did he seem to prefer to be alone or with the family rather than with other children?

___Usually ___Sometimes ___Rarely or never

Did he talk about himself with others in the family?

___Usually ___Sometimes ___Rarely or never

In general, was it difficult to tell how he felt about things?

___Usually ___Sometimes ___Rarely or never

Did he make new friends easily? ___Yes ___No

When he was with people he didn't know well, did he seem to be uncomfortable and remain on the sidelines?

___Usually ___Sometimes ___Rarely or never

Was it hard for him to begin to talk with someone he did not know well?

___Usually ___Sometimes ___Rarely or never

If other children were playing in a group, would he hesitate to join?

___Usually ___Sometimes ___Rarely or never

Did he dislike, or was he fearful about going to parties, or group activities with children he didn't know well?

___Usually ___Sometimes ___Rarely or never

Do you feel that he was a shy child? ___Yes ___No

Did other members of the family, teachers, or friends ever remark that he was a shy child? ____Yes ___No

Did he tease or bully other children?

___Rarely or never ___Sometimes ___Often

Did he hit or hurt other children?

___Rarely or never ___Sometimes ___Often

Did his play with other children end up in quarrels?

___Occasionally ___Often ___Almost always

Did neighbors or teachers ever complain about his fighting, teasing or hurting other children? ___Yes ___No

Did you often have to help dress, or bathe him, or take care of his things after he was old enough to do these things for himself?

___Yes ___No

Did he often come to his mother for help with small problems he probably could have handled himself?___

___Yes ___No

Did he often ask permission for things that he did, even when it was not necessary? ___Yes ____No

Did he look to his parents or other adults for praise or approval of almost everything he did? ___Yes ___No

Did he ask for help with school work in elementary school?

___Often ___Sometimes ___Rarely or never

Did he ask for help with school work in junior high?

___Often ___Sometimes ___Rarely or never

Did you feel he demanded your attention more than most children his age?

___Yes ___No

Did you feel he needed to be near you more than most children his age?

___Yes ___No

At what age could you leave him alone in the house for short periods during the day?

___6-8 ___9-11 ___12-14 ___Always wanted someone with him

Did he like to be hugged or kissed by his mother? ___Yes ___No

by his father? ___Yes ___No

by other adults? ___Yes ___No

Did he spontaneously show affection to:

His mother?	___Often	___Sometimes	___Rarely or never
His father?	___Often	___Sometimes	___Rarely or never
Other adults?	___Often	___Sometimes	___Rarely or never

Did you feel he was less affectionate than other children?

___Yes ___No

Did you feel he was a warm, affectionate child?

___Yes ___No

How often was he unhappy, sad, or "down in the dumps?"

___Very often ___Sometimes ___Rarely or never

How often did he cry, whine, or "mope?"

___Very often ___Sometimes ___Rarely or never

On the whole, did he seem to enjoy his daily activities?

___Most of the time ___Sometimes ___Rarely or never

	Yes	No
Did you think your child cried more often than other children his age?	___	___
Was he easily angered or annoyed by small upsets?	___	___
Did he ever get very excited for little or no reason?	___	___
Were his feelings easily hurt by mild scolding or criticism?	___	___

Did he cry or get upset over teasing or quarreling among his friends?

___Very often ___Sometimes ___Rarely or never

	Yes	No
Did members of the family feel they had to be particularly careful to avoid hurting his feelings?	___	___
Was he unusually unemotional, tending to remain calm even when others got upset?	___	___

When angry, did he become wild and uncontrollable?

___Often ___Sometimes ___Rarely or never

When he was angry did he scream, kick, hit others, or throw or break things?

___Usually ___Sometimes ___Rarely or never

When he was angry, did he throw himself around or try to hurt himself?

___Usually ___Sometimes ___Rarely or never

When he was happy, did he become over-excited or wild? ___Yes ___No

When angry, did he tend to pout, sulk, or avoid contact with people?

___Usually ___Sometimes ___Rarely or never

When he was angry, did he usually get over it?

___In a few minutes ___In an hour or so ___In several hours or more

If he had a disappointment:

Did he cry excessively or become very upset? ___Yes ___No

How long did it take for him to get over it?

___An hour or less ___A few hours ___A day or more

Did the child tend to go along with what others wanted, even if it was not what he himself wanted?

___Usually ___Sometimes ___Rarely or never

Did he make his own opinion known if he disagreed with what others were saying or doing?

___Usually ___Sometimes ___Rarely or never

Did he "stick up" for his own rights?

___Usually ___Sometimes ___Rarely or never

What important things about your child from five to twelve years have not been mentioned?

Two to Sixteen Years

Did your child show any of the following behaviors between the ages of two and sixteen years? Indicate for each question at what ages the behavior was typical.

Example:

For example, suppose your child began to eat a lot of food and perhaps put on a lot of weight for about a year after he started kindergarten. You would answer the following question like this:

	Check one Yes	No	What ages
At mealtime, did this child eat too much	x	___	5-6

If the child has always shown the behavior, write always.

