A COMPREHENSIVE STUDY AND ANALYSIS OF THE IMPLICATIONS OF CHILDHOOD ONSET SCHIZOPHRENIA

by

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ABSTRACT

The purpose of this study was to explore the available research associated with childhood onset schizophrenia. Although childhood schizophrenia is a disease uncommonly found in children today, it is present nevertheless and invokes devastating symptoms with children who suffer from it. Because of its complex nature and debilitating symptoms, it is of great concern for many professionals in the mental health arena.

A comprehensive literature review was conducted to examine the complexities associated with childhood schizophrenia. The study was focused on the following areas: history of childhood schizophrenia, characteristics of childhood schizophrenia, diagnostic criteria of childhood schizophrenia, etiology of childhood schizophrenia, treatment of childhood schizophrenia, and educational implications of childhood schizophrenia.

The extensive research concluded that there are still many mysteries left to be uncovered, especially regarding the areas of etiology and treatment. This research also established that educational implications for students suffering from childhood schizophrenia are both extensive and complicated. Essentially, this study attempted to make meaning of childhood schizophrenia to assist school psychologists, who are the lead professionals and ultimately responsible for all dealings involving the schizophrenic child's educational experience.

Finally, recommendations were made to assist school psychologists in working with children that are suffering from childhood schizophrenia. The series of recommendations focused primarily on responsibilities the school psychologist has regarding schizophrenic students.

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CHAPTER 1: INTRODUCTION

There are many questions that schizophrenia raises in the mental health arena today. The most discussed topics revolve around the etiology and treatment of schizophrenia. There are also debates on concretely defining schizophrenia. The uncertainty that stems from the previously mentioned topics ultimately affects those individuals that are suffering from this devastating disease. There is a wealth of information available regarding schizophrenia, but unfortunately much of it is speculation. The truth is that this is a disease which mental health professionals are relatively unfamiliar with, even in today's age of modern medicine.

Yet, even more complex issues exist within the realm of childhood onset schizophrenia. The two areas that are currently spurring the most heated debate include classification and diagnosis of childhood onset schizophrenia. The debate on whether there is a distinction between adult schizophrenia and childhood onset schizophrenia continues to wage within the mental health arena, complicated by the situation that research specific to childhood onset schizophrenia is extremely limited. Although limited, research does exist and the amount of study seems to be progressing over recent years. Amongst all of the uncertainty that encompasses this disorder, great strides have been made in the past decade by experimental psychopathologists seeking to understand the basic processes known to be dysfunctional in schizophrenia across a variety of substantive domains and levels of analysis (Lenzenweger & Dworkin, 1998, p. xix).

Childhood onset schizophrenia is similar to adult schizophrenia in nature. The disorder may include characteristic symptoms such as delusions, hallucinations,

disorganized speech, grossly disorganized or catatonic behavior, alogia, avolition, and affective flattening (Diagnostic and Statistical Manual of Mental Disorders, 2000, p. 312). Though symptoms may be observed in children as young as 36 months, typically a child is not diagnosed with schizophrenia until s/he reaches grade school. Because imaginative fantasies are typical with nearly all young children, it often becomes extremely difficult for mental heath professionals to diagnose childhood onset schizophrenia. This results in a compounding problem behaviorally, developmentally, and educationally for students who are misdiagnosed or not diagnosed at all. More specifically, treatment is obviously impossible without diagnosis, which can result in a detriment to the student as s/he struggles with the educational environment that s/he is in.

Thankfully, the prevalence of schizophrenia in children is very unusual. A study done in North Dakota revealed that 1 per 10,000 females aged 2-12 years and 3 per 10,000 males in the same age range were diagnosed with schizophrenia (Burd & Kerbeshian, 1987). Nationally, it is suggested that 1 child in 10,000 can be expected to develop schizophrenia (Mash & Barkley, 1996). Regarding this study, there are two points that should be considered. First, the prevalence rate established may not accurately represent the entire United States because there could possibly be a difference in similarities between North Dakota and the United States. Second, the author suggests that the criteria of the DSM-III when applied to children may not be sensitive enough to diagnose schizophrenia (Burd & Kerbeshian, 1987). One final note to mention regarding incidence is that, consistent with adult schizophrenia, it is more likely for males to develop childhood onset schizophrenia than females. More specifically, the rate of

incidence is 2:1; however, the onset of psychotic symptoms appears at similar ages in both males and females (Gonthier & Lyon, 2004).

Like many facets of childhood onset schizophrenia, the etiology remains a relative mystery still today. Researchers believe that there are a wide range of etiological components involved in the onset of this disorder including genetics, environmental factors, brain damage, and neurotransmitter abnormalities. To date, genetics seems to have the most concrete scientific backing regarding etiology. Put simply, overwhelming evidence states that schizophrenia is passed down through family genes. The study of neurotransmitter abnormalities is another area that contains a wealth of scientific research regarding childhood onset schizophrenia. The foundation in this area of study considers the onset of schizophrenia to be caused by an over activity of dopamine neurons in the brain, otherwise known as the *dopamine hypothesis*. The third etiological component mentioned involves the effects that environmental factors have on the onset of schizophrenia. This area looks at how environmental factors stifle the normal and healthy development of one's concept of reality and ability to conform to appropriate social norms. The final etiological component to consider revolves around brain damage. This research ties the onset of schizophrenia to the abnormal enlargement of ventricles in the brain of those suffering from schizophrenia.

There are numerous educational implications associated with students suffering from childhood onset schizophrenia. For example, there is a theory that exists within the mental health industry that attempts to explain the component of the family environment and how it may influence the onset of childhood schizophrenia. According to the

disturbed family environment theory, a child subjected to rejection or mistreatment will fail to develop an adequate concept of reality and normal emotional responses (Huffman et al, 1994). It is possible that the premise of this theory can be transferred from the family setting, into the school setting with similar effects. Other areas of implication include appropriate program planning for students suffering from schizophrenia, safety procedures to protect the general student population from psychotic outbreaks, safety procedures to protect students who have schizophrenia, and precise identification of schizophrenia within those students who have the disease.

Statement of the Problem:

Schizophrenia is a very complex disease that remains relatively mysterious to today's mental health professionals. This lack of understanding is compounded when we consider the knowledge that general society (including today's education professionals) has about schizophrenia. It is likely that educational professionals are unaware of pertinent and detailed knowledge regarding the nature of childhood onset schizophrenia, identification of childhood onset schizophrenia, and program planning for students with this disease.

Purpose of the Study:

The purpose of this study is to examine childhood onset schizophrenia within the context of today's educational system. The objectives of this study are two fold. One, the study will provide comprehensive insight for professional school psychologists working in the educational setting. The researcher will describe the history of childhood schizophrenia, the symptoms and characteristics it presents, diagnosis of childhood

schizophrenia, the etiology of childhood schizophrenia, educational implications of childhood schizophrenia, and treatments for childhood schizophrenia. Two, the researcher will formulate recommendations that the formerly mentioned educational professionals may use to help students and parents cope with schizophrenia. This study will be conducted through a comprehensive review and critical analysis of research and literature focused upon the objectives of this study.

Definition of Terms:

For clarity of understanding, the following terms are defined:

1) IDEA: Individual with Disabilities Education Act. Federal act established to protect and provide appropriate educational services to individuals who suffer with disabilities (both mental and physical).

2) Gross motor therapy: Physical therapy that involves major bodily functions (i.e. walking and using hands to pick grab things).

Limitations:

A limitation of this study is that current research that is specific to childhood onset schizophrenia is rather limited compared to many other mental health disorders.

