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Children at risk for emotional disorder.

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CHILDREN AT RISK FOR EMOTIONAL DISORDER

A Dissertation Presented

By

Jane A. Higgins

Submitted to the Graduate School of the
University of Massachusetts in partial
fulfillment of the requirements for the degree of

Doctor of Philosophy

December 1974

Clinical Psychology

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Children at Risk for Emotional Disorder

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Twenty children of schizophrenic mothers were compared with twenty children of normal mothers. Children of schizophrenic mothers were considered to be at risk for emotional disorder by virtue of their heredity and the environmental stress they had experienced. Children of schizophrenic parents have a higher incidence of schizophrenia than is found in the general population. They are also considered emotionally vulnerable, since it is estimated that about half, on an actuarial basis, will become emotionally disturbed adults. High risk children were individually matched with control children on sex, age, race, and socioeconomic status of their families.

The purpose was to investigate the possible precursor signs of schizophrenia in order to provide a more solid empirical base for future prospective research. The study used measures that would both test theory and be potentially useful for identifying other children at risk, in order to permit early preventive intervention.

The variables studied were intelligence, auditory and visual attention, personality characteristics, family background, self-concept, sex-role preference, health history, and early developmental patterns. Teachers' ratings, parents' ratings, experimenters' ratings, interviews with parents, and individual test data were collected for each subject.

The results indicated that high risk children were behaviorally deviant, as observed by their teachers and parents, and that they were marginally deficient in their cognitive functioning. They were shy, passive, insecure and socially non-participating in school. Outside of school they had few friends; boys were somewhat exhibitionistic (as rated by parents and experimenters); and girls were especially less active socially than their controls (as judged by parents). At home these children may have been a little more aggressive. Although their tested intelligence was not generally below average, they had difficulty on intellectual tasks requiring intensive concentration. The cognitive deficiencies, though slight, appeared to be greater in older children at risk.

An important subsidiary finding was that in spite of careful matching, families in the control group had quite different home environments from those in the experimental group. The experimental group had more families receiving government aid, more physically ill mothers, more unplanned

children and fewer fathers present in the home. Children in the experimental group had more unstable and upsetting lives. Twelve had been in foster homes, and most had experienced at least two of their mothers' hospitalizations, not to mention the lengthy separations.

These findings were interpreted as indicating the importance of environmental stress, particularly the effects of the mother-child relationship, in determining outcome in children of schizophrenic mothers. It was concluded that the findings could be attributed to differential socialization in the experimental and control groups.

It was also emphasized that although the risk children were statistically different from their controls on some measures, their behavior was clearly in the normal range. The negative findings, the clinical impressions, and even the positive findings indicated that the high risk children were not seriously disturbed in childhood.

Implications for preventive intervention and future research were also discussed.

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INTRODUCTION

The etiology of schizophrenia is the focus of one of the most voluminous and controversial bodies of literature in the mental health field. It is also one of the most difficult research problems. For some time theorists have argued about the effects of heredity versus environment while researchers have attempted, with limited success, to delineate the specific influence of each (Jackson, 1960; Rosenthal and Kety, 1968; Lindzey et al., 1970).

While the controversies continue most psychologists and psychiatrists do agree that the environment can have a profound effect in the development of schizophrenia and in the alleviation of its symptoms (Sullivan, 1953; Bleuler, 1968; Pollin and Stabenau, 1968). Support for these notions is found in the literature on the families of schizophrenics (Mark, 1953; Baxter et al., 1962; Stabenau et al., 1965) and in research on the schizophrenic's adjustment prior to breakdown (Phillips, 1953; Kantor and Herron, 1966; Higgins, 1969; Garnezy, 1970).

In order to prevent schizophrenia or to mitigate its symptoms one must know which types of behavioral problems prior to breakdown are indicative of a

schizophrenic disorder. Once these signs can be identified, concentrated preventive treatment can be offered to individuals with these problems. In order to confirm or refute certain etiological theories, particularly those theories which attribute schizophrenic breakdown to a gradual decline in the quality of interpersonal relations (e.g., Chapman, 1967), one must know whether or not schizophrenics exhibit difficulties, for example, in interpersonal behavior prior to breakdown.

Some investigators have attempted to study the antecedents and etiology of schizophrenia by examining the lives of the children of schizophrenic parents (e.g., Rolf, 1972; Erlenmeyer-Kimling, 1968), since the children of schizophrenic parents have a higher incidence of schizophrenia than is found in the general population (Rosenthal, 1970). Usually these investigators follow a genetic etiological model (Garmezy, 1972). However, it is also possible to focus on the psychosocial aspects of the development of schizophrenia, as Rolf (1972) has done, while one's subjects may be considered to have a genetic vulnerability for schizophrenia. Certainly, it would be difficult to separate the genetic influence from the environmental influence in children who were born to, and raised by, their schizophrenic mothers.

Among researchers who have concentrated on the psychological, as opposed to the hereditary aspects of

schizophrenia, the most frequently used research designs have been the retrospective and the follow-up types. In one type of retrospective study, called the follow-back design by Garmezy and Streitman (1974), the researcher attempts to discover the antecedents of schizophrenia by locating adults who have been diagnosed schizophrenic and examining their pasts through the use of public records, such as school records, court records, etc. A second type of retrospective study uses information and records gathered after an individual has become schizophrenic, records such as hospital records containing social history information given by relatives. This second retrospective method, called the clinical retrospective method by Garmezy et al., also includes studies of family interaction which attempt to make inferences about the early family life from current family interaction with the now schizophrenic child (who is usually an adult at the time of the study). In the third method, frequently called the follow-up study, the researcher begins with a set of records or a group of subjects from, for example, a child guidance clinic, and attempts to relate data in the clinic records to the outcome of the individual's life at some later point in the individual's life (perhaps 10-20 years later). This type of study is not conducted concurrently with the subjects' lives; it is retrospective in the sense that the clinic records were collected in the past and the

researchers do not follow their subjects for 10-20 years to determine outcome. It differs from the first retrospective method described above, the follow-back strategy, in that subject selection is not based upon an already determined outcome.

All of these methods have been discussed and amply criticized by several authors (e.g., Garmezy and Streitman, 1974; Jones, 1973; Mednick and McNeil, 1968; Offord and Cross, 1969). All the methods suffer from the use of records which were completed at some point in the past, and may have incomplete and different types of information for different subjects, as well as other difficulties inherent in using particular types of records.

It has become difficult to compare the results of one type of study with another because different methodologies appear to lead to different conclusions about the preschizophrenic individual. As Offord and Cross (1969) have indicated in their review of the behavioral antecedents of adult schizophrenia, the literature appears to suggest that most schizophrenics are withdrawn during childhood, but aggressive antisocial children also have high risk for schizophrenia, and that children of all behavioral types become schizophrenic. However, the contradictory findings appear to be related to differences in the method of data collection. For example, follow-up studies of child guidance clinic clients tend to be biased

by a disproportionate number of certain types of referrals. If a clinic receives a majority of referrals for antisocial behavior, the follow-up study will suggest that pre-schizophrenic children tend to be antisocial or possibly the opposite of this, depending upon the characteristics of the control sample selected.

Garnezy and Streitman (1974) have pointed to additional methodological problems. For example, the researcher who chooses his subjects on the basis of a particular outcome (the follow-back strategy), e.g., having been hospitalized as an adult for schizophrenia, biases his results by limiting the investigation to only one outcome. Any relationship he discovers between this outcome and antecedents to the outcome may not be specific to that outcome, but to a variety of outcomes.

Mednick and McNeil (1968) have criticized those studies of schizophrenia done after the onset of the disorder. It is clearly impossible to separate the causes of schizophrenia from the consequences using this type of design. It may very well be that the behavior of the schizophrenic and his family is altered by "correlates of the illness such as, educational, economic and social failure, prehospital, hospital, and posthospital drug regimens, bachelorhood, long-term institutionalization, chronic illness, and sheer misery" (Mednick and McNeil, 1968, p. 681).

A fourth type of design used to study the antecedents of schizophrenia is called follow-through research by Garmezy and Streitman (1974) and is prospective. Using this method groups of individuals who are statistically more likely to develop schizophrenia than a randomly selected group from the same community are followed concurrently from childhood to adulthood. For example, the children of schizophrenic parents would be considered a high risk group since it has been estimated that approximately 15% of the children of schizophrenic mothers will become schizophrenic (Mednick, 1970).

As Mednick and McNeil (1968) have pointed out, one advantage of studying children at risk for schizophrenia is that one is able to investigate their behavior prior to breakdown. High risk subjects need not have experienced the effects of hospitalization and drugs. Also, "the researchers, relatives, and the subject himself do not know that he will become schizophrenic. This relieves the data of a certain part of the burden of bias" (Mednick and Schulsinger, 1968). Furthermore the data collected is current, not based on people's recollections or inadequate data from school records which have not been "uniformly and systematically obtained" (Mednick and Schulsinger, 1968). The major theoretical limitation of a high risk study is that the population is biased since only about 10% of all preschizophrenic children have schizophrenic

relatives (Kety et al., 1968). However, it has been estimated that approximately 15% of the children of psychotic parents become psychotic and an additional 35% become "seriously deviant" during their lifetimes (Heston, 1966; Mednick, 1970).

Longitudinal studies of high risk children are a relatively new methodological development in the area of research on the antecedents of adult schizophrenia. Although the study of children at risk is considered "a research strategy whose time has come" (Schizophrenia Bulletin, 1974, No. 8, p. 13), it has been slow to develop because of the many risks, the expense, and the effort involved in a longitudinal research program. There is the danger of selecting a too narrowly defined, unrepresentative sample, that measures chosen now will appear outmoded and irrelevant in 20 years because they do not discriminate between the high risk children and the preschizophrenic children, or because the characteristics measured are no longer considered crucial in the development of schizophrenia, or because the measures themselves are technologically inferior.

For these reasons Garmezy (1971) and Roff (1970a) have argued for the development of a better empirical base from which to choose measures in longitudinal research. Bell (1953) has discussed the advantages of short-term prospective studies using cross-sectional samples which may

more rapidly indicate the direction of developmental patterns than longitudinal research.

The present research is an initial prospective investigation designed to help provide a more solid empirical base for future longitudinal research. Although the subjects are the children of schizophrenic mothers, the present study is not based upon a genetic etiological framework. Since the children of schizophrenic mothers face untold environmental stress, it is quite feasible to study the psychosocial correlates of the development of schizophrenia and other types of maladjustment in the children of schizophrenic mothers without adhering to a theory of genetic causation. The choice of subjects was a pragmatic attempt to maximize the potential number of disordered vulnerable children in the present sample. The purpose was to help elucidate the processes involved in the development of schizophrenia, not necessarily the cause of schizophrenia.

A second goal was to study measures which may facilitate the description and understanding of behavioral differences between high risk and control children. Hopefully, measures which discriminate between high risk children and normal control children will be useful in predicting schizophrenic versus non-schizophrenic outcomes. However, this is a question which can only be answered by longitudinal research, and is another risk the longitudinal

researcher takes. In the meantime these early indicators of adult psychopathology may prove useful in identifying, for possible preventive intervention, children who are "at risk."

The measures chosen for the present study were based upon the early reports of longitudinal research begun in the past 10-12 years (e.g., Mednick and Schulsinger, 1968; Anthony, 1971) and a variety of other studies including research using the clinical retrospective method, the child guidance follow-up method, and the school records follow-back strategy. Since the measures chosen include a variety of psychological variables, e.g., intelligence, self-concept, sex-role preference, visual and auditory attention, family background, a thorough review of the literature on each topic is well beyond the scope of this review. Therefore only those studies which were most important in the development of the present research will be reviewed.

The literature following will be organized according to, and presented with, the relevant hypotheses.

Hypotheses 1, 2, 3: High risk boys are significantly more abrasive and aggressive than their controls; High risk girls are more introverted than their controls; High risk boys and girls are more emotionally unstable than their controls.

It has been widely assumed that the preschizophrenic individual is withdrawn and passive (e.g., Fromm-Reichman, 1948; Chapman, 1967) and there has been some empirical support for this notion. For example, Field (1969), studying the child guidance case histories of 122 males, found no differences between the preschizophrenic children and the socially adequate children in terms of acting out in the home or in the community, and preschizophrenic children were found to be significantly more withdrawn in the home and in the community. Offord and Cross (1969), after reviewing a series of studies on school records, concluded that the studies "support the notion that the preschizophrenic, when not preselected by his attendance at a child guidance clinic, tends toward shyness and passivity."

Several studies, however, report mixed results. Higgins (1966) found that children reared by their schizophrenic mothers were very shy, uncommunicative, withdrawn, and unresponsive to rewards given by their teachers, while children reared apart from their schizophrenic mothers were described as easily upset or irritated (in ratings by teachers). Ricks and Berry (1970) studying the case histories of male child guidance clinic clients found that withdrawn boys who later became chronic schizophrenics accounted for one-half of all the chronic cases, delinquent boys who later became chronic schizophrenics accounted for

one-third of the total number of chronic cases.

The results of these studies are exceedingly difficult to unravel. In most studies the subjects have been males, and in some cases if both males and females have been subjects, the results were not analyzed or reported separately. In some studies high risk children were the subjects (with outcome unknown) while in other studies the outcome was known, the subjects were adult schizophrenics, and the method was retrospective. Sometimes data was based on early child guidance records, sometimes on early school records. Definitions of aggression and withdrawal are varied, and it is rarely clear whether these two categories are necessarily mutually exclusive.

However, recent research using teachers' ratings suggest that preschizophrenic boys tend to be abrasive and aggressive, but that preschizophrenic girls tend to be shy and insecure. For example, Watt et al. (1970), using the retrospective, follow-back method, analyzed the school records of hospitalized, adult schizophrenics. Their results indicate that teachers described preschizophrenic boys as significantly less good-natured, less cheerful, less cooperative, less well-behaved, and more defiant of authority than their controls. The preschizophrenic girls were seen as more emotionally immature, less nervous and less attention seeking than their controls. In keeping with these results, Bower (1960) found that emotionally

disturbed boys were rated (by teachers) as overly aggressive "most of the time," seven times more frequently than emotionally disturbed girls. In contrast, non-emotionally-disturbed boys were rated as overly aggressive only twice as often as the non-emotionally-disturbed girls. Also, Mednick and Schulsinger (1968) report that their group of high risk children (Sick Group) who "succumbed" to serious mental difficulties were rated by their teachers as having upset and excited reactions which lasted longer than their controls, and as being more disturbing to the class than a comparison group of high risk children who had not "succumbed" (Well Group).

Hypothesis 4: High risk adolescents are more disturbed in relation to their controls than preadolescents in relation to their controls.

Interestingly, Watt (1972), analyzing the data of the same subjects as the 1970 report, found that differences between the preschizophrenic children and their controls, as evaluated by teachers, are most obvious during adolescence, there being few observable differences in the preadolescent years. Similarly, Livson and Peskin's (1967) prospective study of normal children's personality development indicated that the years 11 through 13 were the best predictors of adult psychological health, there being no significant relationship with adult health and three

other age groups (5-7, 8-10, and 14-16). Their predictors of adult psychological health were also similar to those factors found to be important in the Watt (1972; 1970) studies. For example, they found that among the best predictors of mental health in males were expressiveness, cheerfulness, relaxed mood, and extraversion. In girls the best predictors were a confident and inquiring orientation, relative independence, and a hearty attitude toward food. Field (1969) has also reported that two-thirds of the pre-schizophrenic and predelinquent character-disordered children were poorly adjusted in school during adolescence, while only one-third of the socially adequate had school difficulties in adolescence. She also reported that "difficult reactions" (primarily learning difficulties) in the socially adequate group more often occurred in early childhood and ended before adolescence.

Hypotheses 5, 6: High risk boys and girls have less positive self-concepts than their controls; High risk boys and girls perceive more rejection from their peers.

In addition to the findings described above, research studies investigating school behavior of pre-schizophrenic and high risk children have often found peer reaction to these children to be negative. For example, Rolf (1972) in a prospective study of high risk children found that peers (using Bower's (1960) "A Class Play")

rated sons of schizophrenic mothers more negatively than their controls; daughters were also rated more negatively, but not significantly so. Bower (1960) found that children who had school problems were not as well liked by their peers as children without school difficulties. Mednick and Schulsinger's (1968) Sick Group (described above) was rated by teachers as being more disturbing to the class. And, Roff (1970b), investigating life history factors in relation to adult maladjustment, found that negative peer reaction to classroom misbehavior was a significant factor in discriminating upperclass boys who became delinquent from those who did not become delinquent.

