SCHIZOPHRENIA: ETIOLOGY AND PREVENTION

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I dedicate this writing to my husband, Dennis, and my daughter, Mary, who believed in me and who supported me as I worked toward fulfilling this goal.
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- Catatonic schizophrenia
- Undifferentiated schizophrenia
- Residual schizophrenia
- Deinstitutionalization
- Etiology of schizophrenia
- Gene theory
- Biochemical theory
- Environmental models
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including emotional, behavioral, and auditory hallucinations, delusions, and a myriad of other symptoms specific to the type of schizophrenia diagnosed. Schizophrenia affects about 1.1% of the population (Rice, 1996), and usually strikes an individual during youth with symptoms that persist throughout life. As of today, no cure exists for schizophrenia. Over time, and with proper treatment, the symptoms often become manageable; however, many people with schizophrenia fear a relapse or a recurrence of symptoms, and this has been quite stressful. Yet, it has become increasingly important to not only look at secondary and tertiary prevention strategies, but to explore the primary ones as well (i.e. find those at risk and intervene before the florid symptoms become too damaging). It is more detrimental to the patient's overall well being to wait until hospitalization is necessary before any sort of treatment or prevention begins.

Thus, this paper will begin by focusing on the heritability of schizophrenia. It will explore relevant studies and research related to the disease in an effort to provide the reader with an informative and useful tool that combines both historical and contemporary research findings. It will then evaluate the evidence suggesting that schizophrenia is a disease that stems from a combination of both genetics and environmental events, concluding that schizophrenia is, indeed, a combination of these two factors. This paper
Introduction

Schizophrenia is a psychological disorder that affects all aspects of a person's life including emotions, perceptions, cognition, and behavior. The symptoms include visual and auditory hallucinations, delusions, the inability to think or speak coherently, and a myriad of other symptoms specific to the type of schizophrenia diagnosed. Schizophrenia affects about 1.1% of the population (Rice, 1999), and usually strikes an individual during youth with symptoms that persist throughout life. As of today, no cure exists for schizophrenia. Over time, and with proper treatment, the symptoms often become manageable; however, many people with schizophrenia fear a relapse or a recurrence of symptoms.

Given the chronic and debilitating nature of schizophrenia, the major focus of researchers and clinicians has been to develop medications that will quiet its active symptoms, and this has been quite successful. However, it has become increasingly important to not only look at secondary and tertiary prevention strategies, but to explore the primary ones as well (i.e. find those at risk and intervene before the florid symptoms become too damaging). It is more detrimental to the patient's overall well being to wait until hospitalization is necessary before any sort of treatment or prevention begins.

Thus, this paper will begin by focusing on the heritability of schizophrenia. It will explore relevant studies and research related to the disease in an effort to provide the reader with an informative and useful tool that combines both historical and contemporary research findings. It will then evaluate the evidence suggesting that schizophrenia is a disease that stems from a combination of both genetics and environmental events, concluding that schizophrenia is, indeed, a combination of these two factors. This paper
will conclude by exploring possible ways to reduce the symptoms of schizophrenia, and will suggest ways to identify those at risk for developing it. It is hoped that the reader will have gained a greater understanding of this mental disorder, its causes, and ways in which to utilize the current knowledge on prevention to assist those at risk for schizophrenia.

A History of Schizophrenia as a Diagnosis

Schizophrenia was originally termed “dementia praecox”, in 1896, by Emil Kraepelin. He defined this psychological disturbance as a progressive deterioration of the mind, similar to dementia, but occurring much earlier in life. Kraepelin believed that this illness was inherited, and he supported his theory by stating that 50-70% of his patients had a family history (including parents, grandparents, and brothers and sisters) of the illness (Gottesman, 1991). Kraepelin believed that an organic, even metabolic, process was at the root of dementia praecox (Shapiro, 1981), and that, over time, the person’s condition would eventually, and continually, deteriorate. Kraepelin cited the results of autopsies as evidence of his theory that schizophrenia has an organic basis, as he found that there was “nerve cell damage in the temporal and frontal lobes in the brain, and also in the higher layers of the cerebral cortex” (Shapiro, 1981, p. 19). Shapiro (1981) questioned these autopsy findings stating that Kraepelin never identified the specific causes of death of the patients. Furthermore, she hypothesized that Kraepelin’s patients may have suffered from a disease such as syphilis, alcoholism, epilepsy, or some sort of physical trauma at the time of death, and stated that it may not necessarily have been schizophrenia.

Kraepelin divided dementia praecox into 4 different types: catatonia, hebephrenia, paranoid, and simple (Shapiro, 1981). The symptoms of Kraepelin’s dementia praecox
included auditory hallucinations (voices heard only in the mind of a person with schizophrenia), delusions (false beliefs or ideas about relationships or the outside world), thought and mood disturbances (the inability to process information or the lack of understanding of the outside world), bizarre behavior (behavior that is erratic or that lacks a logical explanation for occurring), and poor judgment (Shapiro, 1981). However, Kraepelin believed that a person suffering from dementia praecox, unlike a person suffering from an organic psychosis, retained his intellect, memory, orientation, and comprehension abilities.

Eugene Bleuler, a contemporary of Kraepelin, disliked the limits of Kraepelin's description of dementia praecox, as he felt that Kraepelin did not focus on the meaning or the organization of symptoms. According to Gottesman (1991), Bleuler believed that the primary symptom suffered by schizophrenics was a disordered thought process. Bleuler thought that Kraepelin focused too much on, what he judged, were secondary symptoms rather than on the primary ones such as loose associations (an inability to focus or make connections with the written or spoken word), autism (emotionally withdrawing into oneself and away from reality), affective disturbances (emotional flatness), and ambivalence (the inability of a person to make a decision). He rejected Kraepelin's theory that this disease was a progressive deterioration and introduced the term "schizophrenia" to reflect his theory of an "underlying personality split" in the patient (Shapiro, 1981, p.19). About his theories Bleuler wrote: "By the term schizophrenia we designate a group of psychoses whose course is at times chronic, at times marked by intermittent attacks, and which can stop or retrograde at any stage" (Shapiro, 1981, p.20). Bleuler further wrote:
The fundamental symptoms consist of disturbances of association and affectivity, the predilection for fantasy as against reality, and the inclination to divorce oneself from reality. Furthermore, we can add the absence of those very symptoms which play such a great role in certain other diseases, such as primary disturbances of perception, orientation, and memory (Shapiro, 1981, p. 20).

Kraepelin did not like Bleuler’s description of schizophrenia and felt that he brought “unnecessary interpretations” into the area and meaning of schizophrenia (Gottesman, 1991, p. 14). Kraepelin wrote a response to Bleuler’s 1911 publication of his theories in which he stated:

Here we meet everywhere the characteristic fundamental features of the Freudian trend of investigation, the representation of arbitrary assumptions and conjectures as assured facts, which are used without hesitation for building up of always new castles in the air ever towering higher, and the tendency to generalization beyond measure from single observations. I must frankly confess that with the best of will I am not able to follow the trains of thought of the “metapsychiatry”, which like a complex sucks up the sober method of clinical observation (Gottesman, 1991, p. 15).

Even though Kraepelin was unhappy with the direction in which Bleuler took the theories of schizophrenia, the contributions that Kraepelin made proved to be invaluable to the psychological society as it began to understand schizophrenia. However, today, it is Bleuler’s definition and description of schizophrenia that is most widely accepted.
The Subtypes of Schizophrenia

According to the Diagnostic and Statistical Manual of Mental Disorders–IV (DSM-IV), there are five sub-types of schizophrenia, with some individual variability in the way that the symptoms are manifested. The DSM-IV (APA, 1994), classifies schizophrenia as:

A mixture of characteristic signs and symptoms (both positive and negative) that have been present for a significant portion of time during a 1-month period (or for a shorter time if successfully treated), with some signs of the disorder persisting for at least 6 months. These signs and symptoms are associated with marked social or occupational dysfunction (p.274).

No one sign or symptom is indicative of schizophrenia, as it involves a range of symptoms stemming from both cognitive and emotional dysfunctions. Symptoms can be classified as either positive or negative. Positive symptoms reflect a distortion of normal functions and include manifestations such as hallucinations, delusions, and disorganized speech and behavior. This is generally referred to as Type I schizophrenia. Negative symptoms reflect a loss of normal functioning and include symptoms such as a flat affect, psychomotor retardation (strange or bizarre bodily movements including, but not limited to, extremely rigid posture or excited movements), a loss of direction toward goals, and a loss of, or decrease in, speech and thought capability. This is generally referred to as Type II schizophrenia.

The DSM-IV (1994) lists the five subtypes of schizophrenia as follows: paranoid, disorganized, catatonic, undifferentiated, and residual. The following description of symptoms is based on these DSM-IV classifications.
Paranoid Schizophrenia

A person suffering from paranoid schizophrenia will experience delusions or auditory hallucinations, but will not usually suffer from the flat affect that is prominent with the disorganized or catatonic types. Neither will this person suffer from the disorganized speech that is also prominent with some of the other types. Often, the delusions are “persecutory or grandiose” (p. 287) and the hallucinations compliment these themes by reinforcing the belief that someone is “out to get” the person with schizophrenia. Because of the possible persecutory nature of the delusions, it is likely that the person suffering from paranoid schizophrenia will tend to become angry or upset when experiencing these delusions. This anger can sometimes lead the person to acting in a violent manner, thus placing all involved at risk for harm. Fortunately, these outbursts can often be controlled through counseling and the proper use of psychotropic medications.

The median age of onset for schizophrenia tends to be in the early to mid-twenties for a male and the late-twenties for a female. Therefore, the person suffering from paranoid schizophrenia may not be diagnosed as such until later in life. According to the DSM-IV, the prognosis for someone suffering from this type of schizophrenia seems to be better than for the other types, as there is usually no cognitive or neuropsychological impairment in the person, which makes it considerably easier for the person to return to a vocation or to an acceptable daily routine after undergoing treatment. Because there is no cognitive damage, the person is more capable of adapting a former lifestyle to fit a new lifestyle in an effort to cope with this illness and function on a daily basis.
Disorganized Schizophrenia

The most prominent characteristics of the disorganized type of schizophrenia (once called hebephrenic) are disorganized speech and behavior and the loss of apparent emotion, or flat affect. The disorganized speech may be closely accompanied by inappropriate laughter and giddiness. For example, a person suffering from disorganized schizophrenia may suddenly begin laughing during a news broadcast reporting a tragedy such as a plane crash or automobile accident, or when there has been no outside stimulation to provoke this laughter. Because of the disorganized behavior, the person will have a difficult time attending to the routine activities of daily life, such as tending to personal hygiene, dressing, or operating even the smallest of household or kitchen machinery. This person may often be found fumbling with clothing in an effort to button a shirt or may be found staring at the bathroom sink trying to remember how to use a toothbrush. The delusions and the hallucinations that are so prominent with the paranoid type are not usually seen in disorganized schizophrenia, but the loss of cognitive functioning is oftentimes much more difficult for family, friends, and the patient to handle.