CHAPTER 2: LITERATURE REVIEW

Introduction

Childhood schizophrenia is an extremely pervasive and debilitating condition that spurs monumental consequences in all facets of life for those suffering. Currently, the debate as to whether childhood onset schizophrenia is its own and separate entity from adult schizophrenia continues to wage within the halls of medicine and psychology. Although the jury is still out regarding this topic, it is evident that schizophrenia does exist within the younger population and often results in more elevated symptoms than the typical adult schizophrenia. Because of the mystery that schizophrenia encompasses and the uncertainty among expert ranks, the level of understanding that the general population has is extremely limited. This chapter provides an in-depth review of the history of childhood schizophrenia, what childhood schizophrenia is and its characteristics, diagnostic criteria of childhood schizophrenia, the etiology of childhood schizophrenia, treatment available for childhood schizophrenia, and the educational implications of childhood schizophrenia.

A Concise History of Childhood Onset Schizophrenia

The idea of diagnosing a child with schizophrenia was practically taboo until 20 to 30 years ago (Remschmidt, 2001). Even today, there is a disinclination to do so in fear of the consequences that result from tacking on such a pervasive label as childhood schizophrenia. Due to the infrequency of presentation and the uncertainty of diagnosis and classification, researchers have seemingly turned a blind eye to childhood schizophrenia over the years. Fortunately, recent years have provided a surge in the

interest of schizophrenia in children, especially in identifying continuities and discontinuities with the condition presenting in children and adults (Remschmidt, 2001).

Pre-nineteenth century

The search for evidence of schizophrenia, whether it be the adult form or childhood schizophrenia, is extremely difficult due to the frequent terminological and societal changes and overlaps (Remschmidt, 2001). More specifically, schizophrenia was not viewed as a categorical disorder until the end of the nineteenth century, thus it might have been viewed as a form of delirium, mania, dementia, imbecility, or idiocy. Because clearly defined diagnostic criteria did not exist, it is difficult to construct a notion of psychosis in juveniles or to estimate its prevalence in pre-nineteenth century accounts of insane children and young people.

Nineteenth century

The initial half of the nineteenth century saw a surfacing of queries regarding unusual cases involving young lunatics in the journals of psychiatry and psychology. "Haslam's detailed account in 1809, of a disorder occurring in young persons associated with "hopeless and degrading change" is widely quoted as an early, if not the first, description of schizophrenia" (as cited in Remschmidt, p 3). Although there were a number of insane children described, it was commonly thought that madness did not occur before puberty (Remschmidt, 2001). In 1845, Esquirol formulated a framework for mania that strongly resembles schizophrenia. He described cases of mania in children, one child being reported as having taste and vision hallucinations, but a link with a progressive dementing process was not established until Morel drew attention to

premature dementia in 1860 (as cited in Remschmidt, 2001). From this point forward, the presence of psychoses in prepubescent children was accepted and recognized in the medical and psychological communities.

Twentieth century

By the early part of the twentieth century, several psychological diseases were evolving that entailed symptoms similar to what is today considered childhood schizophrenia. For example, hebephrenia was exclusive to the prepubertal period and was characterized as a change of superficial emotional conditions, beginning with mental depression, followed by odd, fantastic delusions, eccentric, silly behavior, and intense motor activity, resulting often in a rapid or gradual passage into chronic dementia or into a condition of catatonia (Remschmidt, 2001). Other types of psychoses described that resemble today's definition of childhood schizophrenia include dementia praecocissimia and dementia infantilis. In 1911, Blueler presented the term schizophrenia for dementia praecox, which eventually enveloped many of the different types of psychoses during that time period (as cited in Remschmidt, 2001). He postulated that the majority of schizophrenia cases occurred after puberty, but that schizophrenia did in fact occur in the prepubertal period as well. Furthermore, a distinction between the adult form of the disease and the childhood form was not established.

The 1930's and 1940's brought about an increasing recognition of schizophrenia in children. There was a polarization of concepts between adult and childhood schizophrenia during this time in a variety of areas including causation, treatment, and diagnosis (Remschmidt, 2001). Two major questions regarding schizophrenia were

sought out by those in the medical and psychological arenas including: 1) Whether childhood schizophrenia was the same as the adult dementia praecox and 2) What constituted the adult outcome of the childhood disorder (Remschmidt, 2001). Over the next thirty years these questions were challenged, but unfortunately the perplexing characteristics of this disease only increased the ambiguity and questions among experts. By the 1970's, the impenetrable aspects of schizophrenia resulted in a chaotic diagnostic situation in which the term was widely misused. In fact, "childhood schizophrenia had been used as a generic term to include an astonishing heterogeneous mixture of disorders with little in common other than their severity, chronicity, and occurrence in childhood. A host of different conditions had been included such as infantile autism, the atypical child, symbiotic psychosis, dementia praecosissima, dementia infantilis, schizophrenic syndrome of childhood, pseudo-psychopathic schizophrenia, latent schizophrenia, organic psychosis, and borderline psychosis to name a few" (Remschmidt, 2001, p.17). Since the 70's, there has been an increase in research revolving around childhood schizophrenia, which has resulted in a more specific and streamlined approach. Although there has been a surge in research, unfortunately many of the questions regarding diagnosis, treatment, and etiology of childhood schizophrenia still plagues medical and psychological professionals today.

What is the Symptomotology of Childhood Onset Schizophrenia?

Although the characteristics of childhood schizophrenia do not differ much from adult schizophrenia, they are some of the most baffling and obscure that exists among all of the psychology disorders. The premorbid signs of childhood schizophrenia are evident

rather early in life, in that many children show delays in language, social, and motor difficult. Language or communication deficits of loose associations, illogical thinking, and impaired conversational skills are also present in children suffering from schizophrenia. Furthermore, many of these children are socially withdrawn and have abnormal peer relationships (Gonthier & Lyon, 2004). In fact, children with schizophrenia present such drastic social withdrawal that, "according to a report by the National Institute of Mental Health (NIMH), if a child shows any interest in friendships, even if they fail at maintaining them, it is unlikely that they have schizophrenia" (Gonthier & Lyon, 2004, p. 804).

Dr. Sheila Cantor is a psychiatrist who has worked with schizophrenic children and has been involved with doing therapy and research for nearly her entire medical career. She has observed these children and has established a comprehensive list of symptoms that many children who are suffering from childhood onset schizophrenia may exhibit. The first symptom to elaborate on deals with the arousal state. Disturbances in the arousal state, during both the waking and sleeping cycles, are typically the initial "symptom" to cause parental concern (Cantor, 1988). In a study done by Cantor, it was discovered that by 36 months of age, a significantly greater number of schizophrenic children than controlled children experience difficulty falling asleep and difficulty staying asleep (Cantor, 1988). She also establishes that perseveration is very common among children and schizophrenia. This telltale sign can be noted by observing a child with schizophrenia as they interact in an environment with toys and games. The child will examine every toy and game with great detail, but not actually play with anything.

