A Normative Study of the Psychopathology Instrument for Mentally Retarded Adults (PIMRA).

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A NORMATIVE STUDY OF THE
PSYCHOPATHOLOGY INSTRUMENT FOR MENTALLY RETARDED
ADULTS
(PIMRA)

A Dissertation

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in partial fulfillment of the degree of
Doctor of Philosophy

in

The Department of Psychology

by
Kelley L. Francis
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Abstract

Indices were established for the Psychopathology Instrument for Mentally Retarded Adults (PIMRA) to signify that a particular score warranted further assessment. The subjects were 431 individuals with mild and moderate mental retardation in state schools and developmental centers in Texas and Louisiana. Almost 65% of the sample met the cutoff for further assessment using the newly established criteria, while approximately 40% of the sample had elevations on two or more of the subscales. Critical items were identified for the Schizophrenia, Affective Disorders, Somatoform Disorders, and Adjustment Disorders subscales. No significant differences were noted for gender with respect to the subscales. Age differences were noted for the Anxiety Disorders, Inappropriate Adjustment, and Sexual Disorders subscales. Individuals with mild mental retardation were noted to have significantly higher levels of endorsement on the Anxiety Disorders subscale. The PIMRA was found to be an objective measure of psychopathology unrelated to the length of time the informant has known the subject.
Introduction

Individuals with mental retardation are at greater risk for mental illness than their counterparts with normal intelligence (Menolascino, 1990; Sturmey & Sevin, 1993). However, mental retardation often excludes any type of psychopathology from an individual’s diagnosis based on clinical judgment, not diagnostic criteria. As a result, dually diagnosed individuals, those with mental retardation and mental illness, often do not receive proper treatment (Alford & Locke, 1984; Kadambari, 1986; Levitan & Reiss, 1983; Nezu, 1994; Reiss & Szyszko, 1983). Appropriate intervention planning accounts for many problems of the individual. Therefore, one diagnosis must not preclude another as often occurs for individuals with mental retardation. Therapists working in community settings are hesitant to serve dually diagnosed individuals because they attribute emotional problems to lower intellectual capacity and not mental illness (Levitan & Reiss, 1983). This phenomenon, known as diagnostic overshadowing, occurs across mental health disciplines, as well as across experience and training (Levitan & Reiss, 1983; Reiss & Szyszko, 1983). To accomplish the goal of appropriate treatment, therapists need suitable tools to assess persons with a dual diagnosis (Reiss, 1993).

Assessing persons with mental retardation presents difficulties ranging from the tools and diagnostic criteria used to the utility of a given measure with a particular person. Sturmey, Reed, and Corbett (1991) cite the lack of research on reliable diagnosis and classification of mental illness in persons with mental retardation as a major problem, especially when using classification systems developed for non-handicapped persons. These authors suggest a concern over how past prevalence rates
were established. (Prevalence rates describe the rate at which a disorder occurs, which is important information for establishing norms and diagnosis.) Prevalence surveys conducted on mental illness in mental retardation should be limited to the less intellectually impaired group with a separate prevalence rate set for them compared to the rate set for all subcategories of mental retardation (Sturmey et al., 1991). A second concern is the ability of a person with mental retardation to participate in their evaluation by expressing subjective feelings (Menolascino, 1990). Third, compounding problems in expression are the physical anomalies of many persons with mental retardation (Towbin, 1989). Finally, inappropriate assessment tools have long hampered services for the dually diagnosed along with the difficulties the individual brings. These points are among the many obstacles that exist in the assessment of dual diagnosis.

Despite problems associated with assessing mental illness in mental retardation, prevalence studies have been conducted. Prevalence studies attempt to describe how often a disorder occurs in a population. Matson (1985) has noted that consistent reports of emotional problems in individuals with mental retardation have been reported since the 1940's. Prevalence rate data of dual diagnosis range from 5% to 50% (Schroeder, 1985), but are more likely to range from 16% to 40% (Menolascino, 1990).

Researchers believe that individuals with mental retardation have a greater propensity for mental illness due to the high incidence of central nervous system impairment and diminished interpersonal coping abilities (Borthwick-Duffy & Eyman, 1990; Dosen, 1989; Menolascino, 1990; Reiss, Levitan, & McNally, 1982). Dosen (1989) postulated that persons with mental retardation are more susceptible to mental illness because their emotional development is more delayed than their cognitive and
social development. Due to this emotional lag, many persons with mental retardation are unable to adjust to complexities of social situations and have a predisposition to overreact to social stimuli. This reactivity to the environment makes these individuals more likely to exhibit personality disorganization after minimal stress (Menolascino, 1990; Towbin, 1989). Certain characteristics intensify the susceptibility individuals with mental retardation have to develop a mental illness. Characteristics include dependency on others, approval seeking behavior, wariness of strangers, outer directed problem solving styles, low expectancy of success, low aspirational level, and low ideal self-image (Zigler & Burack, 1989). Menolascino (1990) and Towbin (1989) suggested that persons with mental retardation are more likely to be controlled by others than to retain self control. Environmental control, as opposed to self control, can lead to severe behavioral problems, emotional disorders, personality disorders, or severe mental illness (Menolascino, 1990; Towbin, 1989). Without the necessary social supports, specific behaviors associated with mental illness can be manifested, ranging from excessive sadness, withdrawal, or avoidance to adjustment disorders or depression (Menolascino, 1990).

Only recently have researchers addressed individuals who suffer from both mental retardation and mental illness. Until now, clinicians and researchers have attributed mental illness in persons with mental retardation to their lower intellectual functioning. Researchers have started to look at abnormal behaviors seen in persons with mental retardation just as they diagnose individuals with normal intelligence. That is, symptoms of a mental illness are attributed to a mental illness and not lower intellectual functioning and can therefore be assessed as such and treated.
Few assessment measures and treatment protocols for the dually diagnosed have been developed. Therefore, the continued need for reliable assessment is apparent (Matson, 1985; Schroeder, 1985). Assessment of mental illness in mental retardation will dictate appropriate treatments. Proper treatment first requires early identification of mental illness in mental retardation (Kadambari, 1986). The field of psychology is meeting the challenge for dual diagnosis. Dual diagnosis has begun to be the focus of clinical research in the last decade. Valid measures of dual diagnosis have been developed. However, these instruments still require continued refinement and additional research is warranted.

The current investigation examined the behaviors indicative of psychopathology in an institutionalized sample of persons with mild and moderate mental retardation using the Psychopathology Instrument for Mentally Retarded Adults (PIMRA) (Matson, 1988). The PIMRA is a scale designed to screen for psychopathological conditions in persons with mental retardation. A large scale normative sample was obtained for the PIMRA with persons who evince mild and moderate mental retardation. In addition, the data defined a range of scores on PIMRA subscales which indicate the need for further assessment of psychopathology.

This study furthered the literature by using an established scale to determine a normative view of psychiatric symptoms in institutionalized persons with mental retardation. The symptoms of psychopathology as displayed in mental retardation are defined. This study described a broad view of psychopathology as necessary for a screening tool. As will be discussed, previous studies have used non-standardized methods to describe the prevalence of psychopathology in mental retardation. The
investigation used a standardized measure, the PIMRA. Critical items were determined for each scale to develop a better understanding of mental illness in mental retardation. The study attempted to replicate research findings indicative of differences attributed to gender, age, and level of functioning. The determination of these differences indicated risk factors for dual diagnosis in mental retardation. This information aids in appropriate assessment and subsequent treatment of persons with mental retardation. Use of the PIMRA offers a reliable, standardized alternative to clinical judgment when screening adults with mental retardation for mental illness.

In summary, the following paper presents information on assessment of psychopathology in mentally retarded adults. A historical view of mental retardation and mental illness is reviewed, as well as today's changing needs for adults with mental retardation. Measures available for screening and assessing psychopathology in persons with mental retardation are reviewed. The PIMRA and its psychometric properties are discussed. Lastly, the purpose of this study, research method, results and discussion are presented.
Review of the Literature

Historical Views of Mental Retardation and Mental Illness

The views of mental retardation and mental illness have changed over time. From the prehistoric period to modern times, reactions to individuals with a mental disorder have varied from reproach to concern. Although a distinction between mental retardation and emotional disturbance may have existed before Hippocrates, both disorders were regarded and treated the same -- mostly with disdain (Balthazar & Stevens, 1975). Any "mental defect" was rarely identified by most professionals until the early 1800's (Woolfson, 1984). Since that time, attempts to improve the person's lot in life have been developed.

In prehistoric times, adults killed handicapped infants at birth regardless of the type of defect. Infanticide remained a common practice for many reasons and not only for those with severe mental retardation. If a disorder was not evident until after infancy, other means were used to "cure the ailment." In Mesopotamia, for example, mental disorders were believed to be caused by possession of evil spirits (Scheerenberger, 1983). The imperial practitioner or the village shaman usually treated mental disorders by removing a small circular section of the cranial bone from the top of the skull. The social acceptance of disabilities differed greatly depending on the society and the severity of the disability (Scheerenberger, 1983).

During the Greek and Roman period in Europe, medical professionals attributed "mental instability" to an imbalance of the bodily fluids -- blood, phlegm, yellow bile, and black bile. The mentally ill were stigmatized. Treatments ranged from being "scientific," "religious," or "magical" with the goal being reduction of the stigma or shame (Simon,
Mora (1992) found that the notion of shame was present even in the Homeric poems. Persons with mental retardation were shunned by society (Scheerenberger, 1983). Likewise, the mentally ill were seen as examples of man’s weakness and lack of grace. Some of the mentally ill subsequently were turned over to the authorities and thrown in jail or dungeons, sometimes for life. Other people were cared for by religious orders in institutions, which were a combination of hospital, shelter, workshop, and penitentiary (Mora, 1992).

Mental retardation and mental illness were lumped together without a definition for hundreds of years. Definitions were first formulated in the 1200’s. The first legal and official distinction between idiocy (mental retardation) and lunacy (mental illness) was made. Idiocy was recognized as a congenital condition that disabled the individual’s mental capacity for life, whereas lunacy was described as time limited (Scheerenberger, 1983).

In America the beliefs about mental illness and mental retardation differed by sub-culture between Native Americans and the descendants of Europeans and Africans. Native Americans attributed mental illness to punishment from the gods. Religious ceremonies were held to rid the individual of mental illness. Hysteria, hallucinations, severe depression, and demoniac possession commonly occurred among Native Americans. The American colonists accepted both natural and supernatural causes for mental illness before the 1700’s. They viewed the natural causes as an imbalance of the 4 humors (blood, phlegm, yellow bile, and black bile), as was generally accepted in Europe. Treatments ranged from bleeding to homeopathic medicines. For example, African-Americans used a broad knowledge of herbal medicines to treat mental illness.
However, as with most of the world at the time, if an ailment persisted, a supernatural cause was suspected (Gamwell & Tomes, 1995).

With the Enlightenment came these principles: reason is the essence of human nature, science can explain the universe, and society can be continually improved through human effort. These ideas reshaped how mental illness was conceived and treated during the 17th and 18th centuries in England and America (Gamwell & Tomes, 1995; Scheerenberger, 1983). Mental illness was viewed as the loss of reason and equal to the loss of humanity. Individuals with mental illness were seen as little better than animals and differed vastly from man (Gamwell & Tomes, 1995; Gelb, 1995). The general public feared individuals with mental illness, therefore hospitals were established to protect citizens from the threat posed by violent lunatics. Conditions in the institutions were frequently deplorable (Gamwell & Tomes, 1995).

In the 1800's, professionals made advances, attributing mental retardation to medical causes, such as birth defects or postnatal problems. For example, medical professionals generally accepted that coldness in the brain caused mental retardation by inducing a thick fluid to encompass the brain (Woolfson, 1984). Others still believed that any deviation from what was considered normal, including mental retardation, was caused by sinful living (Gelb, 1995). Professionals in America attributed mental illness to disorders of the vascular system. The treatments included blood-letting, slowing fluid movement in hyperactive patients with a "tranquilizing chair," and stimulating blood circulation with a gyrator (a horizontal board on which lethargic patients were strapped and spun). These tactics cast the caretaker in the role of an animal tamer and the public was charged an admission fee to view the lunatics (Gamwell & Tomes, 1995).
The Industrial Revolution brought much needed reform to the treatment of the insane, though little progress was made toward understanding mental illness. A Frenchman, Phillipe Pinel, emphasized the emotional causes of mental illness and called for careful diagnosis and observation (Gamwell & Tomes, 1995). Pinel's treatise of 1802 is often credited with demonstrating that it is possible to differentiate between mental illness and mental retardation (Turner, 1989). This movement of humane treatment of the insane began in England after one American was found kept in chains in Bedlam for more than 10 years and a Quaker woman died shortly after being brought to an asylum. The Quakers instituted reform with a code of "moral" treatment of the insane. They treated the insane as sane adults and held expectations of responsibility for them, such as daily exercise, work, and amusements. The medical treatments of bloodletting and the gyrator were no longer used. Additionally, in 1839, chains used as restraints were denounced as immoral (Gamwell & Tomes, 1995).

A formal legal distinction between mental retardation and mental illness did not occur until the late 1800's in England. At this time professionals differentiated psychosis from mental subnormality (Balthazar & Stevens, 1975). Similarly, in the early 1900's Britain formed a commission to discuss and preside over the care and control of individuals with mental retardation. In 1913 a Mental Deficiency Act was passed ordering individuals judged "mentally defective" be institutionalized. After this mandate the number of "mental defectives" increased from 2,000 in 1914 to almost 61,000 in the mid-1950's in England (Turner, 1989). Many individuals developed a secondary diagnosis. Institutionalized people usually manifested some form of extreme behavior,
including violent suicidal and occasionally homicidal acts, hallucinations, agitation, delusions, and deep depression (Grob, 1993).

During the same period in the United States more extreme tactics were employed to care for and control persons with mental retardation. In 1876 in the United States the Association of Medical Officers of American Institutions for Idiots and Feeble-Minded Persons was formed to manage the treatment of the mentally retarded; today the association continues under the name of the American Association for Mental Retardation (Scheerenberger, 1983). Feeble-minded individuals were considered a menace to society and until 1933, people in the United States were sterilized in an effort to decrease or eliminate this portion of the general population (Gelb, 1995; Turner, 1989).

In summary, even with the great progress made in treating individuals with mental illness and mental retardation, the conceptualization of mental retardation and mental illness remained largely unstudied and the two were typically considered separate, mutually exclusive disorders. Pointdexter (1989) noted that individuals with mental retardation were not considered “smart enough” to have psychiatric disorders. Yet, other professionals considered that mental retardation could lead to mental illness (Turner, 1989).

