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A NORMATIVE STUDY OF THE DIAGNOSTIC ASSESSMENT FOR THE SEVERELY HANDICAPPED (DASH) SCALE

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the degree of
Doctor of Philosophy

in

The Department of Psychology

by

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and my Mom
who never doubted

and especially
Tamra, Sara, Katie, Virginia and Mamaw
who were loving, patient and
tolerant beyond words
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ABSTRACT

The prevalence of psychopathology in a large institutionalized population (N=1259) of individuals with severe and profound mental retardation was examined, using the Diagnostic Assessment for the Severely Handicapped (DASH) scale. Over 60% of the sample exhibited at least one form of disorder according to newly established DASH criteria. Forty percent exhibited two or more disorders. Differences between severely and profoundly mentally retarded groups were found, especially in terms of the duration of symptoms. Profoundly mentally retarded persons had significantly more persistent symptoms. Items were examined for frequency and duration, and items of critical importance to diagnosis were identified. Gender and age differences were studied but no differences were observed with respect to these factors. Depressed subjects were found to exhibit significantly higher rates of aggression than non-depressed subjects.
CHAPTER 1 INTRODUCTION

Within the field of developmental disabilities, assessment and treatment of severely handicapped individuals often present difficult and interesting challenges to service providers (Matson & Barrett, 1993; Reiss, 1994; Nezu, Nezu & Gill-Weiss, 1992; Szymanski & Taunguay, 1980). Developing methods to conceptualize, categorize, assess, diagnose and treat various behavioral, affective, cognitive, physical and medical difficulties represents an enormous task. Often these dimensions have interactive and overlapping effects which produce diagnostic and treatment complexities, but also these problems can create significant impacts on the environments in which the individuals live and function.

Dual diagnosis refers to the coexistence of mental retardation and a psychiatric disorder. In ancient Greek and Roman cultures, individuals with mental retardation and mental illness were viewed alike and treated with scorn and ridicule (Ollendick, Oswald & Ollendick, 1993). The medieval period saw a short lived but more humane attitude toward handicapped individuals, but still no distinction between the mentally retarded and emotionally disturbed person. In the late eighteenth and early nineteenth centuries, mental illness and mental retardation began to be viewed as separate entities (Beier, 1964). Mental retardation came to be seen as an organically based intellectual deficit, whereas psychopathology was regarded as a functionally caused emotional disturbance. Unfortunately this demarkation led to the common view that people with mental retardation were
somehow immune to psychopathology. As a general understanding of the coexistence of these disorders dawned in the early twentieth century, the central diagnostic issue became the distinction of primary and secondary handicaps (Reiss, 1994). This determination had significant implications in terms of service eligibility, whether by developmental centers or mental hospitals. However, service eligibility did not always mean comprehensive service to address all problem areas. The concept of dual diagnosis, introduced in the last two decades, carries the implication that all disabilities should be diagnosed and treated according to the individual’s need.

Over the last decade, dual diagnosis has become a major area of clinical study (Matson & Sevin, 1994). A number of recent historical factors contributed to this surge. First, in the 1950’s the use of major tranquilizers in the treatment of psychiatric disorders, created a deviation from psychodynamic etiology to more organic causes of psychopathology. Second, the 1960’s introduced the effectiveness of behavior modification treatments with mentally retarded individuals. These events contributed to a growth in the idea that more than confinement and protection were feasible for mentally retarded persons, previously regarded as largely untreatable (Matson & Sevin, 1994).