Catatonic Schizophrenia

Catatonic schizophrenia is identified by psychomotor disturbances that include involuntary movements or excessive activity, motor immobility, or the rigid resistance to commands and instructions given by another. A person may sit and stare at the wall for hours, or may stand in one place and not move, becoming completely rigid. People suffering from this type of schizophrenia may also repeatedly bang their heads against a wall until instructed to stop, or until physically restrained. Catatonic schizophrenia is also characterized by the repetition of words or phrases heard uttered by someone else, or by
the repetition of a movement exhibited by another person. The person may be at risk to himself or to others if not closely supervised during episodes of severe catatonia, as he is not acutely aware of his actions. Although the person may not intend to hurt anyone, he is prone to injurious behaviors.

**Undifferentiated Schizophrenia**

To be diagnosed with Schizophrenia, Undifferentiated Type, the patient must prominently exhibit two or more of the following five DSM-IV criteria: delusions, hallucinations, disorganized speech, disorganized or catatonic behavior, or negative symptoms such as a flat affect. These symptoms must be present for a significant portion of time during a one month period. The patient must not meet the DSM-IV criteria for one of the other four types of schizophrenia.

**Residual Schizophrenia**

According to the DSM-IV (1994), the fifth subtype of schizophrenia, Residual Type, is usually given as a diagnosis when a person has already suffered one episode of schizophrenia and is currently exhibiting no prominent positive symptoms such as delusions or hallucinations. Negative symptoms may be present in the patient, as may be some of the weaker positive symptoms such as “eccentric behavior, mildly disorganized speech, or odd beliefs” (p. 289). However, “the course of the Residual Type may be time limited and represent a transition between a full-blown episode and complete remission” (p. 289). The DSM-IV also explains that a person could display residual symptoms for years and never experience an acute breakdown or show any improvement.
Deinstitutionalization

Deinstitutionalization refers to the movement of psychiatric patients from an in-patient facility to some other type of residence (i.e. home, a group home, assisted living, a shelter, or even the street). Bachrach (1994) studied the evolution of state mental hospitals over a period of forty years and wrote that, between 1955 and 1994, the number of people in these institutions decreased from 560,000 to 101,000. Done mostly as a cost-effective measure, thousands of mentally ill adults were released from institutions, often with no place to go and with no skills to live independently. While it may have a positive aspect in that people were not locked in institutions and forgotten about for the duration of their lives, it had its negative aspects as well. Bachrach stated that deinstitutionalization has caused a whole new set of problems. She argued that changes in the system are imperative if deinstitutionalization is to be a positive move; and a new mindset regarding healthcare must be adopted in order for people to benefit from outpatient programs and therapy. One of the problems that Bachrach observed was that people with schizophrenia were kept in the hospital only long enough to be stabilized. Because of money and insurance restrictions, patients spent as little in-patient time as deemed necessary by the insurance companies and healthcare professionals. They were then released to a society that may not have been conducive to fostering adequate mental health, a society not adequately prepared to handle a person diagnosed with schizophrenia who may display active symptoms.

Along with the shorter hospital stay has come greater community awareness, and thus more outpatient treatment facilities and day programs for those diagnosed with schizophrenia. However, tragedy often befalls such individuals who are discharged from
the hospital and have no such place for support. They easily fall through the cracks and disappear, especially if they do not have insurance or the resources to pay for these types of outpatient treatment programs. It is here where Bachrach sees the largest problem because the mental health needs of these people go unmet. They may be well enough to have been released from the hospital, but they are not well enough to take care of themselves or to adequately maintain, or support, a household without assistance. Most of the affected people are single males and females with no adequate system of support, and often they end up living on the streets or in large shelters upon release from a hospital. Aside from affordable housing, these people are in need of programs that assist with daily living activities so that they may learn to live independently and regain some of the self-respect that may have been lost when they suffered a breakdown.

Bachrach also stated her fear that, in the future, the number of service oriented people might wane and, thus, the amount of services that are provided will as well. She stated that she saw a trend of people moving away from these types of jobs for various reasons, suggesting that there will be a decrease in the number of people who choose to enter careers oriented toward working with people suffering from severe mental illnesses. It is her opinion that lack of funding for programs and meager salaries for employees play a large role in this decrease in numbers. Naturally, with a decrease in helping agencies, and a decrease in the amount of people to staff them, it is the individuals with schizophrenia and other mental illnesses who will suffer.

The concept of deinstitutionalization was further explored by S.J. Dencker and K. Dencker (1994). Their argument centered on the differences between community and hospital care. First, they discussed the side effects produced by community care. They
addressed the issue of homelessness and stated that 40% of the homeless in New York City suffer from some type of mental illness. They then noted the high relapse rate (41%) of people diagnosed with schizophrenia after discharge from the hospital, especially those not taking psychotropic medications. The authors do note, however, that lower relapse rates were reported for schizophrenics who had adapted well back into society and who were receiving help from a healthcare professional who developed a long term treatment plan for the patient. They also discussed the fact that people diagnosed with schizophrenia often became a burden on the family and suffered a lowered standard of living. They noted that the suicide rate among male schizophrenics is ten (10) times higher than that of the general male population, and the suicide rate of female schizophrenics is eighteen (18) times higher than that of the general female population.

Even though Dencker and Dencker (1994) admit there were problems with community-based care, they stated that it was a better alternative to keeping the person diagnosed with schizophrenia in a mental hospital, providing the person was able to function with assistance outside the hospital. They state that the continuity of care was of utmost importance, and that every aspect of a person’s life should be given assistance, from leisure activities to stress management, to help and support with work. They noted that crisis intervention programs and family education also played an important role in sustaining a recovery and in the prevention of relapse. Also needed was a continuous reevaluation of the schizophrenic’s program plan and goals, so the plan evolves with him and changes with his needs, as his condition either improves, remains stable, or deteriorates.
Barry and Crosby (1996) also addressed the issue of quality of community care versus inpatient care. They wrote that they believe that the quality of care an outpatient receives can be better than that received by someone in an inpatient facility. Although their study included only a small sample of people, they argued that they were able to support their hypothesis. They began with 65 patients were discharged from a long-term hospital stay. This number then decreased to 29, as some of the people relocated after they left the hospital, some died, and some declined to participate in the study. The average number of years spent in the hospital was 23, and the authors followed the patients for 12 months after the last hospital stay. There were four main types of living situations provided for these people outside the hospital: a supportive living program consisting of five houses with 24 hour staffing; a care home monitored by a volunteer agency; private mental health care homes; and a small number of independent living settings. The authors assessed quality of life changes, functional ratings, and quality of care. Even though the authors found that these people were not dissatisfied with the hospital setting, they found that they were consistently happier with their independent living situations. They reported that 93% were happier with their physical living situation and 90% were happier with their social relations. The areas that produced dissatisfaction among subjects included the amount of spending money (31% were dissatisfied) and the amount of family contact (28% were dissatisfied). The authors noted that these two areas of dissatisfaction were also areas of high dissatisfaction when the patients were in the hospital, thus not adding to the percentage of dissatisfaction outside the hospital. They also stated that the clients reported an increased sense of well being concerning their lives within the community, compared to their feelings in the hospital. The clients stated that
they were happier with the greater amount of freedom and independence that they experienced outside the hospital. They also reported that they were able to provide input to their care plans and were more involved in the decision making process regarding their lives and treatment, and that this feeling of involvement made them feel more secure about themselves and their caregivers. No subject expressed a desire to return to the hospital setting. Overall the authors judged that the patients, when given an appropriate outside setting in which to live, were happier and more satisfied, thus leading to an increase in overall mental health. The authors called for more research on this issue, and hope that this strategy will improve in the years to come.

Etiology of Schizophrenia

Gene Theory

Rosenbaum (1970) described two types of hypotheses regarding gene theory: monogenic and polygenic. The monogenic theory states that there is one gene responsible for the appearance of schizophrenia, and that this gene can either be dominant or recessive. The polygenic theory states that there are two or more genes responsible for the appearance of schizophrenia. Some advocates of the polygenic theory suggest that there are genes that cause schizophrenia and genes that protect against it. According to Rosenbaum (1970), there was little evidence to prove that this type of gene existed, and called for further research to address this question. Still today, there has been no evidence found that there is a single gene responsible for the transmission of schizophrenia. H. M. van Praag (1977) discussed the polygenetic theory and stated:

Transmission is probably not by a single gene, but by a number of genes, each of which adds a given element, or dimension, to the schizophrenic behavior pattern.
The variability of schizophrenic symptomatology; the often irrefutable significance of environmental influences; the frequent impossibility of establishing or excluding the diagnosis with certainty; the gradual transition between what is called normal if somewhat eccentric behavior and schizophrenic behavior—all these factors are more readily explained by a polygenic theory than by a theory which postulates a single active gene (van Praag, p. 177).

In an article stressing the purely genetic etiology of schizophrenia, McGuffin, Asherson, Owen, and Farmer (1994) argued that the only constant feature in schizophrenia was a genetic component; and non-genetic factors consisted entirely of chance events that affected gene expression and structure. Their article explored four different hypotheses regarding the etiology of schizophrenia. They argued that the environment could not be proven to play a role in the etiology of schizophrenia because there were too many variables that played on its development. The first hypothesis they explored was that there are two different forms of schizophrenia — schizophrenia that is genetic and schizophrenia that is environmental. The second hypothesis was that schizophrenia is purely genetic and that any "genetic determination of less than 100% is explained by observer errors, which may include incorrect specification of the phenotype" (McGuffin, p. 593). The third hypothesis invoked the diathesis stress theory and argued that both genetics and the environment play a role in the etiology of schizophrenia. Although McGuffin et al. said that this theory could not be disproved, they felt it was leaving too much to chance. Instead, they gave credence to the fourth theory which states that the only constant feature in schizophrenia is genetics and that any other "non-genetic" factors merely play a chance role that affects gene structure. The authors refuted the first
three hypotheses because they believed that these hypotheses relied on random events and irrelevant explanations. They stated that, even though they had no evidence to prove this hypothesis, they believe that it may be found valid in the future. Today, still, there has been no one gene that has been isolated as a single cause for this illness.

**Biochemical theory**

The human brain is composed of neurons that send messages throughout the brain. When the message is received, it travels down to the neuron’s nerve ending. This nerve ending, in turn, produces a chemical neurotransmitter that then attaches itself to the receptor of another neuron, relaying the message and firing. This is the way a functional brain is supposed to work. However, research over the past twenty years has shown that, in people diagnosed with schizophrenia, the neurons that use the neurotransmitter dopamine fire too often and transmit too many messages for the brain to handle. As a result, the symptoms of schizophrenia are produced (Comer, 1995).

In the 1950s, while searching for a drug to combat allergy symptoms, researchers discovered a group of antipsychotic medications called phenothiazines. Phenothiazines were not found to be successful at treating allergies, but were very successful at reducing the symptoms of schizophrenia. They were soon prescribed widely for those diagnosed with this illness. Unfortunately, one of the side effects of phenothiazines is that they produce muscle tremors like those seen in Parkinson’s Disease. Researchers had long attributed these tremors to an imbalance between dopamine and acetylcholine levels in the brain. Thus, they argued that schizophrenia could be the result of excessive dopamine activity that is lowered by the antipsychotic medications, thus producing Parkinson’s symptoms as the dopamine level lessened. By examining portions of the brain, researchers
were able to determine that the dopamine synapses in people with schizophrenia were overactive—i.e. the messages from the dopamine-sending neurons to the dopamine-receiving neurons, especially the D-2 receptors of the neurons, were transmitted too easily or too often (Comer, 1995). The current theory holds that there are more dopamine receptors, especially the D-2 receptors, in the brain of a person with schizophrenia. Thus, when dopamine carries a message to a receiving neuron and binds to receptors on the membrane of the neuron, it leads to more firing because of the increased number of receptors. More receptors lead to more activity, which leads to overtransmission of messages and schizophrenic symptoms.