**Psychopathology in Individuals with Mild and Moderate Mental Retardation**

Today professionals recognize that mental illness can co-occur with mental retardation. Furthermore, the full range of psychiatric disorders are common among individuals with mental retardation (Matson & Frame, 1986; Reid, 1989). The most commonly reported mental illnesses in persons with mental retardation are schizophrenia,
organic brain disorders, adjustment disorders, personality disorders, affective disorders, psychosexual disorders, and anxiety disorders (Singh, Sood, Sonenklar, & Ellis, 1991). Researchers suggest that individuals with mild mental retardation have the highest levels of mental illness (Borthwick-Duffy & Eyman, 1990; Iverson & Fox, 1989; Jacobson, 1982). One hypothesis for these high rates is that individuals with mild mental retardation are more aware of the differences between themselves and others with normal intelligence. Individuals with mild mental retardation can recognize the stigma of attending segregated classes and negative social experiences. This recognition and awareness may influence mood (Menolascino, 1990).

Matson and Sevin (1994) researched theories on the etiology of mental illness in persons with mental retardation. They identified four basic theoretical models: organic, behavioral, developmental, and sociocultural. Briefly, the organic model stresses physiological, biochemical, and genetic factors as the source of psychopathology. Behavioral models explore the interactions of an individual and the environment. Developmental models state that the sequences of development are universal and individuals with mental retardation develop at slower rates. Therefore, psychopathology emerges from underlying developmental structures. Lastly, the sociocultural theories attribute psychopathology in mental retardation to social and cultural experiences (Matson & Sevin, 1994).

A debate has occurred over the symptoms of psychopathology in mental retardation. According to some researchers, critical studies are needed to define the symptoms of psychopathology as displayed within the context of mental retardation (Matson, Kazdin, & Senatore, 1984). For example, Einfeld and Aman (1995) wrote that
no accepted definition of psychopathology in persons with mental retardation exists. However, other researchers asserted that the same diagnostic criteria apply for persons with mild and moderate mental retardation as those for the population with normal intelligence; though in the past strict criteria have not been used for persons with mental retardation (Dosen, 1993; MacLean, 1993; Meadows et al., 1991; Reid, 1989; Turner, 1989).

Researchers have investigated the appropriateness of the diagnostic criteria currently in use (Glick & Zigler, 1995; Myers, 1986; Myers, 1987). Myers (1986) examined the admissions to a hospital between 1977 and 1979 and found that the age of presentation was lower for the developmentally disabled group, as compared to the normal IQ group, although no sex differences nor differences in dementia were noted. The developmentally disabled group had more acute psychosis. Myers (1986) noted that mental retardation can present bizarre symptoms under stress and she cautioned against diagnosing schizophrenia unless the symptoms persist over time. However, no differences in schizophrenia were noted between the two groups. A greater frequency of non-major depression in non-developmentally disabled group was noted. The author concluded that no real differences existed in the kinds of psychopathology developing in the developmentally disabled group compared to others admitted for psychiatric disorders (Myers, 1986). One criticism of this study is the determination of the diagnosis by a full record review, as opposed to complete evaluation used for all subjects. The means used to evaluate these subjects was not revealed.

In a later prevalence study, using a chart review, Myers (1987) noted more developmentally disabled patients were acutely psychotic, more non-developmentally
disabled individuals were diagnosed with depression or dysthymic disorder, and slightly more developmentally disabled patients were diagnosed with antisocial behavior. The presentation of the disorders did not differ for the developmentally disabled group or the non-developmentally disabled group (Myers, 1987). The critique for the 1987 study by Myers is the same as for the 1986 study. A chart review was used to determine the diagnosis as opposed to conducting an evaluation with standardized testing.

Glick and Zigler (1995) investigated the developmental differences in psychiatric symptoms for individuals with and without mental retardation. The case histories for the subjects were examined for psychiatric symptoms. Subjects with mild mental retardation exhibited symptoms reflecting developmentally lower functioning than persons without mental retardation. Individuals with mental retardation tended to have more symptoms indicative of turning against others and fewer symptoms indicative of turning against oneself. They also exhibited more symptoms of direct action, as opposed to thought, and had more hallucinations without delusions. The authors concluded that the criteria for different types of psychopathology used for the non-retarded population can be used for the mildly retarded population (Glick & Zigler, 1995). This study did not determine the diagnosis of the subjects, but rather the exhibition of symptoms based on case histories versus standardized testing.

In summary, Glick and Zigler (1995) concluded that the criteria developed for the non-handicapped population can be applied to individuals with mild mental retardation. Although individuals with mental retardation exhibited symptoms at a lower developmental level, the presentation of psychopathology was not different from the non-handicapped sample (Glick & Zigler, 1995; Myers, 1986). The samples in these
studies were only differentiated by the severity of the diagnosis. Thus, developmentally disabled individuals were more likely to be diagnosed as psychotic than their peers with normal intelligence (Myers, 1987). This paper will work under the assumption that psychopathology in persons with mild and moderate mental retardation are diagnosed with the same criteria as those applied to individuals with normal intelligence as supported by Myers (1986, 1987) and Glick and Zigler (1995).

**General Prevalence.** Researchers have measured the prevalence of mental illness among persons with mental retardation (Ballinger & Reid, 1977; Crews, Bonaventure, & Rowe, 1994; Jacobson, 1990; Myers, 1987; Williams, 1971; Wright, 1982). Across studies, substantial differences in prevalence rates were noted and are likely due to the use of different assessment instruments (Reiss, 1990a). Early studies have varied in the definition of mental illness and have used unreliable measures. The lack of psychometrically sound assessment tools and the lack of conformity in studies has led to a great range in estimates of psychopathology in persons with mental retardation from less than 10% to greater than 80% (Borthwick-Duffy, 1994; Singh et al., 1991). For example, Williams (1971) studied individuals from English “subnormality” hospitals. The method of diagnosis was not clearly presented in the study and a prevalence rate of 58.8% was noted. Likewise, Ballinger and Reid (1977) compared individuals in the community to hospitals, using a modified psychiatric interview not designed for use with persons with mental retardation. These authors found prevalence rates of 13 to 31% for community and hospitals respectively for psychiatric signs and symptoms. Similarly, Wright (1982) studied adults living in a long-term setting. In the sample, 2.8% had an affective illness, and 1.8% were schizophrenic. These studies each indicate a different
prevalence rate using assessment measures that were not clear or not designed for use with persons with mental retardation. Additional research is warranted given the substantial differences in prevalence rates, the lack of psychometrically sound assessment tools, and the lack of conformity.

Another limitation of the early studies is that their prevalence data for mental illness in mental retardation was gathered from subjects institutionalized with a variety of severe afflictions. The results in such cases are often misleading about mental illness in the non-institutionalized population with mental retardation (Reid, 1989; Richardson, 1989). Prevalence rates are frequently interpreted with different definitions, different identification methods, and flawed sampling patterns (Borthwick-Duffy, 1994). Furthermore, changes that have occurred in defining mental retardation, as well as how this definition has been applied, affects prevalence rates of dual diagnosis.

Recent investigations have been more consistent and more specific in defining mental illness. Benson (1985) researched the association among age, sex, level of functioning, and behavior disorders in an outpatient mentally retarded group. The sample consisted of 130 individuals, ranging in age from 4 to 55 years of age, with 40 females and 90 males. The sample was classified as 54% mildly mentally retarded, 25% moderately mentally retarded, and 22% severely and profoundly mentally retarded. Benson grouped most of the cases based on intake interviews, case histories, psychological and psychiatric reports, and educational records when available into three broad categories: schizoid-unresponsive and psychotic disorders, conduct disorder, and anxious-depressed withdrawal disorder. Schizoid-unresponsive and psychotic disorders were defined as social withdrawal and bizarre or inappropriate behaviors. Conduct
disorder included such behaviors as temper tantrums, verbal or physical aggression, and oppositional behavior. Anxious-depressed withdrawal disorder was characterized as depressed affect, low self-esteem, social withdrawal, and crying. Schizoid-unresponsive and psychotic disorders were diagnosed equally across all levels of functioning, but conduct disorders and anxious-depressed withdrawal disorders were diagnosed more often in higher functioning individuals. An equal number of males and females were diagnosed with schizoid-unresponsive and psychotic disorders, whereas more adults than children received the same diagnosis. More children received the diagnosis of conduct disorder and more males displayed aggression. More females and more adults manifested anxious-depressed withdrawal disorders, when compared to males and children. Other disorders found, but not scrutinized included: social ineptness, attention problems and motor activity, somatic complaints, and sexual problems (Benson, 1985). One criticism of this study is the use of historical data that was not consistent for all subjects. The same testing was not used for all subjects in deciding the groupings, though psychological and psychiatric reports were used.

In another study, Jacobson (1990) looked at the Individual Program Plan for 42,479 developmentally disabled individuals ranging in age from 0 to over 64 to assess the types of mental illness found to co-occur with mental retardation. Psychosis was reported to occur more frequently than non-psychotic brain syndrome, neurosis, and personality disorder. Jacobson (1990) also suggested that psychosis may be more likely among males and among individuals with mild mental retardation. Medical or psychological evaluations were used to determine the diagnosis of the subjects. A
shortcoming of this study is the lack of control over the assessment procedures used in the evaluations.

Crews et al. (1994) reviewed the data base for 1274 individuals living at the Central Virginia Training Center. The subjects had a mean age of 40 with a range from 10 to 80 years of age. Approximately 15% of subjects were diagnosed with psychopathology. However, the procedures used may have decreased the true accuracy and prevalence rates. The diagnoses were based on clinical experience and judgment. Therefore, the prevalence rates may not represent actual rates found in the community. The prevalence of affective disorders among this cohort was approximately 8% and the authors suggested that individuals with mental retardation may be more susceptible to affective disorders (Crews et al., 1994).

Overall, the prevalence rates reviewed varied from 13% to 75%. Early studies (e.g. Ballinger & Reid, 1977, Williams, 1971, and Wright, 1982) were not specific in the diagnosis and used unreliable measures that were not designed for use with the dually diagnosed. Research has progressed beyond vague definitions, but persisted in using unreliable measures. Later studies (e.g. Benson, 1985, Crews et al., 1994, and Jacobson, 1990) reviewed previous diagnoses made with undefined methods. Until the development of scales specifically for this purpose (such as the PIMRA and the Reiss Screen), the assessment procedures for the dually diagnosed were idiosyncratic (Deb, 1994). Prevalence of psychopathology in individuals with mental retardation as measured by the PIMRA was found to be 35.9% (Iverson & Fox, 1989). In a review of the literature Singh et al. (1991) concluded that 50% of institutionalized persons with
mental retardation had at least one psychiatric disorder, but only 8% to 10% of the institutionalized people had a severe mental illness that warranted treatment.

The aforementioned investigations focused on prevalence of general psychopathology. Some researchers emphasized specific disorders as opposed to general psychopathology (Meadows et al., 1991; Reid, 1989). However, these studies centered primarily on schizophrenia or psychosis and have not addressed other disorders as thoroughly. Therefore, additional research is needed to address these neglected disorders, especially somatoform disorders, sexual disorders, and adjustment disorders.

The disorders discussed in the following sections are assessed on the PIMRA. The PIMRA covers 8 areas: Schizophrenia, Affective Disorders, Anxiety Disorders, Personality Disorders, Sexual Disorders, Adjustment Disorders, Somatoform Disorders, and Inappropriate Adjustment. A brief review of the available research concerning these disorders in persons with mental retardation follows.

**Schizophrenia.** Schizophrenia includes some of the following symptoms: the presence of certain psychotic features during the active phase, deterioration from a previous level of functioning, and a deterioration of psychological processes, such as thought content (APA, 1980, 1994). By and large, symptoms of schizophrenia in the mild and moderately mentally retarded population are unexceptional (Meadows et al., 1991; Reid, 1989). Some argue (i.e. Reid, 1989) that schizophrenia cannot be diagnosed in more severe forms of mental retardation.

Other researchers suggest that schizophrenia is clearly marked in mental retardation by altered affective responses, bizarre rituals, and interpersonal distancing (Einfeld & Aman, 1995). However, formal thought disorder and persecutory delusions
appeared less frequently in individuals with mental retardation. This phenomenon may be attributed to the difficulties individuals with mental retardation have in verbal expression (Meadows et al., 1991). An individual with mental retardation does not have the abilities to create or verbalize sophisticated hallucinations or delusions due to their lower developmental level. The delusions and hallucinations may be naive and poorly sustained, with a florid, fantastic, and grandiose wish-fulfilling component (Reid, 1989). Sovner and Pary (1993) agreed that individuals with mental retardation lack richness of detail in hallucinations evident in persons with normal intelligence. Ideas of influence and control may also be difficult for a retarded individual to describe in conceptual terms (Reid, 1989). A problem lies in distinguishing symptoms of mental retardation from negative symptoms of schizophrenia, such as social withdrawal, underactivity, slowness of thought and action, poverty of speech, and emotional blunting. A developmental history is important in order to differentiate pervasive developmental disorders from negative forms of schizophrenia (Turner, 1989).

Conflicting reports of severe psychopathology within the population with mental retardation exist. Psychosis was reported to occur more frequently than non-psychotic brain syndrome, neurosis, and personality disorder among persons with mental retardation (Jacobson, 1990). The recent prevalence rate of schizophrenia in persons with mental retardation was 3% and schizophrenia was most often found in mild mental retardation (Reid, 1989). Females were diagnosed with paranoid schizophrenia more often than males, but in general, psychosis was more often diagnosed in males with mental retardation (Jacobson, 1990; Reid, 1989). In contrast, Benson (1985) found that schizoid-unresponsive and psychotic disorders were diagnosed equally across all levels of
functioning and gender. Furthermore, in Myers' (1986) study comparing a developmentally disabled group to a non-delayed group, no difference in schizophrenia was noted between the two groups. In relationship to other forms of psychopathology, Goldberg, Gitta, and Puddephatt (1995) found an association between Dependent Personality Disorder, Avoidant Personality Disorder, and Paranoid Personality Disorder and non-specific psychotic disorders in individuals with mental retardation.