It is hypothesized that this general rejection by one's peers would be perceived by high risk and preschizophrenic children and that they would have poorer self-concepts as the result of so much negative feedback. Consistent with this hypothesis, Fleming and Ricks (1970, p. 248) found that "Feelings of isolation and alienation . . . differentiated the pre-schizophrenics and control group more strikingly than any other area of emotional experience. The pre-schizophrenics' records showed long-standing histories of difficulty in establishing and maintaining peer relationships." Friedlander (1945) also found lack of self-confidence was a discriminating factor of preschizophrenics in her follow-up study of children from the Chicago Institute for Juvenile

Research. There also have been several post-onset studies of schizophrenics generally supporting the hypothesis of poor self-concept (e.g., Havener and Izard, 1962; Tamkin, 1954).

Hypothesis 7: High risk children show more sex-role confusion than their controls.

Most of the research on the relationship between "sex-role alienation" and the development of schizophrenia have been post-onset, clinical retrospective studies. For example, Farina and Holzberg (1968) found that poor pre-morbid male schizophrenics were significantly less dominant than their controls or than good pre-morbid males in an experimental interaction situation with their families. Check (1964) found that female schizophrenics, in contrast to the socially approved female role, were more active and dominant than male schizophrenics. McClelland and Watt (1968) report that female schizophrenics generally cared less about parts of their bodies (in a body-parts satisfaction test), while male schizophrenics showed more concern about their appearance--when male and female schizophrenics were compared. The opposite was true in the normal control groups, normal females showing significantly more concern about their bodies than normal males. The authors also report that male and female schizophrenics chose more roles of the opposite sex

when asked to choose parts in a play; the differences were significant for the males when the males were compared with their control group and for the females when compared with a group of female employees (State Hospital), but not when compared with housewives. However, the characteristics (education, age, mental status) of the employee group were in many ways more similar to the patient group than the housewife group.

Contradictory evidence is offered by Gardner (1967) who found no evidence of sex-role alienation in a child guidance follow-up study and by Watt et al. (1970) in their retrospective study of adults hospitalized for schizophrenia. However, both authors' conclusions are based upon symptom patterns or problem behaviors rather than on direct measurement of sex-role preference.

Hypothesis 8: High risk children have lower IQs than their controls.

The greatest number of research reports dealing with IQ differences between schizophrenics and their controls comes from the work of Lane and her colleagues. In their first report, Lane and Albee (1963), reported that children who had become adult schizophrenics (this was a retrospective, follow-back study) showed a significant decline of more than ten IQ points between early childhood (5-8 years) and late childhood (11-14 years). However, a

second study (Lane and Albee, 1968), using improved control groups, found no significant differences between preschizophrenics and their peers or their siblings in terms of a decline in IQ. Albee, Lane, and Reuter (1964) found that children in the city of Cleveland who had become schizophrenic as adults had lower IQs (based on group tests administered in school) than the children in their own neighborhood school classes. Since the subjects in the Cleveland studies were below average in socioeconomic status, Schaffner, Albee and Lane (1967) studied samples drawn from four large suburbs of Cleveland in order to determine IQ relationships in other socioeconomic classes. Their results indicated that the preschizophrenics in the suburban sample did not differ from their peers on IQ, but did differ from their siblings on IQ, the preschizophrenics' IQ scores being significantly lower than their siblings' at each childhood age level. Similarly, Lane and Albee (1965) found that the Cleveland sample differed significantly from their siblings on group intelligence tests administered during the second, sixth, and eighth grades.

Although the relationship between lower IQ and preschizophrenics is considered fairly well established (Ricks, 1970), the research results have not always been entirely consistent. For example, Lubensky (1972), in a retrospective follow-back study with the same subjects as Watt et al. (1970), found that the average IQ of the

preschizophrenic group was not significantly different from their sibling control group, but was significantly different from their matched controls. Pollack et al. (1970) found that the school records data of their hospitalized adult schizophrenics (same method as Lubensky, 1972) indicated that the preschizophrenics did not differ from their siblings on group administered IQ tests except in the one instance of an IQ test administered in the first few years of grade school. However, on IQ tests administered individually and shortly after the hospital admission of these persons, the IQ scores of the schizophrenic group were significantly inferior to their siblings. Mednick and Schulsinger (1968) found no overall IQ differences between their high risk subjects and their controls, but the high risk group scored significantly lower on the arithmetic and coding subtests of the Wechsler Intelligence Scale for Children. They also found no differences at all between that portion of the high risk group which "succumbed" and the portion which remained "healthy."

The discrepancies in these studies may be due to many factors. One possibility relates to the choice of control group. Pollack et al. (1970) found no differences between his sample of preschizophrenics and pre-character-disorders on overall IQ. He suggests that a low IQ is not a risk factor limited to schizophrenia alone. So, if the control group selected has a number of individuals who are

at risk for emotional disorders other than schizophrenia, this may lessen the likelihood of obtaining significant differences between the control group and the preschizophrenic group. This seems especially likely to occur with control groups composed of siblings, as in the case of Lubensky (1972) and in the case of Mednick and Schulsinger (1968) whose control groups are so similar to their high risk groups, that the low risk group is not without considerable risk.

According to Offord and Cross (1972), another possible reason for discrepancies in results is the exclusion of schizophrenic adults with a secondary diagnosis of mild or moderate retardation from the sample of preschizophrenics. They also believe the data will be misleading if the children in special classes are excluded as they were in Albee et al. (1964) and Lane and Albee (1965).

Nevertheless, the relationship between risk for emotional disturbance and low IQ seems relatively well established, if not as a risk factor related to schizophrenia alone. IQ seems to be an important factor to investigate in high risk studies. As Ricks (1974) has written: "Intelligence, as measured by IQ, has proved to predict a variety of types of psychopathological development--criminals, schizophrenics, and alcoholics, for instance, frequently have had low IQ scores in childhood,

relative to classmates, their sibs, and so on. The fact that the predictive power of the IQ is higher than that of other, clinically more central, variables is partly a matter of the quality of its measurement . . . it is often the best measured and most reliable predictor" (p. 362).

Hypothesis 9: High risk boys and girls are more distractible than their controls.

The clinical aspects of an attentional deficit in schizophrenics have been remarked upon by many clinicians (e.g., Bleuler, 1951; McGhie and Chapman, 1961). There also have been numerous experimental studies (post-onset) of attention in schizophrenia, utilizing a variety of measures of attention, including reaction time, incidental learning, discrimination learning, visual-motor coordination tasks, auditory and visual attention, etc. (Schooler, 1967). In fact, the failure of schizophrenics (in comparison to normals) on such a variety of tasks has been called "psychological deficit" and has been the topic of several lengthy reviews (e.g., Buss and Lang, 1965; Lang and Buss, 1965; Yates, 1966; Zimet and Fishman, 1970).

Since most of the research relating to attention has been of the post-onset type, it is yet undetermined to what extent attentional deficit is found in children at risk for schizophrenia. Although there are several on-going high risk research projects which include measures of

attention (e.g., Erlenmeyer-Kimling, and Weintraub and Neale, reported in Garmezzy, 1974), very little has been reported at this time. However, Ricks and Berry (1970) in a follow-up study at the Judge Baker Guidance Center report that the group of males, who were delinquent as children and who became chronic schizophrenic adults, were reported to have short attention spans in addition to other related types of problems such as hyperactivity and overreaction to frustration. Also, Anthony (1970), using a test of auditory attention (the double-bind test) with distraction presented in the form of competing, simultaneous male and female voices, reports that the experimental group (high risk children) did not do as well in selecting out irrelevant information as the control group. Anthony's research, in this case, was prospective.

Post-onset studies of schizophrenics by McGhie and Chapman and their colleagues suggest that schizophrenics have difficulty filtering out irrelevant information and as a result do poorly on attention tasks. Chapman and McGhie (1962), using a variety of visual, auditory, and perceptual-motor tasks with both auditory and visual distractors, found that the schizophrenic group performed especially poorly on visual, auditory and perceptual-motor tasks which were combined with auditory distraction. (The schizophrenics were compared with a group of normal controls and a group of non-psychotic patient controls.)

However, since this study dealt with a combination of sensory modalities, and primarily investigated auditory distraction, an extension of the study was conducted by McGhie, Chapman, and Lawson (1965). In this case an auditory task was combined with auditory distraction, a visual task was combined with visual distraction, and two tasks using combinations of both sensory modalities. Their results indicated that the performance of the schizophrenic group deteriorated significantly when auditory attention was distracted with both auditory stimuli and visual stimuli. Visual attention was also distracted by auditory stimuli, but not by visual stimuli in the schizophrenic group. Nevertheless, when asked to recall (instead of selecting out) both auditory and visual, the schizophrenic group had most difficulty recalling the visual information. McGhie et al. (1965) interpret their results as suggesting that "schizophrenic patients are particularly poor in the short-term retention of visual information" (p. 389). In a similar study Lawson, McGhie, and Chapman (1969) compared schizophrenics, epileptics, and arteriosclerotic patients and found that "only the schizophrenic and arteriosclerotic groups differ significantly from both control groups in the inferiority of visual short-term memory" (p. 532).

As McGhie et al. (1965) have stated, "It is difficult to ascertain whether distraction interrupts the process of perception or exerts this effect in the short

interval between perception and recall" (p. 388-89). Nevertheless McGhie (1970) explains their results as follows: "Studies of normal information processing have already made it clear that the limitation of the human communication channel is an informational one, so that the number of stimuli which can be responded to at any time is determined by the amount of information they contain. It is thus possible to deal with more than one set of data at a time only if the informational demands of each task are small. In order to function effectively, the individual is forced to perform a selective filtering operation on the input to ensure that his limited capacity is not overloaded. McGhie and his colleagues interpret their findings as indicating that in schizophrenia this normal filtering process has broken down so that the patients are less able to attend selectively and to process only relevant information . . . In tasks demanding the monitoring of a range of stimuli involving more complex decision making and fully occupying the limited decision channel, the failure in selective attention is more likely to lead to overloading and consequent breakdown in performance. In dealing with visual data the relatively slow rate of recording information into the auditory modality increases the likelihood of overloading" (p. 11).

METHOD

Subjects

The subjects were 20 school-aged children (7-18 years old) of 12 schizophrenic mothers, and 20 control children of 12 normal mothers. Children were individually matched on age, race, sex, and socioeconomic background. Two children were selected from each of 8 families in the control group and 8 families in the experimental. One child was selected from each of 4 control and 4 experimental families. There were 11 girls and 9 boys in both groups. The average age of the experimental group was 11.9 years (range 7-18 years, standard deviation 3.2) and the average age of the control group was 12.1 years (range 7-16 years, standard deviation 2.9). There were 5 black and 15 caucasian children in each group. Descriptive data on the families chosen can be found in Table 1 of the Results.

A description of the selection and matching procedures for each group is given in the Procedure section below.

Measures

Self-concept for children 12 and under. Children ages 7 through 12 took a modified version of Bower's (1960) "A Class Play." Ordinarily administered to groups of

children in their classes, "A Class Play" requires subjects to choose students from their class to fit various parts, e.g., "a true friend," "a mean, cruel boss." "A Class Play" was modified to be given to single individuals and one item (#21--"Someone who is shy or bashful.") was added. Subjects were requested to choose parts for themselves, and to choose parts that they thought their classmates would nominate them for. Subjects were asked to choose at least 10 of the 21 items. Copies of "A Class Play" can be found in Appendix C.

Self-concept of children 13 and over. Children ages 13 through 18 received a modified version of Bower's (1960) "Student Survey." The modifications were the same as those for "A Class Play" which are described above.

Self-concept scores. For both self-concept measures the scoring system was the same. A positive self-concept was indicated by the number of positive roles (items numbered 1, 3, 5, 7, 9, 11, 13, 15, 17, 19) selected by the subject for himself to play minus the number of negative roles selected (items numbered 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 21). Congruence between self-concept and perceived peer image was indicated by the number of agreements between the two versions of the test (roles selected by the subject for himself versus roles selected by the subject for himself as others see him)

minus the number of disagreements. Degree of perceived peer acceptance was indicated by the number of positive roles selected by the subject for himself as he thinks others see him minus the number of negative roles.

Two scores were developed from the disagreements between items selected for the self and items selected for others. Feelings of inadequacy were defined as the number of positive items endorsed for others but not endorsed for the self, plus the number of negative items endorsed for the self but not endorsed for others. Feeling a lack of recognition was defined as the number of positive items endorsed for the self but not endorsed for others plus the number of negative items endorsed for others but not endorsed for self.

Sex-role preference. Children ages 7 through 12 received a role preference test. They were asked to choose which of the following pairs they would prefer to play:

Old grandfather or Old grandmother
 Angel or Lord
 Scientist or Clothes designer
 Sister or Brother
 Devil or Witch
 Secretary or Policeman
 Cow or Bull

Sex-role preference was indicated by the proportion of sex appropriate choices.

Children ages 13 through 18 received a vocational preference test in which they were asked to choose between pairs of occupations. Each pair consisted of a choice between a male occupation and a female occupation of the same socioeconomic status. The choices were:

photographer	or	secretary
telephone operator	or	farmer
librarian	or	sports coach
airplane pilot	or	nurse
seamstress	or	mailman
porter	or	maid
florist	or	gas station owner
forest ranger	or	dentist's assistant

Sex-role preference was indicated by the proportion of sex appropriate choices.

Intellectual functioning. All subjects received the standard administration of the information and block design subtests of the WISC. A score for digit span was computed from the auditory attention task described below. The digit span from the auditory attention task differs from the standard form in that only one trial was given at each level of the digits, and digits backwards was not

administered. Also, the digits forward procedure was administered twice. An estimated digits forward span score was computed by averaging the first and second administrations of the digit span (without interference) from the auditory attention task. An estimate of digits backwards was obtained by subtracting one from the averaged digits forward score.

A prorated Verbal IQ was computed using the information scaled score and the estimated digit span score described above. A prorated Performance IQ was computed using the block design subtest. Finally, a differential IQ score was computed by subtracting the Performance score from the Verbal score.

Attention measures. Visual distraction test. The measure of visual distraction was a card sorting procedure developed by Strutt (1973). The test consists of 6 decks of 24 cards (stimulus cards) and one practice deck. Subjects are required to sort each deck into two different piles according to which of three types of symbols (form, line, or star) are present on the card. Subjects are shown two cards (display cards) at a time and presented one deck of stimulus cards. They are asked to sort the deck of stimulus cards, according to the two display cards, making two mutually exclusive piles. In addition to the symbols by which the subject is instructed to sort the decks (the

relevant dimension) there are from one to three irrelevant dimensions or symbols on the stimulus cards. A symbol which is relevant for the sorting of one deck may be irrelevant for the sorting of another deck, depending upon the pair of display cards presented.

Subjects were scored on the number of errors in sorting and the amount of time required to sort each deck. Attention was measured by the amount of time required to sort each deck.

Auditory attention task. The auditory attention task consisted of three parts, each part being administered twice. In all three parts the digits were read one second apart, and each level of digits was presented only once (as opposed to two presentations of each level of digits on the digit span subtest of the Wechsler Intelligence Test). Children ages 7 through 12 began the digit series with two digits forward, while children 13 through 18 began with three digits forward. The test was stopped after two consecutive failures or after the subject reached the upper limit for his age group. (The maximum score was 7 digits forward in the younger group and 8 digits forward in the older group.)

The entire task was tape recorded on a SONY STEREO TAPECORDER MODEL NO. TC-252. Except for initial instructions, all other instructions were recorded along with the

digits series. In order to make the digits all the same length of sound for the simultaneous digits task (Part III), a Hewlett-Packard 2100 A computer and its associated components were used to make the tape of all the digits. The digits which were spoken into a microphone were fed into the computer and an analogue to digital converter which recorded the sound 8,113 times per second. This enabled the computer to lengthen or shorten the digits to make them approximately equal in length. The length of the digits in all cases ranged from 475 milliseconds to 493 milliseconds after conversion by the computer. A ready signal was recorded 3 seconds before the first digit of a series and an end signal $1/3$ second after the last digit. Subjects were requested to recall the digits after hearing the end signal. They were allowed from 5 to 12 seconds to recall the digits, depending upon the length of the span presented. Subjects listened to the recordings on a SONY TAPECORDER MODEL TC-252 through headphones. All digits were heard through both sides of the headphones.