However, not all researchers find this dopamine hypothesis convincing. With the advent of a new group of medications, atypical antipsychotics, researchers have found evidence to support yet another theory. Whereas typical antipsychotics bind to the D-2 receptor, atypical antipsychotics bind to half of the D-1 and half of the D-2 receptors. This leads to questions about the importance of the D-2 receptor and to the weight given to the dopamine hypothesis. Clozapine, one of the most effective atypical antipsychotics, binds to and blocks the neurotransmitter serotonin, rather than dopamine. This finding prompted researchers to look at how serotonin acts in the brain, and what role it plays in the development of schizophrenia. Researchers are also looking at the interaction between dopamine and serotonin to see how they interact together.

Another challenge to the dopamine hypothesis comes from researchers who state that excessive dopamine activity only produces Type I Schizophrenia—schizophrenia marked by positive symptoms such as delusions and hallucinations. Researches have found that the typical antipsychotic drugs have been more successful in those diagnosed
with Type I schizophrenia, whereas atypical antipsychotics are more successful in those diagnosed with Type II schizophrenia (characterized by negative symptoms such as flat affect). Thus, some suspect that the dopamine hypothesis may be relevant to only Type I (Comer, 1995).

According to Comer (1995), some researchers believe that Type II schizophrenia may be caused by abnormal brain structure. People with schizophrenia have been found to have larger ventricles in the brain—the cavities that contain the cerebrospinal fluid. They also tend to have reduced blood flow to the brain, and smaller frontal lobes, cerebrums, and craniums. People diagnosed with schizophrenia, who have been found to have enlarged ventricles, tended to display more negative, and fewer positive, symptoms. Researchers speculate that anything from genetic factors, birth complications, toxins, or pre-birth exposure to viruses can be the cause of these brain abnormalities. According to Comer (1995), many people with these brain abnormalities never develop schizophrenia. He responds to this by stating, “Biological factors merely set the stage for schizophrenia, while key psychological factors must be present for the disorder to unfold” (Comer, p.543).

Environmental Models

Just as there are researchers who believe that the cause of schizophrenia is purely genetic, there are also those who believe that the environment can play a role. Numerous scenarios have been explored in an attempt to identify the type of environment that would foster this illness. Researchers have studied environments from the time a baby is conceived—the prenatal environment—through the formative years, including the familial and social environment.
The Prenatal Environment

Bracha, Torrey, Gottesman, Bigelow, and Cunniff (1992) conducted research on the second prenatal trimester of fetal development. They observed that the second trimester is the “critical period of massive neural cell migration to the cortex” (p. 1355). It is also during this period that fingertip dermal cells migrate to form ridges, or fingerprints. Bracha et al. began this study intending to observe the number of fingertip ridges in monozygotic twins discordant for schizophrenia. They hypothesized that a difference in ridge counts would be an indication that some type of problem occurred within the womb that affected both of the twins differently. According to the authors it has been shown that abnormalities in ridge count occur at a much greater rate in children suffering from fetal alcohol syndrome, some cases of mental retardation, and some viral infections--all abnormalities that seem to occur during the second trimester of pregnancy. Second trimester conditions that could result in the discrepancy between dermal ridge cells include anemia, maternal substance abuse, exposure to toxins, etc. Any swelling, or edema, of the fetus affects its size and could, therefore, affect the dermal ridge count. However, Bracha et al. did state that a fetus does not gain the majority of his weight until the third trimester and, therefore, this weight gain may give one of the members of the twin pair a chance to “catch up” to the other in fetal size, thus increasing the dermal ridge count during this period and making the ridge count much closer to his twin’s count when examined after birth.

According to Bracha et al. (1992), the factors that contribute to prenatal difficulties increase the expression of genetic vulnerability to a psychotic disorder by “interfering with cell migration from the germinal matrix to the cortex” (p. 1360).
However, not all of the twins studied that were discordant for schizophrenia had differences in dermal ridge counts—only about 1/3 of the subjects did. Fingertip ridge count measures were used because it is one of the only features that remains permanent once the child is born and goes through changes throughout life. According to this article, the only environmental conditions that can change ridge count are prenatal ones. The authors enlisted the help of two assistants trained in anthropometric research (the study of the measurement of the human body) to examine the dermal ridges of 23 pairs of monozygotic twins discordant for schizophrenia, and 7 pairs of normal MZ twins. First, these researchers counted the differences between each sibling within the pair. They then compared the number of dermal ridges they found in the normal pairs with the number of dermal ridges found in the discordant pairs. Normal, or healthy, monozygotic twins almost always have identical ridge counts, and thus the expected difference in ridge count between two monozygotic twins with no prenatal injury or problems approaches zero. Bracha et al. reported that there were significantly greater intrapair differences in the twins discordant for schizophrenia than in the normal twins. Therefore, the authors concluded that problems or disturbances within the second trimester could negatively affect a child, or result in a predisposition to schizophrenia, thus adding evidence to a diathesis-stress model that holds that schizophrenia has a two-pronged etiology—-a genetic diathesis plus an environmental stressor.

Huttunen, Machon, and Mednick (1994) researched environmental effects during the second trimester of pregnancy and how these effects contributed to the development of schizophrenia. They argued that research done around the world has consistently shown that people who later develop schizophrenia are more often born in the late winter
and early spring than any other time of the year. According to these authors, there seemed to be a general consensus that some seasonally varying environmental cause damaged the developing fetus in such a way as to increase the risk for adult schizophrenia. Some of the environmental factors proposed to explain the seasonality of birth in schizophrenia included the following: infectious agents, nutritional factors, temperature variations at the time of conception, environmental toxins, and an interaction of these factors with genetic traits. The most favored explanations, according to these authors, were prenatal viruses or other infections. According to Huttunen et al. (1994), Mednick, Machon, Huttunen, et al. (1988) found that certain epidemiological studies showed that maternal exposure to influenza or other respiratory or viral epidemics during the second trimester of pregnancy increased the incidence of adult schizophrenia in the child. However, the authors reported that other studies have not found this correlation. One of the main problems with this paper is that all of the studies discussed mentioned only fetal exposure to the virus. None of the studies ever determined whether or not the mother had actually contracted an infection, which could then have affected the growing fetus. Exposure to a virus need not be the only prenatal factor related to the later development of schizophrenia. The authors reported that stress during pregnancy, either alone, or in conjunction with a viral infection, has also been linked to the development of schizophrenia and may negatively affect the future temperament of the child.

Rifkin, Lewis, Jones, Toone, and Murray (1994) found that a birth weight of less than 2500 g. (5.51 lbs.) was reported more often in people who eventually develop schizophrenia than in people who do not develop the disease. One hundred sixty seven people admitted to three London hospitals with schizophrenia-like symptoms were
questioned and tested for their study. Of these 167, one hundred were found to meet the criteria for schizophrenia as determined by the DSM-III, and were used in this study as the schizophrenia group. The remaining 67 were diagnosed either with a depressive psychosis or with bipolar disorder and were considered a single group. These two groups were used in comparison without the use of a “normal” control group. The researchers admitted that an alternate explanation for this finding of a correlation between low birth weight and schizophrenia could be that the mothers of the pre-schizophrenic were suffering from schizophrenia as well and, therefore, had poor antenatal care, thus contributing to the low birth weight. However, in an effort to validate the correlation between low birth weight and schizophrenia, the researchers cited a study done by Goodman and Emory (1992) that compared mothers with schizophrenia with mothers suffering from depression and also with a control group. They found that it was the babies of the mothers diagnosed with depression, not of the mothers diagnosed with schizophrenia, who had the significantly lower birth weight as a reflection of the mother’s illness. Rifkin et al. admitted that it could be a liability that they did not use a normal control group in this study. However, they reported that the incidence of low birth weight in patients with schizophrenia is 15% as compared to 6% as reported in the general population, and stated that this was high enough to make, at least, a preliminary assertion as to the correlation. They cited a study done by McNeil et al. (1993) that supported the finding that people later diagnosed with schizophrenia tended to have lower birth weights. Rifkin et al. used information gained in this study to further their hypothesis that low birth weight was significantly correlated with the later poor functioning of people with schizophrenia. They found that babies with low birth weight had poor social adjustment in childhood and had impaired cognitive
functioning in adulthood, while the control group of the 67 people with the affective diagnoses had no such correlation between birth weight and later social or cognitive functioning.

Gunther-Genta, Bovet, and Hohlfeld (1994) researched the role that obstetric complications played in the development of schizophrenia. They began with the premise that people with schizophrenia have been repeatedly found to experience more obstetric complications at birth than the average person. According to the authors, the meaning of these results had been debated for quite some time and, thus, the purpose of the present article was to add to the current understanding of the etiological role of obstetrical complications in the development of schizophrenia. The sample of people used by the researchers was taken from the obstetric files of a hospital maternity ward in Lausanne, Switzerland, and the patients with schizophrenia were compared with their own siblings and with controls. The researchers for this study used 42 people diagnosed with schizophrenia and 40 of their siblings from a total of 41 mothers. There were 174 controls from 92 mothers. All were Swiss born and each was matched according to sex and age.

This current research found a significant increase on the risk of asphyxia to the newborn to be associated with the development of schizophrenia. Gunther-Genta et al. hypothesized that asphyxia could lead to some cerebral defect that could, in turn, lead to the future development of schizophrenia. The authors stated that they found umbilical cord complications to be more frequent in people with schizophrenia (i.e. a knotted cord or a cord that was wrapped around the baby). The also found that atypical presentation of the fetus itself was common in those later diagnosed with schizophrenia. Gunther-Genta et al. hypothesized that these two complications might have been related to "a sort of in utero
clumsiness of the fetus” (p.168), which could have been a reflection of a previous neurodevelopmental impairment of the baby while still in the womb. They concluded that they found a modest correlation between schizophrenia and obstetric complications.

Walker (1994) studied the effects of environmental factors in the etiology of schizophrenia by studying the pre-natal environment. She found that the infant offspring of people diagnosed with schizophrenia showed greater abnormalities in motor development than the control infants (or infants from non-schizophrenic parents). She also stated that there were a striking number of left-side abnormalities among the infants of schizophrenics, and found that there were numerous abnormalities in utero that could account for this abnormality.

Shapiro (1981) hypothesized that pre-natal stressors, such as drug use and psychological and physical stress, could also play a role in the development of schizophrenia. She found that the individuals who were later diagnosed with schizophrenia were hypersensitive to sounds or to certain smells and colors during infancy. She hypothesized that, if a parent was unable to see or understand that the child’s temperament was being negatively affected by some aspect of his environment, or if the parents were unable to set limits with the child, the child may have developed serious problems. The problems experienced in the home may grow, and the child may begin to develop other problems, either in school or in a social life; and the dysfunctional skills learned at home carry over to these realms, thus perpetuating the problem.