**Affective Disorders.** Affective disorders are characterized by a disturbance of mood with a manic or depressive syndrome that affects an individual's behavior, cognitive, and physiological functioning (APA, 1980, 1994). Most of the affective disorders have been researched and documented to occur in mental retardation. For example, Bipolar Disorder has been reliably reported in persons with mental retardation. During periods of normal mood, the individual may be high functioning in a variety of adaptive areas. However, during either manic or depressive episodes, the individual may be socially unresponsive, unusually active or inactive, and display maladaptive behaviors (Wieseler, Campbell, & Sonis, 1988). Comparing the number of studies conducted, researchers have been more interested in depression than other affective disorders (Helsel & Matson, 1988; Laman & Reiss, 1987; Reiss & Rojahn, 1993).

The relationship between depression and social skills has received much attention. Poor social skills, low levels of social support and depressed mood were found to be related in adults with mental retardation. Individuals with high depressed mood interacted less with others in a more negative manner, such as antisocial behavior, aggressive behavior, taking advantage of others, and threatening others. These individuals also tended to be more self-involved. Laman and Reiss (1987) and Helsel
and Matson (1988) agree that poor interpersonal interactions were related to depression. Depressed mood was associated with antisocial behavior (Reiss & Rojahn, 1993).

The association between personality disorders and affective disorders has also been studied. Goldberg et al. (1995) found that individuals with traits of Dependent Personality Disorder and Schizoid Personality Disorder are more likely to exhibit symptoms of Bipolar Disorder or a depressive disorder.

In one study, the prevalence rate for affective disorders was established at 8.8% (Crews et al., 1994). These authors suggested that individuals with mental retardation may be more susceptible to affective disorders. Furthermore, Benson (1985) discovered that anxious-depressed withdrawal disorders were diagnosed more often in higher functioning persons with mental retardation. Gender and age have a significant effect on depression; more females and more adults manifested anxious-depressed withdrawal disorders (Benson, 1985).

**Anxiety Disorders.** The defining features of an anxiety disorder are anxiety and avoidance (APA, 1987). Anxiety is either a predominant disturbance or an attempt to control various symptoms (Ollendick, Oswald, & Ollendick, 1993). Nervousness, fidgeting, and insomnia are examples of behaviors that may be exhibited by an individual with anxiety. Overall, the research in the area of anxiety as seen in mental retardation is meager (Ollendick et al., 1993). However, researchers have suggested that anxiety disorders are more common in individuals with mental retardation, particularly in the high moderate and mild levels of mental retardation (Menolascino, 1990; Ollendick et al., 1993). The behaviors associated with anxiety in those with normal intelligence are also seen in the individuals with mental retardation. However, individuals with mental...
retardation exhibit some behaviors such as repetitive behaviors that are associated with stereotype/habit disorder, but may look similar to motor symptoms of anxiety (Ollendick et al., 1993). Therefore, a careful assessment is warranted. Other disorders, such as Dependent Personality Disorder, tend to exacerbate anxiety symptoms and tend to co-exist with anxiety disorders (Goldberg et al., 1995). Myers (1986) found that 8% of developmentally delayed inpatients had a diagnosis of an anxiety disorder.

**Personality Disorders.** Personality disorders occur when an individual’s pattern of experience and behavior are maladaptive and inflexible, causing significant impairment in daily living (APA, 1980, 1994). Goldberg et al. (1995) found the full range of personality disorders in a sample of adults with mental retardation, except Antisocial Personality Disorder. These disorders are more often diagnosed based primarily on extrinsic factors, such as how an individual’s behavior affects others (Menolascino, 1990). Rosen and Weisz (1983) suggested that the dimensions measured on personality measures for those with normal intelligence can be applied to those with mental retardation. These aspects of personality include assertiveness, self-confidence, impulse control, identity, creativity, reality testing, arousal, social appropriateness, attention, emotional lability, and anxiety level. The difficulties with communication and interactions with others that individuals with mental retardation have may be attributed to physical and cognitive problems rather than a lack of desire to socialize with others. Therefore, the cause of poor communication is hard to differentiate (Menolascino, 1990).

**Psychosexual Disorders.** Psychosexual disorders are referred to as sexual disorders in the DSM IV (APA, 1994). Individuals with mental retardation can suffer
from a wide range of sexual disorders (Matson & Russell, 1994). These disorders, as assessed on the PIMRA, refer to Gender Identity Disorder and Paraphilia. Gender Identity Disorder is an incongruence between the actual gender and the gender identity of an individual, resulting in discomfort. Paraphilias are associated with arousal to objects or situation that are inappropriate and socially unacceptable (APA, 1980, 1994). A general lack of data exists on Sexual Disorders in mental retardation. Matson and Russell (1994) found no relationship between level of functioning and Sexual Disorders. These authors suggested that the clinical picture is not well-defined. Matson and Russell (1994) attempted to clarify the presentation of sexual disorders as seen in mental retardation by developing a scale to assess sexual disorders in adults with mental retardation.

**Somatoform Disorders.** Somatoform disorders are characterized by physical symptoms with no organic source (APA, 1980, 1994). Somatic complaints are produced and maintained by the positive reinforcement of the statements and the negative reinforcement of avoiding demands and stresses (Matson, 1984). Research on Somatoform Disorders in mental retardation is scarce. Few researchers have focused on this topic. Matson (1984) studied the effects of behavior modification on the treatment of somatic complaints in 3 individuals with mild mental retardation. The author noted that the somatic complaints decreased through the use of behavior modification.

**Adjustment Disorders.** Adjustment Disorders are a reaction of clinically significant symptoms to an identifiable stressor (APA, 1980, 1994). These disorders have not received much attention in the literature. Goldberg et al. (1995) found that
adjustment reactions were associated with Dependent, Avoidant, Paranoid, Organic, Schizoid, and Schizotypal Personality Disorders.

**Need for Assessment Measures for the Dually Diagnosed**

Identification of mental illness remains difficult due to confounding client variables, such as markedly impaired verbal skills, multiple handicaps, and a professional bias against mental illness in mental retardation, i.e. diagnostic overshadowing (Borthwick-Duffy & Eyman, 1990; Levitan & Reiss, 1983; Reiss & Szyszko, 1983). The assessment of individuals with mental retardation for mental illness has been inappropriate and poorly developed. As recently as 1983, Rosen and Weisz wrote that those with mental retardation are restricted in evaluations to only receiving an intellectual assessment and an adaptive behavior assessment. Scales specifically designed for use with the dually diagnosed did not exist at that time. In addition, behavioral ratings of social functioning have been considered personality assessments for persons with mental retardation (Rosen & Weisz, 1983). Clinicians need valid measures in order to develop effective therapies for an individual’s handicaps, regardless of the specific handicap, i.e. mental retardation or a personality disorder (Reiss, 1993). As a result, the diagnostic significance of any co-morbid disorder continues to be down-played in individuals with mental retardation (Reiss, Levitan, & Szyszko, 1982).

Many professionals attribute psychiatric symptoms to mental retardation and do not consider the premorbid functioning of the individual (Meadows et al., 1991). Premorbid functioning is an important part of an assessment. Psychiatric symptoms can be differentiated from behaviors exhibited in mental retardation by noting the change in behavior that occurs due to a psychiatric disorder (Sovner & Pary, 1993). Individuals

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with mental retardation may function at a low level before the onset of a disorder, but the disorder will have a noticeable effect. Psychiatric symptoms impact an individual with mental retardation more intensely than an individual of normal intelligence because the individual with mental retardation has less developed coping skills (Reiss, 1993).

In addition to problems with identification, mental health professionals have had insufficient training in dealing with the co-existence of mental retardation and mental illness (Sovner & Hurley, 1983; Reiss, 1992). Reiss and Szyszko (1983) investigated the previously mentioned phenomenon of “diagnostic overshadowing” and discovered a bias about mental retardation despite the level of experience with people with mental retardation.

Matson (1985) presented further evidence of poor assessment procedures with persons with mental retardation and reported that clinical judgment based on an informal assessment has been the primary tool for diagnosis of mental illness in persons with mental retardation. This practice has lead to low reliability of diagnosis across professionals evaluating a single subject. Clinical judgment fails when symptomatic behaviors look the same, but the behavior is caused by different sources (Menolascino, 1990). The poor reliability problems of informal assessment have led to the development of some psychometrically sound assessments, such as the PIMRA.

More formal assessments include the use of several instruments. Dosen (1993) suggested a multidisciplinary assessment for an appropriate diagnosis and treatment. Reiss (1992) validated the need for multiple sound assessment measures for persons with mental retardation. The author used the PIMRA, the Reiss Screen for Maladaptive Behaviors (Reiss, 1988), the Apperceptive Personality Test (Karp, Holmstrom & Silber,
1989), and the Residential Services Indicator to assess an individual with dual diagnosis. All the measures contributed valuable information to the assessment process and contributed to a comprehensive treatment plan (Reiss, 1992).

Traditionally treatment of persons with mental retardation with emotional disturbance consisted of using medications. The massive drugging of mentally retarded people on a long term basis is common practice in institutions (Linaker, 1990; Wolfensberger, 1994). However, without proper assessment the correct medication is not always used. Furthermore, medication has been used as a chemical restraint (Menolascino, 1990). Harper, Wadsworth, and Michael (1989) found that drugs are used with greater frequency in large care settings. Thus, the likelihood of being medicated became greater as the length of institutionalization increased. In addition, the chance of medication increased with age, as well as, with the number of behavior problems an individual exhibited. Therefore, no matter the diagnosis or what other treatments may be appropriate, medications are used more commonly in large settings (Harper et al., 1989). The continued development of appropriate assessment measures will dictate more appropriate treatment.

A mentally retarded individual’s correct diagnosis should have bearing on the treatment implemented, just as is the case for individuals with normal intelligence. Valid assessment measures are needed to design appropriate and effective treatment strategies (Reiss, 1993). Petronko, Harris, and Kormann (1994) suggested using community-based behavioral training approaches to treat dually diagnosed individuals as opposed to institutionalization and mass drugging. In summary, the need for continued development and research of appropriate measures to assess dual diagnosis has been established.
Scales Measuring Psychopathology in Individuals with Mental Retardation

Differentiating some mental illnesses from pervasive developmental delays is difficult and speaks to the intense need for valid and reliable measures (Menolascino, 1990). As previously stated, professionals have been inclined to rely on clinical judgment rather than objective tests, regardless of the fact that many checklists have greater psychometric properties than the clinical interview and case note methods used so frequently (Sturmey, 1993). Aman (1991) reviewed the available scales for measuring psychopathology in persons with mental retardation and found that most available instruments were not designed for the specific purpose of screening or assessing psychopathology, but instead were intended for evaluating maladaptive behaviors. All of these types of scales (for screening, diagnosis, and evaluation of maladaptive behaviors) offer valuable information for intervention planning.

The two most widely used screening measures for dual diagnosis of persons with mild and moderate mental retardation are the PIMRA (Matson, 1988) and Reiss Screen (Reiss, 1988). Several other measures are used to assess psychopathology in adults with mental retardation. However, their reliability for use with persons with mental retardation has not been thoroughly established. Many are adapted from scales developed for use with the non-handicapped population (e.g., Hamilton Rating Scale for Depression [Hamilton, 1960], Zung Self-Rating Depression Inventory [Zung, 1965], the Thematic Apperception Test [Morgan & Murray, 1935]). In contrast, the PIMRA and Reiss Screen have been developed specifically for use with persons evincing mental retardation.
The measures strictly for use with persons with mental retardation can be divided
into global assessments (the PIMRA [Matson, 1988], the Reiss Screen [Reiss, 1988], the
Schedule of Handicaps, Behaviour and Skills (HBS) - Revised [Wing, 1982, as cited in
Aman, 1991]) and assessments of specific disorders (e. g. Beck Depression Inventory,
Self-Report Depression Questionnaire [Beck, Ward, Mendelson, Mock, & Erbaugh,
1961]). Global measures are best used for screening purposes, while measures for
specific disorders provide valuable information on target behaviors (Singh et al., 1991).

Many scales not designed for identifying psychopathology in persons with mental
retardation have never the less been used for assessing the dually diagnosed. For
example, the American Association for the Mentally Disabled - Adaptive Behavior Scale
(AAMD-ABS) (Nihira, Foster, Shellhaas, & Leland, 1975) consists of two parts that
evaluate an individual’s development in 10 areas important for daily living and 13
domains of personal and social maladaptation. Spreat, Roszkowski, Isett, and Alderfer
(1980) used the AAMD-ABS to evaluate psychopathology in residents of a university-
affiliated facility. No significant differences were found for sex or age among the 4
diagnostic categories (psychosis, schizophrenia, autism, and severe emotional
disturbance). Psychosis, schizophrenia, and severe emotional disturbance were found
more in individuals with mild and moderate mental retardation, while autism was found
more in severe and profound mental retardation. The primary distinguishing feature for
the diagnostic categories was the low level of performance on the ABS language
development scale (Spreat et al., 1980). One criticism of this study is the use of a scale
designed to assess the development of adaptive behaviors to evaluate psychopathology.
Myers (1987) investigated the effectiveness of Mini Mental Status (MMS) for evaluation of developmentally delayed inpatients. Results indicated that the MMS scores of the developmentally disabled group correlated with IQ score and non-developmentally disabled individuals' scores did not correlate with IQ. Those individuals with moderate and severe mental retardation showed significantly impaired functioning on the MMS, whereas the less severely developmentally disabled were able to perform better on the MMS. In conclusion, the MMS should be used with caution if an individual is known to be mentally retarded (Myers, 1987).

**Reiss Screen for Maladaptive Behaviors.** Reiss (1988) developed the Reiss Screen for Maladaptive Behavior to assess maladaptive behaviors in persons with mental retardation. The Reiss Screen is a 36 item scale divided into 8 categories: Aggressive Behavior, Psychosis, Paranoia, Depression - Behavioral Signs, Depression - Physical Signs, Dependent Personality Disorder, Avoidant Disorder, and Autism. Each item is rated on a Likert Scale.

In a 1990 study, Reiss compared the results of the Reiss Screen with psychological case studies for 205 mentally retarded adults in a community-based program. The subjects participating were 94 mildly mentally retarded individuals, 73 moderately mentally retarded individuals, and 35 severely/profoundly mentally retarded individuals. The Reiss Screen correctly evaluated 86.7% who had previously tested positive as dually diagnosed, while 58.6% who had tested negative on the Reiss Screen were incorrectly evaluated as mentally healthy. The overall agreement between the Reiss Screen and their previous evaluation was 72.9%. The concurrent validity was strongest.
for Avoidant Disorder and Dependent Personality Disorder. The author found a prevalence rate of 39% for dual diagnosis in a community-based mental health center. The author asserted that individuals with mental retardation are more vulnerable to personality problems, such as hypersensitivity to rejection/criticism, excessive dependence, and social inadequacy (Reiss, 1990b).