Please answer each question.

At mealtime, did this child eat too much?	___	___	_____
Did he eat too little?	___	___	_____
Was he very fussy about foods; that is, eating only certain foods or foods prepared in certain ways?	___	___	_____
Were there any common foods he disliked or refused to eat, for example; milk, eggs, fish, meat, vegetables, etc.	___	___	_____

What were these foods?_____

_____

Did he ever go on "food jags"; that is, eat only certain foods for long periods of time?	___	___	_____
Did he ever vomit or complain of stomach aches at mealtime?	___	___	_____
Did he usually eat large amounts of food between meals?	___	___	_____

At what age ____

Did he stay up too late or resist going to bed?

___Often ___Sometimes ___Rarely or never ____

Did he have difficulty getting to sleep?

___Often ___Sometimes ___Rarely or never ____

Did he want to have someone stay with him before he fell asleep?

___Often ___Sometimes ___Rarely or never ____

Did he want to sleep in his parents' bed?

___Often ___Sometimes ___Rarely or never ____

Did he wake up during the night?

___Often ___Sometimes ___Rarely or never ____

Did he have bad dreams or nightmares?

___Often ___Sometimes ___Rarely or never ____

Did he grind his teeth in his sleep?

___Often ___Sometimes ___Rarely or never ____

Did he ever talk in his sleep?

___Often ___Sometimes ___Rarely or never ____

Did he ever walk in his sleep? ___Yes ___No ____

If yes, how often? ___Once a week or more

___1 - 3 times a month

___Less than once a month

	Yes	No	At what age
Did you feel he slept too much?	___	___	___
Did you think he slept too little?	___	___	___
Was he a restless sleeper?	___	___	___
Was it very difficult to get this child to obey parents' directions?	___	___	___
Was it very difficult to get this child to conform to rules and regulations?	___	___	___
Did the child ever take anything that did not belong to him?	___	___	___
Did he ever tell lies?	___	___	___
Did he lie so much that you could not believe what he said?	___	___	___
Did he often play with matches or lighters?	___	___	___
Did he ever start any fires other than at camp or at home under supervision?	___	___	___
Did he ever run away from home?	___	___	___
Did he often swear, curse, or use bad language?	___	___	___
Did he ever hit or try to physically hurt his parents or other adults?	___	___	___
Did he ever deliberately break or damage household objects, furniture, clothing or toys?	___	___	___
Was he ever deliberately cruel to animals?	___	___	___
Did he dislike or was he afraid of the dark?	___	___	___
Did he dislike or was he afraid of thunder and lightning?	___	___	___
Did he dislike or was he afraid of going into the water?	___	___	___
Did he dislike or was he afraid of crossing the street alone?	___	___	___

	Yes	No	At what age
Did he dislike or was he afraid of animals?	___	___	___
Was he afraid of bugs?	___	___	___
Was he afraid of snakes?	___	___	___
Did he object to or was he afraid of going places alone?	___	___	___
Did he object to or was he afraid of staying alone at home?	___	___	___
Did he dislike or was he afraid of any particular person?	___	___	___
Did he dislike or was he afraid of people like postmen, policemen, teachers, tradesmen, or others like this?	___	___	___
Did he dislike or was he afraid of people because they were of different nationality, race, or skin color?	___	___	___
Was he afraid of germs?	___	___	___
Did he dislike or was he afraid of using other people's dishes, glasses, silver, or towels?	___	___	___
Did he dislike or was he afraid of dirt?	___	___	___
Was he very much afraid of tests or examinations at school?	___	___	___
Did he fuss and become upset over little cuts and bruises?	___	___	___
Did he dislike or was he afraid of blood?	___	___	___
Was he very much afraid of going to the doctor or dentist?	___	___	___
Did he dislike or was he afraid of enclosed places?	___	___	___
Did he dislike or was he afraid of crowds?	___	___	___
Was he afraid of anything else?	___	___	___
If yes, what?			

	Yes	No	At what age
Did he ever worry about getting lost?	___	___	____
Did he worry about having an accident, getting sick, or dying?	___	___	____
Did he worry about someone in the family having an accident, getting sick, or dying?	___	___	____
Did he worry about his school marks?	___	___	____
Did he ever worry about being kidnapped?	___	___	____
Did he ever worry about being an adopted child?	___	___	____
Did he worry about fires breaking out?	___	___	____
Did he worry about what happened in the world; such as wars, floods, hurricanes, murders, or other things like that?	___	___	____
Did he worry about anything else?	___	___	____
What?			