Learning Theory Explanations of Schizophrenia

Mednick (1974) attempted to explain the origin of schizophrenia and stated that it lies in the “interaction of hypersensitive autonomic nervous systems and unkind
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evironments” (p.39). Mednick used learning theory to explain what may lead to a psychotic breakdown. He began by stating that, contrary to his initial beliefs, people diagnosed with schizophrenia are relatively easy to condition. His studies showed that, in the area of classical conditioning, learning in people with schizophrenia was far superior to normal people. Stimulus generalization is defined as a response elicited by one stimulus that is also elicited by a similar stimuli. For example, if a person was bitten by a German Shepherd and was then afraid of this dog, the person would, in turn be frightened by a similar dog. Mednick stated that his research indicated that people diagnosed with schizophrenia showed exaggerated generalization reactivity. He began this article by describing how a preschizophrenic may react to stress. He stated that a non-schizophrenic will show a normal arousal response to stress, but the preschizophrenic, because of heightened sensitivity, will exhibit more of a response and will take longer to recover. Mednick hypothesized that, if preschizophrenics are able to remove themselves from the stressful situation, they may be able to avert the consequences which may lead to the development of schizophrenia. If they are unable to remove themselves from this stressful situation, several things may happen. The increase in arousal level may cause an increase in the level and breadth of the stimulus and associative generalizations. This increase may affect all of the individual’s habits, including those related to other learned fear reactions. This increase in the breadth of generalization will cause many new stimuli to become potential anxiety arousers. In addition, those stimuli which had, in the past, elicited anxiety reactions, will now elicit stronger anxiety reactions. This increase in arousal and anxiety will, in turn, increase the level of generalization responsiveness. The result will be increased encounters with fear-arousing stimuli due to increasing numbers of such stimuli
and increased magnitude of the response to such stimuli. This will cause increasing anxiety levels, which will again increase generalization responsiveness, and the vicious cycle may continue to intensify. As response generalization begins to increase, the individual will experience intrusions into the thought process and atypical thought sequences. These will be due to associative generalization. One’s perception can become distorted through stimulus generalization. Normal background noises can begin to sound like voices. Shadows can resemble people. The individual may then begin to fear that he is “going crazy”, which in turn leads to further anxiety. At this point the person may suffer an acute schizophrenic breakdown.

Mednick then goes on to posit the question, “Why don’t all people who experience these life stressors suffer acute breakdowns?” (p. 44). He followed this question by outlining three predisposing characteristics of the preschizophrenic, and used these as his explanation for why only a small percentage of the population becomes schizophrenic. The first is that the person must have a low threshold for anxiety arousal. The second is that the person also must have a slower than normal recovery rate from life’s stressors. Third, the preschizophrenic must have a high generalization reactiveness, meaning that the person takes previous information and learned fears and applies them to new circumstances that arise. Mednick ended this chapter by reminding the reader that, “it is the learning of avoidant thoughts which is the essence of the schizophrenic disorder” (p. 46), and stated that further research must be done in order to find an adequate solution to this problem.

Mednick, Mura, Schulsinger, and Mednick (1974) discuss a 1962 study done by Mednick and Schulsinger in which 207 children with a high risk for schizophrenia were...
evaluated. Their study analyzed the effects of pregnancy and delivery complications upon the children of mothers diagnosed with chronic and severe schizophrenia. Also examined were 104 control children. The authors predicted that 100 of the 207 high-risk children would exhibit some form of deviant behavior, while 30 would actually be diagnosed with schizophrenia. This longitudinal study was designed to last for 20 years. One of their major goals was to gain an understanding of factors predisposing a child to mental illness with the hope of identifying preventive strategies. Six years after the start of the project, twenty of the 207 high-risk children suffered a "severe psychiatric breakdown" (p. 231). When matched with data from the beginning of the study six years earlier, two factors were found to be possible predictors of the eventual breakdown: the presence of a poorly controlled hyper-responsive autonomic nervous system (ANS), and a history of severe perinatal distress, later found as a result of environmental stress (such as the loss of a loved one) suffered by the mother during pregnancy. Further analysis found that almost all of these twenty who suffered from the hyper-responsive autonomic nervous system were the same individuals who had suffered the perinatal distress. The researchers interpreted this to suggest that pregnancy and birth complications had produced neurological damage to inhibitory brain centers which then failed to adequately control the autonomic nervous system responsiveness. However, when these data and their ensuing theory were matched with people diagnosed with schizophrenia who had normal parents, the above correlation was not found. The authors thus modified their theory to suggest that the pregnancy or birth complications trigger or magnify a genetically predisposed vulnerability of the autonomic nervous system.
This study raised several new questions regarding the etiology of schizophrenia and thus inspired the present authors to forge a new study, which they termed the “OB” (obstetrics) project. This study hypothesized that pregnancy and birth complications could trigger the genetically predisposed vulnerability involving the autonomic nervous system, and could cause the development of schizophrenia. Data was gathered on the pregnancy of each mother, the delivery of the baby, and the baby’s health during infancy. At the time of this study, the subjects were between 9 and 11 years old. Mednick et al. used both data and subjects from a larger perinatal study that had been conducted of 9,006 consecutive pregnancies in Copenhagen, ranging from 1959-1961, and were able to gather their data from this source. Information was collected on the parents of these children by use of a central registry. Mednick et al. were thus able to determine whether or not the parents had ever been in a mental hospital and, if so, what their diagnosis had been. They were able to ascertain a pool of people diagnosed with schizophrenia, which they then matched with two control groups, one with normal subjects (never been treated for a mental illness), and one with subjects diagnosed with a mental illness other than schizophrenia. Mednick et al. then gathered information on the pregnancy and birth of these children. These children were examined on the day of their births, 5 days later, and then again at one year in the original study. Mednick et al. followed them for nearly another decade. Both the schizophrenic group and the character disorder group had higher percentages of abnormalities in infancy. They also found that, when the infants from the normal or from the character disorder groups exhibited abnormalities at birth, they usually cleared up by the fifth day. This was not the case for the children of people with schizophrenia, who tended to retain their symptoms. The most significant finding was that the children of
people with schizophrenia were found to have reached motor milestones much later than their normal or character disordered counterparts. There were also more instances of leg and foot abnormalities that might be related to motor retardation. These children were late in holding up their own heads, sitting, standing, walking with support, and walking independently. The low birth weight in the schizophrenic group was associated with developmental abnormalities within the first year. This was not the case for the infants in the other two groups. Children in these two groups with low birth weight showed no evidence of abnormalities in the next year.

In following the families over the course of the next 9-11 years, Mednick et al. found that many of the parents in the disturbed groups were diagnosed with a mental illness at some point after the birth of the child in the study. This was true of 2/3 of the disturbed parents. The researchers found that the three groups seemed to be highly comparable in all areas but one - - the “other complications” group which primarily consisted of babies with low-birth-weight anomalies. In this group, the children of people with schizophrenia had higher “other complications” scores. There were two factors which contributed to this finding. The first involved “other complications” scores for mothers who suffered a breakdown during their pregnancy or within a year after delivery. These babies were found to have a lower birth weight than those in the other two categories. Second, 46% of the children with schizophrenic fathers had low normal birth weight. This percentage was over 20 points higher than both of the other groups.

Mednick et al. found that there were certain things in the pregnancy that distinguished the mothers with schizophrenia from the others. For example, they suffered more central nervous system disorders before the beginning of the pregnancy. In general, the doctors
overseeing the pregnancies of the mothers with schizophrenia seemed to be more concerned about the progress of these fetuses than the fetuses in the other categories. This is exemplified by the finding that a significantly greater proportion of schizophrenic mothers were given X-ray exams within the last month of the pregnancy to try to determine if there was a problem with the baby.

In a later study, Brigitte R. Mednick (1974) assessed the impact of both the pre- and post-natal environment on the offspring of mothers with schizophrenia. She wanted to study what role the following three factors played in the psychological breakdown: familial (or genetic) disposition, stress during pregnancy, and parental separation (i.e. the presence or absence of a mother during childhood). Mednick studied two groups of adolescents: the first had recently suffered a severe mental breakdown, while the second (the control group) had improved in mental health over the course of seven years. Both groups had mothers diagnosed with severe schizophrenia. This study consisted of 40 subjects, all of whom were already involved in a longitudinal study. The parents or guardians of the children were interviewed concerning the early development and social functioning of the children. All of the children were interviewed by a psychiatrist, as well. The breakdown group was found to have had more mentally ill fathers than the improved group, which gives credence to the genetic disposition. Mednick asserts that both of her environmental hypotheses were confirmed, as well. The mothers in the breakdown group tended to have been mentally ill, or suffered from extreme stress, before they were pregnant or became ill as a result of the birth of the child. It is also possible that the environmental and emotional stress created in the mothers’ lives was brought on by the baby’s father, as some were physically or emotionally abusive, and some had legal
problems. Mednick also states that her data supported the hypothesis that the absence of a mother figure was detrimental to those in the breakdown group, and found that there was a higher incidence of maternal separation in the breakdown group than in the other group.

Decades of research have been done on the differing theories of schizophrenia’s etiology. Twin studies, studies of individual families, and adoption studies (those done on the offspring of a mother diagnosed with schizophrenia when the child no longer lives with this biological parent), have all generated empirical support; however, no one theory is universally accepted. The following is a review of important research studies that support a diathesis-stress model of the development of schizophrenia.

The Diathesis-Stress Model and Recent Research

The question of how schizophrenia is transmitted is one that causes much dispute within the scientific community. It was originally thought that schizophrenia was transmitted solely through genes, but family and twin studies suggest that more than just genetics are involved. The majority of researchers, including, but not limited to, Gottesman (1991), Shapiro (1981), Mednick (1974), believe that the etiology of schizophrenia lies in a combination of genes and the environment. This combination is known as the diathesis-stress model. The diathesis-stress model states that a person may inherit a certain predisposition, or liability, to schizophrenia; but if certain environmental stressors do not arise, or if the individual is well-equipped to handle these stressors, the person may not succumb to the illness. However, if an individual is unable to cope with the ensuing stressors, the person may be more prone to developing schizophrenia (Shapiro, 1981). Rather than asking how schizophrenia is transmitted, a better question
may ask how environmental, genetic, social, and psychological factors contribute to the different kinds of schizophrenia. The concept of diathesis-stress provides a main theme for this paper.

**Twin Studies**

Numerous studies have been conducted in an attempt to determine the types of people who become diagnosed with schizophrenia. The incidence rate of schizophrenia is about 1% for individuals who have no relatives diagnosed with schizophrenia. Increased genetic overlap (the sharing of a certain amount of genes derived from both parents) with family members diagnosed with schizophrenia increases the risk rates for the future development of schizophrenia. Genetic overlap for first degree relatives (parents, siblings, and children) is 50%, meaning that these first-degree relatives have 50% of their genes in common. For second-degree relatives (grandparents, half-siblings, grandchildren), the genetic overlap is 25%. And for third degree relatives (cousins) the genetic overlap is 12.5%. Monozygotic twins (those fertilized and developed from one egg) have 100% genetic overlap (Shapiro, 1981), and thus make excellent subjects for studies intending to evaluate the genetic basis for schizophrenia.