Sturmey and Bertman (1994) evaluated the validity of the Reiss Screen. Three samples totaling 81 subjects were assessed using either the Reiss Screen and the PIMRA or the Reiss Screen and the Aberrant Behavior Checklist (ABC). The third group was not assessed with the Reiss Screen or the PIMRA, but had previous diagnoses by undefined methods. The Reiss Screen demonstrated good concurrent validity with the PIMRA, the ABC, and the patterns of service (Sturmey & Bertman, 1994).

**Schedule of Handicaps, Behaviour, and Skills (HBS) - Revised.** Wing (1982, as cited in Aman, 1991) originally developed this scale for children, but with the revision extended the age range to adults. The HBS-R is an interview designed to elicit information to describe the individual's current level of functioning to aid in assessment and diagnosis. According to the authors, the scale is appropriate for all levels of retardation. The HBS-R consists of two components, Developmental Skills and Behavioral Abnormalities. The section on developmental skills measures adaptive behavior. The Behavioral Abnormalities component has the following sections: Abnormalities of Speech or Sign Language, Abnormal Imaginative Activities, Eye Contact, Social Responsiveness, Social Play, Social Interaction, Abnormal Response to Sounds, Abnormal Response to Visual Stimuli, Abnormal Proximal Sensory Stimulation,
Abnormal Bodily Movements, Routines and Resistance to Change, Behavior Problems with Limited or no Social Awareness, Behavior Problems with Social Awareness, Sleeping Problems, and Initiative and Perseverance. A heavy emphasis is placed on autism. Little research has been conducted on the HBS and no research with adults has been conducted on the HBS-R. The scale is unpublished.

In summary, scales screening and assessing psychopathology in mentally retarded adults are few. The HBS-R is not frequently used and has little supporting research. The most commonly used scales to screen for dual diagnosis are the Reiss Screen and the PIMRA. These two scales also have received much attention in the literature. The Reiss Screen apparently has good psychometric qualities and would therefore be a good support to the PIMRA in a thorough assessment. The PIMRA will be reviewed in the following section.
Psychopathology Instrument for Mentally Retarded Adults (PIMRA)

The Development of the PIMRA

In 1984 Matson and associates began work on the Psychopathology Instrument for Mentally Retarded Adults (Helsel & Matson, 1988; Matson et al., 1984; Senatore, Matson, & Kazdin, 1985). The PIMRA is a 56 item scale based on the DSM-III. The PIMRA consists of 8 subscales with 7 questions in each -- Schizophrenia, Affective Disorders, Anxiety Disorders, Adjustment Disorder, Inappropriate Adjustment, Personality Disorders, Sexual Disorders, and Somatoform Disorder. The questions are in a yes/no format and are taken from the basic criteria for each of the above named disorders.

Matson and associates (Helsel & Matson, 1988; Matson et al., 1984; Senatore et al., 1985) conducted the original research on the PIMRA with 209 adults with mental retardation participating. Senatore et al. (1985) reported 110 of the cases from Pittsburgh; Helsel and Matson (1988) reported 99 cases from Illinois. These samples generated the original information about average scores, reliability, and validity.

Description of Pittsburgh Sample. Of the 110 mentally retarded adults who participated in the study in Pittsburgh, 56 were females and 54 were males ranging in age from 18 to 71 with a mean age of 45.0. They had been classified as borderline (n=9), mildly (n=51), moderately (n=46), or severely (n=4) mentally retarded using either the Peabody Picture Vocabulary Test or the Wechsler Adult Intelligence Scale. The subjects were selected from available outpatients who were seen at a university-affiliated mental health center (n=51) or from an inpatient unit of a large state hospital serving retarded persons (n=59). All the subjects were ambulatory and had basic self-help skills. The
primary diagnosis of each individual was mental retardation. The presence of mental illness was not a prerequisite for admission to either facility; however a significant portion of the patients (67.3%) had other psychiatric diagnoses besides mental retardation. In this sample, the diagnostic breakdown was: schizophrenia (n=38), depression (n=6), personality disorder (n=4), adjustment disorder (n=4), anxiety disorder (n=1), organic brain syndrome (n=5), and other unspecified psychopathology (n=16) (Senatore et al., 1985).

**Procedure for Pittsburgh Sample.** Data were collected on the PIMRA, a social skills measure, and the Social Performance Survey Schedule (SPSS; Lowe & Cautela, 1978). The measures of depression used to establish initial construct validity for the PIMRA were the Beck Depression Inventory (Beck et al., 1961), the Zung Self-Report Depression Scale (Zung, 1965), the Hamilton Psychiatric Rating Scale for Depression (Hamilton, 1960), and the Minnesota Multiphasic Personality Inventory -- Depression Scale (Hathaway & McKinley, 1967). The raters were either ward staff members of the state hospital who were familiar with the subject or the clinician in the mental health center assigned to the subject's case (Senatore et al., 1985).

**Description of Illinois Sample.** Ninety-nine mentally retarded adults participated in the Helsel and Matson (1988) study. The subjects were 40 females and 59 males ranging in age from 17 to 57 with a mean age of 28.6. They had been classified as borderline (n=13), mildly (n=53), moderately (n=26), or severely (n=7) mentally retarded. The subjects were selected from available outpatients who were seen at a university-affiliated mental health center, a state hospital, a suburban workshop, and a rural workshop. All the subjects were ambulatory and had basic self-help skills. The
primary diagnosis of each individual was mental retardation. The presence of mental illness was noted in a significant portion of the patients (Helsel & Matson, 1988).

**Procedure for Illinois Sample.** Raters administered the PIMRA and seven other psychopathology scales to evaluate the intercorrelations among the various scales (Helsel & Matson, 1988). The scales included Peabody Picture Vocabulary Test-Revised, Forms L & M (Dunn & Dunn, 1981), Yes/No Screening Device, Three Point Likert Screening Device, Social Performance Survey Schedule (Matson, Helsel, Bellack, & Senatore, 1983), Four Point Likert Screening Device, Beck Depression Inventory - Revised for Mentally Retarded Adults (Kazdin, Matson, & Senatore, 1983), and Zung Self Report Depression Scale - Revised for Mentally Retarded Adults (Kazdin et al., 1983). For the sample the PIMRA total scores were significantly correlated with the Hamilton, \( r = .64 \), and the SPSS-I, \( r = .43 \) (Helsel & Matson, 1988).

**Relationship of Subject Variables.** Researchers evaluated the relationship of subject variables to PIMRA scores for the Pittsburgh sample. Separate analyses of variance for patient gender, age, race, level of retardation, IQ, and psychiatric status were completed. The only significant finding was that Caucasians had higher PIMRA total scores than African Americans (Senatore et al., 1985).

Aman, Watson, Singh, Turbott, and Wilsher (1986) conducted a study using subjects who were recruited from the community and a residential facility. In the community 48.4% were males. The ages for the sample ranged from 18 to 52 with a mean age of 24.08. They had been classified as having borderline intelligence (24.2%), mild mental retardation (62.1%), and moderate mental retardation (13.7%). At the residential setting 70.8% were males. The ages for the sample ranged from 18 to 67.
with a mean age of 36.03. They had been classified as borderline (19.4%), mild (47.5%), and moderate (33.1%). The self-report version of the PIMRA was used. No age effects or sex differences were found in the community. Functional level had no measurable influence on psychopathology scores. In the residential setting, age was directly associated with scores on the Somatoform Disorder subscale. Females were noted to have more Psychosexual Disorders (Aman et al., 1986).

One hundred sixty-five subjects participated in the study by Iverson and Fox (1989). The subjects were 66% males. The sample ranged in age from 21 to 84 with a mean age of 36.1. Subjects were classified as mild (27%), moderate (35%), and severe and profound (38%) mentally retarded. The self-report and informant versions of the PIMRA were used. A higher number of individuals with mild retardation were found to manifest psychopathology (54.5%) as compared to those with moderate (31.5%) and severe (25.9%) mental retardation. These authors found that the level of mental retardation influenced the presence of psychopathology (Iverson & Fox, 1989).

Watson, Aman, and Singh (1988) conducted a study with 160 participants. The subjects were recruited from the community and a residential facility. In the community 48.4% were males. The ages for the sample ranged from 18 to 52 with a mean age of 24.08. They had been classified as borderline (24.2%), mild (62.1%), and moderate (13.7%). At the residential setting 70.8% were males. The ages for the sample ranged from 18 to 67 with a mean age of 36.03. They had been classified as borderline (19.4%), mild (47.5%), and moderate (33.1%). The informant and self-report versions of the PIMRA were used. The informant version was found to be more helpful. No significant differences were found between levels of psychopathology in the institution as compared
to the community. A positive correlation was noted between age and psychopathology and functional level and psychopathology. Females were recognized as being more likely to have Psychosexual Disorder (Watson et al., 1988).

**Internal Consistency.** The coefficient alpha for the total score was .83 and the Spearman-Brown split-half reliability for all items was .88. These findings provided evidence for a high level of internal consistency for the total score measure. The mean item-total score correlation was .35, p<.001, with 41 of the 56 items correlating significantly with the total score (Senatore et al., 1985).

Aman et al. (1986) reported an alpha ranging from .45 to .73 with a mean of .64 for each combination of setting and subscale on the self-report version of the PIMRA. Item-whole correlations ranged from .30 to .54. Ninety-three of 114 items (82%) correlated significantly with total subscale scores. Iverson and Fox (1989), which was previously described, found the internal consistency to be .71. The internal consistency of the self-report and informant versions were reported at .64 and .66, respectively by Watson et al. (1988), which was previously described.

Twenty-four subjects participated in the study by Sturmey and Ley (1990). The subjects were recruited from a mental health clinic, which served both inpatient and outpatient clients. No classifications of level of mental retardation were reported for the subjects. Poor internal consistency on the Psychosexual Disorder subscale and the Affective Disorder subscale were calculated due to a lack of variance on the scales.

**Reliability.** To examine the stability of PIMRA scores over time, the investigators retested 19 subjects with an intervening period of about 23 weeks. The test-retest reliability was correlated for each subscale and the total score: Schizophrenia
Iverson and Fox (1989), previously discussed, found that the interrater reliability ranged from 70% to 90%. One hundred sixty-eight mentally retarded adults participated in the study by Linaker (1991). The study used a majority of persons with severe and profound mental retardation, a population that is inappropriate for the PIMRA. The subjects had a 2:1 ratio of males to females ranging in age from 16 to 65 with a mean age of 40.4. They had been classified as mild (3.6%), moderate (20.1%), severe (50.9%) and profound (15.2%). The informant version of the PIMRA was used. Single-item interrater reliability was calculated using kappa, which was given as .64.

**Criterion Validity.** The subjects in the sample were divided into high and low groups on the basis of their ratings on the PIMRA Affective Disorder Scale. Of the total sample, 10 (9.4%) were diagnosed as depressed and 96 (90.6%) as non-depressed. The subjects identified as depressed had higher ratings, than those identified as non-depressed on the Beck Depression Inventory, $F(1,104)=7.51$, $p<.01$; the Zung Self-Report Depression Scale, $F(1,104)=4.07$, $p<.05$; the Social Performance Survey Schedule, $F(1,68)=11.17$, $p<.01$. These findings provided evidence for the criterion validity of the PIMRA Affective Disorder Scale. Additionally, female patients were found to have higher depression scores than males on the PIMRA Affective Disorder Scale, $F(1,104)=4.65$, $p<.05$ (Senatore et al., 1985).

The depressed and non-depressed subjects also differed on measures of psychopathology other than depression measures. The analysis of variance revealed that
the depressed patients scored significantly higher than the non-depressed patients on the Schizophrenia Scale, $F(1, 104) = 20.97, p < .001$; Adjustment Disorder, $F(1, 104) = 6.55, p < .05$; Anxiety Disorder, $F(1, 104) = 11.29, p < .001$; Somatoform Disorder, $F(1, 104) = 11.85, p < .001$; and Personality Disorder, $F(1, 104) = 4.21, p < .05$ (Senatore et al., 1985).

**Concurrent Validity.** Analysis of variance on the Pittsburgh sample indicated that patients with diagnosed psychopathology based on institutional records had higher total PIMRA scores than patients with no psychiatric diagnoses, $F(1, 104) = 7.04, p < .01$. This finding provided some evidence for the concurrent validity of the total score for identifying mentally retarded people who are or are not dually diagnosed (Senatore et al., 1985).

Sturmey and Ley’s study (1990) has been previously described. The authors compared the PIMRA to the ABC (Aman & Singh, 1985). Good correlations with the ABC were noted. In addition, Swiezy, Matson, Kirkpatrick-Sanchez, and Williams (1995) conducted a study to examine the concurrent validity of the schizophrenia subscale of the PIMRA. The subjects were divided into three groups, mildly mentally retarded with no identifiable psychopathology ($N = 22$), mentally retarded depressed/dysthymic group ($N = 21$), and a schizophrenic group ($N = 22$), based on their DSM-III-R diagnoses. Three assessment procedures were used, a drug response measure, the PIMRA, and a DSM-III-R checklist of schizophrenia. Significant differences were found with schizophrenia $F(2, 61) = 4.470, p < .05$; total $F(2, 61) = 5.123, p < .01$, and affective $F(2, 61) = 11.151, p < .001$, going from least to most significant. These findings provide evidence for the criterion validity of the PIMRA Affective.
Disorder subscale, the PIMRA Schizophrenia subscale, and the PIMRA total score. The Schizophrenia subscale appears to define the desired construct (Sweizy et al., 1995).

**Factor Analysis.** The data from the Pittsburgh sample were submitted to a factor analysis using a principal components solution followed by a varimax rotation. All factors with eigen values of 1.5 or greater and loadings of .35 or greater were included. Factors had to have at least five items to be included. The items were placed only in the factor where the highest factor loading occurred. Three factors emerged for the Ratings by Others version -- "Affective," "Somatoform," and "Psychosis" (Senatore et al., 1985).

In Linaker's study, as previously discussed, eliminated the personality disorder questions for analysis. Nine factors were revealed through factor analysis. These factors were used to classify 69.33% of the cases correctly (Linaker, 1991).