Part I (No Interference) of the auditory attention task consisted of the presentation of digits forward one second apart--without interference of any sort.

Part II (Alternating Interference) of the task consisted of the presentation of a female voice and a male voice alternately stating digits one second apart.

Subjects were instructed to recall the digits spoken by the male.

Part III (Simultaneous Interference) consisted of a male and female voice reciting digits simultaneously through both sides of the headphones. Subjects were instructed to recall the digits spoken by the female.

Experimenter ratings. Experimenter impressions of the children research participation were obtained immediately. Impressions were recorded using an 18 item questionnaire in which subjects were rated on such factors as appearance, personality style, and rapport established with the experimenter. Experimenters did not know which children were high risk or which were controls. A copy of the experimenter rating form (Clinical Observation Questionnaire) can be found in Appendix C.

Interview data. Background information about the child and his/her family was obtained during an interview which averaged an hour and a half in length. Among the topics covered were school adjustment of the child, personality description of the child, discipline problems at home, health history of the parents and child, and the life-style of the family in general. A copy of the interview outline can be found in Appendix C.

Parents' ratings. Parents rated each of their

children on a behavioral adjustment scale developed by Watt et al. (1970). The scale was developed on the basis of an analysis of teachers' comments in cumulative school records, and is designed to be used by teachers. However, the dimensions rated can easily be evaluated by parents or other raters as well. A copy of the scale can be found in Appendix C. Analysis of this scale is described below.

Teachers' ratings. From one to four teachers rated each child on the Pupil Rating Form. Mean scores were computed for each child on the basis of the ratings from all his teachers.

Items falling under the "agreeableness-disagreeableness" factor were used to measure abrasiveness. The peaceful-aggressive scale was used to measure aggression. Items falling under the "emotional-stability" factor were used to measure insecurity and emotional stability in general. Shyness was measured by the "introversion-extraversion" factor. In girls degree of disturbance was indicated by three factors, "emotional instability," "introversion-extraversion," and "assertiveness-passivity." In boys degree of disturbance was indicated by "emotional-stability," "extraversion-introversion," and "agreeableness-disagreeableness."

Instructions for the Pupil Rating Form can be found in Appendix D, the Factors are described in Appendix C.

Procedure

Selection of experimental group. The selection of the experimental group required several stages in order to identify potential subjects, and to obtain sufficient accurate information about each case.

In the first stage subjects were selected from the files of an outpatient clinic associated with the Northampton State Hospital. This facility was chosen because it was located in the Springfield area, an area with the largest population in Western Massachusetts. In addition, for the last two to three years patients requiring follow-up care were regularly referred to this facility upon discharge from the Northampton State Hospital. It was expected, therefore, that the clinic's records would include a large proportion of Northampton State Hospital patients who were still residing in the area.

Approximately 1,500 records were reviewed. However, due to overlap between the various separate files which were kept, the actual number of individuals was approximately 1,200. The clinic, which is staffed primarily by paraprofessionals and part-time, consulting professionals, keeps four separate files--active medication (approximately 10% of the total number of cases), inactive medication (approximately 23% of the total), active counseling (approximately 7% of the total), and inactive medication (approximately 60% of the total).

The medication records consist of the names of all clients who have received medication for psychiatric problems. A large proportion of this file consists of former Northampton State Hospital patients, discharged within the last three years. In most cases a relatively recent discharge summary from Northampton State Hospital was found in the records of the former Northampton State Hospital patients. Records of prescriptions and brief notes by the consulting psychiatrist are also kept in the medication files.

The counseling files contain background information on clients (such as, address, marital history, presenting problem, psychiatric history, etc.), and the paraprofessional counselor's progress notes. These files contain a large proportion of non-psychotic clients who had never been hospitalized.

The information in the clinic records tended to be sketchy, particularly with regard to the ages of children, previous hospitalizations, and diagnosis. As a result a second screening from the Northampton State Hospital records was required. Men and women were selected from these files who met or seemed likely to meet the following criteria.

1. Having at least one hospitalization at Northampton State Hospital.
2. Having a schizophrenic diagnosis.

3. Having children between the ages of 7 and 18.
4. Having a residence in the area.

One hundred and sixty-one cases were selected. However, since only 14 were males, and since the records suggested that males rarely had custody of their children, the males were eliminated. In general, information about children of psychotic males tended to be unavailable.

In the second phase the remaining 147 cases were screened, using Northampton State Hospital records. The criteria for keeping cases in the sample were the same as above, and in addition the parent must have had custody of their children, and must have had a most recent diagnosis of schizophrenia without retardation or organicity.

Out of these 147 cases, 109 were eliminated for the following reasons:

- 28 cases had children too young or too old
- 26 had never been in Northampton State Hospital
- 17 were not psychotic
- 10 had no children
- 8 had children living with foster parents or relatives
- 8 cases were living out of the area or their children were living out of the area
- 6 were in the hospital at the time of the present study
- 4 records had inadequate information about the existence, ages and/or location of children

2 had a most recent diagnosis which was not schizophrenic

Diagnostic screening. The third stage involved an independent assessment of diagnosis by two judges (the present author and Dr. Norman F. Watt, Professor of Clinical Psychology at the University of Massachusetts). The judges reviewed the records of 38 women whose last hospital diagnosis was schizophrenia without retardation or organicity.

The hospital records typically contained an admission interview note, physicians' progress notes, case history information, nurses' ward reports, case work-up and formulation, medical evaluation, discharge summary. Some records also contained psychological test reports, family interviews and/or family questionnaires, and information from other institutions. Generally, there was more information available for individuals with longer and/or more frequent admissions.

After reading the hospital records, the judges agreed that 27 of 38 cases were schizophrenic and that 8 were not schizophrenic or that there was insufficient evidence in the record for a schizophrenic diagnosis. The judges did not agree in 3 out of 38 cases (92.1% agreement).

Selection of control subjects. Control subjects

were selected from the records of the Springfield School Department. Control families were selected which had children the same age and sex as the children selected from the experimental group families. Families were matched on race and socioeconomic status. A modified version of the Hollingshead and Redlich Scale was used to establish socioeconomic level. A copy of the scale can be found in Appendix E. Occupations were obtained from the Springfield area municipal directory.

Contacting subjects. Letters were sent to 24 of the 27 women for whom there had been diagnostic agreement. (It was discovered after the diagnostic assessment that one woman's children were too young, one had moved to the Midwest, and one was in a nursing home in another state.) Out of 24 letters sent out 4 women were unable to be contacted directly, one spoke no English (neither did her husband), one was in a mental hospital in another state, and two could not be located. Of the remaining 20 families which could be contacted, eight said they were not willing to participate and 12 accepted. (Among the 12 families who participated one mother was in the hospital at the time of participation, one had children in a foster home at the time of participation, and one mother was hospitalized shortly after participating.)

Letters were sent to 29 control families. One

letter was returned with address unknown, 8 refused to participate when contacted by telephone, 4 did not reply to the letter and were unable to be reached by phone, 4 accepted but did not participate because the family with whom they were matched did not participate or because they were unable to come in before the end of the project, and 12 families agreed to participate and did so.

Copies of letters sent to the experimental and control group families can be found in Appendix A.

Experimental tasks. Upon arriving at the Child Study Center, a research facility operated by the Psychology Department of the University of Massachusetts, the family was taken to an interview room, and the purpose of the project and the tasks involved were explained again. While the children were present the consent forms were reviewed paragraph by paragraph. Children were allowed to read the consent form which applied to them. It was emphasized to parents and children that they could refuse to participate at any time, including on the day of participation.

After consent forms were signed (copies of consent forms can be found in Appendix B), children were taken to the experimental rooms where they were tested. Parents were then interviewed.

Subjects were presented the experimental tasks in

the following order:

1. Sex-role preference test	3-5 minutes
2. Self-concept measure	10 "
3. Auditory attention task	25 "
4. Wechsler Intelligence Scale for Children Information Subtest	10 "
5. Card sorting task	15 "
6. Block design subtest	15 "
	<hr/> 88-90 minutes

During the rest period names of teachers were obtained from the subjects.

Instructions for the sex-role preference tests, and the self-concept measures were read to the subjects as they are printed on top of the forms. Instructions for the WISC subtests were the standard WISC manual instructions. Instructions for the auditory attention task and the card sorting task can be found in Appendix D.

Ethical Issues

The methodology required for high risk research necessitates the consideration of numerous ethical issues. For example, to obtain children of schizophrenic parents as subjects for the present study, it was necessary to obtain the names of former mental patients who had received that diagnosis. Since it would not be practical to obtain the written consent of all former patients prior to the

investigation of their hospital records, the search for names was conducted without the knowledge or consent of the former patients. In addition, contacting former patients to ask for their participation, if done improperly or too frequently, could be upsetting and/or annoying to the former patients. Also, requesting the participation of children of former patients could arouse unnecessary anxieties in the children or the parents regarding the mental health of the children. Finally, requesting teachers to rate children represents a possible threat to confidentiality which could result in the labeling of individual children as mental health risks.

As the result of these considerations, it was decided that the true purpose of the project would be explained to the various officials responsible for the welfare of the former mental patients, and to those school officials responsible for the welfare of their children. Individual teachers were not told about the high risk hypothesis nor were the former mental patients, however, the former patients were told that their names were selected from the records of the Northampton State Hospital. Also, the study was designed to leave the choice of telling experimental group children about the connection between the project and the mother's hospitalization up to the parents. The hospitalization was not discussed in front of the children unless the parent had already done

so, and children were not asked any questions about their mother's hospitalization.

The project was reviewed by representatives from seven different organizations. Those groups were: The Human Subjects Committee of the Psychology Department of the University of Massachusetts, the Human Subjects Committee of the University of Massachusetts, the Human Rights Committee of the Northampton State Hospital, the director of the Community Care Center clinic, the Massachusetts Department of Mental Health Human Rights Committee and a committee of officials from the Springfield School Department.

Approval of the project was obtained in all cases.

RESULTS

Demographic data. Mothers in the experimental and control groups were compared on the basis of employment status and marital status, using Fisher's Exact Test. Families in each group were compared on the basis of receipt of government financial aid. The results indicated that there were significantly more employed mothers in the control group ($p < .05$) and significantly more experimental group families receiving government financial aid ($p < .05$). There was also a trend ($p < .20$) for the experimental group families to have fewer fathers in the home (marital status data). Additionally, there were 12 experimental children who had been in foster homes at some point in their lives; two of these children were in a foster home at the time of the study. It is clear that inspite of careful matching procedures, there were substantial differences in the home and family conditions in the two groups, and that these differences may certainly have affected the overall results of the present study. Further descriptive data on the subjects and their families can be found in Table 1.

Global Assessments of Social Behavior

Teachers' ratings. One to four teachers' ratings per child were returned for 33 of the 40 experimental and

TABLE 1

SOME DESCRIPTIVE DATA ON THE SUBJECTS AND THEIR FAMILIES

Item	Control Group	Experimental Group
Person(s) interviewed	9 mothers, 1 father, 2 sets of parents	8 mothers, 2 fathers, 2 sets of parents
Average number of children born to mother	3.50, range 2-8 children	3.75, range 2-8 children
Average age of mother	37.5, range 26-54 years	40.5, range 28-54 years
Average age of father	41.75, range 34-59 years	46.7, range 34-58 years
Number of married mothers	11	7
Number of separated mothers	0	1
Number of divorced mothers	1	3
Number of widowed mothers	0	1
Number of mothers who did not graduate high school	2	5
Number of fathers who did not graduate high school	5	2
Number of mothers with training beyond high school	2	3
Number of fathers with training beyond high school	5	5
Number of mothers working	8	2

Table 1 (continued)

Item	Control Group	Experimental Group
Number of foreign-born mothers	2	3
Number of foreign-born fathers	0	2
Number of families receiving government financial aid	1	7
Number of oldest (in family) children tested	5	5
Number of youngest (in family) children tested	6	7
Average number of Northampton State Hospital admissions (mother)	0	3.08, range 1-6 admissions
Average total number of known mental hospital admissions (mother)	0	3.58, range 1-8 admissions
Average number of times mother diagnosed schizophrenic	0	2.58, range 1-5 times
Average number of months since date of last mental hospital admissions (excluding one mother who was in the hospital at the time of the present study).	No mental hospital admissions	25.4 months, range 12 to 55 months

control group children (a total of 64 ratings returned). No ratings were returned for three high risk children and three control children: one older experimental child of each sex, one younger experimental girl, one older and two younger control girls. As a result, two high risk girls (one older and one younger) were rematched for this analysis. Children without matched controls were omitted from the analysis. Therefore, the analysis of the teachers' ratings is based upon 16 high risk-control group pairs, four pairs of each sex and age level.

Paired comparison t-tests yielded significant overall differences between the high risk and control groups for three out of five factors: Emotional Stability ($p < .025$), Extraversion ($p < .025$), and Assertiveness ($p < .01$, all one-tailed). There was also a trend ($p < .10$, one-tailed) on Scholastic Motivation. The difference between the two groups for the total positive sum of the factor items was also significant ($p < .025$, one-tailed). The high risk group, in other words, was rated significantly less emotionally stable, less extraverted, less assertive, and less positively in general. The high risk boys over 12 were the only subgroup rated significantly less emotionally stable than their controls ($p < .025$, one-tailed). High risk girls combined across age levels were rated significantly less extraverted ($p < .025$), less assertive ($p < .005$), and less positively in general

($p < .05$, all one-tailed) than their matched controls. However, there were no significant sex x risk factor interactions in the teachers' ratings data. High risk children over 12 combined across sexes were rated significantly ($p < .025$, one-tailed) less assertive than their matched controls, but the age x risk factor interaction did not reach significance. The differences between the groups on agreeableness and aggression (peacefulness) were not significant. Means and standard deviations for the groups are presented in Table 2.

Parents' ratings. Overall comparisons between the high risk group and the control group were not significant for any of the Factors, although there was a trend ($p < .10$, one-tailed) for the experimental children to be rated by their parents as less peaceful than control children were rated by their parents. There were significant age x risk factor interactions for the boys; the older boys at risk were rated significantly more aggressive ($p < .05$), less scholastically motivated ($p < .025$) and more exhibitionistic ($p < .05$, all one-tailed) than younger boys at risk, when compared to their respective control groups. Although the age interaction on Scholastic Motivation was predicted, Table 4 shows that this result was attributable much more to the high motivation of the younger boys at risk (which was not expected) than the low motivation of

TABLE 2
 SUMMARY OF THE MEANS AND GROUP DIFFERENCES ON TEACHERS' RATINGS OF CLASSROOM BEHAVIOR

Factors	Control Group (n = 16)		Experimental Group (n = 16)		Difference Scores: Control minus Experimental	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Scholastic Motivation	3.48	.67	3.00	1.08	.48*	1.25
Emotional Stability	3.62	.64	3.19	.66	.43**	.71
Extraversion	3.63	.59	2.86	.86	.77**	1.02
Assertiveness	3.22	.56	2.44	.82	.78***	1.12
Agreeableness	4.12	.70	3.96	.94	.16	1.17
Sum-positive	87.29	10.64	75.60	16.60	11.69**	18.18
Peacefulness	3.99	.65	3.71	1.20	.29	1.24

* p < .10, one-tailed test

** p < .025

*** p < .01

the older boys at risk (which was expected). There were no main effects for age, or sex, and no other age x sex interactions for any other analysis. Means and standard deviations for peacefulness (aggression), Scholastic Motivation, and presentation (exhibitionism) are presented in Tables 3, 4, and 5 respectively.

Experimenters' ratings. Sign tests of the experimenters' ratings of the children after their research participation yielded a significant overall difference between the high risk group and their matched controls on item #5, Interest in experimenter ($p < .025$). Experimental children (primarily the older girls) were rated as taking more interest in the experimenter. The high risk boys were rated as more exhibitionistic than their matched controls ($p < .05$, one-tailed), confirming the impressions of parents, and high risk children over 12 (primarily the older girls) were liked by the experimenters slightly more than their matched controls ($p < .10$).