Gottesman and Shields (1972) report on several twin studies and the reasons why they were, or were not, reliable. Much research, including that done by Gottesman and Shields (1972), has used monozygotic (MZ) twins to determine whether they are concordant or discordant for schizophrenia, and to then determine why or why not. If twins are concordant for schizophrenia, they have both been diagnosed with the illness. If they are discordant for schizophrenia, only one of the pair has been diagnosed with it. When researchers are able to determine the degree of concordance, they can then examine
genetic and environmental variables of the two children to see if there are apparent reasons for that finding. Gottesman writes, “Since MZ twins have identical genotypes, any dissimilarity between pair members must be a result of the action of the environment, either prenatally or postnatally” (p. 24). Gottesman and Shields identified three criticisms of twin studies. First, it has been argued that MZ twins might be at risk for schizophrenia because of “such problems as confusion of identity and weak ego formation” (p. 25). Gottesman and Shields argued that, if this were true, MZ twins would be overrepresented in samples of schizophrenia as compared to their frequency in the general population. The authors stated that, after reviewing twin studies, Rosenthal (1960) agreed with their assertion, and stated that there was no overrepresentation of MZ twins in the schizophrenic samples. Second, psychological factors might have contributed to one twin identifying with the other. The authors stated that this could work either way, in that the well twin could have positively influenced the mental health of the sick sibling, or the sick twin could have negatively affected the well twin. The authors reported that there were too few cases of this to support this idea. A third potential problem with twin studies is that the identical environment of the twins could have caused the twins to exhibit a higher concordance rate, as MZ twins are more often exposed to the same family and environmental influences at the same time. Identical twins are also more likely than dizygotic twins (DZ) to be treated the same by family members, as they look alike and project the image of one person instead of two. Gottesman and Shields reported a study by Kallmann (1946), who found that schizophrenia was recorded at a higher rate in MZ twins who lived together for five or more years before the onset of the illness than in twins
who lived apart during this critical period, suggesting that both environment and genetics play a role in the development of schizophrenia.

Family Studies

Numerous studies have been done on family dynamics and their contribution to schizophrenia. Many of the ideas related to the schizophrenogenic mother, and the family as the sole reason for a child developing schizophrenia have been dismissed. However, there is a lot to be learned from many of the studies done on family dynamics, as the family does play a large role in a child’s development. Rosenbaum (1970) wrote about the theory of a double bind type of communication, or meta-communication, within the family. In a double bind type of communication, there is a difference between what is said and what is actually meant. For example, Rosenbaum described a scene between a mother and a son shortly after the mother visited him for the first time in the hospital after his psychiatric breakdown. The son attempted to put his arm around his mother and her body stiffened to his touch. He instinctively pulled his arm away and she responded by asking him why he did not love her anymore. She then told him not to be afraid of his feelings. The son became embarrassed and confused and, according to Rosenbaum, suffered a decline in his condition shortly after this episode.

Rosenbaum described the five necessary ingredients for a double bind. First, the scenario must involve more than one person. Second, this experience must be one that has been repeated. Third, it must be a primary communication which has either of these two forms: (a) Do not do this or you will be punished, or (b) If you do not do this, I will punish you. Fourth, the double bind must have a secondary communication, or a metacommunication, that conflicts with the first communication at an abstract level. Like
the primary communication, this metacommunication is enforced by punishments that threaten the child’s survival or well being. This meta-communication is often non-verbal. Lastly, the double bind must have a tertiary negative injunction that prohibits the child from escaping the field, and that is incongruent with the first two communications. As the result of a double bind, children grow up not understanding how to communicate properly with others. They think that they must always listen for the underlying meaning in all that is said to them, especially within the family setting, and they learn to watch for certain signs and signals in speech that alert them to this type of communication. Without the proper knowledge of how to communicate, children grow up not trusting people. Furthermore, they do not trust themselves, as they fear that they are the ones who are somehow causing the communication problems, as this is often what is taught to them by their parents. They are not properly equipped with the skills to change their patterns of communication. To effectively change the pattern of communication for this child, the family must be taught how to communicate without implying these underlying meanings and giving negative responses. Learning a new pattern of communication can be very difficult, especially for members of a family who have grown up with this style and who are familiar with no other type of communication.

Shapiro (1981) reports that Jackson (1968) has also done research on communication within the family. One of Jackson’s concepts discussed by Shapiro was termed “family homeostasis”, and was found in both normal and schizophrenic families. According to Jackson, family homeostasis referred to the tendency of family members to establish and maintain an equilibrium within the family setting. Jackson argued that
schizophrenia affects a family as a whole, and thus the family must receive therapy as a whole, or the therapy will be ineffective.

Shapiro (1981) reports that R. D. Laing (1965) has also done research on miscommunication within the family setting. Laing’s term for the major type of miscommunication within some families is mystification, with its main purpose being to maintain the family status quo and its stereotyped roles. “One person denies the other’s experience out of his or her own defensive needs because, in the context of the family, repression is insufficient for those who want to avoid their conflicts; consequently, group sanctions and defenses are developed” (Shapiro, 1981, p. 117). When parents employed this technique toward children, they become confused as their experiences and beliefs are continually challenged and deemed wrong by their parents. Children are then unable to develop and mature properly because their self-confidence has been shaken and their emotions deemed inadequate, resulting in lasting problems.

In a 1965 study on 17 families of schizophrenics by Lidz, Fleck, and Cornelison (Shapiro, 1981), Lidz found that there were several significant characteristics displayed by these families. To begin this study, Lidz et al. (1965) chose subjects from the Yale Psychiatric Center. These subjects were diagnosed with schizophrenia between the ages of 15 and 30. The subjects were also unmarried and were asked to have their mother and a sibling available to be tested with them. A social worker and at least one psychiatrist interviewed all family members, and they were all given a battery of projective tests. The study lasted for over a year and included home visits and follow-up interviews with all involved. When possible, the researchers spoke with friends, non-family members, and past schoolteachers of the subjects. Lidz et al. were able to reach several conclusions about the
family dynamics of the subjects. First and foremost, all the people diagnosed with schizophrenia in the study came from families with "serious emotional strife" (p. 112). The mothers tended to be extremely intrusive into the life of the child, and were unable to recognize ego boundaries, and they seemed impervious to the child’s needs. The mothers frequently confused the needs of the child with their own needs (such as a need for belonging or for security), and would send conflicting signals to the child, similar to the aforementioned double bind scenario. Many of the mothers were either too restrictive or insufficiently firm with their children. The fathers in these families were often "insecure in their masculinity" (p. 112), in need of constant admiration to boost their self-esteem, and were often mildly paranoid. These families all tended to have unclear sexual and generational boundaries, as well, which could also lead to a type of double bind scenario. The parents often reversed the sex roles (the males take on effeminate characteristics and the females take on masculine characteristics), or would act in a seductive manner with the children. Often the parents would behave like children themselves, thus further creating confusion for the child as to the proper role in the family. Within many families there was fostered a sense of distrust and dishonesty. Frequently, one parent would use the child against the other parent, therefore instilling in this child the idea that one side had to be chosen over the other, or the child would risk not being loved by one or both of the parents. The parents also seemed to be more tied to their family of origin than to the family that they had created, and they spent more time and energy focusing on the one of origin, thus neglecting their own family.

Rosenbaum (1970) reported that Lidz (1965) used the terms marital schism and marital skew to describe two types of dysfunctional families that he believed led to the
onset of schizophrenia. In a family divided by marital schism, each spouse is caught up in his own problems and concerns. There is no mutual support and, often, things are done without the knowledge of the other spouse. The marriage is usually fraught with a lack of trust of one spouse for the other. There are underlying marital problems, but either one or both of the spouses fail to acknowledge these problems, and usually have no desire to do so. Usually, each parent ends up drawing one or all of the children into this scenario by deliberately destroying the worth of the other parent in the child’s eyes.

Regarding a family separated by marital skew, Lidz stated, “serious psychopathology of one partner dominates the home” (Rosenbaum, 1970, p.149). According to Shapiro (1981), it was usually the wife suffering from the severe psychopathology. This psychopathology was treated as normal by the other members of the family in the house, and was never recognized as abnormal. However, the other spouse, and the children as well, were able to recognize the unhappiness of the disturbed spouse and began to exhibit supporting behavior. They also began to share in these ideas and in this unhappiness. The fathers, in a family characterized by marital skew, were generally weak and ineffectual in their fatherly duties and went along with the delusional wife in her beliefs, thus leaving the children without appropriate role models.

The families of females diagnosed with schizophrenia could also be schismatic with the mothers being insecure, defeated, and devalued. According to Shapiro (1981), “In families with marital schism, the parents are locked in continuous covert conflict and compete for their children’s loyalty” (p. 113). These mothers may have tried to be adequate role models for their daughters, but their efforts were disrupted by their unhappiness and overwhelming insecurities. Such mothers tended to be hopeless, passive,
and overprotective, thus resulting in the lack of a healthy female role model for the daughter as she grows and enters adulthood. According to Shapiro, many of the fathers in this study exhibited narcissistic tendencies, a contrast to the image of the father portrayed in the family divided by marital skew. The fathers needed constant attention and admiration, and felt that they deserved to have it. The fathers felt and, therefore conveyed to the daughter, that the mother was inadequate and unable to fulfill the needs of the father; they thus turned to the daughter for the love and affection that was lacking in the marriage. This attention from the father provided conflict within the daughter regarding the role that she should have assumed within the family. She no longer played the role of a daughter or of a child, but of a wife and a partner to her father. The daughter was, therefore, left feeling insecure as to her role in the family and remained always afraid that she would alienate one parent or the other by her actions or her response to the actions of one of her parents. This role, Rosenbaum (1970) states, seemed to fulfill the criteria for the double bind.

Lidz (1965) found that parents of males with schizophrenia tended to be more skewed than schismatic. The mothers were the dominant spouse and they tended to maintain a symbiotic (a type of relationship where both people are likely to benefit) and erotic relationship with their sons. The mother treated the son not as a child, but as a partner, with the implied intimacy of a marital relationship. As the son grew, the mother placed contradictory demands and expectations upon him. She expected only great things from him and wanted him to fulfill all of her unfulfilled dreams. At the same time, she was overprotective, coddling, and tried to take care of him as if he were still an infant. The fathers in these families provided poor models of masculinity and were described as either
alcoholic, psychotic, passive, or emotionally distant from the family. The fathers also tended to be passively seductive with their sons, either by subtle comment or by gestures of affection, although the fathers denied this vehemently.

In regards to his findings, Lidz stated:

Meanings can alter in the service of emotional needs and when a person’s acceptability to himself and others is threatened, when no way out of an irreconcilable dilemma can be found, and when all paths into the future seem blocked, there is still a way. One can simply alter his perception of his own needs and motivations and those of others; one can abandon causal logic or change the meaning of events; one can regress, retreating to a period in childhood when reality gave way before wish, when one felt central to the parent’s care or even to a time when one was not fully separated from the mother - and then regain a type of omnipotence and self-sufficiency [1973, 10] (Shapiro, 1981, p. 113).