Inappropriate affect is another area that Cantor notes as a symptom of concern. The most common affect present would include an incongruent smile or inappropriate laugh. Both parent and nursery school teachers have provided descriptions of affected children who appeared to be "laughing" at some "inner" joke, yet were unresponsive to external efforts to elicit a joyful response (Cantor, 1988). Fearfulness is also very evident with children suffering from this disease and quite similar to the anxiety that is associated with adult forms. Cantor establishes that often the schizophrenic child's greatest fear seems to be not comprehending or understanding information: "one can observe the child's anxiety escalating in almost any situation that poses a cognitive challenge" (Cantor, 1988, p. 98). When children with schizophrenia verbalize, they often have a very monotonous inflection in the tone of their voices. This can be demonstrated in either an unusually loud or soft voice, but the main characteristic is that there is a lack of expression when they talk. Loose thought associations, neologisms, and clanging can also be evident when a child with schizophrenia verbalizes. An extremely difficult symptom for parents and educators to deal with is the distinctive trait of illogical thinking. Unlike a typically normal child without schizophrenia who when corrected will shrug and accept the correct information, the schizophrenic child usually responds to corrections with an emphatic "NO!" and perseverates with his or her own concept (Cantor, 1988). "Other impairments that are symptoms of childhood schizophrenia include difficulties with smooth pursuit eye tracking, higher levels of autonomic responsivity involving skin conductance and heart rate, problems with immune system, impaired coordination, and poor sensory integration" (Gonthier & Lyon, 2004, p. 804). These previously mentioned impairments

suggest that children with schizophrenia are more responsive to stimuli than are unaffected children, are less coordinated, and that their bodies may have greater difficulty fighting off illnesses (Gonthier & Lyon, 2004). Aside from the formerly mentioned symptoms, children also suffer from the typical positive and negative manifestations that most people think of when they picture adult schizophrenia. Paranoid manifestations include delusions, hallucinations, and paranoid ideation. Negative symptoms encompass behaviors such as flat affect, lack of speech and concentration, bizarre behavior, and poor attention (Gonthier & Lyon, 2004).

A final symptom that becomes particularly important for education professionals and school psychologists specifically deals with the child's IQ or intellectual ability level. It has been shown that intellectual functioning deteriorates after the onset of psychosis and can continue to deteriorate for 24 to 48 months thereafter (Gonthier & Lyon, 2004). Furthermore, the areas of functioning which deteriorate most significantly involve informational processing, the retention of learned information and abilities, as well as failure to efficiently acquire new information and skills (Gonthier & Lyon, 2004). Other ability areas that suffer with the onset of childhood schizophrenia but to a lesser extent include fine motor speed, attention, and short-term memory (Gonthier & Lyon, 2004). Cognitively, it has been found that 10% to 20% of children with schizophrenia have IQs in the borderline to mentally retarded (below 80) range (Gonthier & Lyon, 2004). As of yet, it has not been determined if these low ability levels are an element of the deterioration of mental functioning that results from this disorder or from other factors. One major reason for the mystery behind identifying the source for low IQs is because

most children with schizophrenia were not tested prior to the onset, making it impossible to establish a baseline (Gonthier & Lyon, 2004).

Diagnosis of Childhood Onset Schizophrenia

Diagnosing childhood schizophrenia is one of the heated debates existing in the arena of schizophrenia today. The significance of childhood onset schizophrenia dictates that a clinical psychologist or psychiatrist performs evaluations and assessments for schizophrenia. To begin, it is important to realize that the diagnostic criterion of childhood schizophrenia is the same as it is for adult schizophrenia:

A. Characteristic symptoms: two (or more) of the following, each present for a significant portion of time during a 1-month period (or less if successfully treated):

   1. Delusions.
   2. Hallucinations.
   3. Disorganized speech (e.g., frequent derailment or incoherence).
   4. Grossly disorganized or catatonic behavior.
   5. Negative symptoms (e.g., affective flattening, alogia, or avolition).

B. Social/occupational dysfunction: for a significant portion of the time since the onset of the disturbance, one or more major areas of functioning such as work, interpersonal relations, or self-care are markedly below the level achieved prior to the onset.

C. Duration: continuous signs of the disturbance persist for at least 6 months. This 6-month period must include at least 1 month of

symptoms that meet Criterion A and may include periods of prodromal or residual symptoms.

D. Schizoaffective and Mood Disorder exclusion: Schizoaffective Disorder and Mood Disorder with Psychotic Features have been ruled out because either (1) no Major Depressive, Manic, or Mixed Episodes have occurred concurrently with the active-phase symptoms; or (2) if mood episodes have occurred during active phase symptoms, their total duration has been brief relative to the duration of the active and residual periods.

E. Relationship to Pervasive Developmental Disorder: If there is a history of Autistic Disorder or another Pervasive Developmental Disorder, the additional diagnosis of Schizophrenia is made only if prominent delusions or hallucinations are also present for at least a month (or less if successfully treated) (Diagnostic and Statistical Manual of Mental Disorders, 2000, p. 312).

Furthermore, other disorders such as autism and mood disorders must be ruled out, as well as any organic factors.

When diagnosing childhood schizophrenia, there are a number of obstacles that are presented to the clinician. For example, distinguishing between pathological symptoms such as delusions and imaginative fantasies typical during childhood can present one of the most prominent diagnostic dilemmas regarding childhood

schizophrenia (Mash & Barkley, 1996). Another area that can make diagnosis laborious deals with language and cognitive development. Because children's language and cognition are in the process of developing, it can be difficult to discern between a normal child and one that is suffering from schizophrenia. Due to all of the different variables involved in this complex disease, it is extremely important that children feel familiar and safe with diagnosticians. "It is important that evaluators have special qualities of application, persistence, and a capacity for empathic engagement with these children" (Goldfarb, 1961, p. 64). Also, it is important to note that it becomes easier as the child matures and his or her thinking becomes more complex (Cantor, 1988).

The importance of early identification and treatment to enhance the lives of those suffering from childhood onset schizophrenia is currently at the forefront of many researchers agendas. More specifically, it is theorized that the earlier the identification, the better a child's chances are to lead a "normal" and productive life. Unfortunately, because the disease is so complicated and due to the stigma associated with such a label, many professionals in the medical community are hesitant in diagnosing childhood schizophrenia. In a recent study conducted by Ross and Schaeffer, a high level of frustration was detected by parents of children with schizophrenia because of the clear and finite diagnosis at early stages of development (Ross & Schaeffer, 2002). Many of these parents reported telling pediatricians and school psychologists that something was seriously wrong, while the diagnosis of childhood schizophrenia was missed time and time again (Ross & Schaeffer, 2002). There appear to be two components that inhibit the early identification and intervention: 1) delay in diagnosis and treatment after initiation of

psychotic symptoms and 2) difficulties in identifying prodromal symptoms (Ross & Schaeffer, 2002). Regarding the delay in diagnosis and treatment after initiation of psychotic symptoms, it was discovered that, "there was on average a 2-year delay between the onset of psychotic symptoms and the diagnosis of schizophrenia with related antipsychotic administration, well beyond the 6-month window generally considered as early diagnosis and treatment in adolescent patients" (Ross & Schaeffer, 2002, p. 543). To compound the problem, children suffering from schizophrenia are usually being treated for some other disorder before the actual diagnosis and effective treatment regime is pinpointed. This study also revealed that pediatricians, general psychiatrists, and school and private psychologists did not display adequate comfort or training in diagnosing and treating childhood schizophrenia (Ross & Schaeffer, 2002). With respect to the second component that inhibits the early identification and intervention of childhood schizophrenia, most children who develop schizophrenia have multiple symptoms and severe impairments, suggesting identification of specific prodromal stages, which are unfortunately often missed by mental health providers.

The positive aspect of this study found that once a diagnosis of schizophrenia was determined and antipsychotic medications were used, a significant change was seen in baseline symptoms (Ross & Schaeffer, 2002). Furthermore, schoolwork improved, social interactions improved, and family life was brought toward a more fulfilling center (Ross & Schaeffer, 2002).