Intellectual Functions

Intelligence. There was an overall trend ($p < .10$, one-tailed) for the high risk children to have lower Verbal IQ scores than their matched controls when the Verbal IQ was prorated on the basis of the information and the digit span subtests. There was also a significant age x risk factor interaction ($p < .05$, one-tailed), the

TABLE 3
 MEANS AND GROUP COMPARISONS OF PARENTS' RATINGS
 ON PEACEFULNESS FOR BOYS

Subject Groups	Boys 12 and under (n = 4)		Boys over 12 (n = 5)	
	Mean	S.D.	Mean	S.D.
Control Group	3.50	.58	4.60	.89
Experimental Group	4.00	.82	2.60	1.14
Difference Scores (Control minus Experimental)	-.50	1.29	2.00	1.58

Note.--There was a significant age x risk factor interaction ($p < .05$, one-tailed).

TABLE 4
 MEANS AND GROUP COMPARISONS OF PARENTS' RATINGS
 OF SCHOLASTIC MOTIVATION FOR BOYS

Subject Groups	Boys 12 and under (n = 4)		Boys over 12 (n = 5)	
	Mean	S.D.	Mean	S.D.
Control Group	2.52	1.01	3.82	.51
Experimental Group	4.22	.63	3.66	1.04
Difference Scores (Control minus Experimental)	-1.70	1.21	.16	.58

Note.--There was a significant age x risk factor interaction ($p < .025$, one-tailed).

TABLE 5
 MEANS AND GROUP COMPARISONS OF PARENTS' RATINGS
 ON PRESENTATION SCALE (EXHIBITIONISM) FOR BOYS

Subject Groups	Boys 12 and under (n = 4)		Boys over 12 (n = 5)	
	Mean	S.D.	Mean	S.D.
Control Group	3.00	.82	2.30	.67
Experimental Group	2.88	1.03	3.60	1.14
Difference Scores (Control minus Experimental)	.12	.85	-1.30	1.10

Note.--There was a significant age x risk factor interaction for boys ($p < .05$, one-tailed).

older experimental children having significantly lower Verbal IQs in relation to their controls than younger experimental children in relation to their controls. Group means and standard deviations are presented in Table 6.

When the Verbal IQ was prorated on the basis of the information subtest alone, there were no significant differences between the groups. Hence most of the experimental children's deficiency in verbal intelligence rests on the digit span, which measures primarily concentration.

Performance IQ scores were slightly higher ($p < .20$) in the experimental group. There were no significant interactions for the Performance IQ data.

The IQ difference scores, computed by subtracting the performance score from the verbal score (based on both subtests), were significantly lower in the high risk group ($p < .025$, one-tailed). However, there were no age or sex effects, nor were there any significant interactions.

Auditory attention. There were three scores computed for each of the three parts of the auditory attention task (described in Method): No Interference, Alternating Interference, Simultaneous Interference. The three scores were:

1. Longest span: the longest span correctly repeated by the subject.

TABLE 6
SUMMARY OF WECHSLER INTELLIGENCE SCALE FOR
CHILDREN MEANS AND GROUP COMPARISONS

Subject Groups	12 and under (n = 10)		Over 12 (n = 10)	
	Mean	S.D.	Mean	S.D.
Verbal IQ				
Control	96.50	11.41	112.00	11.32
Experimental	97.60	14.37	95.40	11.29
Difference Scores (Control minus Experimental)	-1.10	20.43	16.60	20.13
Performance IQ				
Control	92.30	15.28	109.10	25.36
Experimental	106.30	30.86	114.00	29.14
Difference Scores (Control minus Experimental)	-14.00	34.61	-4.90	24.48
Verbal-Performance IQ				
Control	4.20	14.57	2.90	24.75
Experimental	-8.70	25.75	-18.20	30.21
Difference Scores (Control minus Experimental)	12.90	29.52	21.10	34.02

Note.--There were overall trends for the experimental group to have lower Verbal IQ scores ($p < .10$, one-tailed) and higher Performance IQ scores ($p < .20$) than controls. There was also a significant age x risk factor interaction ($p < .05$, one-tailed) on the Verbal IQ scores.

2. Positionally correct: the total number of digits correctly repeated by the subject in the correct order, for all levels of digits presented.
3. Digits remembered: the total number of digits correctly repeated by the subject for all levels of digits presented, regardless of the order in which they were repeated by the subject.

Paired comparison t-tests for the No Interference Task yielded a significant overall difference between the experimental and control groups on all three scores, longest span, positionally correct, and digits remembered ($p < .01$, $< .025$, $< .01$, respectively, one-tailed). There were significant age x risk factor interactions for the positionally correct score ($p < .05$) and for the digits remembered score ($p < .025$, both one-tailed). Both of these results were primarily due to the boys. There was also a significant age x risk factor interaction for boys on the longest span score ($p < .025$, one-tailed), although the age x risk factor interaction for the sexes combined did not reach significance. The results for all interactions were consistent, older high risk children did more poorly in relation to their controls than younger high risk children in relation to their controls. There was no main effect for sex; however, there was a significant main effect for age ($p < .05$). As might be expected, the older children performed better than the younger children. Means and standard deviations for the positionally correct scores

and the digits remembered scores, broken down into age groups, are presented in Tables 7 and 8, respectively. Means and standard deviations for the longest span scores for boys are presented in Table 9.

Paired comparison t-tests for the alternating Interference Task yielded a significant overall effect, experimental versus control, only for the positionally correct score ($p < .025$, one-tailed). There was also a significant age x risk factor interaction ($p < .05$, one-tailed) on the positionally correct scores, the older experimental group doing more poorly in relation to their controls than the younger experimental group children in relation to their controls. There was no significant main effect for sex, nor was there a significant age x sex interaction; however, as might be expected, there was a significant main effect for age. Younger children did less well on the task than older children. The means and standard deviations for the positionally correct score on the Alternating Interference Task are presented in Table 10.

Paired comparison t-tests for the Simultaneous Interference Task yielded significant differences between the experimental and control children for all three scores, longest span ($p < .05$), positionally correct ($p < .025$), and digits remembered ($p < .025$, all one-tailed). There was no main effect for sex and there was no age x sex interaction;

TABLE 7
 NUMBER OF POSITIONALLY CORRECT DIGITS IN THE AUDITORY
 ATTENTION TASK WITH NO INTERFERENCE

Subject Groups	12 and under (n = 10)		Over 12 (n = 10)	
	Mean	S.D.	Mean	S.D.
Control Group	17.90	6.25	27.20	2.52
Experimental Group	15.90	2.46	19.70	4.74
Difference Scores (Control minus Experimental)	2.00	7.58	7.50	3.84

Note.--There was a significant overall difference between experimental and control children ($p < .025$, one-tailed), a significant age effect, and a significant age x risk factor interaction ($p < .05$, one-tailed).

TABLE 8
 NUMBER OF DIGITS REMEMBERED IN THE AUDITORY
 ATTENTION TASK WITH NO INTERFERENCE

Subject Groups	12 and under (n = 10)		Over 12 (n = 10)	
	Mean	S.D.	Mean	S.D.
Control Group	21.25	5.78	30.60	1.96
Experimental Group	20.15	2.36	23.50	4.20
Difference Scores (Control minus Experimental)	1.10	7.24	7.10	3.66

Note.---There was a significant overall difference between experimental and control children ($p < .01$, one-tailed), a significant age effect ($p < .01$) and a significant interaction of age x risk factor ($p < .025$, one-tailed).

TABLE 9
 LONGEST SPAN SCORES FOR BOYS ON THE AUDITORY
 ATTENTION TASK WITH NO INTERFERENCE

Subject Groups	Boys 12 and under (n = 4)		Boys over 12 (n = 5)	
	Mean	S.D.	Mean	S.D.
Control Group	4.50	.71	6.70	.45
Experimental Group	4.38	.63	4.90	.55
Difference Scores (Control minus Experimental)	.12	1.03	1.80	.27

Note.--There was a significant overall difference between experimental and control children ($p < .01$, one-tailed), a significant age effect, and a significant age x risk factor interaction ($p < .025$, one-tailed) for boys.

TABLE 10
 POSITIONALLY CORRECT SCORES IN THE AUDITORY ATTENTION
 TASK WITH ALTERNATING INTERFERENCE

Subject Groups	12 and under (n = 10)		Over 12 (n = 10)	
	Mean	S.D.	Mean	S.D.
Control Group	12.80	7.13	24.86	3.06
Experimental Group	11.45	5.00	14.95	7.01
Difference Scores (Control minus Experimental)	1.35	8.81	9.90	9.03

Note.--There was a significant overall difference between experimental and control children ($p < .025$, one-tailed), a significant age effect, and a significant age x risk factor interaction ($p < .05$, one-tailed).

however, there was a significant main effect for age.

In addition to the three scores described above, the Alternating Interference Task and the Simultaneous Interference Task were scored for two other variables:

1. intrusions--digits which were repeated by the subject, but which came from the irrelevant, interfering list read simultaneously or alternating with the relevant list.
2. external intrusions--digits which were recited by the subject, but which were not from the relevant list of digits presented or from the interfering list.

There were no significant differences between the groups using these two scores.

In order to determine the effect of interference each subject's score on the No Interference Task was subtracted from his score on the Alternating Interference Task and from his score on the Simultaneous Interference Task. This procedure was used for all three types of scores, longest span, positionally correct, and digits remembered.

Paired comparison t-tests of the Alternating minus No Interference scores yielded no overall differences between the groups. However, there was an age x risk factor interaction for girls ($p < .05$, one-tailed), as indicated by the longest span score. The older experimental girls did more poorly relative to their controls than the younger experimental girls relative to their

controls. Also, the experimental girls in general did more poorly than their matched controls, as measured by the longest span score ($p < .05$, one-tailed). There were no main effects for age or sex. Means and standard deviations for the Alternating minus No Interference scores for girls are presented in Table 11.

Paired comparison t-tests of the Simultaneous minus No Interference scores yielded no significant differences between the groups.

Visual attention. A careful inspection of the card sorting task indicated that the older children did significantly better on this task than younger children. However, there were no differences between the experimental and control groups.

Other Variables

Sex-role preference. A careful inspection of the data for this measure revealed that there were no significant differences between the groups on either measure of sex-role preference.

Self-concept. Paired comparison t-tests of the feelings of inadequacy score (described in Method) yielded no significant differences between the high risk children and their matched controls. However, there was a trend ($p < .10$, one-tailed) for the high risk girls to have more

TABLE 11
 ALTERNATING MINUS NO INTERFERENCE SCORES FOR
 GIRLS ON THE AUDITORY ATTENTION TASK
 USING THE LONGEST SPAN SCORE

Subject Groups	Girls 12 and under (n = 6)		Girls over 12 (n = 5)	
	Mean	S.D.	Mean	S.D.
Control Group	-.83	.52	.10	.65
Experimental Group	-1.00	1.18	-1.50	.71
Difference Scores (Control minus Experimental)	.17	.75	1.60	1.24

Note.--There was a significant age x risk factor interaction for girls ($p < .05$, one-tailed).

feelings of inadequacy than their matched controls. A careful inspection of the other scores on this measure indicated that there were no age, sex, or risk factor effects.

Health Checklist. The Health Checklist Questionnaire was administered during a break in the interview. It was analyzed by sign tests. Parents reported that children were more often planned in the control group ($p < .05$), more children in the experimental group rocked back and forth as babies ($p < .05$), and experimental children had more severe and more frequent temper tantrums ($p < .05$, all one-tailed). In addition, the older experimental group children were reported as either remaining the same in their attitude toward parental affection or liking affection slightly more as they grew older ($p < .10$), as opposed to the control group children who were more likely to like affection less.

Interview. Interview questions were also analyzed with sign tests. The results indicate that in relation to their matched controls, the high risk children were described by their parents as less likely to have a close friend ($p < .05$) and less likely to have several close friends ($p < .05$, both one-tailed). In addition mothers in the experimental group more often spontaneously mentioned that their children seemed to try to advise or protect or

take care of the mothers ($p < .05$) and that the child seemed to worry about the mother ($p < .10$). Experimental group girls were significantly less likely to be a member of clubs or to be in organized extracurricular activities ($p < .05$, one-tailed).

Interview questions about the health of parents indicated that the physical health of the schizophrenic mothers was significantly poorer ($p < .05$, one-tailed) than the health of mothers of the control group children. Included in the experimental group mothers was one woman with terminal cancer, one with diabetes and a severe weight problem, and one with emphysema and heart problems. The experimental group families also had significantly more relatives who had been in mental hospitals ($p < .05$, one-tailed).

DISCUSSION

The results of the present study indicate that emotionally vulnerable children (high risk) are behaviorally deviant, as observed by their teachers and parents, and that they are marginally deficient in their cognitive functioning. They are shy, passive, insecure and socially non-participating in school. Outside of school they have few friends; boys are somewhat exhibitionistic (as rated by experimenters and parents); and girls are especially less active socially than their controls (as judged by parents). At home these children may be a little more aggressive. Although their tested intelligence is not generally below average, they have difficulty on intellectual tasks requiring intensive concentration. The cognitive deficiencies, though slight, appear to be greater in older children at risk.

The present findings of social deviance among girls are consistent with retrospective results reported by Watt et al. (1970), who studied the school records of hospitalized schizophrenics. Using a similar factor system to analyze teachers' comments, they found that the preschizophrenic girls were significantly more insecure, maladjusted, and quiet than their controls. Their results for

the boys are different from the present results. Although the authors report that boys were significantly less emotionally stable (consistent with the present data), major sex differences were found on the Agreeableness Factor. Preschizophrenic boys were more unpleasant, negativistic and antisocial than the girls. The authors interpret their results as indicating that preschizophrenic boys show patterns of unsocialized aggression while preschizophrenic girls show patterns of oversocialized, inhibited behavior.

Probably, the main reason for the discrepant results is the important differences in the populations studied. The Watt et al. study is a retrospective investigation of schizophrenics, while the present study is concerned with a group of children who are vulnerable to emotional disorders. When one considers that only two or three children in the present sample might become schizophrenic (based on actuarial estimates), it is not surprising that the results of the two studies are different.

Furthermore, there were a few indications of unsocialized aggression and abrasiveness in boys in the present data. Experimenters and parents rated boys more exhibitionistic, and parents rated the boys more aggressive. If one interprets the exhibitionism in boys (bragging, being a "show-off," etc.) as an attempt to get attention and acceptance, one might also interpret the

experimenters' ratings of the girls as a similar, but more socialized pattern of the same thing. The girls may have attempted to gain the attention and acceptance of the male experimenters by asking more questions about them, thus appearing more interested in the experimenters. If this interpretation is correct, the risk children would have been attempting to receive the nurturance they needed in different, but sex-appropriate ways.

The results of the intelligence testing parallel those of Lubensky (1972) who found that her preschizophrenic group tended to have larger English minus Math Grades discrepancy scores ($p < .10$) than their controls. She also found that the preschizophrenic group had significantly lower math grades, and she suggested that the deficiency in math may have been due to problems in concentrating. In the present study the risk group had significantly greater Verbal minus Performance IQ scores, due primarily to the digit span subtest, which is considered a test of attention (Rapaport, 1968).

The attention tasks themselves indicated that emotionally vulnerable children have difficulty paying attention, but that the deficit does not appear to be related to an inability to filter out irrelevant information as McGhie (1970) has suggested. Neither the auditory attention task nor the visual attention task showed signs of filtering deficiencies in the risk children. However,

the simpler, undistracted test of attention did reveal an attention deficit. It is important to remember that McGhie's hypothesis is based upon studies of adult schizophrenics while the present study is concerned only with a small group of emotionally vulnerable children. Therefore, while the present data does not support McGhie's interpretations, it certainly cannot be considered contradictory evidence. Furthermore, there was some evidence indicating that the risk girls were slightly distracted on the Alternating attention task. Interestingly, on this task the female voice was the distractor, while on the Simultaneous task the male voice was the distractor. Anthony (1968), who has developed a task similar to the Simultaneous task, has hypothesized that the child who identifies most closely with the sick parent will, when left to his own choice, choose to recite the message delivered by the same sex voice of the sick parent. If Anthony's hypothesis is correct, it may be that the girls in the present study had more difficulty ignoring the female voice because the female voice was more "emotionally charged" for the girls. However, it is also possible that emotionally vulnerable girls have more difficulty with distracting influences. The latter interpretation would be consistent with Lubensky's (1972) finding that the major deficit in math was in the preschizophrenic girls.