Third, the advent of the normalization movement (Wolfensberger 1972) had significant impact on the settings of treatment. The 1960’ and 70’s saw an emphasis on decentralization of residential service systems, resulting in a shift from
large developmental centers and state schools to a continuum of residential placements in community residences (Reiss & Trenn, 1984; Jacobson & Schwarts, 1983). In 1975, Public Law 94-142 was enacted by Congress, which mandated that all handicapped children have a right to free and appropriate public education. Then, as mentally retarded persons began to interface with the community more regularly, their problems and maladaptive behaviors became more visible and the voice of advocacy resounded to professionals and legislators alike. Eventually, the need for additional services for mentally retarded persons became a responsibility which was passed off between mental retardation and mental health delivery systems as mentioned above. Some authors have pointed out that service delivery systems and professional training tend to ignore the interaction and intricacies that this coexistence presents (Menolascino, 1988; Russell, 1988; Cushna, Szymanski & Tanguay, 1980). Phelps and Hammer (1989) surveyed graduate programs in psychology and found that 75% of clinical and 67% of counseling psychology programs do not address the psycho-social adjustment of mentally retarded persons in their curricula. This lack of specific training combined with underdeveloped methods of assessment were at the core of the dilemma for a number of years (Menolascino, 1989). The 1980's saw a flourish of training and organization to address dual diagnostic patients (MacLean, 1993; Matson & Sevin, 1994). The increased awareness has led to the development of professional affiliations, new
publications and research which have focused on prevalence rates, assessment, diagnosis and effective treatments for this population (Reiss, 1993).

There have been five very consistent findings in the research on dual diagnosis. First, it is well established that mental retardation is not an antidote for mental illness, as was once thought (Gardner, 1967). Second, mental illness occurs at higher rates among mentally retarded individuals than it does in the non-retarded population (Matson & Frame, 1986). As early as 1938, Penrose studied 1,280 cases of institutionalized mentally retarded persons and reported a rate of 16% of the mentally retarded group overall with concurrent emotional disturbance. Pollock (1944) researched mentally retarded adults who were admitted to New York State hospitals. Of the 444 subjects, approximately 40% had exhibited at least one psychotic episode.

Third, mentally retarded individuals are susceptible to the full range of psychopathology found in the general population (Menolascino, 1988). Much of the documentation for this broad vulnerability and manifestation of psychopathology, comes from the literature on specific treatments. For example, anxiety disorders have been documented and treated in a number of mentally retarded patients (Love, Matson & West, 1990; Jackson, 1983; Freeman, Roy, & Hemmick, 1976; Matson, 1981; Luiselli, 1977, 1978). Mood disorders are also well documented in the literature (Matson, 1982; Reiss & Trenn, 1984; Sovner & Hurley, 1983). Menolascino and his colleagues have substantially documented the
existence and treatment of schizophrenia in mentally retarded individuals (Menolascino, Reudrich, Golden & Wilson, 1985; Parsons, May & Menolascino, 1984; Menolascino & Swanson, 1982). Personality disorders, organic brain syndrome, autism, tic disorders, eating disorders, sexual disorders and conduct disorders are clearly evident in this population as well (Reiss, 1994; Matson & Barrett, 1993).

Fourth, mental illness in mentally retarded individuals tends to persist over time and create serious problems for the individual and their surrounding environment (Reiss, 1994). A number of studies have considered the persistence of psychopathology and the level of adjustment over time for dually diagnosed patients and found that the problems tend to be durable and adjustment relatively poor (Reid, Ballinger, Heather & Melvin, 1984; Linden & Forness, 1986; James, 1986). Finally, mentally retarded individuals with mental illness represent an under served group in both the developmentally disabled and mental health service provision sectors (President's Commission on Mental Health, 1978; President's Committee on Mental Retardation, 1985). Menolascino and Fleisher (1993) reported that often "dually diagnosed are shuffled from institutions for the mentally retarded to institutions for the mentally ill in a lifelong cycle of nontreatment" (p.19). While current trends both legislatively and professionally offer encouragement, appropriate and effective service delivery remains a need. One area of study which remains superficially, and often only speculatively, addressed
is that of the manifestation of psychopathology in severely and profoundly mentally retarded persons.

Difficulties in assessment of mentally retarded persons have been a major obstacle in the dual diagnosis field. Sovner (1986) catalogued four areas of client functioning that can impede the diagnostic process: intellectual distortion resulting in unreliable self report data; psychosocial masking or the tendency for mentally retarded individuals to hide their disabilities and/or have restricted real world experiences which may effect symptom expression; cognitive disintegration which is a stress induced disruption in information processing which may mislead clinicians; and baseline exaggeration, where pre-existing maladaptive behaviors are exaggerated with the onset of a psychiatric condition producing a confusing array of symptoms.