Shapiro (1981) found that, in general, both males and females who were diagnosed with schizophrenia had a history of poor relationships with the parent of the same sex. The parent of the opposite sex had often been seductive and had used the child for narcissistic gratification, not implying an incestuous relationship, but rather one in which the verbal or implied messages sent were of this nature. Neither parent was able to cater to or determine the child’s needs, but used the child for personal needs and wants. These children grew up nearly unaware of their own needs, but hypersensitive to the needs of others, especially their parents. They felt that they were integral to the parents’ well being, and this feeling, according to Shapiro could lead to delusional beliefs later in life.
Although the aforementioned research is somewhat outdated, it suggests that schizophrenia develops from a combination of both genes and the environment. It is seen that family dynamics can play a large role in the development of a child, especially an impressionable pre-adolescent who does not have a proper role model, or a model on which to base future relationships. Researchers now know that, in themselves, interactions between parents and children do not cause a child to become schizophrenic. But these interactions do show that there is often an underlying mental health problem with one, or both, of the parents, thus giving weight to the diathesis-stress model of etiology.

When research has shown that improper family dynamics can be detrimental to a child’s development, it is the responsibility of healthcare professionals in all genres to counsel the family on what steps to take to move toward a healthier way of life. As will be discussed in the next section, it is society as a whole who is affected by the prevalence of schizophrenia, not merely family and friends. Thus, it would benefit all of society to research prevention strategies and to implement early intervention techniques.

Prevention Strategies

When dealing with people diagnosed with schizophrenia, preventing a recurrence of symptoms and learning ways in which to lessen the severity of symptoms is of utmost importance, not only for individuals and their families, but for society as a whole. Although schizophrenia affects approximately 2.6 million Americans (Rice, 1999), nearly 2.5% of U.S. health care expenditures go toward the treatment of this illness (Mauskopf, 1999). The average annual cost per patient ranges from $16,000 to $57,000 depending on the severity of the illness (Mauskopf, 1999). As schizophrenia generally occurs during the
productive working years for men and women (ages 18-34 including both men and
women), the economic burden is substantial. According to Rice (1999), the Alcohol,
Drug Abuse and Mental Health Administration estimated that, in 1985, 22.8 billion
American dollars were spent on treating people with schizophrenia. These costs include
hospital stays, professional services, prescription drug costs, etc. Lost wages and days
missed of work also negatively affect the economy. Society is further affected by the
increased incidence of homelessness, drug addiction, and crime rate in this population.
Eronen, Tiilhonen, and Hakola (1996) write that, although most people diagnosed with
schizophrenia cannot be considered dangerous, those who are suffering from
hallucinations or persecutory delusions have a greater propensity toward violence than
those not diagnosed with a mental illness.

Those diagnosed with schizophrenia, and their caregivers, must be given the tools
to understand and live with this illness. Daily life can be difficult for all involved when
there is no outside assistance. It can be especially difficult when a patient is newly
diagnosed and is discharged from the hospital with little awareness as to what to expect
upon discharge. This section will deal with ways in which this issue has been addressed
and will highlight some programs that have benefited those who have taken part in them.

Prevention Theories

If schizophrenia were an illness borne of a genetic liability coupled with some type
of environmental stressor, the next logical question would ask what could be done in the
way of prevention. Since nothing can be done to prevent any kind of genetic
predetermination in a person, as there has been no specific gene isolated as causing
schizophrenia, prevention can only take place within the environment, be it social or
familial. But is it even possible for a society to prevent schizophrenia? What are the warning signs and how do people know the warning signs as opposed to a “normal” part of an adolescent or young adult merely growing up or acting out? How does a parent or caregiver know when the situation is serious and should be discussed with a professional? Should the goal be to merely decrease the severity of the symptoms? Lastly, do early intervention techniques work? Have they proven to be helpful and can they prevent the most serious impairments of this illness? These are the questions that will be addressed and answered in this final section of the paper.

Three levels of prevention are frequently discussed when dealing with someone who has been diagnosed with schizophrenia (Wyatt, 1999). Primary prevention attempts to decrease the incidence of schizophrenia by decreasing the risk factors associated with it. Secondary prevention attempts to reduce the duration or severity of the illness, or to reduce the risk factors that put the person in jeopardy of subsequent problems. Finally, tertiary prevention includes the rehabilitation and restoration of functions that have been lost due to the effects of schizophrenia. This section will discuss these prevention strategies, indicating what has worked, and what improvements should be made to improve the quality of life of a person diagnosed with schizophrenia.

Several studies within the last decade have researched whether the early detection of precursors to schizophrenia is feasible. One such study, conducted by Olin and Mednick (1996) focused upon people who are in the high-risk category for developing schizophrenia. They defined high risk as having a parent, usually the mother, who has been diagnosed with schizophrenia. Most high-risk studies encourage the examination of gene-environment interactions. Olin and Mednick (1996) stated that the risk for children
whose mothers have schizophrenia is 16%, and this percentage was even higher if the father was diagnosed as schizophrenic. This article discussed both genetics and life events, while putting most of the emphasis on heritability, but the authors concluded that environment does play a large role in whether or not the child develops this illness. In this article, the authors discussed a longitudinal study of children of disturbed parents who were followed from birth to five years of age. They found that mothers with schizophrenia tended to provide a poorer living environment characterized by less play stimulation, fewer learning experiences, and with less emotional and verbal involvement in comparison to well mothers. They suggest that these substandard environments may contribute to adult psychosis. The article also addresses prenatal and birth complications as precursors to schizophrenia, and gives added credence to the Finnish Adoption Study done by Tienari et al. (1994) which concluded that:

Children who had mothers with schizophrenia but who had a positive adoptive experience were protected from later schizophrenia, while the genetically vulnerable individuals who experienced a disturbed adoptive family tended to develop the disorder. This finding suggests that a positive rearing experience can protect at-risk individuals against future psychosis (Olin and Mednick, p. 229).

Olin and Mednick (1996) report on several studies that have found that teachers and guidance counselors were important in assessing a child’s behavior and temperament, and argued that these behaviors could be reliable predictors of later schizophrenia. They reported that studies have consistently found behavioral deviance evident from childhood or adolescence. Students were found to be shy and withdrawn, to have poor peer relationships, and to do poorly in school. These children also demonstrated antisocial
behavior, mainly within the family, and tended to have family histories of mental illness. Many differences, however, were not noted until the child reached adolescence, when their behavior tended to become even more deviant and problematic. Teachers often described the males as disruptive, having disciplinary problems, anxious, lonely, often rejected by peers, and more likely to have repeated a grade, while the females were described as nervous and withdrawn.

Olin and Mednick (1996) made only a few suggestions regarding the prevention of schizophrenia. Women diagnosed with schizophrenia could have a better chance of preventing this illness in their children if they receive the proper prenatal care, such as frequent visits to the doctor and the proper nutrition. Psychosocial intervention for the family in its entirety could prove helpful as well in prevention. Therapy that teaches coping skills would be especially useful for the entire family, and may specifically aid in the prevention of future psychotic episodes in the mother. The authors asserted that mentally and emotionally healthy parents, or parents who were receiving the support of a therapist or psychiatrist, were more likely to provide a stable environment and therefore a more healthy home life for the child’s development.

In a further discussion of the role of the environment, Tienari et al. (1994) concluded that, as children grow and spend more time in school and away from their parents and their home life, teachers become an integral part of the children’s’ lives, especially in the assessment of their behaviors. Teachers may begin to see the behavioral changes in a child; and it is the teachers who can look at the other children and compare and contrast the behaviors and the emotional abilities of each child. Once a problem is noted, it is the responsibility of the teacher to address these issues with the parents. It is
then the responsibility of the parent to listen to the teacher and to intervene by contacting the appropriate healthcare professional so that they may obtain the necessary help for both the child and the family as a unit.

McGorry, Edwards, Mihalopoulos, Harrigan, and Jackson (1996) review a model of early intervention in schizophrenia. This model, called EPPIC (Early Psychosis Prevention and Intervention Centre) was founded in Australia and, according to the authors, has become quite successful. Its goals are to target the people who are at high risk for the development of schizophrenia and to treat them as quickly and effectively as possible. This EPPIC system began operation in October of 1992 with the following objectives:

To address and embrace early detection, to prevent secondary morbidity, and maintain social and occupational functioning during the early “critical period,” namely the initial two years after entry into treatment...this model had two fundamental aims: first to identify patients at the earliest stage from onset of psychosis, and second, to provide intensive phase-specific treatment for up to two years thereafter (p. 309).

An Early Psychosis Assessment Team (EPAT) was established to serve as the only means of entry into the program. The team was mobile and could respond to a distress call in as few as two hours, if necessary. This team sought to improve community awareness about schizophrenia and taught the warning signals as well as gave information about genetic liability to the illness. They targeted not only young people but doctors and teachers as well. They wanted anyone who would come into contact with potential patients to be able to detect the illness in its early phases and to contact the team.
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immediately. One of the goals of the EPAT team was to conduct the assessments in the least threatening environment to the patient, whether that is at home, school, or the doctor’s office.

The founders of EPPIC were impressed with its outcome. In the first twelve months of operation, EPPIC responded to 460 referrals. Two hundred seventy three (273) were clinically assessed and 183 were accepted into the program. In order to be accepted into the program, the person had to be between the ages of 16 and 30, must be presenting with first episode psychosis, and must live in the western region of Melbourne, Australia. In the second twelve months, the numbers increased and EPICC accepted 215 people into the program. Each person accepted into the outpatient program had his own case manager who coordinated all aspects of his treatment. In the inpatient program, the goal was to focus on symptom reduction and containment. There were only 14 beds in the inpatient unit, and the average length of stay was 12 days. Low doses of neuroleptics were considered standard for those recently admitted to the inpatient facility.

EPPIC also had a day treatment program to which people were referred during the recovery phase of their initial psychotic episode. An individual program was tailored to meet the patient’s needs, and staff worked with each other across the programs to ensure consistency in the program planning. A five-bedroom house served as the base for this day program, but most of the activities took place in community settings, with the goal of transitioning the client back into society with as little stress as possible. The author’s data showed that most of the people in this program were able to return to at least some aspect of their “normal” lives. Some have returned to work, others to school, and some to vocational rehabilitation services. Still others, through the diligence of the staff in this
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program, have avoided the deterioration that may have occurred had they not been involved in this program.

Another aspect of EPPIC's program dealt with family interaction and family intervention. A family worker was sent to observe and teach dysfunctional families new patterns of interaction designed to ameliorate previous problems and avoid new ones. The family worker observed the family and suggested changes so that they could better cope with the patient and the stress that may follow when the person returns home.

Finally, a program entitled COPE (cognitively oriented psychotherapy for early psychosis) was provided to the person suffering from schizophrenia to help deal with the psychological changes and challenges that had been occurring. Since most psychiatric episodes begin during late adolescence or early adulthood, the goal of this intervention is to help each person adapt to the onset of the psychotic illness and its effects on self-concept, identity development, and self-esteem. The person may have just developed into adulthood, or may still be in this process, and may become even more confused or distressed to find that an entirely new personality has developed and new coping mechanisms must be learned. Consequently, this may lead to a decrease in his self-value or self-worth. The goal of COPE is to help these people understand these changes and to learn how to deal with them more effectively.