Older emotionally vulnerable children showed

greater signs of disturbance in relation to their controls than younger children in relation to their controls, primarily as measured by the auditory attention task, Verbal IQ, and parents' ratings. This finding is in keeping with the theory that emotionally vulnerable children are most observably different as teenagers when society begins to demand greater social competence and when one must begin to apply the knowledge and basic academic skills acquired in the early grades. During the teenage years one begins to prepare for the interpersonal and occupational responsibilities of adulthood. One begins to establish independence from parents, to deal with awakened sexuality, and to experience various rites de passage. It is considered by many theorists to be the time of a normative, developmental crisis during which one must deal with heightened levels of anxiety. In short, early adolescence is a critical time for testing one's personal identity. If a child is emotionally vulnerable, whether due to inherited characteristics or early socialization experience, it is plausible to expect signs of the vulnerability to be most observable during adolescence when some of the social shelters fall away.

It should be emphasized that although the present study revealed a number of statistically reliable differences between the control group and the high risk group, these differences were small. Clinical impressions of the

children indicated that the risk children, except for one case, did not behave differently from the control children. Although the children in the present study were statistically different from their controls on some measures, their behavior was clearly in the normal range. It is also important to underline the negative findings in the present investigation. Children at risk were not different from their controls on measures of self-concept, sex-role preference or visual attention. The negative findings, the clinical impressions, and even the positive findings indicate that emotionally vulnerable children are not seriously disturbed in childhood.

This finding has significance for preventive intervention because it means that most emotionally vulnerable children are not easily identified. The finding is also consistent with Offord and Cross's (1969) conclusion that "at the very most not more than 50% of the total population of hospitalized schizophrenics are disturbed in childhood and that the majority (70%), at least in high school, are either well adjusted or have only slight personality problems" (p. 274).

A not entirely unexpected, but important subsidiary finding in the present study is that in spite of careful matching on race, socioeconomic status, and age and sex of children, families in the control group had quite different home environments from those in the

experimental group. More families in the experimental group were receiving government financial aid; fewer families had fathers present in the home; there were more physically ill mothers; and there were more unplanned children in the experimental group families. In addition to the statistically analyzed differences, there was a clinical impression that the experimental families led more impoverished lives. They rarely went out to eat, almost never traveled and seemed, in general, to have fewer cultural experiences than control group families. The effect of the cultural lack may be illustrated by the experimental group girl who, apparently, had never seen a soda machine and did not know how to operate it.

There was evidence that the children in the experimental group had more unstable and more upsetting lives. Twelve had been in foster homes, and most had experienced the trauma of their mother's hospitalization two or more times, not to mention the effects of lengthy separations. Whereas in the control group few mothers had ever been separated from their children except for a brief hospitalization for the birth of another child or for a very unusual vacation. The toll of this upsetting environment may be reflected in the findings that experimental group children worried more about their mothers, attempted to care for the mothers, and yet seemed more needy of affection and, perhaps, reassurance than their controls.

In order to match groups on all the seemingly important variables, one must consider the number of mothers on welfare, the number and length of separations of the children from their mothers, the number of fathers present in the home, the number and length of foster home placements, the stigma of the mother's illness, the disruption of the home prior to the hospitalization of a seriously disturbed mother, and so on. It almost seems that the only group comparable to a group of children of schizophrenic mothers is a second group of children of schizophrenic mothers.

Although these findings are chronically problematic to the researcher interested in the etiology of schizophrenia, the findings are especially important to high risk researchers who so often adhere to a genetic model of etiology (Garnezy, 1972; Shakow, 1973). Perhaps it is too often assumed that if experimental and control groups have been matched on socioeconomic status and one or two other important variables, the groups are truly comparable except for heredity. As Shakow (1973) has suggested, perhaps there has been an overemphasis on the genetic in high risk research, and a tendency to ignore important environmental schizophrenogenic factors. Rodnick and Goldstein (1974) also have presented data which points up the importance of research on the upbringing of the children of schizophrenic mothers. They argue persuasively that

emotional deprivation by schizophrenic mothers may contribute to the development of emotional flatness and interpersonal dysfunction in their children. Their evidence suggests that offspring of the most severely disturbed schizophrenic mothers probably suffer the most extreme emotional deprivation in childhood, thus shaping their development toward recapitulating the histories of their mothers. Poor premorbid or process schizophrenics are most likely to evidence a family history of schizophrenia, possibly through genetic transmission (Kety et al., 1968), but the psychosocial impact of the mothering of such women may also contribute to the more severe forms of schizophrenia in later life. Mednick (1973) reports that children of chronic schizophrenic women who broke down earliest were children who lost their mothers to hospitalization earlier and for longer periods of time. These children were also less likely to receive surrogate parenting from another family member.

Disentangling the gene-environment interaction in these studies and in the present study is no simple matter. It must be emphasized that the results of the present research could be attributed to differential socialization in the experimental and control groups. Finally, the results of the present study provide additional support for the argument that child rearing practices in children with a possible genetic risk are not secondary issues.

One of the most heartening findings of the present study is that the children at risk were not yet seriously disturbed. If the present sample represents a reasonable cross-section of children at risk for emotional disorders, the prospects for successful intervention are good. However, it will be important to follow this sample longitudinally to determine the factors which are the best predictors of schizophrenic disorders and to determine the life experiences which are most beneficial in deterring schizophrenia.

SUMMARY

Twenty children of schizophrenic mothers were compared with twenty children of normal mothers. Children of schizophrenic mothers were considered to be at risk for emotional disorder by virtue of their heredity and the environmental stress they had experienced. Children of schizophrenic parents have a higher incidence of schizophrenia than is found in the general population. They are also considered emotionally vulnerable, since it is estimated that about half, on an actuarial basis, will become emotionally disturbed adults. High risk children were individually matched with control children on sex, age, race, and socioeconomic status of their families.

The purpose was to investigate the possible precursor signs of schizophrenia in order to provide a more solid empirical base for future prospective research. The study used measures that would both test theory and be potentially useful for identifying other children at risk, in order to permit early preventive intervention.

The variables studied were intelligence, auditory and visual attention, personality characteristics, family background, self-concept, sex-role preference, health history, and early developmental patterns. Teachers' ratings, parents' ratings, experimenters' ratings, interviews with parents, and individual test data were collected for each

subject.

The results indicated that high risk children were behaviorally deviant, as observed by their teachers and parents, and that they were marginally deficient in their cognitive functioning. They were shy, passive, insecure and socially non-participating in school. Outside of school they had few friends; boys were somewhat exhibitionistic (as rated by parents and experimenters); and girls were especially less active socially than their controls (as judged by parents). At home these children may have been a little more aggressive. Although their tested intelligence was not generally below average, they had difficulty on intellectual tasks requiring intensive concentration. The cognitive deficiencies, though slight, appeared to be greater in older children at risk.

An important subsidiary finding was that in spite of careful matching, families in the control group had quite different home environments from those in the experimental group. The experimental group had more families receiving government aid, more physically ill mothers, more unplanned children and fewer fathers present in the home. Children in the experimental group had more unstable and upsetting lives. Twelve had been in foster homes, and most had experienced at least two of their mothers' hospitalizations, not to mention the lengthy separations.

These findings were interpreted as indicating the importance of environmental stress, particularly the effects of the mother-child relationship, in determining outcome in children of schizophrenic mothers. It was concluded that the findings could be attributed to differential socialization in the experimental and control group.

It was also emphasized that although the risk children were statistically different from their controls on some measures, their behavior was clearly in the normal range. The negative findings, the clinical impressions, and even the positive findings indicated that the high risk children were not seriously disturbed in childhood.

Implications for preventive intervention and future research were also discussed.

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Appendix A

Letters

Letter to experimental group
families

Letter to control group
families

Letter to teachers



The Commonwealth of Massachusetts

University of Massachusetts

Amherst 01002

DEPARTMENT OF PSYCHOLOGY

Dear

We are writing to ask you and your family to take part in an important research project sponsored by the Massachusetts Department of Mental Health and the Psychology Department of the University of Massachusetts.

This study is concerned with families in which a parent has been hospitalized for an emotional illness. We appreciate that, as members of a family that has experienced an emotional illness, you will have had to face a great deal of stress. We believe, however, that with your help our project will contribute greatly to a better understanding of the needs and problems of families such as yours. We hope to develop programs in the future to meet these needs, so that other families will have to undergo fewer difficulties.

What we are asking of you is that you, your spouse (if he is available), and one of your children visit with us at the Child Study Center at 122 Chestnut Street, Springfield. We will ask you some questions about your everyday life, and we will ask your children to take some simple tests. The whole procedure should not take much more than one and a half hours. We have found this is usually a pleasant experience for the families assisting us.

We assure you that the information you give us will be treated in strictest confidence and will be kept in locked files available only to qualified professionals and their research associates on our staff. The information that we are obtaining on a large number of families will be used for statistical purposes only. You and members of your family will not be identified by name.

We understand that your participation in the project may be somewhat of an imposition on your time. In recognition of this, we would like to send you a check for \$15.00 to cover transportation expenses and to express our appreciation for your help.

If you have a telephone, please write down the number on the enclosed reply form. Return it along with your comments about days of the week or times during the day that are especially convenient for

you to come in for the interview. If you do not have a telephone either at home or at work, please indicate your preferences for appointment times and we will contact you again by mail to arrange for an appointment.

Within the next week Ms. Higgins will phone you. She will answer any questions you may have and will make specific arrangements with you for participation.

Because of the importance of the answers that we are seeking, your participation and cooperation is especially needed in this project. We hope, therefore, that we can count on you and we look forward to speaking with you soon.

Sincerely,

Jane A. Higgins
Principal Psychologist
Northampton State Hospital

Norman F. Watt
Professor of Clinical Psychology
University of Massachusetts

Please put an X next to those times which are most convenient for you and your family. Choose at least three times.

Monday	morning _____	afternoon _____	evening _____
Tuesday	morning _____	afternoon _____	evening _____
Wednesday	morning _____	afternoon _____	evening _____
Thursday	morning _____	afternoon _____	evening _____
Friday	morning _____	afternoon _____	evening _____
Saturday	morning _____	afternoon _____	evening _____
Sunday	morning _____	afternoon _____	evening _____

Comments:

Name: _____

Address: _____

Telephone number: _____



The Commonwealth of Massachusetts

University of Massachusetts

Amherst 01002

DEPARTMENT OF PSYCHOLOGY

Dear

We would like to ask you and your family to participate as members of a volunteer group in an important research project sponsored by the Massachusetts Department of Mental Health and the Psychology Department of the University of Massachusetts.

Our study is presently concerned with the health and development of children. Needing a group of average families for our study, we randomly selected names from central school registries and municipal directories in the Springfield area. Your name was one of those selected. The information we are gathering will be of educational and scientific value in a number of ways. Primarily we hope the information we gather will help us understand how the average family lives and how children normally develop.

What we are asking of you is that you and one of your children visit with us at the Child Study Center at 122 Chestnut Street, Springfield. We will ask you some questions about your everyday life, and we will ask your children to take some simple tests. The whole procedure should not take much more than one and a half hours. We have found this is usually a pleasant experience for the families assisting us.

We assure you that the information you give us will be treated in strictest confidence. The information that we are obtaining on a large number of families will be used for statistical purposes only. You and members of your family will not be identified by name.

We understand that your participation in the project may be somewhat of an imposition on your time. In recognition of this, we would like to send you a check for \$15.00 to cover transportation expenses and to express our appreciation for your help.

If you have a telephone, please write down the number on the enclosed reply form. Return it along with your comments about days of the week or times during the day that are especially convenient for you to come in for the interview. If you do not have a telephone either at home or at work, please indicate your preferences for appointment times, and we will contact you again by mail to arrange for an appointment.

Within the next week Ms. Higgins will phone you. She will answer any questions you may have and will make specific arrangements with you for participation.

Because of the importance of the answers that we are seeking, your participation and cooperation is especially needed in this project. We hope, therefore, that we can count on you and we look forward to speaking with you soon.

Sincerely,

Jane A. Higgins
Principal Psychologist
Northampton State Hospital

Norman F. Watt
Professor of Clinical Psychology
University of Massachusetts

Please put an X next to those times which are most convenient for you and your family. Choose at least three times.

Monday	morning_____	afternoon_____	evening_____
Tuesday	morning_____	afternoon_____	evening_____
Wednesday	morning_____	afternoon_____	evening_____
Thursday	morning_____	afternoon_____	evening_____
Friday	morning_____	afternoon_____	evening_____
Saturday	morning_____	afternoon_____	evening_____
Sunday	morning_____	afternoon_____	evening_____

Comments:

Name: _____

Address: _____

Telephone number: _____



The Commonwealth of Massachusetts
University of Massachusetts
Amherst 01002

DEPARTMENT OF PSYCHOLOGY

Dear

I am writing to ask your assistance in a research project being conducted in the Springfield area schools. The project is concerned with child development, and its purpose is to investigate the relationship between child development and family life style. As you know, much more needs to be learned about this crucial aspect of children's behavior.

Families were selected from several different backgrounds in order to provide a variety of life styles. Some of the families who are participating in the project had children in your last year's class. Their parents have given their permission to have you rate their children on the enclosed Pupil Rating Form. We are turning to you for your help because you possess a close acquaintance with the child's recent classroom behavior that few people have.

Since most of the children in the study are attending public schools in Springfield, the project has been screened, and approved by the Springfield School Department. (If you have any questions about the authenticity of the project, please contact Dr. John Howell, Director of Research, Springfield School Department, 195 State Street; phone: 733-2132. He also has the signed parental consent forms by which he can confirm that parental permission has been given.) All the ratings and all the information obtained about the children and their families will be confidential. The data will be available only to the researchers working on the project.

We are offering a \$3.00 payment for each pupil rated. This is only a token compensation, but the rating usually only requires about 20 minutes.

Because of the importance of the project and the tremendous amount of effort involved in collecting this kind of information,

- 2 -

it is particularly important that you help us complete our knowledge of the children. Please fill out the Pupil Rating Form and return it in the enclosed envelope as soon as possible. If you have any questions I can answer, please call me at 413-586-1084.

I look forward to hearing from you soon.

Sincerely,

(Ms.) Jane A. Higgins
Doctoral Student
University of Massachusetts

JAH:jeb
Enclosure

Appendix B

Consent Forms

Consent for research participation
of adults in experimental group

Consent for research participation
of adults in control group

Consent for research participation
of children

CONSENT FORM FOR RESEARCH PARTICIPATION
OF ADULTS--E

(Date)

I hereby consent to participate in the research study sponsored by the Psychology Department of the University of Massachusetts. This participation may include any or all of the following procedures: (1) an interview at the Child Study Center at 122 Chestnut Street, Springfield, (2) a self-administered questionnaire, (3) examination of my Northampton State Hospital records, and (4) full or partial recording of the interview.

Participation in this study is for the purpose of aiding research and will not be of potential benefit to me directly. I understand that I may refuse to participate in the study at any time.

I understand that the information will be identified by number only, not by name. It will be held in strictest confidence and kept in locked files. I also understand that the information will be used only for the research purposes and will be available to the responsible researchers only.

I agree that I may be contacted in the future to be asked to participate in follow-up research. I understand that I may refuse to participate at any time in the future.

(Parent's signature)

(Parent's signature)

(Witness)

CONSENT FORM FOR RESEARCH PARTICIPATION
OF ADULTS--C

(Date)

I hereby consent to participate in the research study sponsored by the Psychology Department of the University of Massachusetts. This participation may include any or all of the following procedures: (1) an interview at the Child Study Center at 122 Chestnut Street, Springfield, (2) a self-administered questionnaire, and (3) full or partial recording of the interview.

Participation in this study is for the purpose of aiding research and will not be of potential benefit to me directly. I understand that I may refuse to participate in the study at any time.

I understand that the information will be held in strictest confidence. I also understand that the information will be used only for research purposes and will be available to the responsible researchers only.