**Summary.** Many researchers have conducted analysis on the PIMRA (Aman et al., 1986; Iverson & Fox, 1989; Linaker, 1991; Sturmey & Ley, 1990; Sweizy et al., 1995; Watson et al., 1988). Some of the studies used the self-report version of the PIMRA, which is no longer produced due to difficulty with individuals being reliable sources of information (Aman et al., 1986; Iverson & Fox, 1989; Watson et al., 1988). Linaker (1990) and Iverson and Fox (1989) used inappropriate samples including persons with severe and profound mental retardation. Sturmey and Ley (1990) did not state the level of retardation for their subjects, therefore the appropriateness of the PIMRA for the population used is questionable. The PIMRA was designed for use only with persons with mild and moderate mental retardation. In general, these studies found lower internal consistencies than the original data, however as previously stated.
inappropriate samples and/or the self-report version were used. Researchers consistently found high concurrent validity of the PIMRA.
Purpose of the Study

The early and accurate identification of mental illness is important in developing the most relevant treatment. Despite this, assessing dually diagnosed persons with mental retardation has been subjected to little study until recently. The formulation of scales specifically designed for the dually diagnosed has alleviated part of the problem. However, more research is needed on these scales, such as the PIMRA. This study examined a normative reference group for psychopathology in institutionalized mildly and moderately mentally retarded adults using the PIMRA. Data sets from Texas and Louisiana were combined to develop a normative sample to ensure a large sample of individuals with different symptoms. This study describes the relative frequency of various maladaptive behaviors and disorders using a screening tool. The cut-off scores were determined by examining the standard deviations for each scale. Cutoffs indicate the need for further assessment for a particular disorder.

An item analysis was conducted to reveal if critical items are present for each subscale. Non-endorsement verses endorsement of critical items could distinguish individuals who exhibit some symptoms, but do not meet criteria for further assessment from individuals who meet criteria for further assessment on the PIMRA. The first hypothesis was that some items would be less frequently reported by those not meeting cutoff criteria, more frequently reported by those at or above the cutoff criteria, and therefore more critical to a diagnosis than other items (Hypothesis 1).

This investigation explored whether results on gender and age differences in studies using normal clinical samples are applicable to persons with mild and moderate mental retardation. Gender differences are noted for depression, anxiety, somatoform,
and sexual disorders. Females are reported to have a higher incidence of depression, anxiety, and somatoform disorders than males. Males are reported to have a higher incidence of sexual disorders than females (APA, 1994), though Aman et al. (1986) found that females have a higher incidence of sexual disorders. The second hypothesis was that gender differences would be noted on the scales measuring depression, anxiety, somatoform, and sexual disorders. Specifically, females would have a higher incidence of depression, anxiety, and somatoform disorders and males would have a higher incidence of sexual disorders (Hypothesis 2).

Age differences were also examined. Elderly persons with mental retardation may be at greater risk for somatoform disorders (Aman et al., 1986). Watson et al. (1988) found a positive correlation between age and psychopathology. The third hypothesis was that age differences would be noted for individuals across all subscales with increased age being positively correlated with increased levels of psychopathology (Hypothesis 3).

Individuals with mild mental retardation appear to suffer from the highest rates of mental illness (Borthwick-Duffy & Eyman, 1990; Iverson & Fox, 1989; Jacobson, 1982). This study investigated if differences in the level of functioning is correlated with the prevalence of psychopathology. The fourth hypothesis was that differences in psychopathology would be noted between persons with mild and moderate mental retardation with higher psychopathology associated with individuals with mild mental retardation (Hypothesis 4).

This study investigated the length of time the informant has known the subject and how it affects the subscale scores. The fifth hypothesis was that the length of time
the informant has known the subject would not be correlated with overall psychopathology (Hypothesis 5).

This investigation was needed due to the dearth of research on the topic of dual diagnosis. Few scales exist to measure mental illness in mental retardation. This study defined the symptoms of psychopathology as displayed within the context of mental retardation using a screening tool. The normative data presented in this research will be useful in interpreting assessment and planning for future treatments of dually diagnosed individuals. Further research was needed on the PIMRA to establish cutoffs for each scale. This study used an established scale, which researchers have shown is more reliable than clinical judgment (Menolascino, 1990; Sturmey et al., 1991). This study attempted to replicate previous studies, which have found differences in psychopathology depending on differences in gender, age, and level of functioning. These differences may represent risk factors for dual diagnosis in mental retardation. The research is furthered by determining the cutoffs and risk factors using an established scale, the PIMRA.
Method

Subjects

An existing data set of 431 institutionalized persons with mild and moderate mental retardation was studied. The data set consists of participants from state schools and mental retardation centers in Texas and Louisiana. All subjects were at least 18 years of age. Subject demographics can be found in Table 1.

For the sample, a majority of the individuals participating in the study the cause of their mental retardation is either unknown or not organic. Approximately, 7% have Down’s Syndrome, 4.3% have other chromosomal or genetic causes, 5.3% suffered damage due to an infection, 6.3% suffered an injury or head trauma, 5.3% had insufficient oxygen at or around birth, 12.1% had other medical or organic causes.

Many of the subjects, 57.0% of the subsample with mild mental retardation and 50.6% of the subsample with moderate mental retardation, had a previous diagnosis of psychopathology. Schizophrenia was the most common diagnosis for the sample (20.4% of the total sample, 22.1% of the subsample with mild mental retardation, and 17.5% of the subsample with moderate mental retardation). Another common disorder found in the full sample was Organic Brain Disorder with 13.3% of the total population having the diagnosis. Organic Brain Disorder was diagnosed for 11.5% of the subsample with mild mental retardation and 16.2% of the subsample with moderate mental retardation. Other common disorders in the sample were Pervasive Developmental Disorder/Autism (2.5% total, 2.9% mild, and 1.9% moderate), Psychosis Not Otherwise Specified (7.8% total, 9.8% mild, and 4.5% moderate), Bipolar Disorder (1.5% total, 1.6% mild, and 1.3% moderate), and other disorders (9.3% total, 9.0% mild, and 9.7% moderate).
**Raters and Informants**

Trained graduate and undergraduate students conducted the assessments. The rater or interviewer was the person responsible for administering the PIMRA. The rater was either a mental health or mental retardation professional, a staff psychologist, a Qualified Mental Retardation Personnel, or a case manager with at least a Bachelor’s degree. In Texas, a Project Research Assistant trained raters and seven Facility Research Project Coordinators in the study procedures. The Facility Research Project Coordinators were responsible for supervising, monitoring, and collecting assessments within the respective facility. The Project Research Assistant monitored the progress and integrity of the assessments during monthly site visits.

Direct care staff with a minimum of one month working knowledge of the subject served as informants. Informants answered the actual assessment questions. The informants had direct contact with the subject and were knowledgeable about specific behaviors exhibited by the subject. The rater consulted other staff who had more contact with the patient and/or documentation from case files when an informant had insufficient information about an item.

**Measure**

The assessment consisted of two parts, a 35 item background information questionnaire (Appendix) and the PIMRA Ratings-By-Others scale. Background information included race, gender, age, intelligence level, adaptive behavior level, physical disabilities, medical or organic cause of retardation, health problems, family history, living situation, relationship with informant, treatment (medical and behavioral), crisis history, and diagnosis. The PIMRA is a 56 item scale based on the DSM-III.
PIMRA consists of 8 subscales with 7 questions in each — Schizophrenia, Affective Disorders, Anxiety Disorders, Adjustment Disorder, Inappropriate Adjustment, Personality Disorders, Sexual Disorders, and Somatoform Disorder. The questions are in a yes/no format. An example of the questions are: "Speech is incoherent due to inability to put words together in a coherent sentence." "Mood swings and moodiness." "Cannot relax."

A rater completed the background information on the basis of case evaluations, medical records, and routine psychological and educational evaluations. The rater then completed the PIMRA with an informant. All protocols completed used the PIMRA Ratings-By-Others.

**Design/Analysis**

Provisional empirical guidelines were established to interpret the PIMRA scores on the basis of norms as opposed to subjective, clinical judgment. A tabular description of the sample was completed, including a frequency distribution of age, gender, race and physical disability. See Table 1. Analyses were conducted using Statistical Package for the Social Sciences Graduate Pack (SPSS Inc., 1995).

Subscale scores were tallied for each subject, then a mean and standard deviation were computed for each subscale. The cutoff value was computed by adding one standard deviation to the mean and rounding to the nearest integer (less than .5 rounded down and greater than or equal to .5 rounded up). Further evaluation is recommended for individuals with scores at or above this cutoff score. One standard deviation above the mean indicates a deviation from the norm reflecting a greater number of symptoms than average at the 85th percentile. The percentage of subjects at or above the cutoff...
value were identified for each subscale using the empirically derived cutoff scores. For each subscale, the sample was dichotomized (0 meaning the subject did not meet the cutoff for the individual scale and 1 meaning the subject met the cutoff). A frequency count tallied the number and percentage of the subjects in the sample with no subscale elevations, one subscale elevation, two subscale elevations, etc. This examination yielded information concerning the overall estimated levels of general psychopathology in the sample (Hamilton, 1995).

The frequency of the sample who endorsed each item was calculated to determine the critical items. For each subscale the sample was divided into those at or above the cut score and those below the cut score for that subscale. Next, a frequency count was computed for each item for both groups. Frequency of endorsement of items was examined for the subsamples. A chi square was performed to test significance between the frequency of endorsement between the two subsamples, below the cutoff and at or above cutoff, for each item. Only those items with a greater frequency of endorsement for the subsample at or above the cutoff were tested. Items with a significant difference at the .01 level between the two subsamples were considered critical for further assessment, since they represent items more strongly associated with a particular area of psychopathology.

Gender differences were examined for each subscale. Means for males and females were examined to determine the commonly observed gender differences in adult patient with schizophrenia, anxiety disorders, affective disorders, somatoform disorders, sexual disorders, and adjustment disorders also appear in the present sample with developmental disabilities. The mean scores for each subscale were computed for males.
and females separately. An analysis of variance (ANOVA) was conducted to determine if the means were significantly different between the groups on the above mentioned subscales (Senatore et al., 1985). An ANOVA with an alpha set at .01 was chosen to control the overall experiment wide error in the analysis.

Age differences were studied for each subscale to determine if age is a risk factor for certain disorders. Previous researchers have found that age is associated with somatoform disorders and general psychopathology (Aman et al., 1986; Watson et al., 1988). A multiple regression was used to determine if a linear relationship exists between psychopathology and ages ranging from 18 to 86 years. Age was entered as the predictor variable and subscale scores as the dependent variable.

Subscale differences associated with level of mental retardation were studied for each subscale. The mean scores were computed for the subsample with mild mental retardation and the subsample with moderate mental retardation for each subscale. An ANOVA was conducted to determine if the means were significantly different between the groups on the above mentioned subscales (Senatore et al., 1985). An ANOVA with an alpha set at .01 was chosen to control the overall experiment wide error in the analysis.

A separate analysis examined if subscale scores were affected by the length of time the informant knew the subject collapsing across the severity of mental retardation. Responses on the background information were categorized into four groups based on how long the informant knew the subject: 1 month or less, 2 to 6 months, 7 to 12 months, 13 months to 5 years, and more than 5 years. The mean score for each subscale was calculated for each time component. Eight 1 (mean for the scale) by 5 (time frame)
ANOVA's were conducted to determine if these means were significantly different between the groups as a function of the length of acquaintance. An ANOVA with an alpha set at .01 was chosen to control the overall experiment wide error in the analysis. A Tukey post hoc test was completed to indicate which time frame groups were different.
Results

General Findings

Subscale Indices. Indices were established for the PIMRA to signify that a particular score on a subscale warranted further assessment. These scores were calculated by adding one standard deviation for each subscale to its mean. Scores were rounded to the nearest integer (less than .5 rounded down, greater than or equal to .5 rounded up). Table 3 shows the cutoff scores for each subscale, as well as the frequency and percentage that meet the cutoff for the total sample. Table 4 shows the number and percentage of subjects meeting the cutoff for the subsamples of subjects with mild and moderate mental retardation.

Subscale Elevations. The number of subscale elevations above the cutoff was summed for each subject. The subjects were then categorized according to their total number of subscale elevations. Table 5 shows the number of subscale elevations for the groups with mild and moderate mental retardation and the total sample. Of the total sample, 35.5% had no subscale elevations above the cutoff score. Only a difference of .7% existed between the mild and moderate groups. Almost 65% of the sample met the cutoff for further assessment. The greatest differences between the two groups occurred at one subscale elevation (22.4% of individuals with mild mental retardation and 26.5% of individuals with moderate mental retardation) and at three subscale elevations (11.2% individuals with mild mental retardation and 6.1% individuals with moderate mental retardation). The difference at 3 subscale elevations was the only significant difference as tested using a chi squared, $x^2=7.41$, df = 1 at .01.
Critical Items

Table 6 has the frequency of endorsement for each item. Items were chosen based on a significant difference at the .01 level between the two subsamples as tested by a chi square. Critical items emerged for the following subscales: Schizophrenia, Affective Disorders, Somatoform Disorders, and Adjustment Disorders. The topics of these critical items include delusions ($\chi^2 = 13.5, \text{df} = 1$), sadness ($\chi^2 = 8.18, \text{df} = 1$), death wishes ($\chi^2 = 16.3, \text{df} = 1$), insomnia ($\chi^2 = 8.80, \text{df} = 1$), many aches and pains ($\chi^2 = 15.1, \text{df} = 1$), reports illness to avoid work ($\chi^2 = 11.0, \text{df} = 1$), complaints of breathing problems ($\chi^2 = 14.3, \text{df} = 1$), noncompliance ($\chi^2 = 15.0, \text{df} = 1$), hostility ($\chi^2 = 12.5, \text{df} = 1$), not being responsible ($\chi^2 = 9.46, \text{df} = 1$), and being antisocial ($\chi^2 = 16.2, \text{df} = 1$). The items for the Sexual Disorders subscale were all rarely endorsed and therefore were all sensitive to the subscale. The items for the Anxiety Disorders and Inappropriate Adjustment subscales were highly endorsed by both groups, therefore no significant differences were found, nor were they sensitive to their respective subscales. None of the items for the Personality Disorders subscale were significant as critical items for further assessment.