MacLean (1993) noted that psychiatric diagnosis has traditionally relied on client’s verbal report of symptoms. Mentally retarded individuals can self-report their emotions and experience however, they may have more difficulty doing so than non-retarded patients. Also, the degree of self report unreliability may increase as the individuals’ intellectual and language capabilities decrease. Thus alternative methods to detect psychopathology have had to be developed. Direct observation and informant reports of behavioral, affective and social patterns have become primary sources of symptom detection. A number of behavioral checklists and rating scales have been generated and are in various stages of development.
Multimethod assessment is the imperative for comprehensive and accurate assessment of mentally retarded persons. The majority of the studies concerned with dual diagnosis in the developmentally delayed have focused on mildly and moderately mentally retarded persons. With less cognitively impaired persons, the use of traditional categories of psychopathology requires only minimal adaptation (Sovner, 1986). In addition, the clinical interview with less impaired individuals may yield confirmatory if not primary diagnostic data. A number of behavioral rating scales have been developed for screening psychopathology in mildly and moderately impaired persons: the PIMRA (Senatore, Matson, & Kazdin, 1985); The Reiss Screen for Maladaptive Behavior (Reiss, 1988) and Reiss Scales for Children’s Dual Diagnosis (Reiss & Valenti-Hein, 1990); Aberrant Behavior Checklist (ABC) (Aman, Singh, Stewart, & Field, 1985); the Behavior Disturbance Scale (Leudar, Fraser & Jeeves, 1984); the Prout-Strohmer Personality Inventory (Prout & Strohmer, 1989) and Strohmer-Prout Behavior Rating Scale (Strohmer, Prout, & Gorsky, 1994). Due to further decreased language and intellectual capacities these instruments do not all extend to more severely impaired individuals. Thus there remains a paucity of instruments and studies examining psychopathology in individuals with severe and profound mental retardation. The Diagnostic Assessment for the Severely Handicapped (DASH) (Matson, Gardner, Coe & Sovner, 1991) is the only
behavioral checklist designed specifically to address psychopathology in adults who are classified as severely or profoundly mentally retarded.

This study will examine and describe the presentation of certain behaviors and patterns of behaviors indicative of psychopathology in a large institutionalized sample of severely and profoundly mentally retarded persons using the Diagnostic Assessment for Severely Handicapped (DASH) (Matson, Gardner, Coe & Sovner, 1991). The DASH was designed to screen severely handicapped individuals for indices of psychopathology, however; without knowing the symptoms which are most frequently reported and the rates at which this population display certain constellations of behaviors, assessment remains largely idiographic. The first purpose is to develop a normative view of the presence of the symptomatology represented on the DASH scale in this population. Second, the data will define a range of scores on DASH subscales which would indicate to practitioners the need for further assessment and diagnostic study.

The literature review will focus on four areas. First a general view of the dual diagnosis prevalence literature will be presented, with special attention to studies which include severely and profoundly mentally retarded persons. Next, definitions and classification for dual diagnosis will be examined. A third section will review the areas of psychopathology of major concern for severely and profoundly mentally retarded individuals with mental illness. Fourth, assessment of dually diagnosed individuals will be discussed, including the construction and
research findings on the DASH (Diagnostic Assessment for the Severely Handicapped) scale.
CHAPTER 2 REVIEW OF LITERATURE

Dual Diagnosis: A General Review

It is widely agreed, on the basis of extensive albeit varied types of studies, that mentally retarded persons are more susceptible to emotional disorders than non-retarded individuals (Rutter, et.al., 1970; Parsons, May, & Menolascino, 1984; Benson, 1990; Ollendick & Ollendick, 1982). Borthwick-Duffy (1994) surveyed the existing literature and found that in studies using psychiatric evaluations of representative samples of mentally retarded persons, rates ranged from 25% to 71%; whereas rates based on client records from more varied agency-defined samples ranged from 10% to 15%. Nezu, Nezu, and Gill-Weiss (1992) also compared a wide range of investigations and concluded that dual diagnosis is generally seen in the range of 20% to 35% among mentally retarded persons. Matson and Frame (1986) reported rates up to 5 to 6 times greater than those for non-retarded persons.