I agree that I may be contacted in the future to be asked to participate in follow-up research. I understand that I may refuse to participate at any time in the future.

(Parent's signature)

(Parent's signature)

(Witness)

CONSENT FORM FOR RESEARCH PARTICIPATION
OF CHILDREN

(Date)

I hereby consent that my (son/daughter) _____ participate in the research study sponsored by the Psychology Department of the University of Massachusetts. This participation will consist of any or all of the following procedures: (1) a visit to the Child Study Center at 122 Chestnut Street, Springfield for some simple tests of his/her opinions and thinking, (2) examination of his/her school records, and (3) ratings of his/her performance and behavior in school obtained from his/her teachers.

I understand that the testing session may be recorded in full or in part.

Participation in this study is for the purpose of aiding research and will not potentially benefit my child (children) or other members of my family directly. I understand that my child (children) may refuse to participate in any given procedure and may withdraw from the study at any time.

I understand that the information will be identified by number only, not by name. It will be held in strictest confidence and kept in locked files. I also understand that the information will be used only for the research purposes and will be available to the responsible researchers only.

(Parent's signature)

(Parent's signature)

(Witness)

Appendix C

Measures

A Class Play

Student Survey

Experimenters' rating form
(Clinical Observation Questionnaire)

Interview Outline

Interview Questionnaire

Pupil Rating Form

Manual for coding Pupil Rating
Form

DATE _____

A CLASS PLAY - I

If you were going to be in a play in school and you could choose your own part, which of these parts would you pick for yourself? Put an X next to all the parts you would like to play.

Please choose at least 10 parts.

- _____ 1. A true friend.
- _____ 2. Somebody who is often afraid and who acts like a little boy or girl.
- _____ 3. A class president.
- _____ 4. Somebody who is stuck-up and thinks he or she is better than everybody else.
- _____ 5. Someone to act the part of a teacher of small children.
- _____ 6. A mean, cruel boss.
- _____ 7. A boy or girl to act the part of a team captain, someone good in sports and liked by all.
- _____ 8. A mean, bossy sister or brother.
- _____ 9. Someone who is smart and usually knows the answer.
- _____ 10. A person who often gets angry over nothing and gets into lots of arguments.
- _____ 11. Someone who is jolly and doesn't cause any trouble in class.
- _____ 12. A bully who picks on smaller boys and girls.
- _____ 13. Someone who is liked by everybody and who tries to help everybody.
- _____ 14. A very lazy person.
- _____ 15. A very fair person who plays games fairly.
- _____ 16. A nice pest - someone who often gets into trouble, but is really nice.
- _____ 17. Someone who could direct the play.
- _____ 18. A smaller, younger child who is always falling down and getting hurt.
- _____ 19. A school nurse or doctor.
- _____ 20. Somebody who seems always to be late for school.
- _____ 21. Someone who is shy or bashful.

NAME _____

DATE _____

A CLASS PLAY - II

Which of these parts would your classmates pick you to play?
Please choose at least 10 parts.

- _____ 1. A true friend.
- _____ 2. Somebody who is often afraid and who acts like a little boy or girl.
- _____ 3. A class president.
- _____ 4. Somebody who is stuck-up and thinks he or she is better than everybody else.
- _____ 5. Someone to act the part of a teacher of small children.
- _____ 6. A mean, cruel boss.
- _____ 7. A boy or girl to act the part of a team captain, someone good in sports and liked by all.
- _____ 8. A mean, bossy sister or brother.
- _____ 9. Someone who is smart and usually knows the answer.
- _____ 10. A person who often gets angry over nothing and gets into lots of arguments.
- _____ 11. Someone who is jolly and doesn't cause any trouble in class.
- _____ 12. A bully who picks on smaller boys and girls.
- _____ 13. Someone who is liked by everybody and who tries to help everybody.
- _____ 14. A very lazy person.
- _____ 15. A very fair person who plays games fairly.
- _____ 16. A nice pest - someone who often gets into trouble, but is really nice.
- _____ 17. Someone who could direct the play.
- _____ 18. A smaller, younger child who is always falling down and getting hurt.
- _____ 19. A school nurse or doctor.
- _____ 20. Somebody who seems always to be late for school.
- _____ 21. Someone who is shy or bashful.

NAME _____

DATE _____

A STUDENT SURVEY - I

Put an X next to those statements that apply to you. Please choose at least 10 items.

- _____ 1. Someone who is good in school work.
- _____ 2. Someone who gets into fights or quarrels with other students.
- _____ 3. One who can accept responsibilities.
- _____ 4. One who has to be coaxed or forced to work with other students.
- _____ 5. Someone who is well liked.
- _____ 6. One who has difficulty learning.
- _____ 7. Someone who is helpful to others.
- _____ 8. Someone who is interested in things he can do alone.
- _____ 9. A person on whom you can depend.
- _____ 10. One who makes unusual or odd remarks in class.
- _____ 11. One who is respected by other students.
- _____ 12. One who sometimes behaves in ways which are dangerous to himself or others.
- _____ 13. Someone who will probably be a success in life.
- _____ 14. Someone who is often unhappy or "blue."
- _____ 15. One who has lots of common sense.
- _____ 16. Someone who has more problems than others.
- _____ 17. Someone who has lots of self-confidence.
- _____ 18. One who gets upset when faced with a difficult school problem.
- _____ 19. A person who is seldom sick.
- _____ 20. A person who is moody.
- _____ 21. Someone who is shy or bashful.

NAME _____

DATE _____

A STUDENT SURVEY - II

Put an X next to those statements that describe how your classmates in school probably think of you. Please choose at least 10 items.

- _____ 1. Someone who is good in school work.
- _____ 2. Someone who gets into fights or quarrels with other students.
- _____ 3. One who can accept responsibilities.
- _____ 4. One who has to be coaxed or forced to work with other students.
- _____ 5. Someone who is well liked.
- _____ 6. One who has difficulty learning.
- _____ 7. Someone who is helpful to others.
- _____ 8. Someone who is interested in things he can do alone.
- _____ 9. A person on whom you can depend.
- _____ 10. One who makes unusual or odd remarks in class.
- _____ 11. One who is respected by other students.
- _____ 12. One who sometimes behaves in ways which are dangerous to himself or others.
- _____ 13. Someone who will probably be a success in life.
- _____ 14. Someone who is often unhappy or "blue."
- _____ 15. One who has lots of common sense.
- _____ 16. Someone who has more problems than others.
- _____ 17. Someone who has lots of self-confidence.
- _____ 18. One who gets upset when faced with a difficult school problem.
- _____ 19. A person who is seldom sick.
- _____ 20. A person who is moody.
- _____ 21. Someone who is shy or bashful.

CLINICAL OBSERVATION QUESTIONNAIRE

Except in items 11, 12 and 13, the items are on a 5-point scale (1 and 5 are extremes, 3 is desirable or "normal"). If undecided between two possible ratings, always choose the one closer to 3--normal.

I. Child's initial approach to tests:

1. Totally unwilling to go with researcher (e.g., outright refusal; temper tantrum; requires excessive persuasion; etc.)
2. Somewhat reluctant to go with the researcher (e.g., finds excuse not to go with researcher; requires some persuasion; would prefer to play with toys and makes this evident)
3. Willing to go with researcher (e.g., may ask questions about situation but is not resistant)
4. Seems somewhat impatient to begin test (e.g., may demonstrate this verbally, but impatience arises out of own desire to get it over with rather than desire to be with researcher)
5. Overly and inappropriately eager to go with researcher (e.g., may forceably take researcher by hand; may run out of room ahead of researcher; etc.)

II. Attitude during testing:

1. highly resistant and uncooperative; deceitful
2. somewhat resistant; evasive; guarded
3. cooperative, appropriate response
4. eager to please
5. obsequious; inappropriately confiding

III. Test situation anxiety; tasks during which child is particularly anxious

1. suspicious and frightened (e.g., expects not to do well, anticipates discovery that he/she is crazy, etc.)
2. somewhat apprehensive, apologetic, or anxious for approval (e.g., asks if he/she is doing well; apologizes for not performing adequately, etc.)
3. accepting of test situation
4. trusting and confident, self-assured

5. excessively confident, self-righteous (e.g., makes derogatory comments about situation; may suggest that questions are "dumb"; or, attempts to take over situation)

IV. Change in child's attitude toward researcher at end of session:

1. excessive positive changes (e.g., adoration of researcher)
2. mildly inappropriate positive changes toward researcher (e.g., may physically come closer to researcher in a way that seems inappropriate or excessive; may reveal an inappropriate attachment to researcher; may consider researcher a friend; may desire future contact with researcher; etc.)
3. friendlier and warmer (within normal range)
4. no change
5. more hostile, indifferent, disinterested

V. Curiosity toward researcher personally:

1. displays excessive curiosity about researcher's personal life
2. makes occasional inappropriately curious remarks
3. interested and appropriately curious
4. not very interested; does not ask questions, yet does respond somewhat when opening is obvious
5. totally indifferent and/or disinterested (e.g., to the point of boredom, impatience, etc.)

VI. Physical contact with researcher:

1. aggressive and hostile, even "in jest" (e.g., pinching, hitting, pulling hair, pulling at clothes, etc.)
2. obvious aversion to physical contact (e.g., moves away from researcher; quickly breaks contact if contact is established, even accidentally; avoids taking researcher's hand; etc.)
3. appropriate relaxed attitude toward physical contact (e.g., does not move away abruptly if physical contact is established accidentally; may take researcher's hand; etc.)
4. takes active steps toward physical closeness though not necessarily contact (e.g., may sit very close to researcher; may follow researcher closely; may stand near researcher; etc.)

5. excessive and/or inappropriate "affectionate" physical contact (e.g., hugs and elings to, or caresses researcher, etc.)

VII. Physical posture:

1. rigid
2. stiff and tense, with some free movement (or may display rigid posture at first, yet gradually relaxes)
3. relaxed
4. seems relaxed at first, but gradually becomes restless and fidgety (or may display nervous mannerisms such as foot-tapping, playing with hair, etc.)
5. slouching, sloppy posture; or restless and fidgety

VIII. Over-all affect (voice, facial animation, expressive movement):

1. highly dramatic, theatrical range of affect
2. (same as #1, only less so)
3. normal, appropriate range of affect
4. (same as #5, only less so)
5. flat, unexpressive affect

IX. Overall distractability (tasks in which the child was particularly distracted and how):

1. wanders from tasks when there is no distraction present (e.g., diverts attention to other subjects; shows obvious desire not to concentrate; or conversation wanders)
2. overly distractable (e.g., complains of mild noise or other distraction as an excuse not to concentrate, etc.)
3. somewhat distractable (e.g., shows non-verbal irritation or distraction; shows non-verbally that he is trying to concentrate anyway)
4. oblivious to distraction--absorbed in task
5. totally absorbed and detailed in approach (e.g., will continue on one topic persistently, relating incidents in unnecessary detail; persists even when it is suggested that he move on to next question or task)

X. Shyness:

1. withdrawn or aloof (e.g., consistently averts gaze; will not look at researcher; physically edges away from interviewer)

2. shy and/or reserved (e.g., blushes, occasionally averts gaze; shows some facial tremor in emotional situations; will not initiate interactions)
3. warm and friendly (e.g., in general opens self up to researcher; will initiate interactions)
4. aggressive in initiating interactions
5. exhibitionistic (e.g., absorbed with self and own opinions about things; initiates interaction which is really a monologue rather than an interaction)

XI. General suspiciousness about lab situation:

1. overly suspicious (frequent comments that we are out to get him)
2. mildly suspicious (occasional comments that things are stacked against him)
3. not suspicious

XII. Child's dress and grooming tidy? Rate from 1 to 5.

1 = very untidy 3 = average 5 = very tidy

XIII. Child's dress and grooming clean? Rate from 1 to 5.

1 = very unclean 3 = average 5 = very clean

XIV. Child's dress and grooming appropriate? Rate from 1 to 5.

1 = very inappropriate 3 = average 5 = very appropriate

XV. Child's dress and grooming--body odor? Rate from 1 to 5.

1 = much body odor 3 = average 5 = no body odor

XVI. Gaze behavior:

1. averts gaze _____
2. feigns eye contact _____
3. stares _____
4. up and down gaze at researcher _____
5. back and forth (breaks eye contact repeatedly and returns _____
6. other (specify): _____

XVII. How did you feel about the child?

1. liked child very much
2. liked child
3. indifferent

4. disliked child somewhat
5. intensely disliked child

XVIII. Apparent relationship between children (where appropriate):

1. hostile, verbally or physically
2. ignored other child
3. very little interchange
4. warm and friendly interchange
5. overly protective

Additional comments: Put on a separate sheet of paper.

INTERVIEW OUTLINE

Introduction

Today we will be asking you some questions about yourselves and your family. We will also be asking you to complete some forms and to take a few tests.

Basically we would like to get some idea what your lives are like. We'd like this to be as casual as possible, so feel free to mention anything you think is important or to ask questions--whenever you think of them. Try to think of it as your telling us your story.

Most people have enjoyed this process and thought it a pleasant experience.

If there are any questions that you prefer not to answer, please let me know.

Today _____ and _____ will be taking some tests. These will be relatively short, simple tasks that measure things like general information, attitudes, self-concept, and ability to concentrate.

In a few minutes I will introduce you to some of the people who are working with me on the project. _____ will be working with _____, _____ will be working with _____, and I will be talking with you, _____.

In order to be certain that you understand the project we have prepared a form describing the project--which we would like you to read and sign. (Recount the various tasks in the project, and go over consent forms.)

(Introduction to other experimenters, description of recording device, tour of Child Study Center.)

Description of Child

1. How would you describe _____? For example, how does he/she behave, how would you characterize his personality, what are his special interests or hobbies? (Pursue any leads for elaboration.) (Favorite games or toys--younger children.)
2. Does _____ have any special responsibilities at home, e.g., a paper route, doing the dishes, taking out the trash, etc. .

3. Do you have any pets in your home? (Have you ever had any pets?)
Who usually cares for the pets?
4. What are _____'s best qualities?
5. What problems have you had with him/her?

Interpersonal Relationships

1. How would you describe _____'s relationships with other people?
2. How does he/she get along with his/her brothers and sisters?
3. How does he/she get along with other children his/her own age?
4. Does he/she have any best friends? Could you describe one of them?
5. Do other children ever tease him/her or pick on him/her?
6. Does he/she play a lot with other children or does he/she prefer to play alone?
7. Has he/she ever fought much with other children?
8. Is he/she a member of any clubs or organizations such as Scouts, Little League, or religious groups?
9. Does he/she have a special attachment to anyone outside your immediate family?

School

1. How does _____ like school?
2. How does _____ usually do in school?
3. What does _____ like to do best in school?
4. Is he/she having any difficulties with his/her schoolwork at present?
5. Have there ever been any difficulties at school?
6. What else can you tell me about school?

Is there anything else you would like to tell us about your children in order to help us know and understand them better?

- - - - -

Break--parents get rating scale and questionnaire.

Go over questionnaire and ask about the following:

1. Names of mother and father for each child.
2. Length of marriage to each partner.
3. Whether or not there is another male currently living in the home. How long he has been a "father figure" for the children?
4. Go over any ambiguities in the form or the way it was completed.
5. Occupation of patient's father, if needed.

Is there anything else about _____'s development or health that you feel is important?

Now I'd like to talk about your life.

- - - - -

Family Life

1. Can you tell me something about your personal situation--where you live, how you spend your time during the day, what you enjoy doing, etc.
2. What do you usually do for entertainment when you go out?
3. How often would you say you go out in an average week (including evenings and weekends)?
4. How do you usually spend your time at home when you are not working? Do you have any hobbies or special interests? If you want to relax, what do you do?
5. What kinds of things do you usually do with your children around home?
6. How often do you find time to spend with your children?
7. What kinds of things do you do as a family (e.g., vacations)? Do you ever go out together?
8. Do you (or your husband) do any sort of work outside your home? If so, what kind of arrangements do you have for working? How do you support yourself and your family?

Separation

1. Have you or your husband/wife ever been separated from the children for any length of time?
 When was that?
 What was the reason for the separation?
 How long were you away?
 How did the children take the separation?
2. When you (your wife) were in the hospital, how were the children cared for? Who cared for the children? How did it work out?
3. While you were in the hospital, did you see your children? (Did you visit your wife while she was in the hospital?) How did the children like the visits? Were they aware of your being in the hospital?
4. How was your hospitalization explained to the children? What was the reaction of the children?
5. Husband: What was it like at home when your wife was in the hospital?
6. What else can you tell me about your hospitalization?