In general, did he worry:

___A lot ___Some ___A little _Not very much ____

After doing something, did he often go back several times to check if he had done it?	___	___	____
Did he usually like certain things exactly in their place and get upset if they were moved?	___	___	____
Did he wash his hands more often than necessary to keep them clean?	___	___	____

	Yes	No	At what age
Did he ever show any unusual movements, jerks or twitches of any part of his body, such as:			
Blinking his eyes?	___	___	___
Twitching his mouth?	___	___	___
Unusual head movements?	___	___	___
Twitching or jerking his shoulders?	___	___	___
Other (specify)_____	___	___	___
If he had any of these movements:			
Did he show these movements almost all the time?	___	___	___
If no, did he show them only when worried or upset?	___	___	___
Did he bite his fingernails?	___	___	___
Did he suck his thumb or finger?	___	___	___
Did he chew or suck his lips or bite the inside of his mouth?	___	___	___
Did he pick his nose?	___	___	___
Did he pick at or scratch his skin?	___	___	___
Did he bite, chew, or suck his clothing, pencils or other objects?	___	___	___
Did he pull or twist his hair?	___	___	___
Did he have any other nervous habits or mannerisms?	___	___	___
Describe:			
Did he frequently touch or play with his sex organ?	___	___	___

	Yes	No	At what age
Did he have temper tantrums?	___	___	____

If yes, how often?

___Every day ___1-3 times a month

____2-3 times a week ___Less than once a month

After the age of four did this child ever wet the bed?	___	___	____

About how often did this happen?

___Every night ___1-3 times a month

___2-3 times a week ___Less than once a month

Until what age did this continue?_____

Did he wet himself during the day?	___	___	____

About how often did this happen?

___Every day ___1-3 times a month

___2-3 times a week ___Less than once a month

Until what age did this continue? _____

After the age of four did this child ever soil himself with a bowel movement?	___	___	____

About how often did this happen?

___Every day ___1-3 times a month

___2-3 times a week ___Less than once a month

Until what age did this continue? _____

Adolescence (12 to 16 Years)

At what age did the following physical changes occur?:

Girl	Boy
____ Menstruation	____ Voice change
____ Breast development	____ Underarm and pubic hair
____ Underarm and pubic hair	____ Facial hair

For each of the following categories, please indicate if you think your child's behavior either remained the same or changed in the ways indicated from the age of 12 on:

General mood

___Same ___Happier ___Less happy

Self reliance (independence)

___Same ___More self-reliant ___Less self-reliant

Friendships

___Same ___More and/or closer friendships ___Fewer and/or less close friendships

Group activities

___Same ___More participation in group activities ___Less participation

Eating patterns

___Same ___Improved ___Got worse

Describe changes:

Sleeping patterns

___Same ___Improved ___Got worse

Describe changes:

Activities

___Same

___More activities and interests

___More skill in activities and interests

___Less activities and interests

___Less skill in activities and interests

Describe any other ways in which he changed in behavior, mood, activities, relations with people, etc.

School History

Check the box that describes your child's school marks, on the average, for each period:

	Above Average	Average	Below Average
Elementary school (grades 1-6)	___	___	___
Junior high (grades, 7, 8, 9)	___	___	___
High school (grades 10, 11, 12)	___	___	___

Did his marks ever rise or fall sharply at any time during his life?

___Yes ___NO

When?_____ Describe:

What grades were repeated? _____

What grades were skipped? _____

What subjects did he fail? _____

What subjects did he do best in? _____

What subjects did he have difficulty with? _____

Did he ever have special tutoring? ___Yes ___No

What subject?_____ When?_____

Was he ever placed in any special classes? ___Yes ___No

What classes?_____ When?_____

_____ _____

What was his attitude toward school work?

___Very interested, eager to do work.

___Average interest, did what was necessary without coaxing.

___Uninterested, did as little work as possible.

___Interested in only one or two subjects/

When he first entered school (kindergarten or 1st grade):

Did he want you to stay with him? ___Yes ___No

How long did this last?

___A day or two ___More than a week

___A week

Was school entrance postponed? ___Yes ___No

For how long?_____

Why? _____

Did he cry, vomit, or complain of sickness when it was time to go to school?

___Often ___Sometimes ___Rarely or never

Did he ever refuse to go to school? ___Yes ___No

At what age?_____

How long did this last?_____

Check the box that describes your child's school marks, on the average for each period:

	Above Average	Average	Below Average
Elementary school (grades 1-6)	___	___	___
Junior high (grades 7, 8, 9)	___	___	___
High school (grades 10, 11, 12)	___	___	___

Did his marks ever rise or fall sharply at any time during his life?

___Yes ___No

When?_____ Describe:_____

What grades were repeated? _____

What grades were skipped? _____

What subjects did he fail? _____

What subjects did he do best in? _____

What subjects did he have difficulty with? _____

Did he ever have special tutoring? ___Yes ___No

What subject?_____ When?_____

Was he ever placed in any special classes? ___Yes ___No

What classes?_____ When?_____

_____ _____

What was his attitude toward school work?

___Very interested, eager to do work.

___Average interest, did what was necessary without coaxing.

___Uninterested, did as little work as possible.

___Interested in only one or two subjects.

Did he have difficulty concentrating on school work?

___Usually ___Sometimes ___Rarely or never

Did the school or teachers ever consult you about any problems he had in school?

___Yes ___NO

When?_____

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