Psychopathology in Severely and Profoundly Mentally Retarded Persons

Most prevalence studies have found extremely high rates of emotional disturbance in mentally retarded persons. Many studies have failed to clearly define the degree of mental retardation in their samples, while others (clinical samples) have often not included individuals with severe and profound mental retardation. Three predominant methodological limitations preclude comparisons between different studies: (a) sample selections which involve only clinically
referred and/or institutionalized groups, which may not generalize to larger populations; (b) definitions and criteria for the diagnosis of mental retardation may vary from study to study; and (c) criteria and definitions of psychopathology (including assessment methods) vary considerably across studies. This section will survey those studies which indicate prevalence rates in more severely handicapped samples.

One of the earliest examinations of the prevalence of emotional and behavioral disorders in a severely handicapped group was conducted by Balthazar and English (1969). They examined an institutionalized group of 288 severely and profoundly mentally retarded persons. Using behavioral observations and the Central Wisconsin Colony Scales of Adaptive Behavior as a standardized rating instrument, the authors found that approximately 30% of those surveyed suffered from moderate to severe emotional and behavioral disturbance. This study did not however, delineate diagnostic categories and their rates of occurrence. Another limitation is the institutionalized population which may overrepresent those who have emotional and behavioral problems.

In the landmark epidemiological studies from the Isle of Wight in the mid 1960’s, Rutter and his colleagues shed new light on the existence and rates of psychopathology in mentally retarded children (Rutter, 1971; Rutter, Tizard, & Whitmore, 1970; Rutter, Tizard, Yule, Graham, & Whitmore, 1976; Rutter, 1990). These studies involved several methodological advantages. They included
the entire population of 9 to 11 year old children living on the island, thus the sample may be more representative of general populations. In addition they used multiple data sources with systematic testing of reliability and validity. Subjects included 2199 mentally retarded children in the cohort. For the entire sample of mentally retarded youth, parent ratings yielded a rate of 30% emotionally disturbed, while teacher ratings were higher at 42% emotional disturbance. In a subgroup of severely and profoundly mentally retarded children 50% were diagnosed as emotionally disturbed. The general population's rate of emotional disturbance was only 7%. The main limitation of these data is that the authors used broad psychiatric categories of emotional and conduct disorders rather than specific diagnostic categories (Rutter, 1989).

Williams (1971) investigated patients in a British hospital for mentally retarded persons. Using Rutter's broad classifications of psychopathology, patients were evaluated by medical staff. In the sample of 162 patients with IQ's below 30, 64% were assessed as having a psychiatric disorder, with adult psychosis being the most frequent diagnosis (45%), while neuroses were present in only 5% of severely mentally retarded, and not at all in the profoundly impaired group. These figures were high compared to moderately retarded individuals in the sample at 47% diagnosed with a psychiatric disturbance, and only 16% with adult psychosis. Anti-social behavior (12%), hyperkinetic syndrome (3%), and sexual perversion (1%) were also noted in the severely handicapped subgroup. It is difficult to know
whether the existence of emotional disturbance is a critical factor in determining a mentally retarded individual's need for institutionalization. In addition this study provided no evidence of the reliability or validity of the assessment methods.