Table 7 has the ten most frequently endorsed PIMRA items. The majority of the most frequently endorsed items are drawn from the Anxiety and Inappropriate Adjustment subscales. It should be noted that items for the Inappropriate Adjustment subscale is reverse scored. The topics of these items includes: outgoing, adjusts to new situations, no sexual hang-ups, mood swings, cannot cope with stress, self-consciousness, easily frustrated, refrains from inappropriate reports of illness, anxiety, and conforms to rules. Table 8 has the ten least frequently endorsed PIMRA items. The
majority of the least frequently endorsed items pertain to the sexual disorders and somatoform disorders subscales. The topics of these items are: desire to change sex, cross-dressing, discomfort over anatomy, fetish, frequently imagines illness, imagines debilitating illness, preoccupation with the opposite sex, exposes him/herself, sexual assault, and complaints of breathing problems.

**Relationship with Gender**

The second hypothesis was that gender differences would be noted with females having a higher endorsement on the subscales measuring depression, anxiety, somatoform, and males having a higher endorsement on the subscale measuring sexual disorders. This hypothesis was not supported by the data. Table 9 shows the means and standard deviations for all subscales for males and females. Table 10 shows the frequency and percentage of all subscales for both groups. Females have a greater percentage in each subscale except Sexual Disorders subscale. The homogeneity of variance was tested for the two groups using the Levene statistic. Significant differences in homogeneity of variance were found for the Affective Disorders and Somatoform Disorders subscales. Differences were examined for the two remaining subscales being investigated using an ANOVA to test for significance between the means for each group. No significant differences were found.

**Relationship to Age**

The third hypothesis was that age differences would exist for the all subscales with psychopathology increasing with age. Age differences were noted for Anxiety Disorders, Inappropriate Adjustment, and Sexual Disorders subscales. The means and standard deviations for each subscale by two groups, individuals less than or equal to 30
years of age and individuals greater than 30 years of age, can be seen in Table 11. The frequency and percent for each subscale by the two groups is noted in Table 12. The frequency of endorsement for the Adjustment Disorders, Anxiety Disorders, Schizophrenia, and Sexual Disorders subscales were greater for subjects less than or equal to 30 years of age. Table 13 shows the means and standard deviations for each subscale by four groups, ages 18 to 29, ages 30 to 39, ages 40 to 49, and ages over 50. Table 14 shows the frequency and percentage for each subscale by the four groups. The over 50 group had a higher percentage of endorsement by subjects for the Adjustment Disorders, Affective Disorders, Inappropriate Adjustment, and Somatoform Disorders subscales. The 30 to 39 group had the highest percentage of endorsement for the Anxiety Disorders and Personality Disorders subscales. The 18 to 29 group had the highest percentage of endorsement for the Schizophrenia and Sexual Disorders subscales. A linear relationship was found between age and the Anxiety Disorders subscale with a magnitude of -.136, Inappropriate Adjustment subscale with a magnitude of .119, and Sexual Disorders subscales with a magnitude of -.109.

**Relationship to Level of Functioning**

The fourth hypothesis was that differences in psychopathology would be related to level of functioning with higher psychopathology associated with mild mental retardation. This hypothesis was supported for the Anxiety Disorders subscale. Table 2 has the means and standard deviations for all subscales for the two groups. Table 4 has the frequency and percentage of each subscale for the two groups. The subsample with mild mental retardation had a greater percentage of endorsement for the Affective Disorders, Anxiety Disorders, Schizophrenia, Sexual Disorders, and Somatoform Disorders.
Disorders subscales. The homogeneity of variance was tested for the two groups using the Levene statistic. Significant differences in homogeneity of variance were found for the Inappropriate Adjustment, Sexual Disorders, and Somatoform Disorders subscales. Differences were examined using an ANOVA and significant differences were found for the Anxiety Disorders subscale $F(1, 429) = 6.229$, $p < .05$. Significant differences did not occur for the remaining subscales: Adjustment Disorders, Affective Disorders, Personality Disorders, and Schizophrenia.

**Relationship to Informant**

The fifth hypothesis was that the relationship to the informant, specifically the length of time the informant has had a working knowledge of the subject, would not be related to the overall level of psychopathology. This hypothesis was supported by the lack of significant differences noted for the different time frames. Only the Adjustment Disorders subscale had a significant difference between 2 of the time periods, the 7 to 12 month group and the more than 5 years group. Table 15 shows the means and standard deviations for each group - 1 month or less, 2 to 6 months, 7 to 12 months, 13 months to 5 years, and more than 5 years. The homogeneity of variance was tested using the Levene statistic. Differences were examined for all subscales using an ANOVA and significant differences $F(4, 394) = 2.8720$, $p < .05$ were found for the Adjustment Disorder subscale. Significant differences did not occur for the other subscales or the PIMRA total score. A Tukey post hoc test revealed significant differences between the 7 to 12 month group and the more than 5 years group on the Adjustment Disorder subscale.
Discussion

This study furthered the literature on dual diagnosis by using an established scale, the PIMRA, to determine a normative profile of psychiatric symptoms in institutionalized persons with mild and moderate mental retardation. The behaviors indicative of psychopathology in institutionalized persons with mild and moderate mental retardation were examined using a large normative sample. The indices, suggesting the need for further assessment, were determined for the PIMRA by defining the cut-off scores for each scale at one standard deviation over the mean.

The determined cutoffs generally should be in accordance with the prevalence rates of psychopathology in adults with mental retardation, if not slightly higher. Since the PIMRA is a screening tool, a conservative cutoff is needed to include any individual who may exhibit a particular disorder. The rates of the various disorders are general estimates since the PIMRA is a screening tool. Table 3 shows the indices for each subscale, as well as, the frequency and percentage of subjects that meet the cutoff for the total sample. The percentage of subjects above the conservative cut score vary from 16.5% for Somatoform Disorders to 24.1% for Adjustment Disorders. The difference in percentages for disorders is partly due to the type of disorder. These estimates of psychopathology may seem high, but the PIMRA is a screening tool and the cutoffs are designed to have a high sensitivity and imperfect specificity. Previous researchers found that psychopathology is more common in adults with mental retardation, than individuals with normal intelligence (Matson & Frame, 1986; Menolascino, 1990). Matson (1985) noted consistent reports of emotional problems in individuals with mental retardation since the 1940's. Prevalence rate data of dual diagnosis range from 5% to 50%
(Schroeder, 1985), but are more likely to range from 16% to 40% (Menolascino, 1990).

Matson and Frame (1986) agreed noting that mental illness is two to three times higher for individuals with mental retardation.

**Comorbidity**

Comorbidity of psychopathology in persons with mental retardation has received little attention in the literature. The pattern of possible psychopathology seen in individuals with mental retardation was examined. These rates of comorbidity are only general estimations since the PIMRA is a screening tool and not a diagnostic tool. To estimate the comorbidity rate of psychopathology in individuals with mental retardation, the number of subscale elevations above the cutoff was summed for each subject. Individuals were categorized according to the total number of subscale elevations. Table 5 shows the number of subscale elevations for the groups with mild and moderate mental retardation and the total sample. Of the total sample, 35.5% had no subscale elevations above the cutoff score. The level of mental retardation was not related to the number of subscale elevations the subject had, except at three subscale elevations. A significant difference existed between the two groups with individuals with mild mental retardation endorsing a greater number of subscales. Almost 65% of the sample met the cutoff for further assessment on at least one subscale, which further supports the existing literature that psychopathology is more common in individuals with mental retardation (Borthwick-Duffy & Eyman, 1990; Dosen, 1989; Matson & Frame, 1986; Menolascino, 1990; Reiss et al., 1982; Sturmey & Sevin, 1993). Approximately 40% of the sample had elevations on two or more subscales, indicating that individuals with mental retardation are at high risk for multiple diagnoses of mental illness. Goldberg et al.
(1995) found evidence of multiple diagnoses in adults with mental retardation. These authors noted that personality disorders or traits of personality disorders are associated with other psychiatric diagnoses. The focus of future research should be to extend the literature on which disorders are more likely to exist together. Also comorbid diagnoses in persons with mental retardation should be further investigated to determine the effects on assessment and treatment.

**Relationship of Symptoms Within and Across Disorders**

The presentation of certain symptoms by an individual are more indicative of a disorder than the presentation of other symptoms. The specific symptoms of mental illness were examined to determine which were more critical in warranting further assessment. The items were identified by comparing the frequency of endorsement by the two subsamples, below cutoff and at or above the cutoff, for each item using a chi square. The item analysis revealed critical items for the following subscales: Schizophrenia, Affective Disorders, Sexual Disorders, Somatoform Disorders, and Adjustment Disorders. Critical items were not revealed for Anxiety Disorders, Personality Disorders, and Inappropriate Adjustment subscales. The items for the Anxiety Disorders and Inappropriate Adjustment subscales were all highly endorsed. Though items such as “cannot relax” and “constantly worried” were more highly endorsed by subjects at or above the cutoff criteria than the others, they were not significantly different. Likewise “pleasant to be around” was commonly endorsed, but did not meet criteria for the Inappropriate Adjustment subscale. Symptoms of anxiety appear to be more common in individuals with mental retardation, than in individuals with average intelligence. This sample has high levels of anxiety and inappropriate
adjustment. Factors contributing to these high levels of symptoms for these disorders may be inherent in their placement in an institution. Future research should determine if anxiety is common to all individuals with mental retardation or primarily those individuals in institutions.

A positive symptom of schizophrenia, delusions, was more indicative of schizophrenia in this sample, than deteriorating from a previous level of functioning or having a flat affect. This finding is contrary to the findings of Einfeld and Aman (1995), who noted altered affective responses, bizarre rituals, and interpersonal distancing as the primary markers for schizophrenia in individuals with mental retardation. Flat affect was a weak marker for schizophrenia, according to this study. These differences may be due to different operational definitions for these terms. Bizarre rituals may be related to delusions, which were distinguished in this study as separate entities and may be the root of bizarre rituals for individuals with mental retardation and schizophrenia.

Sadness, death wishes, and insomnia were the critical items for further assessment of depression. These items were more indicative of depression than weight loss or decreased energy. Previous research has focused on the relationship between social skills and depression (Helsel & Matson, 1988; Laman & Reiss, 1987; Reiss & Rojahn, 1993). These findings suggest that poor interpersonal interactions are secondary to sadness, death wishes, and insomnia. However, the treatment of poor interpersonal skills may relieve these symptoms of sadness, suicidal ideation, and insomnia. These factors have received little attention in the literature (Sturmey, 1994), but should be addressed in future research, especially suicidal ideation.
Hostility, not being responsible, noncompliance, and being antisocial were identified as critical items for the Adjustment Disorders subscale, as opposed to stealing or nervousness. These items reflect how an individual relates to others, which in the literature is more often associated with personality disorders (Menolascino, 1990).

Goldberg et al. (1995) noted a relationship between adjustment disorders and personality disorders, therefore adjustment disorders and personality disorders are likely to exist together in an individual with mental retardation. Future research may investigate the types of stressors which elicit these behaviors of having difficulty relating to others.

Complaints of breathing problems, having many aches and pains, and reports of illness to avoid work emerged as critical items for the Somatoform Disorders subscale. These items were more indicative of needing further assessment than imagining illness or using illness to gain attention. Little research has been conducted on somatoform disorders in individuals with mental retardation.

The items for the Sexual Disorders (i.e. sexual assault, fetish, exposing him/herself, and preoccupation with the opposite sex) subscale were all rarely endorsed, therefore were all likely to be sensitive to the respective disorders. All of these items are related to sensitive areas, especially the items for the Sexual Disorders subscale which could lead to an individual being incarcerated. If any of these behaviors are exhibited by an individual a full assessment should be pursued.

**Person Characteristics**

Gender and age differences were examined to determine if findings using clinical samples with average intellectual functioning are applicable to persons with mild and moderate mental retardation. No subscales had significant differences related to gender.
Jacobson (1990) and Reid (1989) found that psychosis was more often diagnosed in males with mental retardation and Benson (1985) found more females to have anxious/depressed disorders. The gender differences reported by Jacobson (1990), Reid (1989), and Benson (1985) did not appear here. However, these findings are in agreement with other previous research which indicated that gender has no significant relationship to mental illness in persons with mental retardation (Borthwick-Duffy & Eyman, 1990; Iverson & Fox, 1989, Jacobson, 1982). Gender is not a risk factor for mental illness in individuals with mental retardation.

Age differences were also examined. A linear relationship exists for the Anxiety Disorders subscale at the .01 significance level and Inappropriate Adjustment and Sexual Disorders subscales at the .05 significance level. Anxiety and Sexual Disorders subscale scores decreased with age, while Inappropriate Adjustment subscale score increased with age. The decreased number of symptoms indicated by the Anxiety Disorders and Sexual Disorders subscales at older ages may be related to the length of time the individual has been institutionalized. The Inappropriate Adjustment subscale is unique to the PIMRA and the behaviors examined on this subscale warrant further investigation as to their relevance to general levels of psychopathology. The items are in reference to coping with change and appropriate affect. The relationship of these factors to elderly individuals with mental retardation should be investigated to better the treatment of elderly individuals with mental retardation.

Researchers have found that individuals with mild mental retardation suffer from the highest rates of mental illness relative to those individuals with more severe mental retardation (Borthwick-Duffy & Eyman, 1990; Iverson & Fox, 1989; Jacobson, 1982).
Significant differences were only found for Anxiety Disorders. The Inappropriate Adjustment subscale was more highly endorsed for the subsample with moderate mental retardation, however the difference was not significant. In general, minimal differences existed between the two groups, as also seen with the subscale elevations. The higher rate of endorsement on the Anxiety Disorders subscale for persons with mild mental retardation may be due to their lesser cognitive deficits compared to the subsample with moderate mental retardation. As suggested by Dosen (1989) individuals with mild mental retardation suffer from psychopathology because they are aware of their deficits.

In general, high levels of anxiety and inappropriate adjustment were noted in the sample. This finding may be inherent in this sample due to the fact that the subjects were institutionalized. Surprisingly, no significant differences were found due to gender. This population does not follow traditional differences due to gender found in the general population. The Anxiety Disorders subscale was most affected by outside variables, such as age and level of functioning. A significant relationship was shown between age and anxiety, inappropriate adjustment, and sexual disorders. A negative correlation was found for the Anxiety Disorders and Sexual Disorders subscales with age, while a positive correlation was found for the Inappropriate Adjustment subscale with age. The decreased rate of endorsement on the Anxiety Disorders subscale at older ages may be related to the length of time the individual has spent in the institution and the adjustment to the institution. Level of functioning of an individual had a significant effect on anxiety. More persons with mild mental retardation met the cutoff for further screening for anxiety disorders, than persons with moderate mental retardation. The higher rate of endorsement for the Anxiety Disorders subscale may be due to their lesser cognitive...
deficits as compared to the subsample with moderate mental retardation. Individuals with mild mental retardation may be better able to express their feelings of anxiety, or any other mental illness, than their counterparts with moderate mental retardation.