The authors had only two years of follow-up before this article was written. They took a sample of 51 EPPIC patients who had been in the program between March and October 1993, and compared them to a sample group of 51 people (matched for age, sex, diagnosis, marital status, and premorbid functioning) who had been treated in the pre-EPPIC period between 1989 and 1992. The authors stated that, because of EPPIC's
ability to detect schizophrenia early and begin treatment with the patient, the time of duration of untreated psychosis was significantly shorter — approximately one month, on the average. The number of days spent in the inpatient unit was significantly less in the EPPIC sample than in the pre-EPPIC sample — 39.5 days as compared to 54.1 days. Not only did the treatment appear to be beneficial to the patient, but the reduction in days also meant a reduction in cost. These preliminary results suggested that EPPIC may be moderately beneficial to the people it served, and the authors stated that feedback from patients indicated that, for the most part, they were happy with the program, especially in the area of family support. According to the authors, the results of this program appeared to be successful, although they were not able to complete follow-up assessments on the patients at two years or beyond by the time of this publication. The authors concluded that the initial findings supported their hypothesis that the amount and severity of some of the patient’s symptoms have been reduced; and the authors were hopeful that this trend would continue. This article concluded that, while EPPIC needs some improvements, it is a promising program that appears to improve the health and well being of the patients.

In an article studying the effectiveness of EPPIC, Power, Elkins, Adlard, Curry, McGorry, and Harrigan (1998), found that this method has been quite effective for its patients. They report that hospitalizations were brief and were not necessary for 1/3 of the population. They were able to keep most of the patients on only low doses of antipsychotic drugs. And, by the end of a three month study period, they found that 80% of their subsample had responded to treatment, while 63% were in remission. They concluded that EPPIC’s early intervention and treatment practices were beneficial and that programs such as these should be considered elsewhere.
Falloon, Kydd, Coverdale, and Laidlaw (1996) explored various ways to detect schizophrenia and treat it before the symptoms worsen. They argued that it is important for both families and family doctors to know and understand the early warning signs of schizophrenia so that detection can become quicker and easier. Their article discussed the Buckingham Project which began in 1984 and was a model of community-based mental health care. This project served a semi-rural area of England with a population of 35,000 and a well-established circle of primary health care physicians. The authors explained that, at first, the family practice doctors were told to watch for early warning signs of schizophrenia, but it proved too difficult for them to discriminate early warning signs from more common responses to stress. However, the authors stated that the doctors had little trouble treating the illness once detected. To train the healthcare professionals about early signs of an illness, a ten question interview screening was developed (See Table 1, Appendix A).

The authors designed training practices for the family physicians, but these were not initially well attended. Thus, in order to improve attendance and facilitate learning, the family practitioners and nurses were trained individually by mental health therapists. They had case-related discussions and weekly tutorials to assist in the enhancement of their skills in detecting these types of mental disorders. The physicians were also trained to recognize eight early warning signs of schizophrenia. These warning signs are derived from the prodromal signs outlined in the DSM III and are outlined in Table 2 (Appendix A). (Prodromal signs are the early signs and symptoms of schizophrenia that occur prior to the obvious characteristic signs becoming apparent in a person (Yung, McGorry, McFarlane, Jackson, Patton, & Rakkar, 1996).)
Most of the physicians reported that they easily recognized these symptoms, but
tended to limit the referrals to mental health professionals until the symptoms worsened.
They did so because, as one physician stated, the psychiatrists often sent them back to the
family practice doctor stating there was nothing they could do at this time. Most
physicians found this extremely frustrating. Thus, another aim of this study became the
integration of the services of all professionals to ensure that the patient is given the service
he needs as quickly as possible. Mental health services staff made themselves available at
any time during the week to assess any patient that the family practice doctor stated was
displaying unusual behavior. During the assessment, the mental health specialist looked
for six things, in particular. He began by attempting to determine the nature and duration
of the behavior, the patient's mood, and cognitive functioning to try to determine if the
behavior was, in fact, indicative of schizophrenia, or if it was simply a reaction to stress.
He also investigated whether this behavior was normal for the patient. Next, he looked at
features that would put the patient in a high-risk category for developing schizophrenia.
He then examined family history to determine if schizophrenia or any type of
schizophreniform disorder had been prevalent with any close relatives. He also looked at
birth complications or signs of illegal drug use. He would then examine the effects of life
stressors, coping strategies, and the presence or lack of community and family support. A
standardized mental health assessment schedule was developed for use as a diagnostic
tool. As part of this assessment, the authors not only interviewed the patients, but the
major caregivers as well to clarify biomedical vulnerability and psychosocial stress factors.
This interview process was then followed by a standardized mental status assessment,
using the Present State Examination. All mental health professionals who conducted these
assessments and interviews were trained in their procedures before they met with the patients or the families. They were also required to complete a self-paced training program on detecting the symptoms of schizophrenia, and received workshop training as well as personal tutoring. Finally, their skills were tested to ensure accuracy in both the understanding and detection of the symptoms of schizophrenia. All assessments were then reviewed by a psychiatrist for a second opinion or clarification of any questions.

When a person was determined to be showing the early warning signs of schizophrenia, a crisis management program was immediately initiated. Each component of this program was tailored to the individual's needs, and included education about this illness, modes of stress management, and the use of neuroleptic medication. Within 24 hours of detection of schizophrenia, the mental health professionals had both the patient and the caregivers attend a meeting explaining the necessity of early intervention. It was explained to the patient and the family what the symptoms probably indicated, and the reasons for, and courses of, treatment and its goals were outlined. Patients and caregivers were encouraged to ask questions and voice concerns regarding the impending course of treatment, including what the patient could expect to experience in the near future. All questions were answered candidly, as establishing trust was of utmost importance. The reasons for the onset of the symptoms were discussed, as were life and family stressors, and ways to improve or ameliorate the causes of stress. If a particular event was found to be the main cause of symptom onset, the issues surrounding this would be assessed, and the patient would be taught specific coping mechanisms. At the end of the session, the mental health professionals sought the consent of all involved to commence treatment. The authors stated that, in all cases, they received consent.
Stress management sessions were then conducted daily in the home, usually for all involved. Home nursing care was made available for the patient with special needs. All treatment, including the length of the sessions, was tailored to the individual needs of the patient and the patient's caregivers. Neuroleptic drug treatment, at the lowest possible dosage, was used for only specific disturbances, such as "perceptual or cognitive impairment, agitation, or sleep disturbances" (p. 278). Drug treatment was monitored, and was limited to only a short period of time (usually not lasting longer than a week). By observing the patient and the caregiver in the home, the therapists were not only able to instruct in stress management techniques, but were able to assess the coping mechanisms used and offer alternatives when deemed necessary. A weekly meeting was conducted in the home with all involved to discuss the observations of the mental health professionals and to ensure that the necessary corrections were taking place. As the patient improved, and treatment was faded in intensity, the patient was given a small wallet card with a list of the possible warning signs of a return of symptoms. Necessary phone numbers were also provided so that the mental health team could be contacted without delay. After complete resolution of the prodromal state, assessments of all areas of the patient and the caregiver were completed at 3, 6, 12, and 24 month intervals to check on the status of the patient, to determine if the person needed assistance, and to determine if the suggested coping strategies had continued to function properly. At any point during these follow-up sessions, if the mental health professional identified an area in need of work or assistance, such help was provided. If, after 24 months, the patient experienced symptom-free behavior, the family practice physician would take over the routine monitoring.
Vaglum (1996) supports many of the same ideas regarding the treatment of schizophrenia as those described in the preceding pages. He argued that patients should be treated while still in the prodromal phase of the illness, and that physicians and caregivers should be educated to recognize these traits. He stressed that family involvement was of utmost importance. Vaglum also stated that early intervention programs should target adolescents and young adults and should be provided in areas of low socio-economic status, where people normally would not be informed about the early warning signs of schizophrenia and may not be able to afford a doctor’s visit. Vaglum briefly outlined an early detection program designed to educate doctors, caregivers, teachers, and people at risk for the illness, and proposed a treatment series close to that outlined in the previous article by Falloon et al.

**Genetic Screening and Counseling**

The aforementioned studies have shown that early detection and treatment of schizophrenia decreases length of hospitalization, improves symptoms sooner, and requires less drastic intervention. This is all to the benefit of both society and to the person with the diagnosis. If schizophrenia is, indeed, a predisposition brought on by an environmental stressor, might it be possible to prevent it by eliminating the predisposition? In other words, could genetic screening and counseling aid in the decrease of schizophrenia?

The President’s Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research (1983) addressed the development of genetic counseling. The first American genetic counseling center, The Eugenics Records Office, was founded in 1915 in Cold Spring Harbor, New York. The term eugenics “refers to
efforts to improve inborn characteristics of the human species by applying rules of heredity to human propagation (p. 10)." In discussing how people with genetic disorders were treated in the past, the Commission wrote that, "In the first part of this century, many eugenicists called for regulated marriage, sterilization, immigration restrictions, and permanent confinement of individuals considered ‘misfits’" (p. 10). In a speech regarding the use of sterilization, Laughlin (1925) stated, "the remedy lies in drying up the source" (p.6). He believed that researchers should delve into the history of families to see who is producing the "degenerates" (p.6), and these people should then should be prevented from producing more members of the family.

In the 1930s, as Hitler rose to power and people began to see the horrors of the application of Nazi methods of forced eugenics, many of these beliefs diminished. According to the Commission (1983), eugenics became merely an academic pursuit for the next two decades. By the 1960s, researchers had made great progress in the understanding of genetics. From this research arose the development of genetic tests based on blood and cell samples, thus giving way to genetic screening and counseling.

Genetic screening and counseling can be very important to couples or women with a history of a genetic illness who are wishing to start a family, or who have just found out that a baby was conceived. People with genetic disorders may wish to find out if the baby is at risk for the disease. And couples wishing to conceive may consult a genetic counselor to determine the risk for a certain disease if they do conceive. The Commission (1983) addressed both positive and negative aspects of genetic screening and counseling. Among its discussion of the positive aspects, it maintains that, through screening, couples are better able to make educated and informed decisions as to their health and the health
of a potential baby. The Commission also asserted that major contributions could be made to public health by "reducing the incidence of genetic disease and by facilitating more effective management and treatment" (p. 41). Its concerns were in the area of confidentiality and of who should be screened, and whether or not screening should be on a voluntary basis.

In dealing with such a delicate issue, numerous questions and issues must be addressed. There are not only societal issues to address, but moral and ethical ones as well. What is the responsibility of a potential parent or of society in dealing with an illness such as schizophrenia? Does anyone have the right to decide if a person diagnosed with schizophrenia should or should not conceive or give birth to a baby? What if two people, who have control of their schizophrenia through counseling and medication, fall in love, get married, and want to begin a family? Should they be allowed to bring into this world a person with the potential of a lifetime illness, someone with the potential to cost his parents and society hundreds of thousands of dollars in a lifetime of care? Who is it who should make these types of decisions? Should it be the decision of anyone other than the parents? And, even if the parents were to seek genetic counseling, what about the people who do not seek it, yet give birth to one or several children? These are all questions that have been pondered and must be addressed, especially as it is society who will incur the treatment costs of a person with schizophrenia.