Diagnostic role of school psychologist

There are a variety of assessment batteries that may be utilized by a school psychologist to facilitate diagnosis and treatment on both the clinical and educational level. Examples of these assessments might include the Behavioral Assessment System for Children (BASC), Minnesota Multi Personality Inventory, various ability assessments, the Brief Psychiatric Rating Scale for Children (BPRS-C), the Positive and Negative Syndrome Scale for Children (Kiddie-PANSS), the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS), or the Krawiecka-Manchester Scale (KMW). The BPRS-C is a popular scale that consists of 21 items that generate seven scales: behavioral problems, depression, thinking disturbance, psychomotor excitation, withdrawal-retardation, anxiety and organicity. Another scale previously mentioned that is used to identify and interpret schizophrenic symptoms is the KIDDIE-PANSS. This is an inventory that seeks to identify seven positive symptoms (hallucinatory behavior, delusions, disorganized speech, etc.), as well as seven negative symptoms (poor rapport, emotional withdrawal, blunted affect, etc.). It also has 16 items that make up the general psychopathology scale, which is used as a measure of control for overall psychopathology. A third assessment that is often used is the K-SADS. This is a semi-structured diagnostic interview that suggests verbal probes, but the specific questioning is contingent upon the educated decision of the examiner. Finally, the KMS is a brief assessment that includes three negative symptoms and five positive symptoms

that are evaluated. In conjunction with psychological assessments, family history evaluations and brain imaging are also used to diagnose schizophrenia.

Etiology of Childhood Onset Schizophrenia

To date, most of the valid etiological research has been done in three specific areas including neurotransmitters, brain damage, and genetics. There are many researchers who have proposed theories on the etiology of childhood schizophrenia involving the previously mentioned areas, or a combination of them. For example, Weinberger proposed a neurodevelopmental model that accounts for three inescapable facts about schizophrenia:

> " 1) most cases of schizophrenia have their onset in late adolescent or early adulthood, 2) stress has been found to be associated with both onset and relapse, and 3) neuroleptic medications have dramatically improved outcome in many patients" (as cited in Mash & Barkley, 2003, p. 465).

One significant drawback regarding childhood schizophrenia is that the majority of the etiological suggestions are based on studies done without distinction between adult and childhood schizophrenia. Although this is viewed as a setback by many experts in the field of childhood schizophrenia, ultimately research on any form of schizophrenia is better than no research at all.

Neurotransmitter abnormalities

The long-standing research on neurotransmitters has evolved around the activity of dopamine neurons in the brain. From this research the *dopamine hypothesis* has developed which suggests that an over activity of certain neurons in the brain causes

schizophrenia (Huffman, Vernoy, & Vernoy, 1994). There are two important observations that this hypothesis is based on:

> "First, large doses of amphetamines are capable of producing the positive symptoms of schizophrenia (such as delusion of persecution) in people with no history of psychological disorders. Furthermore, low doses of amphetamines worsen these symptoms in people who are schizophrenic. Secondly, drugs that are effective in treating schizophrenia, such as chlorpromazine, block the effects of dopamine in the brain" (Huffman et al, 1994, p. 528).

Regarding the dopamine hypothesis, there are a number of qualifiers that should be kept in mind when consider this approach:

> " First, antipsychotic drugs act not only on schizophrenia, but on other psychotic conditions as well. Second, not all symptoms or patients that suffer from schizophrenia respond to antipsychotic medications. Last, these drugs also act on a variety of other transmitters, although their antipsychotic action is highly correlated with the action on dopamine" (Shean, 2004, p. 143).

For these reasons, a revision to the original hypothesis of dopaminergic hyperfunction has been established. It is suggested that the disorder may be caused by a more subtle dopaminergic dysfunction or by an imbalance between dopaminergic and other systems (Shean, 2004).

Brain structure

A second area of research deals with brain structure, brain functioning, and brain abnormalities. Considering brain structure, there have been studies that suggest that

enlargement of the fluid-filled cavities called ventricles in the brain of schizophrenic individuals have contributed to the onset of this disease (NIMH, 1999.). In fact, the ventricles of the brain are enlarged, and the thalamus can be up to 17.2% smaller than controls (Gonthier & Lyon, 2004). Because the thalamus serves as a filtering mechanism of sensory information, this may contribute to the development of more severe psychotic symptoms such as delusions and hallucinations (Gonthier & Lyon, 2004). Regarding the presence of enlarged ventricles, a study of adult offspring of schizophrenic parents and normal controls, it was found that measures of ventricular enlargement increased in a stepwise, linear fashion, with an increasing level of genetic risk for schizophrenia (as cited in Lenzenweger & Dworkin, 1998). The increase of cerebrospinal fluid has also been found in children suffering from schizophrenia. In fact, "in a sample of sibling pairs in Denmark, patents were found to show a 100% to 300% increase in cerebrospinal fluid volume compared with their own unaffected siblings, and the degree of difference was significantly more pronounced in the left compared with the right hemisphere" (Lenzenweger & Dworkin, 1998, p. 78). Studies have also indicated that there is a decrease in metabolic activity within certain regions of the brain of those that are suffering from schizophrenia. There are also studies done at the microscopic level on schizophrenic brain tissue that indicates small changes in the distribution or number of brain cells. Furthermore, brain abnormalities found in children with schizophrenia have been a differentiating factor from control subjects and, in some cases, individuals with

the adult-onset form of schizophrenia (Gonthier & Lyon, 2004). A recent study conducted discovered that cerebral volume, or brain mass, is decreased by 8% to 9% from that found in controls, thus resulting in the presents of negative symptoms such as flat affect, disorganized speech, and bizarre behaviors (Gonthier & Lyon, 2004). To date, no study has directly linked a molecular or cellular event within the brain to the etiology of schizophrenia. Thus, the idea that schizophrenia is caused entirely by problems with brain structure and brain functioning is circumstantial, but the previously mentioned components do combine to establish evidence that brain structure and brain functioning can influence the onset of childhood schizophrenia.

Genetics

The most concrete etiological component of schizophrenia is genetics. More specifically, a person who is related to someone that has schizophrenia has a far better chance of developing the disorder. For example, a monozygotic twin of a person with schizophrenia has the highest risk, 40% to 50%, of developing the illness (NIMH, 1999). It has also been established that a child whose parent has schizophrenia encompasses about a 10% chance, compared to the 1% chance that the general population has of developing childhood schizophrenia (NIMH, 1999). An additional piece of evidence that supports the genetic claim is that, "nearly 50% of children with childhood-onset schizophrenia have at least one first degree relative with schizophrenia or a schizophrenia spectrum disorder" (Gonthier & Lyon, 2004, p. 807).

It appears today that there are two distinctly different molecular biological mechanisms for families that have several members suffering from schizophrenia:

> "In those families where the genetic pattern most closely fits a recessive model, a tiny genetic mutation between alleles may account for the onset of schizophrenia. A second genetic pattern is seen in other families with a number of adult members, who are located somewhere on the schizophrenia spectrum. In these families, the exact genetic pattern in the family doesn't fit previously established models or, at best in some families, appears to be a variant of a dominant model" (Coleman & Gillberg, 1996, p. 289).