**Informant Characteristics**

The relationship to the informant, specifically the length of time the informant has had a working knowledge of the subject, was examined to determine if a relationship existed with levels of psychopathology. The only significant difference noted was on the Adjustment Disorder subscale for individuals knowing the subject between 7 to 12 months and those knowing the subject more than 5 years. This finding supports the PIMRA as an objective screening of psychopathology in individuals with mild and moderate mental retardation because the endorsement of items was not dependent upon the length of time a rater knew a subject.

**Conclusions**

The difficulties of assessing persons with mental retardation presented in the literature was addressed. Sturmey et al. (1991) suggested that prevalence surveys conducted on mental illness in mental retardation were limited to the less intellectually impaired group with a separate prevalence rate set for them. This study was focused on institutionalized persons with mild and moderate mental retardation. A second concern was the ability of a person with mental retardation to participate in their evaluation (Menolascino, 1990). This problem was resolved by using a ratings by others scale. Finally, a standardized assessment tool was used. The current investigation examined the behaviors indicative of psychopathology in an institutionalized sample of persons with mild and moderate mental retardation using the PIMRA.
The symptoms of psychopathology as displayed in mental retardation were described and empirically derived from the scale. This study described the estimated frequencies of various disorders using a screening tool. Previous researchers used non-standardized methods to describe the prevalence of psychopathology in mental retardation (Ballinger & Reid, 1977; Crews et al., 1994; Jacobson, 1990; Myers, 1987; Williams, 1971; Wright, 1982). This investigation used a standardized measure, the PIMRA. Critical items were determined for each scale to develop a better understanding of mental illness in mental retardation. The study attempted to replicate research findings indicative of differences attributed to gender, age, and level of functioning. The determination of these differences indicated risk factors for dual diagnosis in mental retardation. Age is a risk factor for further assessment for anxiety, inappropriate adjustment and sexual disorders. Moreover, having mild mental retardation put an individual at higher risk for further assessment of anxiety, as compared with individuals with moderate mental retardation. This information aids in appropriate assessment and subsequent treatment of persons with mental retardation. Use of the PIMRA offers a standardized alternative to clinical judgment when screening adults with mental retardation for mental illness.

Several factors in the study were considered limitations and are recommended to be controlled in future research. The limitations of this study include assessing the individuals while they were on medication. The medications were not taken into account by the rater in the presentation of the symptoms of psychopathology. The individual’s behavior without medication should be rated by the rater. Medication may alter the presentation of symptoms presented by an individual. Another limitation is only
including individuals who are institutionalized. No information was gathered on individuals in the community or in any less restrictive setting. The length of time the individual has lived in an institution was not accounted for or investigated as a factor in psychopathology. The behaviors presented initially may have changed over time and is correlated with the extent of time spent in the institution. Another component of this factor is if the individual has spent time in the community and that effect on psychopathology.

Many avenues are available for future research. This research supports the need for comprehensive assessment of individuals with mental retardation. The next step in this research is to formulate a valid and reliable scale for diagnosis of psychopathology in adults with mild and moderate mental retardation. Future researchers should determine the normative data for individuals with mild and moderate mental retardation in the community, especially with the trend towards de-institutionalization. With the high levels of individuals with more than one disorder, research is needed on the comorbidity of psychopathology in this population. It would be interesting to test if a relationship between levels of psychopathology and length of institutionalization with the hypothesis that a positive correlation exists between psychopathology and length of time in an institution. This research did not take into account the physical disabilities of the sample or the relationship between physical disabilities and psychopathology. A final direction for future research may investigate if males and females exhibit the same symptoms in their presentation of psychopathology as commonly exhibited by males and females in the general population.
References


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Reiss, S. (1990a). Special Section on Dual Diagnosis from AJMR - Introduction. *American Journal on Mental Retardation, 94*, 577


## Appendix A
### Supplementary Tables

### Table 1
**Subject Demographics**

<table>
<thead>
<tr>
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<th>Mildly Mentally Retarded N=250 58%</th>
<th>Moderately Mentally Retarded N=182 42%</th>
<th>Total Sample N=431 100%</th>
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<td><strong>Age</strong></td>
<td>mean 38.7</td>
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<td>18-86</td>
<td>18-86</td>
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<td>31 17.1</td>
<td>79 18.3</td>
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<td>Hispanic 23 9.2</td>
<td>19 10.5</td>
<td>42 9.7</td>
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<td>13 8.5</td>
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<td></td>
<td>non-ambulatory 10 4.1</td>
<td>13 8.5</td>
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<td>2 .5</td>
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<td></td>
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<td>8 5.2</td>
<td>21 5.3</td>
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<td></td>
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<td>65 16.4</td>
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<td></td>
<td>no disability 136 55.7</td>
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<td>207 52.1</td>
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### Table 2

Means and Standard Deviations for Each Subscale

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<th>Subscale</th>
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<th>Moderately Mentally Retarded N=181</th>
<th>Total Sample N=431</th>
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<td>SD</td>
<td>mean</td>
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<td>1.55</td>
<td>1.48</td>
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<td>1.46</td>
<td>1.34</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.14</td>
<td>1.61</td>
<td>1.75</td>
</tr>
<tr>
<td>Inapp. Adjust</td>
<td>2.38</td>
<td>1.76</td>
<td>2.83</td>
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<tr>
<td>Personality</td>
<td>1.18</td>
<td>1.32</td>
<td>1.25</td>
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<td>1.40</td>
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### Table 3

Frequency of Sample Scoring Above One Standard Deviation Above the Mean (total sample n= 431)

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<th>1 SD Above Mean</th>
<th>Subjects Above Cutoff</th>
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<td></td>
<td>%</td>
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<tr>
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<td>24.1 104</td>
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<td>21.1  91</td>
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<tr>
<td>Anxiety</td>
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<td>17.4  75</td>
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<tr>
<td>Inapp. Adjust</td>
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<td>19.3  83</td>
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<td>Personality</td>
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<td>19.0  82</td>
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<td>Schizophrenia</td>
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<td>17.6  76</td>
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<td>Sexual</td>
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<td>23.0  99</td>
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<tr>
<td>Somatoform</td>
<td>3</td>
<td>16.5  71</td>
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Table 4
Frequency and Percentage of Subjects Above the Cutoff for Each Subscale

<table>
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<tr>
<th>Subscale</th>
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<td>%</td>
<td>frequency</td>
<td>%</td>
<td>frequency</td>
<td>%</td>
<td></td>
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<td>Adjustment</td>
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<tr>
<td>Affect</td>
<td>57</td>
<td>22.8</td>
<td>34</td>
<td>18.8</td>
<td>91</td>
<td>21.1</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>48</td>
<td>19.2</td>
<td>27</td>
<td>14.9</td>
<td>75</td>
<td>17.4</td>
<td></td>
</tr>
<tr>
<td>Inapp. Adjust</td>
<td>37</td>
<td>14.8</td>
<td>46</td>
<td>25.4</td>
<td>83</td>
<td>19.3</td>
<td></td>
</tr>
<tr>
<td>Personality</td>
<td>46</td>
<td>18.4</td>
<td>36</td>
<td>19.9</td>
<td>82</td>
<td>19.0</td>
<td></td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>50</td>
<td>20.0</td>
<td>26</td>
<td>14.4</td>
<td>76</td>
<td>17.6</td>
<td></td>
</tr>
<tr>
<td>Sexual</td>
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<td>21.0</td>
<td>99</td>
<td>23.0</td>
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<tr>
<td>Somatoform</td>
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<td>13.3</td>
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Table 5
Subscale Elevations

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</thead>
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<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
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<td>35.9</td>
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<td>1</td>
<td>56</td>
<td>22.4</td>
<td>48</td>
<td>26.5</td>
<td>104</td>
<td>24.1</td>
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</tr>
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<td>2</td>
<td>42</td>
<td>16.8</td>
<td>31</td>
<td>17.1</td>
<td>73</td>
<td>16.9</td>
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</tr>
<tr>
<td>3</td>
<td>28</td>
<td>11.2</td>
<td>11</td>
<td>6.1</td>
<td>39</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>6.8</td>
<td>10</td>
<td>5.5</td>
<td>27</td>
<td>6.3</td>
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<tr>
<td>5</td>
<td>7</td>
<td>2.8</td>
<td>7</td>
<td>3.9</td>
<td>14</td>
<td>3.2</td>
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<td>6</td>
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<tr>
<td>7</td>
<td>5</td>
<td>2.0</td>
<td>3</td>
<td>1.7</td>
<td>8</td>
<td>1.9</td>
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<tr>
<td>8</td>
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<td>0.4</td>
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<td>0.2</td>
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### Table 6
**Item Endorsement by Subscale**

<table>
<thead>
<tr>
<th>Schizophrenia</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Frequency above Cut Score</th>
<th>Frequency below Cut Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>flat affect</td>
<td>83</td>
<td>19.2</td>
<td>43</td>
<td>40</td>
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<tr>
<td>incoherent speech</td>
<td>62</td>
<td>14.4</td>
<td>33</td>
<td>29</td>
</tr>
<tr>
<td>auditory hallucinations</td>
<td>62</td>
<td>14.4</td>
<td>42</td>
<td>20</td>
</tr>
<tr>
<td>deterioration</td>
<td>53</td>
<td>12.3</td>
<td>27</td>
<td>26</td>
</tr>
<tr>
<td>delusions*</td>
<td>50</td>
<td>11.6</td>
<td>38</td>
<td>12</td>
</tr>
<tr>
<td>withdrawal</td>
<td>108</td>
<td>25.1</td>
<td>50</td>
<td>58</td>
</tr>
<tr>
<td>peculiar behavior</td>
<td>99</td>
<td>23.0</td>
<td>47</td>
<td>52</td>
</tr>
</tbody>
</table>

| Affective Disorder                |           |            |                           |                           |
| mood swings                        | 194       | 45.0       | 78                        | 116                       |
| decreased energy                   | 85        | 19.7       | 51                        | 34                        |
| unusual weight loss               | 18        | 4.2        | 9                         | 9                         |
| sadness*                          | 110       | 25.5       | 70                        | 40                        |
| death wishes or crying*           | 48        | 11.1       | 38                        | 10                        |
| social withdrawal                 | 114       | 26.5       | 57                        | 57                        |
| insomnia*                         | 41        | 9.5        | 30                        | 11                        |

| Psychosexual Disorder             |           |            |                           |                           |
| sexual assault                    | 35        | 8.1        | 35                        | 0                         |
| fetish                             | 19        | 4.4        | 19                        | 0                         |
| cross-dressing                    | 12        | 2.8        | 12                        | 0                         |
| discomfort over anatomy           | 18        | 4.2        | 18                        | 0                         |
| preoccupation with the opposite sex | 27    | 6.3        | 27                        | 0                         |
| desire to change sex              | 10        | 2.3        | 10                        | 0                         |
| exposes him/herself               | 33        | 7.7        | 33                        | 0                         |

* indicates a critical item
Table 6 cont.

<table>
<thead>
<tr>
<th>Adjustment Disorder</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Frequency above Cut Score</th>
<th>Frequency below Cut Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>noncompliant*</td>
<td>123</td>
<td>28.5</td>
<td>83</td>
<td>40</td>
</tr>
<tr>
<td>cannot cope with stress</td>
<td>176</td>
<td>40.8</td>
<td>67</td>
<td>109</td>
</tr>
<tr>
<td>hostile*</td>
<td>104</td>
<td>24.1</td>
<td>70</td>
<td>34</td>
</tr>
<tr>
<td>nervous</td>
<td>104</td>
<td>24.1</td>
<td>60</td>
<td>44</td>
</tr>
<tr>
<td>not responsible*</td>
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<td>17.9</td>
<td>52</td>
<td>25</td>
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<td>stealing</td>
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<td>18.6</td>
<td>40</td>
<td>40</td>
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<td>antisocial*</td>
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<td>18.6</td>
<td>58</td>
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<td><strong>Anxiety Disorder</strong></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>self-consciousness</td>
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<td>38.8</td>
<td>43</td>
<td>119</td>
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<td>anxiety</td>
<td>142</td>
<td>33.0</td>
<td>65</td>
<td>77</td>
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<td>cannot relax</td>
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<td>17.4</td>
<td>39</td>
<td>36</td>
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<tr>
<td>easily frustrated</td>
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<td>36.4</td>
<td>62</td>
<td>95</td>
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<td>51</td>
<td>33</td>
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<td>shy</td>
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<td>24.1</td>
<td>33</td>
<td>71</td>
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<td>difficulty</td>
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<td>concentrating</td>
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<td>55</td>
<td>69</td>
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<tr>
<td><strong>Somatoform Disorder</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>frequently imagines illness</td>
<td>19</td>
<td>4.4</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>many aches &amp; pains*</td>
<td>81</td>
<td>18.8</td>
<td>58</td>
<td>23</td>
</tr>
<tr>
<td>reports illness to avoid work*</td>
<td>86</td>
<td>20.0</td>
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<td>28</td>
</tr>
<tr>
<td>imagines debilitating illness</td>
<td>21</td>
<td>4.9</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>uses illnesses to gain attention</td>
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<td>19.0</td>
<td>52</td>
<td>30</td>
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<td>complaints of breathing problems*</td>
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<td>8.6</td>
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<td>7</td>
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</table>

* indicates a critical item
Table 6 cont.