According to one Christian religion, a married couple should be open to new life. In discussing the Vatican Council II and its perspective on marriage and family, Atkinson (1980) stated that, "No societal good is more important than the good of the individual, and the quality of no society can be higher than the quality of life of its members (p. 134)."
Atkinson quotes the encyclical when he states, "the whole structure of family life is directed toward assisting the couple to cooperate with the creative love of God who through them will increase the human family (p. 118)." Pope Paul, in this encyclical, stated that it is wrong to interfere in any way with the marriage act in order to render it infertile. The church and Vatican II did not believe that a life is less valuable just because it has developed an illness or has the potential to develop an illness. A person must be given a chance at life, according to the church, and must be given the chance to make his life valuable. The church does not see one life as more or less valuable than another. The Pope and the Catholic Church stated that it is not for society at large, or a doctor in a hospital, to decide if a person diagnosed with an illness (such as schizophrenia) should or should not conceive a life.

However, neither the Pope nor Vatican II address problems with unwed mothers, and were speaking merely in terms of a marriage situation. The Catholic Church teaches that only married couples should enter into a union that could result in the creation of a life. Yet, in today's world, we must look beyond this teaching, as an increasing number of children are conceived by unwed women. We must take a more humanistic look at each situation, and try to understand each case as it presents itself.

The majority of young or unwed women diagnosed with schizophrenia do not plan on becoming pregnant but once they have become pregnant, they should be counseled by the doctors treating them on the current statistics regarding their offspring. Some people may argue that, for the good of society or for the well-being of an unconceived baby, a woman diagnosed with schizophrenia should not be allowed to become pregnant, or if she does conceive, she should elect to terminate the pregnancy. However, schizophrenia is
not a genetic disease such as Down’s Syndrome or sickle cell anemia in which a
determination can be made either before or during a pregnancy if the baby will have the
illness. There is no schizophrenia gene that has been defined, and thus no way to
determine if a baby would eventually become schizophrenic. It cannot even be proven if
the baby will be born with the predisposition for the illness.

According to the diathesis-stress model, the environment in combination with the
person’s genes leads to a diagnosis of schizophrenia. No genetic counselor could predict
what will happen to a person, especially in his environment, throughout the course of his
life. Even a couple in which both parties are diagnosed with schizophrenia could give
birth to a baby who will never become schizophrenic. The actual course of development
for any individual cannot be determined, and so it is my judgment that it is wrong to
suggest that people diagnosed with schizophrenia should be sterilized or discouraged from
having children because of the chance that the child may develop this disease. However,
parents should be informed as to the risks -- that a child with one parent diagnosed with
schizophrenia has a 10% chance of developing the illness, and that a child of both parents
diagnosed with schizophrenia will have a 40% chance of developing the illness (Weiden,
1998). There should be healthcare programs, for all income levels, that monitor the family
life to insure that the child is not being mistreated, neglected, or subjected to the active
symptoms of a schizophrenic parent. Children cannot thrive in these types of situations,
and should be protected by a third party. Parents should be counseled on the
interpretation of warning signs that might be exhibited by their child. They should also be
taught coping mechanisms so that, not only they, but their children as well, will learn to
manage life’s stressors and function in a society that can be very stressful at times. If the
child has inherited the predisposition for schizophrenia, these skills may at least give him a chance at his best adjustment. Parents who understand their illness, manage their symptoms, and continually work toward positive mental health would not be as detrimental to the welfare of their children and society as those who do not take care of themselves.

It is important for those diagnosed with schizophrenia, and those at risk for the development of schizophrenia, to learn to deal with and understand their symptoms. However, it is often not enough for the individual to deal with this illness alone. The person must have assistance through a reliable support network of knowledgeable professionals who are able to determine the occurrence and severity of symptoms. It is only with this type of assistance that a person can be expected to cope with the difficulties associated with schizophrenia.

Conclusion

Schizophrenia is an extremely complex illness that affects all aspects of a person's life, including the lives of caregivers, friends, family, and of society as a whole. Although there is no cure for this illness, there are many things that can be done to lessen its severity, and to prevent this illness from becoming something that will destroy the life of the person suffering from it. Even though the prevention strategies described in this paper are rather new and inconclusive, they are suggestive of new directions to be tested and validated. Decades of research have been conducted into schizophrenia's etiology and treatment in an effort to better comprehend this illness. A massive research effort to predict, cure, and explain schizophrenia has gone on for numerous decades, with only a representative sample presented in this paper. No one has been able to reach any
conclusive findings regarding the causes of schizophrenia, and varying theories still abound. However, the research cited strongly suggests that schizophrenia cannot exclusively be a genetically based illness. I believe that it is an illness that stems from both genetics and the environment, with both playing a role in determining whether a person will be diagnosed with schizophrenia.

Schizophrenia is too serious and too debilitating to allow to progress for months, or years, untreated. In the meantime, there is much to be gained and little to lose by educating family practice doctors about the warning signs that precede the development of schizophrenia. Whether or not these doctors are aware of it, they are an integral part of their patient’s lives, and can be even more so when the beginnings of an illness such as schizophrenia arise. The job of family practice physicians is twofold. First, they must discuss the potential of offspring developing schizophrenia when their patients are already diagnosed with schizophrenia. Second, they must be trained to listen closely to the complaints of their patients that may suggest the presence of prodromal signs, active symptoms, or a residual phase of schizophrenia. They must also obtain a complete family history so that, if they observe behaviors indicative of schizophrenia (or of the schizophrenia spectrum) they will know that these behaviors may very well be the precursors to this illness. Doctors must also learn to ask the right questions and to continue to ask questions until they find the potential problem. They must not merely scratch the surface and terminate their questions there. For example, Falloon (1996) described a doctor whose patient told him that she was having trouble sleeping. Instead of merely prescribing medication to help her sleep, he began to ask questions about why she was having difficulty sleeping. She confided that she had been hearing voices talking to
her at night and instructing her to do things. She was frightened and could not sleep. This doctor immediately referred her to a psychiatrist who was able to help her. The patient was subsequently diagnosed with schizophrenia and began what was to be a successful treatment plan. Had this doctor merely given her a prescription for sleeping pills, and not probed further into her sleeplessness, she may not have been helped at all, and her symptoms may have increased to such intensity that her recovery process could have been impaired.

However, not everyone, especially those in a lower income bracket, has a family practice doctor and, therefore, would not benefit from his expertise. This is why I feel that all healthcare professionals, from family practice doctors to health clinic staff to Medicaid/Medicare/welfare caseworkers, should be trained in the warning signs of schizophrenia. Although it is not a skill that these professionals will use daily, it could save one life or could keep one family together. They should be trained to ask in depth questions about their client’s lives, to really get to know them as people. I understand that this would take more time than the system currently allows, but in the long run, it could end up saving money for the client himself, the insurance companies, and the government. I feel that more personal contact is necessary in all of these professional settings. If the professionals don’t ask the questions, who will?

As stated throughout this paper, the early identification of schizophrenic symptoms is critical. However, it is then essential that the referral is made quickly to the mental health professionals and treatment begin. The models outlined in this paper appear to have all the necessary areas covered for intense and skillful treatment of the patient; and if more communities would become proactive in the early identification and treatment of
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schizophrenic symptoms, treating them before they worsen, incalculable amounts of human suffering, and resulting costs to society, could be prevented. It is also possible that early intervention and prevention efforts might reduce the overall cost of an added need for outpatient facilities. If doctors intervened at the beginning of the course of schizophrenia, the symptoms might not be so debilitating, and insurance companies might be able to save money as well as might the employers of the people with the disease. By beginning an early course of treatment, both the patient’s knowledge and awareness of the many aspects of the illness would be increased. The patient could focus on effective coping methods instead of being a silent victim of the illness. The patient would also be educated in ways to help himself, and the people around him would be educated in this manner as well. Using this type of team approach, the patient is more likely to attain greater mental health. These are my recommendations; and I feel that, with the necessary amount of cooperation among mental and healthcare professionals, this is something that can be attainable in the future if someone were to take the initiative and fund intense intervention programs.

Society must do its part as well. It must encourage people to study schizophrenia and to work with those afflicted by this illness. It must work toward decreasing the stigma associated with a mental illness and teach that schizophrenia is manageable, that it is not a personality flaw, but an imbalance within the brain. The healthcare system must work with, instead of against, those diagnosed with schizophrenia. Intense treatment at the beginning of the illness is necessary to increase the chance that a person will have a shorter active phase of schizophrenic symptoms. Late recognition of symptoms, delayed treatment, shorter hospital stays, and fewer outpatient programs can only be detrimental to
the person’s recovery. When a person is treated with dignity and respect and is taught how to manage this illness, everyone in society will benefit. It is not only the schizophrenic and his family who are affected by this illness, it is everyone.
References


1. Have you experienced loss of energy or interests recently?
2. Have you been worrying a lot about everyday problems?
3. Have you had difficulty concentrating on reading or watching television? Have you been more forgetful than usual?
4. How do you see the future? Do you ever feel that life is not worth living? Have you ever felt you would like to end it all?
5. Have you any odd habits, like checking or cleaning more than other people?
6. Do you ever have attacks of palpitations, sweating, shaking, or dizziness accompanied by feelings of intense fear?
7. Has anybody commented that your speech has become odd or difficult to understand?
8. Have you ever had the experience of hearing people’s voices speaking when nobody seems to be around?

Appendix A: Tables

Table 1. A 10-Question Screening.

1. How have you been sleeping in the past week? Any difficulties getting to sleep? Waking early?

2. Have you lost your appetite recently? Weight loss of two or more kilograms?

3. Have you experienced loss of energy or interests recently?

4. Have you been worrying a lot about everyday problems?

5. Have you had difficulty concentrating on reading or watching television? Have you been more forgetful than usual?

6. How do you see the future? Do you ever feel that life is not worth living? Have you ever felt you would like to end it all?

7. Have you any odd habits, like checking or cleaning more than other people?

8. Do you ever have attacks of palpitations, sweating, shaking, or dizziness accompanied by feelings of intense fear?

9. Has anybody commented that your speech has become odd or difficult to understand?

10. Have you ever had the experience of hearing people’s voices speaking when nobody seems to be around?

Table 2. Prodromal signs checklist.

Onset of one of the following without explanation:

- Marked peculiar behavior
- Inappropriate, or loss, or expression of feelings
- Speech that is difficult to follow
- Marked lack of speech and thoughts
- Marked preoccupation with odd ideas
- Ideas of reference—things have special meanings
- Persistent feelings of unreality
- Changes in the way things appear, sound, or smell

Susan Ciancio received a Bachelor’s Degree in Psychology as well as a Bachelor’s Degree in Sociology from the University of Notre Dame in 1993. She has worked in several mental health settings, including psychiatric treatment facilities and a homeless shelter, where she was able to see firsthand how schizophrenia affects the individual and the family. Most recently, Susan has taught Sociology and Growth and Development at Michiana College. Susan is currently receiving her Master’s in Liberal Studies.