Due to the complexities of genetic research, the precise role that genetics plays regarding its influence on childhood onset schizophrenia is still a mystery. Some researchers believe that schizophrenia is a heterogenous grouping, indicating that there may be different weightings and combinations of genetic factors which are related to risk for different syndromes (Shean, 2004). Mcguffin maintains that the relative contribution of genetic factors which is relevant in any given case is a function of the severity and type of symptoms and age of onset (as cited in Shean, 2004). "Thus, risk for early-onset highly regressed forms of schizophrenia, such as disorganized and hebephrenic patterns, may be largely genetic in origin, while environmental factors play a much larger role in the origins of positive psychotic symptoms and late-onset paranoid patterns" (Shean, 2004, p. 101). Kringlen regards genes as contributing factors that play a varying role in the etiology of most cases of schizophrenia (as cited in Shean, 2004). He believes that the "genetic diathesis may simply be a weakly inherited, nonspecific tendency or an additive group of traits or tendencies (e.g., anxiety proneness, introversion, irritability, and negative affect) which must be precipitated and enhanced by significant socio-

environmental stressors to result in schizophrenia" (Shean, 2004, p. 102). On the other hand, Torrey denies the involvement of any psychosocial stressors, believing that all forms of schizophrenia are entirely genetic in nature (as cited in Shean, 2004). Although there is a wealth of research that supports the involvement of genetic factors in schizophrenia, changes in diagnostic practice, sampling errors, and inconsistencies in methodology have also been found as sources of error in much of this research (Shean, 2004). In total, many researchers believe that the secrets of childhood schizophrenia can be answered by genetic research, but it is evident that much more progress is needed.

Family environment

Lastly, it is important to discuss the social etiological component present in COS. More specifically, there is a theory regarding the family environment and how it may influence the onset of childhood schizophrenia. The research on this etiological aspect is far less concrete and is without the extensive scientific backing, but many researchers believe that it does play some role nevertheless. "According to the *disturbed family environment theory*, a child subjected to rejection or mistreatment will fail to develop an adequate concept of reality and normal emotional responses" (Huffman et al, 1994, p. 530). The support for this theory comes from the evaluation of *expressed emotionality*. Researchers have discovered by measuring the level of criticism and hostility aimed at the family member with schizophrenia, as well as emotional over-involvement in his/her life, that there is greater relapse and worsening of symptoms among hospitalized patients with schizophrenia who go home to high expressed emotional families (Huffman et al, 1994).

Regarding environmental and family theories, it is important to understand that these theories are not in conflict with genetic-biological views, but rather follow the notion that genetic vulnerabilities must interact with environmental and family factors from the outset of the disease development (Shean, 2004).

> "Since the family is the primary mediator between the child's biological-genetic makeup and society, it is reasonable to assume that the family environment can play a role in the development of most mental disorders. After all, in most developed countries the primary family has the responsibility to socialize, nurture, and selectively foster valued aspects of personality development in the child. It makes sense that the family environment must play a role in all aspects of personality development" (Shean, 2004, p. 243).

In essence, family and other environmental theories do suffer from flaws regarding interpretation, design, and execution, but ultimately serve to further the knowledge base that is required for understanding childhood schizophrenia.

Treatment

In general, schizophrenia is a disease that can be effectively treated, especially if it is diagnosed early and treatment is begun before it has consumed the child. It is important to note that there should not be any confusion between treatment and permanent removal of the disease; the symptoms can be successfully controlled, but not extinguished. The best disease model to explain schizophrenia is diabetes:

> "Both schizophrenia and diabetes have childhood and adult forms, both almost certainly have more than one cause, both have relapses and remissions in a course

> which often lasts over many years, and both can usually be well controlled, but not cured, by drugs. Just as we don't talk of curing diabetes but rather of controlling its symptoms and allowing the diabetic to lead a comparatively normal life, so we should also do with schizophrenia" (Torrey, 1995, p. 175).

When considering treatment, many clinicians implement a three-phase model:

1) During the acute phase the emphasis is on bringing acute psychotic symptoms under control through a combination of medication and inpatient care.
2) During the stabilization phase outpatient pharmacological and psychosocial treatment is employed with the goal of stabilizing the youth's clinical state.
3) During the maintenance phase the emphasis is on helping the youth to maintain a stable state through continuing multimodal treatment (Asarnow et al, 2004, p. 184).

The intervention strategies often include a number of different approaches encompassing medical, behavioral, and therapeutic techniques. When choosing which therapeutic methods to implement, it is important to look at symptomatology and the acuteness, as well as the psychological, social, and cultural needs of the child and the family. Furthermore, it has been documented that the most successful programs are multimodal treatments.

Perhaps one of the most significant issues currently in childhood schizophrenia and specifically treatment of childhood schizophrenia centers on the possible relationship between earlier identification and treatment of schizophrenia and improved long-term

outcome (Ross & Schaeffer, 2002). Recently, many researchers have acquired this idea, resulting in the exploration of antipsychotic treatments in individuals with subclinical and/or prodromal forms of the disorder (Ross & Schaeffer, 2002). There is an emerging approach that entails aggressively tackling childhood schizophrenia with a barrage of treatments, medication leading the charge, in order to squelch schizophrenic symptoms and improve long-term outcomes.

Medical treatments

To begin, the cornerstone to treating schizophrenia is the component of antipsychotic pharmaceuticals. Historically, antipsychotic medications have been successful in treating the positive symptoms of schizophrenia, but not the negative symptoms. They also had serious side effects including akathisia, tardive dyskinesia, and parkinosonism. Fortunately, modern pharmaceutical research has spawned a line of new medications called atypical antipsychotics, which treat both positive and negative schizophrenic symptoms. These new medication including clozapine, olanzapine, and risperidone have proved beneficial in assisting many children with schizophrenia to live a more functional and 'normal' life. One question that is very common when discussing medications as a treatment to schizophrenia centers on how long the medication should be continued. This is a very difficult question to answer, but it is consistent that the administration of medication lasts as long as the episode lasts. Thus, the medication is discontinued after the episode has subsided. Interestingly, it has been discovered that one-quarter of individuals that have had an initial episode of schizophrenia and recovered will not get sick again and will not need medication (Torrey, 1996). However, the

three-quarters who eventually relapse will again be treated with medication, often lasting for several months after recovery (Torrey, 1996).

Other medical treatments that exist include electroconvulsive therapy (ECT), psychosurgery, and hemodialysis; although psychosurgery and hemodialysis have been debunked and are all but nonexistent in schizophrenic therapy today. However, when the onset of childhood schizophrenia is acute and confusion and mood disturbances are present, as well as the presence of catatonia from almost any underlying cause exists, the implementation of ECT is often preferred by medical professionals (Torrey, 1996).

Psychosocial treatment

A second treatment realm to consider includes psychosocial therapy. This therapy focuses on improving problem solving techniques, vocational and basic life skills training, social skills training, family interactions, stress management, and other useful strategies. Cognitive-behavioral therapy is an example of a current psychotherapy that is often used with schizophrenic individuals. This type of therapy is especially beneficial when geared toward compliance, or teaching and motivating the person to continue with treatment (WebMD Health, n.d.a.). Individual psychotherapy may be useful in reducing aggressive behaviors and providing coping skills, but not directly for reducing psychotic symptoms (Ross & Schaeffer, 2002). Additional programs that can help improve compliance with treatment include family therapy and psychoeducation. "Within family therapy, the focus is on the family and helping them understand the disorder and treatment options, developing coping strategies, strengthening problem solving, and

learning to use basic communication skills more effectively" (Gonthier & Lyon, 2004, p. 808).

When researching treatment options, it is also helpful to consider the age that the onset occurs. More specifically, therapy with younger children should include gross motor therapy. This can be helpful in encouraging the child to explore his or her environment, thus helping them develop a separate identity. Conversely, when the onset occurs in older children or teenagers, therapy that entails limit setting and is reality oriented becomes beneficial. The focus here is often to strengthen the deficient ego and establish areas of conflict and ways to effectively deal with them. "A healthy concept of self and a capacity for constructive self-regulation are the hoped-for eventual treatment outcome" (Cantor, 1988, p. 146).