Parents

1. Now I'd like to talk about your marriage. How would you describe your relationship with your husband/wife?
2. What do you and your husband/wife enjoy doing together most?
3. Who usually makes the decisions in your family?
4. Would you say you and your husband/wife generally agree or disagree in handling family matters?
5. Most parents have disagreements at times, what kinds of things do you and your husband/wife disagree about?
6. What is the usual reaction of the children to an argument between you and your husband/wife?
7. What else can you tell me about your marriage?

Discipline

1. What kinds of discipline problems come up most frequently in your home?

2. How do you usually discipline your children?
3. Does any one of your children require more discipline than the others?
4. Have there ever been any problems with sex or drugs among your children?

Relatives

1. How is your health now?
2. Have you had any serious accidents or illnesses?
3. How is your general health, compared to your health 5 or 10 years ago?
4. Husband (experimental group): In order for us to get a complete picture of your family, it is important for us to know as much about the kinds of stressful experiences your family has faced. In Mrs. _____'s case, we know that she has been hospitalized. Have you, Mr. _____, ever experienced any emotional upsets for which you have received professional help?
 - When was that?
 - Where did you go for help?
 - What was the problem you experienced?
 - How did it turn out?
5. Husband: Were you ever hospitalized for a nervous or emotional problem?
 - When was that?
 - Where were you hospitalized?
 - What was the reason you went to the hospital?
 - How did it turn out?
6. Normal control: Have you ever experienced an emotional upset for which you received professional help? Has your spouse ever received professional help for emotional difficulties? (If yes, probe hospitalization, etc.)
7. Has anyone in your family ever had any emotional or nervous difficulties, e.g., your aunts, uncles, brothers or sisters?
 - Could you describe the difficulty?
 - Was he/she ever hospitalized?
 - When was that?
 - What was the problem?
8. Is there anything about your health that you think is important and would like to tell me about?

I don't have any more questions at this time. Is there anything else that you would like to mention or talk about?

Do you have any questions?

Obtain comments about the interview and/or the research project.

QUESTIONNAIRE - 2

YOUR FATHER'S OCCUPATION: _____

YOUR FATHER'S EDUCATION: _____

YOUR SPOUSE'S NAME: _____

SPOUSE'S ADDRESS: (If different from yours) _____

SPOUSE'S DATE OF BIRTH: _____ PLACE OF BIRTH: _____

SPOUSE'S EDUCATION: (Last grade completed in school) _____

ARE YOU CURRENTLY RECEIVING FINANCIAL ASSISTANCE FROM ANY GOVERNMENT AGENCY? _____

NAMES OF CHILDREN'S TEACHERS	CHILD	SCHOOL
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

QUESTIONNAIRE - 3

QUESTIONS ABOUT YOUR SON/DAUGHTER _____

1. Was he/she a normal nine month baby (or early or late)?
2. Were there any physical problems during the pregnancy?
(For example, bleeding staying in bed, accidents, fevers, rashes, illnesses, viruses, etc.)
3. Were there any problems for the baby right after his/her birth? (For example, difficulty in starting breathing, jaundice, time in incubator)
4. What was his/her weight at birth?
5. Was he/she a planned baby?
6. Has he/she ever had any serious illnesses or accidents/
7. Was your child precocious in any way, in other words, did he/she show any developmental characteristics or activities earlier than you would normally expect?
8. Does he/she have trouble with his/her eyesight, hearing or speech?
9. Has he/she ever taken any medicines regularly?
What are they?
10. Has he/she ever had difficulty sitting still, paying attention to things or concentrating?
11. Would you say that he/she is clumsy when compared to other children his age? (Has frequent minor accidents, falls or bangs himself frequently, etc.)
12. Has he/she ever had any seizures? (Twitches, jerks, convulsions, fits, epilepsy)

QUESTIONNAIRE - 4

13. Has he/she ever received any help for emotional or nervous difficulties?
14. Have there been any important difficulties for which he/she has not received help?
15. What aspects of his/her early development were you especially please with?
16. Do you thin that as an infant he/she was (circle one of the following) very quiet quiet normally active overly active
17. Would you say that as an infant he/she liked to be held and cuddled? (circle one) very much a normal amount very little
18. Would you say that his/her attitude toward being held and cuddled changed or remained the same as he/she grew older?
19. Children sometimes show the following behaviors. Please circle those items that have ever applied to your son/daughter.
- | | |
|--------------------------|------------------------------|
| stammering or stuttering | restlessness or overactivity |
| undercats or overcats | sleeping difficulties |
| head banging | temper tantrums |
| rocking back and forth | unusual habits or mannerisms |

PUPIL'S NAME

NUMBER

TEACHER'S NAME

PUPIL RATING FORM

Behavior		Rating Scale	
1. orderliness	orderly	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	careless
2. confidence	insecure	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	confident
3. loquaciousness	silent	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	talkative
4. leadership	leader	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	follower
5. cooperation	compliant	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	negativistic
6. activity level	low	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	high
7. attention	distractible	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	attentive
8. mood	somber	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	cheerful
9. group participation	little	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	much
10. self assertion	assertive	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	passive
11. consideration	considerate	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	egocentric
12. inhibition	inhibited	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	uninhibited
13. achievement	achieving	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	underachieving
14. tension	nervous	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	calm
15. popularity	popular	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	unpopular
16. independence	dependent	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	independent
17. disposition	pleasant	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	unpleasant
18. presentation	exhibitionistic	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	modest
19. work habits	organized	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	disorganized
20. maturity	immature	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	mature
21. sociability	extraverted	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	introverted
22. conduct	misbehaved	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	well behaved
23. effort	unmotivated	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	motivated
24. emotional control	controlled	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	emotional
25. reliability	dependable	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	undependable
26. aggression	aggressive	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	peaceful
27. adjustment	well adjusted	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	maladjusted
28. impulsivity	impulsive	<u>1</u> ' <u>2</u> ' <u>3</u> ' <u>4</u> ' <u>5</u> '	deliberate

Manual for Coding Pupil Rating Form

<u>Factor</u>	<u>Scale</u>	<u>Coding Direction</u>
I. Scholastic motivation	1. orderliness	reverse
II. Emotional stability	2. confidence	OK
III. Extraversion	3. loquaciousness	OK
IV. Assertiveness	4. leadership	reverse
V. Agreeableness	5. cooperation	reverse
none	6. activity level	OK
I	7. attention	OK
II	8. mood	OK
III	9. group participation	OK
IV	10. self assertion	reverse
V	11. consideration	reverse
none	12. inhibition	reverse
I	13. achievement	reverse
II	14. tension	OK*
III	15. popularity	reverse
IV	16. independence	OK
V	17. disposition	reverse
none	18. presentation	reverse
I	19. work habits	reverse
II-	20. maturity	OK
III	21. sociability	reverse
V	22. conduct	OK
I	23. effort	OK
II	24. emotional control	reverse
I	25. reliability	reverse
none	26. aggression	reverse
II	27. adjustment	reverse
none	28. impulsivity	reverse

*Note that the label for this scale, tension, refers to the negative pole of the dimension. Hence any correlations with this variable should be interpreted with reference to the positive pole, calm, since it is treated for coding purposes as if it were labeled calmness rather than tension.

Appendix D

Instructions

Card Sorting Task

Auditory Attention Task

Pupil Rating Form Instructions

Pupil Rating Form Behavioral
Summaries

CARD SORTING

Initial Instructions

This is a game in which you must sort a deck of cards into two piles as quickly as you can. Each pile goes in front of one of these card holders. (E points to area in front of card holders.) A card which will be put here (E points) will tell you which cards go in that pile. (E turns over first card of practice deck.) Every card has a dot in the center and a black line at the top. With this first deck of cards, if the card has red anywhere on it, then put it on this side (E inserts red display card and points to area in front). If the card has green anywhere on it, then put it over here (E inserts display card and points to area in front).

Remember, speed is very important. Work as fast as you can without making mistakes. If you do make a mistake and throw a card in the wrong pile, don't go back and put it in the other pile. Push ahead with the other cards. Do you have any questions?

Let's try it with these red and green cards. (E puts the practice deck face down in front of S.) Put your hands beside the cards and when I say "Go," pick up all the cards, turn them over and begin sorting them into the right piles as fast as you can.

Okay? Ready? Go!

Instructions Before Each Deck of Cards

Very good. Here are some different cards. This time, if there is a _____ anywhere on the card (E names value of dimension), then it goes in this pile (E inserts display card); and if there is a _____ anywhere on the card (E names other value), then it goes in this pile (E inserts display card).

Remember, work as fast as you can without making mistakes.
Okay?

Put your hands beside the cards.

Ready? Go!

AUDITORY ATTENTION TASK

Initial Instructions
(Not on Tape)

What we do here is listen to a tape of a person speaking some numbers. What you do is repeat back the numbers you hear. We both listen through these earphones. (E shows S the earphones.)

The first thing we will do is to make sure the sound is comfortable for you. The person on the tape will ask you to turn these two dials (E points) until the sound is loud enough for you to hear clearly. One dial controls the loudness in your right ear, the other the loudness in your left ear. Make it so the sounds are the same loudness in your two ears. Just follow the instructions you hear on the tape. Okay?

If at any time you want to stop, maybe to ask a question, just tell me and I'll shut off the tape.

Okay?

Let's put on the earphones.

Taped Instructions

Hello. For the next few minutes we'd like you to listen carefully to some numbers. First, we need to make sure the sound is okay. Turn the dials on the tape recorder so the sound is at a comfortable level. Adjust the volume so you can hear the words clearly, and the volume is comfortable for you. Also make sure that the sounds coming in your left ear are as loud as the sounds coming in your right ear. Turn the dials on the tape recorder until the sounds are the same loudness in your ears. The dials don't have to be in exactly the same position, just get it so the sounds seem to be the same for you. Okay?

Part I

You are about to hear a girl speak some numbers and when she stops you are to repeat back the numbers she has spoken. Before each series of numbers you will hear the get ready sound _____. A few seconds later you will hear the numbers. When the girl has finished you will hear this sound _____. That's your signal to repeat the numbers the girl has spoken. Just say out loud the

numbers you have heard. If at any time you want to stop, maybe to ask a question, just tell the person who is with you and the tape will be shut off.

Remember you'll hear the get ready sound _____, then some numbers. Then you will hear _____, the sound telling you it's time to recall the numbers you have heard. Okay? Let's begin.

Now it's time to rest.

Part II

In this second part, we'd again like you to repeat back numbers, but this time there will be two people speaking, a girl and a man. What we'd like you to do is repeat the numbers spoken by the man. In other words, ignore the girl's voice and repeat only the numbers the man speaks. You'll hear the get ready tone, then the numbers, then the tone telling you it's time to repeat back the numbers the man has spoken. Okay? Let's begin.

It's time to rest a moment.

Part III

This time both the girl and the man will be speaking and we'd like you to repeat back the numbers spoken by the girl. This time the girl and the man will be speaking at the same time. Remember, repeat only the numbers spoken by the girl. You'll hear the get ready tone, then the numbers, then the tone telling you it's time to repeat back the numbers spoken by the girl. Okay? Let's begin.

Rest a moment.

Part IV

This time only the girl's voice will be on the tape. As in the first part, what we'd like you to do is repeat back the numbers she speaks. You'll hear the get ready tone, then the numbers, then the tone telling you it's time to repeat back the numbers the girl has spoken. Okay? Let's begin.

Now rest.

Part V

In this next part, there will be two people speaking again and what we'd like you to do is repeat the numbers spoken by the man. Ignore the girl's voice and repeat only the numbers spoken by the man. You'll hear the get ready tone, then the numbers, then the tone telling you it's time to repeat back the numbers spoken by the man. Okay? Let's begin.

Now rest.

Part VI

In this next part, the man and girl will again be speaking at the same time and what we'd like you to do is repeat back the numbers spoken by the girl. You'll hear a get ready tone, then the numbers, then the tone telling you it's time to repeat back the numbers spoken by the girl. Okay? Let's begin.

Instructions for Pupil Rating Form

This is a rating questionnaire for describing roughly the typical classroom behavior of children. It consists of 28 behavioral dimensions, each characterized at either end by adjectives with opposite meanings. These meanings are expanded considerably in the accompanying manual. It would be useful to read over the manual before making the ratings, and then to consult it occasionally when questions arise in your mind, as you make the ratings. The name of the child should be written in the upper left corner of the page and the name of the person making the rating should be written in the upper right corner of the page. The space for the child's number can be left blank. It is to be used later for purposes of identification.

The ratings are to be made by circling the number on each dimension which best describes the child's typical behavior. Consider, for example, the first rating scale. Referring to the summaries in the manual, you read how orderly and careless are defined. Then you circle the number on the orderliness scale that in your opinion best describes the child in question. If you consider the child very orderly, you circle 1. On the other hand, a very careless child should be rated 5. The middle three numbers refer to average children. You should circle 2 if the child is a little more orderly than usual or 4 if he is a little more careless than usual. Few children fall exactly in the middle of a scale, but 3 should be circled if you simply can't decide toward which end of the scale the child's behavior usually inclines.

Rate each of the 28 scales in order, leaving none of them out. When you are finished, check to be sure that you have circled one number, and only one, for every scale, omitting none. If you have any doubt about your rating, you may indicate this by writing a question mark next to the name of the scale, for example:

2. confidence ? insecure ' 1 ' 2 ' 3 ' ④ ' 5 ' confident

If you have more than one child to rate, take each one separately. Fill out the entire rating form for the first child before going on to the next. Once the form has been completed, there is no need to go back to make changes, since your first impressions are sufficient for our purposes.

If you have any questions about these instructions, please ask the experimenter before you start to make the ratings.

PUPIL RATING FORM

Behavioral SummariesScale 1. Orderly

Consistently does neat work, keeps desk area orderly. Tends to be a perfectionist, very conscientious about getting work done. Careful worker.

Careless

Messy, unconscientious about doing his work, likely to be satisfied with speed rather than neatness and accuracy in school work.

Scale 2. Insecure

Lacks self-confidence, too ready to say he is ill. Overly sensitive, vulnerable, cannot accept criticism. Expresses doubt and fears, low self-esteem. Doubtful about abilities and attractiveness to other people. Afraid of failure.

Confident

Assumes he will have some measure of success in social encounters and academic tasks. Self-assured, confident, realistic about capabilities. Accepts criticism and praise without undue distress or elation.

Scale 3. Silent

Seldom talks very much. May listen well or daydream in class. Quiet. Reticent to express his feelings.

Talkative

Likes to talk to people. Must exercise self-restraint not to talk inappropriately. Wants to socialize too much during "no talking" times, rather talk than work. Freely expresses his feelings.

Scale 4. Leader

Takes charge of groups and situations. Leadership potential, definite leader, excellent leadership qualifications. Not easily influenced by peers.

Follower

Goes along with the group. Easily influenced by peers. Makes up to the leader. Apt to be distracted by unstable company.

Scale 5. Compliant

Is eager to be helpful, anxious to please. Willing to adjust to social demands of peers and teachers. Willing to help others, desires to cooperate. Obediant.

Negativistic

Not always cooperative. Fresh, flaunts and rejects authority. No respect for adults, finds teachers unfair. Argumentative, won't admit he caused trouble. Tells teacher how to run things. Blunt.

- 2 -

Scale 6. Low Activity

Slow, physically underactive. Takes his time, seldom hurries. Seems apathetic at times. Low energy level.

Scale 7. Distractible

Easily distracted in class, difficulty concentrating on work, seems to have short attention span. Low interest.

Scale 8. Somber

Is moody, sulky, pouts when he doesn't get his way. Grumbling, unsmiling, sullen, humorless, unhappy, spiritless, unresponsive to environment.

Scale 9. Little Participation

Does not participate, needs to be drawn out from group. Needs encouragement to participate in class discussions, does not adjust to group situation, reticent to take part in extracurricular activities.

Scale 10. Assertive

Is socially aggressive. Takes the initiative. Dominant, makes his will known. Seldom backs down.