<table>
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<th>Personality Disorder</th>
<th>Frequency</th>
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<th>Frequency above Cut Score</th>
<th>Frequency below Cut Score</th>
</tr>
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<td>emotionally cold</td>
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<td>54</td>
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<tr>
<td>indifferent</td>
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<td>17.4</td>
<td>38</td>
<td>37</td>
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<tr>
<td>demanding</td>
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<td>22.7</td>
<td>60</td>
<td>38</td>
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<td>excessive dependence</td>
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<td>odd speech</td>
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<td>suspicious</td>
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<td>self-dramatic</td>
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<table>
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<th>Frequency above Cut Score</th>
<th>Frequency below Cut Score</th>
</tr>
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<td>appropriate affect</td>
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<td>59</td>
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<td>adjusts to new situations</td>
<td>200</td>
<td>46.4</td>
<td>64</td>
<td>136</td>
</tr>
<tr>
<td>conforms to rules</td>
<td>138</td>
<td>32.0</td>
<td>69</td>
<td>69</td>
</tr>
<tr>
<td>pleasant to be around</td>
<td>113</td>
<td>26.2</td>
<td>66</td>
<td>47</td>
</tr>
<tr>
<td>refrains from inappropriate reports of illness</td>
<td>145</td>
<td>33.6</td>
<td>64</td>
<td>81</td>
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<tr>
<td>outgoing</td>
<td>205</td>
<td>47.6</td>
<td>77</td>
<td>128</td>
</tr>
<tr>
<td>no sexual hang-ups</td>
<td>196</td>
<td>45.5</td>
<td>68</td>
<td>128</td>
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</table>
### Table 7
10 Most Frequently Endorsed Items

<table>
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<th>Item</th>
<th>Frequency</th>
<th>Percentage</th>
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<tr>
<td>outgoing</td>
<td>205</td>
<td>47.6</td>
</tr>
<tr>
<td>adjusts to new situations</td>
<td>200</td>
<td>46.4</td>
</tr>
<tr>
<td>no sexual hang-ups</td>
<td>196</td>
<td>45.5</td>
</tr>
<tr>
<td>mood swings</td>
<td>194</td>
<td>45.0</td>
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<tr>
<td>cannot cope with stress</td>
<td>176</td>
<td>40.8</td>
</tr>
<tr>
<td>self-consciousness</td>
<td>167</td>
<td>38.8</td>
</tr>
<tr>
<td>easily frustrated</td>
<td>157</td>
<td>36.4</td>
</tr>
<tr>
<td>refrains from inappropriate reports of illness</td>
<td>145</td>
<td>33.6</td>
</tr>
<tr>
<td>anxiety</td>
<td>142</td>
<td>33.0</td>
</tr>
<tr>
<td>conforms to rules</td>
<td>138</td>
<td>32.0</td>
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### Table 8
10 Least Frequently Endorsed Items

<table>
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<th>Item</th>
<th>Frequency</th>
<th>Percentage</th>
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<tr>
<td>cross-dressing</td>
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<td>2.8</td>
</tr>
<tr>
<td>discomfort over anatomy</td>
<td>18</td>
<td>4.2</td>
</tr>
<tr>
<td>fetish</td>
<td>19</td>
<td>4.4</td>
</tr>
<tr>
<td>frequently imagines illness</td>
<td>19</td>
<td>4.4</td>
</tr>
<tr>
<td>imagines debilitating illness</td>
<td>21</td>
<td>4.9</td>
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<tr>
<td>preoccupation with the opposite sex</td>
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<td>exposes him/herself</td>
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</tr>
<tr>
<td>sexual assault</td>
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</tr>
<tr>
<td>complaints of breathing problems</td>
<td>37</td>
<td>8.6</td>
</tr>
</tbody>
</table>
Table 9
Subscale Means and Standard Deviations by Gender

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Males N=258</th>
<th></th>
<th>Females N=173</th>
<th></th>
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<tr>
<td></td>
<td>mean</td>
<td>SD</td>
<td>mean</td>
<td>SD</td>
</tr>
<tr>
<td>Adjustment</td>
<td>1.40</td>
<td>1.48</td>
<td>1.60</td>
<td>1.63</td>
</tr>
<tr>
<td>Affect</td>
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<td>1.33</td>
<td>1.60</td>
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<td>1.34</td>
<td>1.46</td>
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<td>.87</td>
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</table>

Table 10
Frequency and Percentage by Gender

<table>
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<tr>
<th>Subscale</th>
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<th></th>
<th>Females N=173</th>
<th></th>
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<td></td>
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<td>%</td>
<td>frequency</td>
<td>%</td>
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<td>45</td>
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<td>Inapp. Adjust</td>
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<td>17.4</td>
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<td>23.1</td>
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<td>36</td>
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### Table 11
Subscale Means and Standard Deviations by 2 Age Groups

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Age &lt; or = 30 N=130</th>
<th>Age &gt;30 N=301</th>
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<tbody>
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<td>mean</td>
<td>SD</td>
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</tr>
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### Table 12
Frequency and Percentage by 2 Age Groups

<table>
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<th>Age &lt; or = 30 N=130</th>
<th>Age &gt;30 N=301</th>
</tr>
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<tbody>
<tr>
<td></td>
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<td>%</td>
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<td>Adjustment</td>
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<td>26.9</td>
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<td>Affect</td>
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<td>19.2</td>
</tr>
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<td>19.2</td>
</tr>
<tr>
<td>Sexual</td>
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Table 13
Subscale Means and Standard Deviations by 4 Age Groups

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Ages 18-29</th>
<th>Ages 30-39</th>
<th>Ages 40-50</th>
<th>Over 50</th>
</tr>
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<tbody>
<tr>
<td></td>
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<td>SD</td>
<td>mean</td>
<td>SD</td>
</tr>
<tr>
<td>Adjustment</td>
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<td>1.62</td>
<td>1.47</td>
<td>1.48</td>
</tr>
<tr>
<td>Affect</td>
<td>1.41</td>
<td>1.44</td>
<td>1.27</td>
<td>1.39</td>
</tr>
<tr>
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<td>1.60</td>
<td>2.19</td>
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<td>1.33</td>
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<td>1.43</td>
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<td>1.41</td>
<td>1.19</td>
<td>1.32</td>
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<td>.85</td>
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<td>.99</td>
<td>1.60</td>
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</table>

Table 14
Frequency and Percentage by 4 Age Groups

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Ages 18-29 N=116</th>
<th>Ages 30-39 N=134</th>
<th>Ages 40-50 N=96</th>
<th>Over 50 N=85</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>freq</td>
<td>%</td>
<td>freq</td>
<td>%</td>
</tr>
<tr>
<td>Adjustment</td>
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<td>17.9</td>
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<td>Personality</td>
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<td>14.7</td>
<td>34</td>
<td>25.4</td>
</tr>
<tr>
<td>Schizophrenia</td>
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<td>19.0</td>
<td>17</td>
<td>12.7</td>
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<tr>
<td>Sexual</td>
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<td>29.3</td>
<td>28</td>
<td>20.9</td>
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<td>Somatoform</td>
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<td>12.1</td>
<td>25</td>
<td>18.7</td>
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Table 15
Subscale Means and Standard Deviations by 5 Groups of Informant Duration

<table>
<thead>
<tr>
<th>Subscale</th>
<th>1 month or less</th>
<th>2 to 6 months</th>
<th>7 to 12 months</th>
<th>13 months to 5 years</th>
<th>more than 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>SD</td>
<td>mean</td>
<td>SD</td>
<td>mean</td>
</tr>
<tr>
<td>Adjustment</td>
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<td>1.60</td>
<td>2.26</td>
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<td>Affect</td>
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<td>2.81</td>
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<td>0.71</td>
<td>1.21</td>
<td>1.32</td>
<td>1.74</td>
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<td>1.25</td>
</tr>
<tr>
<td>Sexual</td>
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<td>1.41</td>
<td>0.33</td>
<td>0.82</td>
<td>0.48</td>
</tr>
<tr>
<td>Somatoform</td>
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<td>1.07</td>
</tr>
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<td>PIMRA total</td>
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<td>10.4</td>
<td>8.15</td>
<td>13.7</td>
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</table>
Appendix B

Psychopathology Instrument for Mentally Retarded Adults (PIMRA)

Background Information

Do not write on this form. Responses are recorded on the PIMRA Scoring Form.

1. Interviewer's name
2. informant's name
3. Date of rating
4. Facility name
5. PIMRA format used: 1. Self-Report 2. Ratings-by-Others

Background Information:
6. Name of Client
7. Date of Birth
8. Age
10. Individual's Sex: 1. Male 2. Female

11. Intellectual Functioning Level (AAMD Criteria):

12. Most Recent Intellectual Assessment Instrument and Scores:
   1. list IQ test 2. list IQ score


14. Adaptive Behavior Assessment (if current within the last 12 months):
   1. list Adaptive Assessment test 2. list SQ score

15. Physical Disabilities:
   1. Blindness/partial sight
   2. Deafness/partial hearing
   3. Epileptic/seizure disorder
   4. Confined to bed or wheelchair
   5. In a coma or semi-conscious
   6. Cerebral Palsy
   7. No physical disability
   8. Other (including physical handicaps, misshapen or malformed body parts)
      (list on scoring sheet)
   9. None of the above

16. Medical/organic cause of retardation known?
   1. Down's Syndrome
   2. Other chromosomal or genetic causes (list on answer sheet)
   3. Damage due to infection such as meningitis or encephalitis
   4. Injury or head trauma
   5. Oxygen insufficiency at or around time of birth
   6. Other (list on answer sheet)
   7. None of the above
17. Known severe health problems?
   1. Yes       2. No
   If yes, specify on answer sheet.

18. Any life threatening or potentially life threatening conditions?
   1. Yes       2. No
   If yes, specify on answer sheet.

19. Does the individual have any first degree relatives (parents, brothers, sisters, children) with mental retardation?
   1. Yes       2. No       3. Unknown
   If yes, specify on answer sheet.

20. Living situation:
   1. Family home
   2. Group home
   3. Institution
   4. Supervised apartment
   5. Other (list on answer sheet)

21. Informant's relationship to individual
   1. Relative
   2. Teacher
   3. Caretaker/paraprofessional
   4. Medical professional
   5. Mental health professional with Master's or Doctoral training
   6. Other (list on scoring sheet)

22. Length of time informant has known individual
   1. 1 month or less
   2. 2 to 6 months
   3. 7 to 12 months
   4. 13 months to 5 years
   5. More than 5 years

23. How much contact does informant have on a daily basis with this individual?
   1. More than 12 hours
   2. 7 to 12 hours
   3. 2 to 6 hours
   4. 1 hour or less
24. In what setting does most of the contact take place?
   1. Sheltered workshop/job setting
   2. Living/residential setting
   3. Treatment/consultation
   4. Other (list on scoring sheet)

25. What is the ratio of this individual to caretakers in this setting?
   1. 1 individual with mental retardation to 1 caretaker
   2. 1 individual with mental retardation to 1 caretaker
   3. 2 to 5 individuals with mental retardation to 1 caretaker
   4. 6 to 10 individuals with mental retardation to 1 caretaker
   5. More than 10 individual with mental retardation to 1 caretaker

26. How long has this individual functioned in this setting?
   1. 1 month or less
   2. 2 to 6 months
   3. 7 to 12 months
   4. 13 months to 5 years
   5. More than 5 years

27. Is this individual on an individualized behavior therapy program?
   1. Yes  2. No

28. If yes, what procedures are currently in effect?
   (Check all that apply.)
   1. Differential Reinforcement of Other Behavior (DRO)
   2. Differential Reinforcement of Alternate Behavior (DRA)
   3. Differential Reinforcement of Incompatible Behavior (DRI)
   4. Differential Reinforcement of Low Rates Behavior (DRL)
   5. Behavioral contracting
   6. Token system
   7. Other (list procedure(s) on scoring form)
   8. Contingent restraint
   9. Restraint fading
   10. Contingent water mist
   11. Contingent visual screening
   12. Contingent electric shock
   13. Response cost
   14. Time out
   15. Extinction
   16. Overcorrection
   17. Other (list on scoring sheet)
29. What is the level of effectiveness of the behavior therapy program?
   1. Very ineffective (<20% change from baseline)
   2. Ineffective (20 to 40% improvement from baseline)
   3. Moderately effective (40 to 60% improvement from baseline)
   4. Effective (60 to 89% improvement from baseline)
   5. Very effective (90 to 100% improvement from baseline)

30. Has emergency or crisis-intervention personal restraint been used in the past 2 weeks?
   1. Yes  2. No

31. If yes, how frequently within the last 2 weeks?
   1. Less that twice
   2. 2 to 5 times
   3. More frequently than 5 times
   4. Daily or more frequently

32. Has emergency or crisis-intervention mechanical restraint been used within the past 2 weeks for any reason other than surgical or dental restraint?
   1. Yes  2. No

33. If yes, how frequently within the last 2 weeks?
   1. Less that twice
   2. 2 to 5 times
   3. More frequently than 5 times
   4. Daily or more frequently

34. Does the individual have a psychiatric diagnosis?
   1. Yes  2. No

35. List the current diagnosis.
   1. Organic
   2. Schizophrenic
   3. Pervasive Developmental Disorder (not including Autistic Disorder)
   4. Autistic Disorder
   5. Psychotic Disorder NOS
   6. Bipolar Disorder
   7. Other (list the diagnosis on the scoring form)

36. Does the individual receive one or more psychotropic drugs for behavior management and/or a psychiatric disorder?
   1. Yes  2. No

37. List the current psychotropic drug(s) and dosage(s) on the scoring form. Report dosages in total mg. per day.
38. Do any immediate family members have a psychiatric diagnosis?
   1. Yes  2. No  3. Unknown

39. If yes, please check those that apply
   1. Mother
      1. Not Applicable
      2. Organic
      3. Schizophrenic
      4. Psychotic Disorder NOS
      5. Bipolar Disorder
      6. Anxiety Disorder
      7. Other (list on the scoring form)

   2. Father
      1. Not Applicable
      2. Organic
      3. Schizophrenic
      4. Psychotic Disorder NOS
      5. Bipolar Disorder
      6. Anxiety Disorder
      7. Other (list on the scoring form)

   3. Sibling
      1. Not Applicable
      2. Organic
      3. Schizophrenic
      4. Psychotic Disorder NOS
      5. Bipolar Disorder
      6. Anxiety Disorder
      7. Other (list on the scoring form)

40. Has the individual been placed in a more restrictive setting because of his/her emotional and/or behavioral disorder?
   1. Yes  2. No
Vita

Kelley Lynne Francis graduated from St. Scholastica Academy in Covington, Louisiana, in May, 1986. She attended Louisiana State University for her undergraduate degree in psychology and graduated in 1990 with a 3.5 grade point average. Ms. Francis began graduate school in clinical psychology at Louisiana State University under the supervision of Johnny L. Matson, Ph.D. She earned her master of arts degree in 1993. Ms. Francis completed her internship at the Louisiana State University Student Health Center and Greenwell Springs Hospital Internship Consortium in 1996. She completed her dissertation in November, 1997; and her degree of Doctor of Philosophy will be conferred in May, 1998.
Candidate: Kelley L. Francis

Major Field: Psychology

Title of Dissertation: A Normative Study of the Psychopathology Instrument for Mentally Retarded Adults (PIMRA)

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:

November 24, 1997