Finally, although advances are being made regarding treatment of childhood schizophrenia, this is only part of the equation in providing the most beneficial care for those suffering from childhood schizophrenia. More specifically, there are extensive challenges involved in moving effective interventions into practice. For example, "despite the existence of evidenced-based guidelines for the treatment of adult schizophrenia, current data indicates significant quality of care problems with many patients receiving poor quality medication management and inadequate doses of antipsychotic medications, as well as inadequate psychosocial care" (Asarnow et al, 2004, p. 183). There is also inconsistency regarding the adherence to treatment guidelines. For instance, "in a major survey across multiple settings involving

schizophrenia, adherence tended to be better for pharmacological treatment vs. psychosocial treatment, better in rural vs. urban settings, and worse for minority patients vs. whites. These data underscore the importance of identifying effective interventions, developing strategies for disseminating effective treatments into usual practice settings, and decreasing disparities in quality of care across diverse settings and patient groups" (Asarnow et al, 2004, p. 184).

Prevention

Because the notion of prevention deals primarily with early identification and treatment, its discussion will be placed within the realm of treatment. There is increasingly more attention being turned to prevention strategies due to the severity of the illness, relatively poor outcomes, and data that suggests that early intervention has potential for the prevention of onset and/or limiting severity childhood onset schizophrenia (Asarnow et al, 2004). In a recent randomized controlled study that compared needs-based supportive therapy and needs-based supportive therapy plus a specific preventive intervention emphasizing a low-dose atypical antipsychotic medication (resperidone) combined with cognitive-behavior therapy, it was suggested that it may be possible to delay, and in some cases prevent, the progression to a first episode of psychosis in very high-risk patients (Asarnow et al, 2004). A second prevention study entails an evaluation strategy for assessing prodromal features of schizophrenia, resulting in follow-up data that depicts the presents of prodromal features as a prelude to full-blown schizophrenic disorders (Asarnow et al, 2004). Early treatment

emphasizing medication in combination with psychosocial treatment is being used as a prevention strategy and outcome data is just on the horizon (Asarnow et al, 2004). Regarding the previously mentioned studies, both were done using an adult population and these approaches have yet to be applied to the youth population. Fortunately, both types of schizophrenia are similar and findings should be able to be applied to both populations.

Educational Implications of Childhood Onset Schizophrenia

There are numerous educational implications that are connected to childhood onset schizophrenia. To begin, it should be recognized that the school psychologist is a key cog in the dealings of a student with schizophrenia. Other avenues of support would include the guidance counselor, school nurse, special education teachers, and administration. As previously mentioned, it would undoubtedly be recommended that the parents of a child suffering from schizophrenic symptoms such as delusions, hallucinations, odd or eccentric behavior, unusual or bizarre thoughts, extreme moodiness, severe anxiety or fearfulness, withdrawn or isolated behavior, etc. should seek help from a clinical psychologist or psychiatrist that has the expertise in diagnosing and treating schizophrenia at the clinical level. Keeping this in mind, it should be understood that the school psychologist is the point of reference for the child and his/her parents regarding any effects that the disease has on a child's educational experience.

Special education identification

When considering the educational implications, it is important to realize that identification and qualification standards are different from those that clinical

psychologists and psychiatrists use when diagnosing schizophrenia. For example, clinicians use the DSM IV-TR for identifying criteria, whereas school psychologists use the Individuals with Disabilities Education Act (IDEA) for identifying criteria and to qualify students for special education.

Framework of special education

Special education today is guided by the Individuals with Disabilities Education Act (IDEA) of 1997, which has recently been revamped and identified as IDEA 2004. This is a federal special education law that ultimately ensures that every student receives a free and appropriate public education (FAPE). The foundation of special education law has its roots from the Rowley Standard, which states that every child has a right to receive educational benefit from public education (Wrightslaw, n.d.c.). Although IDEA is federal law, special education is governed at the state levels, but bound to IDEA through the federal dollars that are funded if these federal laws are complied with.

An individual's special education process is initiated through a referral that can be made by anyone including the student, parent, teacher, nurse, doctor, etc. Typically, the referral is a written letter that is sent to either the child's principal or special education director. The referral should be structured in a manner that includes: 1) the date, 2) indicates that the letter is in fact a referral, 3) the child's first and last name, date of birth, and school, and 4) why it is believed that the child might need special education services. Furthermore, it is required that the school completes the referral process in 90 days which includes evaluating the child, writing an individualized education program (IEP), and deciding where the child will attend school and informing his/her parents. The previously

mentioned evaluation components are all included in the child's IEP, which is a written plan that tells what a child will learn in a year, includes the services that the school will provide, and how the interventions will be implemented. The child's IEP team typically consists of a school psychologist who manages the team, the child's regular education teacher(s), a special education teacher, school administrator, the child's parents, medical professional(s) (if necessary), and parents' lawyer (if necessary). The IEP team contemplates an array of information when making a decision about special education eligibility including background information, medical history, observational data, assessment data, and the child's past educational performance. It is mandatory that the school has a meeting to write the IEP within 30 days of deciding the child's eligibility for special education, otherwise known as an IEP meeting. There are eleven educational impairments that exist in state rules which help guide the IEP's decision including autism, cognitive disability, emotional behavioral disability, hearing impairment, specific learning disability, orthopedic impairment, other health impairment (encompassing ADHD), significant developmental delay, speech or language impairment, traumatic brain injury, and visual impairment. Each disability has qualifying criteria that serves as a map to assist the IEP in making this crucial decision. If the child qualifies within an educational impairment and it is deemed that he/she should receive special education related services, their progress is continuously monitored by the IEP team and the school psychologist specifically. Furthermore, it must be ensured that the child who qualifies for special education related services receives them, but in the least restrictive environment

(LRE) possible. In other words, the maintenance of normalcy for the child is at the utmost importance, thus the child must be integrated into the general education setting as often as possible. Finally, it is necessary that at least once every three years, the IEP team reevaluates to see if the child still requires special education to gain educational benefit.

Childhood schizophrenia and special education

The description of schizophrenia and the symptoms that persist make it clear that this is a prodigious obstacle to contend with for anyone suffering from the disease, let alone a child. For this reason, schizophrenia typically automatically falls under IDEA-Part B within the Emotional Disturbance (ED) definition. Emotional disturbance means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's performance:

A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.

B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.

C) Inappropriate types of behavior or feelings under normal circumstances.

D) A general pervasive mood of unhappiness or depression.

E) A tendency to develop physical symptoms or fears associated with personal or school problems.

ii) The term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance (Jacob & Hartshorne, 2003, p. 128).

Furthermore, each individual state has its own definition and eligibility criteria for special education. Wisconsin denotes an emotional behavioral disability as:

A) Emotional or behavioral functioning that so departs from generally accepted, age appropriate ethnic or cultural norms that it adversely affects a child's academic progress, social relationships, personal adjustment, classroom adjustment, self-care or vocational skills.

B) The IEP team may identify a child as having an emotional behavioral disability if the child meets the definition in (A) and meets all of the following:

   a. The child demonstrates severe, chronic and frequent behavior that is not the result of situational anxiety, stress or conflict.

   b. The child's behavior described under (A) occurs in school and in at least one other setting.

   c. The child displays any of the following:

      i. Inability to develop or maintain satisfactory interpersonal relationships.

      ii. Inappropriate affective or behavior response to a normal situation.

      iii. Pervasive unhappiness, depression or anxiety.

      iv. Physical symptoms, pains or fears associated with personal or school problems.

v. Inability to learn that cannot be explained by intellectual, sensory or health factors.

vi. Extreme withdrawal from social interactions.

vii. Extreme aggressiveness for a long period of time.

viii. Other inappropriate behaviors that are so different from children of similar age, ability, educational experiences and opportunities that the child or other children in a regular or special education program are negatively affected.