Scale 11. Considerate

Is kind, thoughtful, selfless, generous, and a good sportsman. Has concern for others, sense of justice, fair play. Aware that other people have needs and desires that are different from his own.

Scale 12. Inhibited

Cautious, timid, fearful. Seldom "let's go" for fear of consequences. Tends to fret and be a worrier. May wish for things but hesitates to go after them.

High Activity

Quick, physically overactive. Always doing something. Seems to be always in a hurry. Energetic.

Attentive

Appears alert in class; good concentration in work. Awake and inquisitive; curious. Interested in class work.

Cheerful

Has a happy, sunny disposition. Sense of humor, bounding spirits. Smiles readily, enjoys experience, interested in what's going on around him.

Much Participation

Contributes much in class, likes to be in groups, participates, works well in groups. Joins willingly in extracurricular group activities.

Passive

Is submissive, yielding. Does not seem to have a will of his own. Lacks social initiative. Acquiesces to other views.

Egocentric

Is unkind, inconsiderate, and selfish. Treats others unfairly. Domineering, headstrong, strongwilled, stubborn, self-righteous, bossy. Wishes everyone to cooperate with him. Treats others unfairly in sports. Socially insensitive.

Uninhibited

Wild, daring, unafraid. Throws caution to the winds. Carefree, seldom ruminates about potential threats. When the spirit moves him, he goes.

- 3 -

Scale 13. Achieving

Strong achiever, a good student and making good progress. Does accurate and quick work. Impressive in the classroom.

Scale 14. Nervous

Agitated, fidgety, restless. Has nervous habits (bites fingernails, chews pencil, etc.) Obviously a tense, anxious child. Can't sit still in class.

Scale 15. Popular

Is popular and gets along well with peers. Has a number of friends. Well liked, respected by classmates. Accepted by other kids, at the center of things.

Scale 16. Dependent

Needs support, seeks approval, needs praise, affection and recognition. Seeks constant reassurance. Depends upon others a lot. Demands unusual attention from teacher.

Scale 17. Pleasant

Is good natured. Attractive personality. Is personable, agreeable; placates in conflict situations. Affectionate, likeable child.

Scale 18. Exhibitionistic

Boastful, "shows off." Seeks attention by dress and manners. Displays self audaciously. Cocky. Seems to hold high opinion of himself.

Scale 19. Organized

Engages in worthwhile and efficient activity. Good work habits. Does assignments on time.

Underachieving

Poor achievement. May have untapped potential and be bright, but not working efficiently or up to capacity. Not doing well enough in class.

Calm

Is composed, never becomes ruffled. Able to sit still without becoming restless and uncomfortable. Usually relaxed in class.

Unpopular

Unlikeable and has few or no friends. Not liked, others avoid him. Abrasive or aloof personality. Doesn't get along well with his classmates.

Independent

Is self-sufficient, resourceful, self-reliant. Great deal of moral courage. Stands up for himself. Seldom requires help from teacher.

Unpleasant

Is critical, irritating. Argumentative and antagonistic. Disagreeable, mean, unpleasant disposition. At times he is the class pest. Quarrelsome.

Modest

Bashful, humble. Seldom draws attention to himself. Conservative in dress and manner. Seems to hold modest opinion of himself.

Disorganized

Wastes time. Inefficient. Poor work habits. Work often handed in late. Uses class time badly.

Scale 20. Immature

Is childish and very young in his reactions. Still enjoys being the "little boy." Awkward socially, lacks poise, unsophisticated, sheltered or spoiled at home. Emotionally immature for grade.

Mature

Has a mature outlook with good judgment and common sense. Comfortable socially, poised. Emotionally mature for his age.

Scale 21. Extraverted

Is outgoing and friendly. Initiates interactions with others. Interested in other's affairs. Likes to be with people. Warm, anxious to get work done so he might "visit".

Introverted

Is shy and withdrawn. Reclusive, aloof, cold, distant; retiring member of class. Keeps to himself. Outwardly rather reserved. Unfriendly, spurns others' overtures to him, prefers to be alone.

Scale 22. Misbehaved

Is unconfoming, mischievous, and disruptively playful. Disturbs class, horses around. Obviously has not been taught good manners. Can be rude.

Well Behaved

Is conforming, polite, courteous, and well-mannered. Understands importance of good self-control and manners.

Scale 23. Unmotivated

Little effort in school, gives up easily. Needs pushing. Doesn't seem to care about success or failure. Needs to develop positive attitude in class. Apathetic and uninterested in school work.

Motivated

Persistent and industrious in studies; often takes the academic initiative. Usually seen working, applies himself. Goal-directed. Tries to excel. Eager student.

Scale 24. Controlled

Restrained in expressions of anger, irritation and joy. Steady, emotionally stable, quiet (in a positive sense), even tempered.

Emotional

Cries easily. Quick-tempered, irritable, excitable, emotionally unstable, easily disturbed by others, has temper tantrums. Volatile emotional expression.

Scale 25. Dependable

Accepts responsibility for school work and reliable in getting it done. Trustworthy and helpful around the classroom. Punctual.

Undependable

Tends to forget assignments. Has to be encouraged to finish work and to help teacher. Needs to be reminded about responsibilities. Not punctual.

Scale 26. Aggressive

Rough, taunts or torments classmates. Gets into fights or arguments often. Assaults others physically or verbally.

Peaceful

Gentle, absorbs provocations from others. Avoids fights or disputes. Seeks peaceful means to settle disagreements.

- 5 -

Scale 27. Well Adjusted
 A well-rounded, wholesome,
 healthy person. Capable (soci-
 ally), adapts easily to changes
 and to new situations. Be-
 haves appropriately with
 others in athletic, academic
 and casual social situations.
 Able to tolerate frustration.

Scale 28. Impulsive
 Quick reactions. Responds to
 tasks and social situations
 without forethought. Impatient,
 flighty, spontaneous. Can't
 delay rewards to maximize bene-
 fits.

Maladjusted
 Is disturbed, emotionally upset,
 possibly a Child Guidance Cli-
 nic case. Poor social adjustment,
 disturbed by changes and new
 situations. Behaves inappro-
 priately with others in athletic,
 academic and casual social situa-
 tions. Unable to tolerate frus-
 tration.

Deliberate
 Deliberately assesses tasks and
 social situations. Exercises
 forethought; patient, self-
 controlled, serious, reflective.
 Postpones rewards to maximize
 benefits.

Appendix E

Modified Version of Hollingshead and
Redlich's Two Factor Index of Social
Status

TABLE OF SOCIAL CLASS CONVERSIONS

Occ.	Educ.	SES	Occ.	Educ.	SES	Occ.	Educ.	SES	Occ.	Educ.	SES
1	1	20	2	1	32	3	1	44	4	1	57
	2	27		2	39		2	51		2	63
	3	34		3	46		3	58		3	70
	4	40		4	53		4	65		4	77
	5	47		5	59		5	72		5	84
	6	54		6	66		6	78		6	91
	7	61		7	73		7	85		7	97
	Z	20		Z	39		Z	58		Z	77
5	1	69	6	1	81	7	1	93	Z	1	20
	2	76		2	88		2	100		2	38
	3	82		3	95		3	107		3	57
	4	89		4	101		4	114		4	77
	5	96		5	108		5	120		5	96
	6	103		6	115		6	127		6	115
	7	110		7	122		7	134		7	134
	Z	96		Z	115		Z	134		Z	

Education Scale

- 1 Graduate professional degree
- 2 Standard college graduation
- 3 Partial college (1 year or more)
- 4 High school graduation
- 5 Partial high school (10 or 11)
- 6 Junior high school (7-9)
- 7 Less than 7 years

Alphabetical List of Occupations by Level

1. Professional and Large Business Owner and Official

Certified Social Service		
College Educator and Scientist		
Engineer		
High Government Official		
Legal		
Lesser Medical		
Medical		
Official		
Owner		
Religious		
Advertiser	Electronics	Oceanographer
Archeologist	researcher	Optometrist
Area representative	Financier	Osteopath
Astronomer	Geologist	Pharmacist
Auditor	Geo-physicist	Physician
Bacteriologist	Grain broker	Physicist
Banker	High government	Producer
Bank president	official	Property owner
Bookmaker	Horticulturist	(large)
Business executive	Hotel manager	Psychiatrist
Chemist	Hotel owner	Psychoanalyst
Chiropractor	Hydrographer	Psychologist
Civil engineer	Importer	Psychotherapist
Comptroller	Import-export broker	Rancher
Cottonbroker	Judge	Real-estate owner
CPA	Judge advocate in	Recreation director
Criminologist	army	Researcher
Dentist	Large business	Restaurant owner
Department-store	owner	School psychologist
owner	Lawyer	Social worker
Diplomat	Manufacturer	Sociologist
Doctor	Mathematician	Speech therapist
Educational	Meteorologist	(certified)
administrator	Minister	Stock owner
Auctioneer	Missionary	Veterinarian
Chiropodist	Motel owner	
	Nun	
	Occupational	
	therapist	

2. Business Agent and Manager

Accounting
 Insurance
 Management
 Real Estate
 Sales Representative

Accountant
 Advertiser
 Advertising manager
 Advertising space
 seller
 Agent
 Art director
 Auctioneer
 Business agent
 Business manager
 Buyer
 Construction
 superintendent
 Credit manager
 Department head

Distributor
 Escrow officer
 Field superintendent
 Foreign trade for
 big company
 Insurance claim
 investigator
 Insurance collector
 Insurance sales
 Insurance underwriter
 Labor-union business
 agent
 Loan-company agent
 Manufacturer's
 representative
 Marketer

Meat jobber
 Metal trader
 Personnel manager
 Plant superintendent
 Production manager
 Real-estate broker
 Real-estate manager
 Retail-furniture
 dealer
 Sales manager
 Stockbroker
 Wholesaler

3. Semiprofessional and Public Administrator

Art		
Educator		
Government Administration		
Literature		
Music and General Entertainment		
Scientific and Medical Service		
Actor	Funeral director	Private music teacher
Actuary	Game warden	Professional athlete
Advertising copy writer	Graduate student	Professional race-back driver
Agricultural consultant	Home economist	Programmer
Airplane pilot	Industrial-relations counselor	Public official
Architect	Interior designer	Public-relations man
Art designer	Investment counselor	Recreational therapist
Artist	Journalist	Reporter
Cartoonist	Lab assistant	Secret-service agent
Ceramicist	Labor-relations counselor	Securities analyst
Chief of police	Lab technician	Singer
Choreographer	Librarian	Sound editor
Church school teacher	Make-up artist	Sound technician
Coach	Medical librarian	State interviewer
Dental hygienist	Military officer	Statistician
Dietician	Mortician	Substation head
Dress designer	Movie or stage director	Tax assessor
Educator (primary and secondary)	Musician	Tax collector
Embalmer	Nurse	Translator
Fashion consultant	Nutritionist	Tree surgeon
Fashion designer	Physical culturist	T.V. or radio announcer
Fashion illustrator	Physical therapist	Weatherman
Film editor	Politician	Writer
Foreign Service (consulate)	Postmaster	X-ray technician
Forester	Post-Office inspector	
Forest ranger	Practical nurse	

4. Lesser White-collar Worker and Small-Business Owner, Manager, and Salesman

Agriculture		
Clerical		
Commission Sales		
Contractor, construction		
Manager		
Nonretail owner		
Salesclerk		
Small-business		
White Collar		
Retail Owner		
Appliance salesman	Key punch operator	Receptionist
Bank teller	Landscaper	Restaurant owner
Bookkeeper	Laundry owner	Rubbish collector
Car salesman	Logger	Salesclerk
Cashier	Magazine	Secretary
Claims investigator	photographer	Service-station
Clerk	Mailer	manager
Contractor	Manager of small	Sharecropper
Dental assistant	business	Shipper
Dispatcher	Meter reader	Shipping clerk
Display man	Motel owner (small)	Tabulator
Dry cleaner	Movie cameraman	Telephone operator
Estimator	Nursery owner	Title searcher
Farmer	Office or desk work	Traffic man
Florist	Order clerk	Trailer-park owner
Freight adjuster	Owner of small	Trucking business
Gas-station owner	business	T.V. cameraman
Grocer	Pawn-broker	Typist
Haberdasher	Personnel	Undergraduate
IBM operator	interviewer	student
Interior decorator	Photographer	Upholsterer
Junk dealer	Plastering business	White collar
	Printing business	Window trimmer
	Produce clerk	
	Rancher	
	Receiving clerk .	

5. Skilled Laborer

Construction		
Draftsman		
Electrical		
Food and Personal Service		
Foreman		
Metal and Mechanical		
Printing		
Protective		
Air Force (enlisted)	Electronics	Paint mixer
Air Force	technician	Pattern maker
Ground crew	Finisher	Photo-engraver
Airline hostess	Fireman	Pipe fitter
Army (enlisted)	Flight engineer	Plasterer
Baker	Floor lady	Plumber
Barber	Foreman	Policeman
Barge captain	Form setter	Printer
Bartender	Freight conductor	Propman in movies
Beauty operator	Furrier	Quality-control
Blacksmith	Glazer	supervisor
Boiler "engineer"	Government meat	Radio repairman
Boilermaker	inspector	Riveter
Brewer	Grinder	Roofer
Brick mason	Hand engraver on	RR engineer
Cabinetmaker	precious metals	Scaleman
Caddymaster	Horse trainer	Seaman
Carpenter	Inspector	Ship fitter
Carpet layer	Jeweler	Shoe repairman
Cement finisher	Jig-maker	Steel finisher
Chef	Lifeguard	Structural iron
Coast Guard	Linoleum layer	worker
(enlisted)	Lithographer	Supervisor
Compositor	Machine maintenance	Surveyor
Cook	Machine operator	Tailor
Cooper	(by education)	Telephone installer
Craftsman	Machinist	Telephone lineman
Crane operator	Marines (enlisted)	Telephone switchman
Design checker	Mechanic	Template maker
Detective	Milliner	Tile setter
Diamond setter	Millwright	Tool and die maker
Diesel mechanic	Mold-maker	Upholsterer
Draftsman	Movie projectionist	Watchmaker
Diver	Navy (enlisted)	Weather stripper
Electrical leadman	Neon sign-maker	Welder
Electrician	Painter	

6. Semiskilled Laborer

Delivery
Food
Laundry
Operator

Assembler
Attendant
Auto attendant
Belt-maker
Blueprinter
Brakeman (RR)
Bus driver
Butcher
Buttermaker
Chauffer
Chemical operator
Chrome plater
Coil winder
Color matcher
Coremaker
Creamery man
Counterman
Die caster
Draw-bench
operator
Distiller
Drill-maker
Exterminator
Film developer
Film technician
Finisher
Flour miller

Food checker
Foster mother
Foundry worker
Furnace operator
Galvanizer
Garment cutter
Gear cutter
Hydraulic operator
in construction
Hydraulic-press
operator
Labeler
Lathe operator
Lather in
construction
Laundry worker
Lift-trunk operator
Mailman
Meat packer
Meat weigher
Metal cutter
Metal polisher
Milkman
Millman
Mineral prospector
Molder
Oil driller
Parcel post driver
Pottery checker

Presser
Processor (rubber)
Punch press operator
Quality-control
tester
RR carman
Renderer
Sand blaster
Seamstress
Sheet-metal worker
(by education)
Shirt-maker
Soapmaker
Sorter (fruit, veg-
etables and nuts)
Steel pourer
Stickerman
Stitcher
Switchman (RR)
Tally man
Taxi driver
Tire builder
Truck driver
Vending machine
operator
Waiter
Weaver
Well digger

7. Unskilled Laborer

Agriculture
 Construction
 Factory
 Gardener
 Laborer
 Service

Asphalt maker
 Bus boy
 Cattle herdsman
 Cement mixer
 Checker
 Chipper
 Coal miner
 Custodian
 Dishwasher
 Elevator operator
 Farmer (employed)
 Field irrigator
 Freight carrier

Fruit picker
 Gardener (urban)
 Grip
 Hammer driver
 House mover
 Janitor
 Kitchen attendant
 Laborer
 Loader
 Longshoreman
 Lumberjack
 Machine helper
 Maid

Maintenance man
 Messenger
 Metal sorter
 Oiler
 Porter
 Sand mixer
 Steel loader
 Stevedore
 Stock girl
 Warehouseman
 Watchman