C) The IEP team shall rely on a variety of sources of information, including systematic observations of the child in a variety of educational settings and shall have reviewed prior, documented interventions. If the IEP team knows the cause of the disability under this paragraph, the cause may be, but is not required to be, included in the IEP team's written evaluation summary.

D) The IEP team may not identify or refuse to identify a child as a child with emotional behavioral disability solely on the basis that the child has another disability, or is socially maladjusted, adjudged delinquent, a dropout, chemically dependent, or a child whose behavior is primarily due to cultural deprivation, familial instability, suspected child abuse or socio-economic circumstances, or when medical or psychiatric diagnostic statements have been used to describe the child's behavior (Wisconsin Department of Public Instruction, n.d.b.).

Program planning

Program planning within the school setting can range across a variety of different parameters and often depends on how acute the symptoms are. For example, very young children, who are not yet exhibiting hallucinations or bizarre behaviors, may need services such as speech therapy to address language delays, physical or occupational therapy to assist with motor delays, and possibly the implementation of a behavior plan to help with inattention and acting-out behaviors (Gonthier & Lyon, 2004). Once the prodromal phase occurs and deterioration is noted in the child's social and self-care skills, other services such as social skills training and problem solving programs, may become necessary for the child to maintain a basic level of functioning (Gonthier & Lyon, 2004).

Typically during the acute phase, the child is placed in an inpatient setting because of the increased possibility of harming themselves or someone else during their psychotic episodes. In most every case that is presenting the acute phase, around-the-clock care is needed to ensure proper medication administration and evaluation of possible side effects from said medication, or schizophrenic symptoms in general. However, if the child is within the acute phase and not placed in an inpatient setting and continues to attend school, certain accommodations are necessary. For instance, "it is recommended that the child be placed in a smaller classroom setting or alternative settings depending on the level of their functioning" (Gonthier & Lyon, 2004, p. 809). It is also important to implement modifications to the child's curriculum such as shortening assignments, providing handouts, increasing the time allowed for tests, etc. (Gonthier &

Lyon, 2004). Furthermore, it is necessary to make sure that there is constant assistance by teachers and aids, and that stress be kept to an absolute minimum.

As the symptoms move from an acute state to stabilization and maintenance, many of the aforementioned accommodations need to be continued, but combined with other modifications and programs. More specifically, it is essential that children battling childhood schizophrenia receive training in social skills, including problem solving and anger management, as well as instruction in basic life skills during this time (Gonthier & Lyon, 2004). A final modification that is crucial for children with schizophrenia is initializing and maintaining open communication between school personnel, medical personnel, social services personnel, and the child's family.

Role of the school psychologist

Because the school psychologist is generally the source that is turned to when a child is behaving in an abnormal way at school, they become a vital cog within numerous facets of the child's battle with schizophrenia. Some roles that the school psychologist may play include acting as the family's initial contact with mental health personnel, collaborating with the child's mental health provider, providing information on the disorder to school personnel, and providing basic on-site support for the child (Gonthier & Lyon, 2004). In collaboration with the child's IEP team, the school psychologist will determine the most effective educational plan available to enhance the student's educational experience. It is essential that the school psychologist understands all aspects of childhood schizophrenia because it will be his/her responsibility to implement trainings for the entire school population (teacher, nurses, secretaries, administration, and

students) on things such as instruction technique, social skills, medication administration, safety, and other aspects that come in question when working with a child with childhood schizophrenia. The school psychologist will also be the advocate for the child and his/her parents during each and every IEP meeting. Finally, aside from the family, the school psychologist is most likely to have access to each of the different aspects of the child's disability. In total, the school psychologist is in the best position to act as an advocate for the child and his/her family, assuring that h/she receives the necessary treatments and supports in the educational setting (Gonthier & Lyon, 2004).

School psychologists must realize that this disorder is as pervasive as it gets, and that the professional experience working with a child suffering from childhood schizophrenia may be extremely trying. It is clear that the successful intervention can be an arduous task and relies on the partnership of a variety of mental health professionals, which may leave school psychologists feeling pessimistic and powerless against the debilitating symptoms that this disease may incur. The school psychologist must also bear in mind the possibility of relapse and be diligently monitoring students suffering from childhood schizophrenia for symptoms that resemble schizophrenia.

Conclusion

The research established in this review regarding childhood schizophrenia indicates that it is an extremely insidious disease that is limited by the complexity it entails. It is a rare mental disease that seems to affect more males than females and can manifest itself in early childhood, but typically presents itself around the age of thirteen. Although there continue to be many questions regarding treatment, etiology, and

distinction between adult and child forms, we now have guidelines that, for the most part, are reliable in diagnosing schizophrenia in children. Furthermore, cutting edge research has provided advances on fronts including pharmacological treatment strategies, prevention strategies, and considerations to help successful guide clinical practice.

The educational implications that are coupled with childhood schizophrenia are monumental and unfortunately, exacerbated by an often lack of knowledge and inexperience from the educational staff. For this reason, it is crucial that school psychologists understand the fine details of childhood onset schizophrenia and are current on modern treatments, as well as educational interventions that can be implemented to benefit these children as best as possible. Furthermore, it is the school psychologists' responsibility to inform the staff and student body about childhood schizophrenia and become an advocate for these children with any situation that transpires within their educational setting.

Despite the advances, it is clear that additional research is needed on a number of fronts regarding childhood schizophrenia. The personal, social, and economical costs spawned by this disease are staggering and at the mercy of the secrets still veiled by the complexity of this disease. Luckily, researcher in the fields of medicine and psychology are becoming increasingly aware of childhood schizophrenia and working diligently to remove the veil and unlock the secrets of childhood schizophrenia.

CHAPTER 3: DISCUSSION

Introduction

This chapter presents a summary of the information obtained in the literature review. A critical analysis is included regarding the symptoms and characteristics of childhood schizophrenia, diagnosis of childhood schizophrenia, the etiology of childhood schizophrenia, treatments for childhood schizophrenia, and educational implications of childhood schizophrenia. Lastly, the chapter offers recommendations to professional school psychologists who work with children suffering from schizophrenia.

Summary

Within childhood onset schizophrenia lurks a variety of mysteries including the diagnosis, etiology, and treatment of this pervasive disease. For nearly 100 years, experts in the fields of medicine and psychology have been baffled by the complexities of childhood schizophrenia. This has led to a wealth of speculation, but unfortunately very little precision regarding the previously mentioned aspects of this disease.

Although there is an abundant amount of grey area, researchers have been able to establish that childhood schizophrenia is more prevalent among males versus females, with an overall incident rate of 1 in 10,000. Current research has also provided advancements in areas especially entailing diagnosis and treatment of childhood schizophrenia. This is not to say that research is on the cusp of cracking the secrets of this disease, but rather that children suffering from schizophrenia today are far better off than they were 40 years ago.

Research over the years has provided an array of debate regarding the etiological components of childhood schizophrenia. Much of this research has its roots in the adult form because most researchers believe that the etiologies of childhood schizophrenia and adult schizophrenia are comparable in nature. There are a variety of etiological notions proposed by researchers including genetics, environmental factors, brain damage and functioning, and neurotransmitter abnormalities. To date, genetics seem to have the most scientific backing for the etiological nature of schizophrenia, but most researchers believe that the components which instigate the onset of schizophrenia in children are multifaceted. More specifically, aspects including genetics, the environment, neurotransmitter abnormalities, and brain damage work in tandem to trigger an onset.

There are a variety of symptoms that occur with the onset of childhood schizophrenia. These symptoms can be generalized into two main categories including positive and negative manifestations. Positive manifestations include delusions, hallucinations, and paranoid ideation. Negative manifestations entail symptoms such as flat affect, lack of speech and concentration, bizarre behavior, and poor attention. These have serious effects on the child's development and can spawn some very difficult educational implications.

Diagnosis of schizophrenia is another very difficult hurdle for psychiatrists, clinical psychologists, and school psychologists to overcome. To make a clinical diagnosis, psychiatrists and clinical psychologists use the DSM- IV-TR criteria. This process can be very challenging at times because much of the criteria that are used for diagnosing schizophrenia can be considered typical child-like behavior. School

psychologists have the lead on diagnosing and qualifying a child for educational disabilities, in which childhood schizophrenia would fall under the category of Emotional Disturbance.

As mentioned, treatment is one area of childhood schizophrenia that has benefited from research over recent years. Although psychotropic medication is at the fore front in helping children cope with schizophrenia, other techniques including various alternative medical treatments, as well as psychosocial treatments also exist. Normally, clinicians will prescribe a comprehensive treatment regimen that includes both medical and psychosocial treatment tactics to battle the symptoms of childhood schizophrenia.

The educational implications derived from childhood schizophrenia generate some of the most complicated situations that the child affected, his/her parents, and the school that they attend will have to face. These areas of educational concern include appropriate program planning, safety procedures, and precision regarding appropriate special education identification. Typically, the school psychologist will take the lead regarding all of the previously mentioned educational implications, consequently being responsible for all facets of the child's educational experience. Ultimately, the school psychologist is the designated advocate for every situation that involves his/her education.

Critical Analysis

There are several research questions that this study attempts to address. The following is a critical analysis of the original research areas purposed.

1. Characteristics and Symptomotology of Childhood Onset Schizophrenia.

Childhood onset schizophrenia is an extremely debilitating psychological disease which presents a very extensive and complex array of symptoms. The symptoms connected to childhood schizophrenia are very similar to those found within the adult form. These symptoms include both positive and negative manifestations and can vary both in types and intensities from child to child. The research that was referenced indicates that these symptoms can be seen as early as infancy, which often increase in intensity as the child grows.

Of particular interest to school psychologists is the research that regards a child's decrease in IQ or intellectual ability with the onset of schizophrenia. More specifically, research shows that there is a deterioration of informational processing, retention of learned information and abilities, and acquisition of new information and skills with the onset of childhood schizophrenia. There is no conclusive evidence that lowered ability levels are a result of schizophrenia or from other factors, but research is ongoing and experts are hopeful to uncover an answer.

2. Diagnosis of Childhood Onset Schizophrenia.

Regarding diagnosis of childhood schizophrenia, it is important to understand the difference between a clinical diagnosis and the special educational identification process. The significance of childhood schizophrenia dictates that a clinical psychologist or psychiatrist performs evaluations and assessments, ultimately clinically diagnosing schizophrenia. The guidelines for clinically diagnosing childhood schizophrenia are the same as those used for diagnosing the adult form, which can be found in the DSM-IV-TR. Because of the monumental repercussions tied to a diagnosis of childhood

schizophrenia, many clinicians are hesitant of labeling children with such a diagnosis. This is one of the heated debates existing in the arena of schizophrenia today. This debate includes the majority group of clinicians buying into the existence of childhood schizophrenia, whereas a smaller group feels that the diagnosis of childhood schizophrenia is premature and therefore not clinically appropriate.

The second aspect of diagnosis pertains to diagnosis for special education identification. As previously mentioned, this is done by the school psychologist regarding his/her state's special education qualification criteria. In the state of Wisconsin, students suffering from childhood schizophrenia would indeed qualify for special education under the Emotional/Behavioral definition.

3. Etiology of Childhood Onset Schizophrenia.

There are three main areas of research regarding the etiology of childhood schizophrenia involving genetics, neurotransmitters, and brain damage. Also existing is research on the influence of family environment and childhood schizophrenia, which is far less scientific but important nevertheless. Genetics provides the leading scientific research for both forms of schizophrenia, but unfortunately geneticists still have a long way to go in uncovering the precise role that genetics plays in the onset of schizophrenia. The primary research involving neurotransmitter abnormalities centers on the *dopamine hypothesis*. Simply put, this hypothesis states that an over activity of certain neurons in the brain causes schizophrenia. Also, studies that revolve around brain damage and brain functioning have found a variety of abnormalities with individuals suffering from schizophrenia compared to control groups. Finally, regarding the family environment's

influence on the onset of childhood schizophrenia, theories such as the *disturbed family environment theory* view environmental stressors such as mistreatment or rejection to account for the onset of schizophrenia. The underlining feeling with many schizophrenic researchers today regarding the previously mentioned etiological components is that there may not be one absolute factor that causes the onset of schizophrenia, but rather a combination of factors that invoke this disease.

4. Treatment of Childhood Onset Schizophrenia.

Treatment of childhood schizophrenia usually involves a three phase model including an acute phase, a stabilization phase, and a maintenance phase. Typically, the treatment strategies implemented are dictated by the phase that the child is in. In the acute phase where symptoms are extremely intense, psychotropic medications in combination with inpatient care and possibly electroconvulsive therapy are implemented. As the symptoms lessen in intensity and the child moves through phases, their medications are often curtailed and psychosocial therapies can be implemented. These psychosocial therapies can become very helpful in teaching both the child with schizophrenia and his/her parents medication compliance techniques, appropriate behaviors, and healthy family dynamics. In conclusion, there is not a specific treatment regimen that works for every child with schizophrenia, nor will every child benefit equally from today's treatments. Furthermore, it should be understood that today's treatments can be effective in controlling schizophrenic symptoms, but will not extinguish them.

5. Educational Implications of Childhood Onset Schizophrenia.

The educational implications tied to children suffering from schizophrenia are both extensive and complicated. As previously mentioned, it is important to recognize that the school psychologist is the key cog in all dealings involving the schizophrenic child's educational experience. Keeping this in mind, other areas of assistance can be found from guidance counselors, the school nurse, special education teachers, and administration. Because childhood schizophrenia is such an incapacitating disease, it typically is automatically identified within the scope of special education. This provides a wealth of program planning that can help to enhance the child's educational experience.

When considering program planning for the schizophrenic child, there are a variety of options to draw from and often depends on the severity of the child's symptoms. Similar to the treatment of schizophrenia, there is not a specific mold or set of related services that are implemented for each child that has schizophrenia. On the other hand, there are various related services that are often used for assisting these students including alternative classroom settings, curriculum modifications, social skills therapy, and medication protocols. Finally, it is important to realize that ensuring a positive and beneficial education for a schizophrenic child is only acquired if educational professionals are on the same page and collaboratively work together to fulfill this goal.

Limitations of the Study

A limitation of this study is that current research that is specific to childhood schizophrenia is rather limited compared to many other mental health disorders.

Furthermore, much of the current schizophrenic research does not draw a distinction between the child form and the adult form.

Recommendations

To better prepare and assist school psychologists in working with children that are suffering from childhood schizophrenia, the following recommendations are made as a result of the literature review and critique.

1. It is recommended to collaborate with all educational professionals involved with the schizophrenic child, as well as all medical and psychological professionals involved.
2. It is recommended to use a multimodal method of observations, assessments, interviews, and medical and psychological reviews to monitor the child.
3. It is recommended to educate all staff and student body about childhood schizophrenia including characteristics of the disease, safety issues, and ways that they can assist the child.
4. It is recommended to maintain an advocate role for both the child and his/her parents.
5. It is recommended to utilize a variety of interventions strategies when implementing a program plan.
6. It is recommended that more research be done related to appropriate and beneficial educational intervention strategies regarding childhood schizophrenia.

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