Koller, Richardson, Katz and McLaren (1983) conducted a follow-up study to that of Birch, Richardson, Baird, Horobin, and Illsley (1970). The original study surveyed the total population of a British city and identified all mentally retarded children between 8 and 10 years old. They found that 52% of mentally retarded children were psychiatrically abnormal. Koller, et. al. (1983) attempted to re-examine the original cohort via extensive interviews with informants of 192 mentally retarded young adults, and their parents. Records, school personnel, courts, social workers and residential institutions were used as additional sources of information. The authors were particularly interested in behavior disturbances as manifested in childhood versus postschool age (16 years and up) with respect to sex and level of mental retardation. The study revealed that overall 61% of the group had experienced behavior disorders during childhood and 59% during the postschool period. Severely mentally retarded subjects exhibited 45% disturbance in childhood and in postschool age, a 58% disturbance rate. Further analyses revealed that 27% of the subjects with IQ below 50 had moderate-severe and severe behavior disturbances in childhood, and 20% in the postschool period. These rates were slightly higher than those in the mild and moderate mental retardation groups. In the IQ below 50 group, childhood disorders were
predominantly aggressive conduct problems and hyperactivity with a shift toward emotional disturbance in the later years, particularly for males. This investigation is noteworthy because of its longitudinal format, attempting to mark changes in disturbance across developmental periods. Again, broad rather than specific diagnostic categories were employed, and unfortunately the sample of severely handicapped individuals was small (n=36) and distinctions between the severe and profound levels of mental retardation were not made.

Eaton and Menolascino (1982) studied a community based program for mentally retarded persons in Nebraska over 3 years. Referrals came from schools, social service agencies, health care agencies, private physicians and families. Of the 798 individuals referred to the clinic, 168 (21%) were sent for psychiatric evaluation and of these 114 (14%) were diagnosed with a mental illness. The age span in this sample was 6 to 76 years. Twenty-four (21%) of those diagnosed, were severely mentally handicapped and within this subgroup over 70% were given a diagnosis of organic brain syndrome, while the less severely handicapped were most often diagnosed with an adjustment disorder.

Gostason (1985) examined a group of 122 mentally retarded individuals randomly selected from the Swedish National Registry. The subjects ranged in age from 20 to 60 years. Level of functioning was divided into a mild and a severe group. Gostason used a multi-method assessment procedure which included the Comprehensive Psychopathology Rating Scale, the Eysenck Personality Inventory
and DSM-III diagnostic criteria. The severely mentally retarded group had a rate of 71% psychiatric diagnosis, compared with the mildly impaired group at 33%.

Jacobson (1982) conducted a large study in New York State which included 30,578 mentally retarded individuals. The study variables included a variety of residential placements, levels of intellectual functioning, behavior problems and psychiatric problems. The sample included individuals in independent living, family, community group homes and institutions. All four levels of intellectual functioning were represented. Psychiatric impairment was considered on the basis of previous diagnosis and behavior problems were defined in four categories: (a) Cognitive behaviors (delusions, hallucinations, disorientation, perseveration and echolalia); (b) Affective problems (extreme mood changes, lack of appropriate affect, lack of interpersonal responsiveness, suicide threats, depression, extreme irritability); (c) Major behaviors (physical assault, property destruction, theft, fire setting, coercive sexual behavior, genital display, public disrobing, self-injury); (d) Minor behaviors (hyperactivity, stereotypies, resists supervision, temper tantrums, verbal abuse, roaming/running away, pica, etc.). The data showed that more markedly mentally retarded individuals were more likely to display problem behaviors. Those with psychiatric impairments (an estimated 13.7% of children and 17.1% of adults) were more likely to exhibit problem behaviors than cohorts with the diagnosis of developmental disorders alone. Individuals with severe and profound intellectual impairments exhibited more frequent behavior problems, but
this relationship was more strongly related with increasing placement restrictiveness and less significant was the psychiatric diagnosis. It may be, Jacobson suggests that the failure of personnel to recognize and identify psychiatric conditions impacts this result. It is important to note also, that some of the problem behaviors are similar to symptoms of various diagnostic categories. Therefore, it is not surprising that dually diagnosed individuals exhibit the behaviors listed more frequently. It is not clear whether the behavior problems overlap in kind with diagnostic criteria or represent distinct behavior problems. It appears that, in this sample, behavior problems, and to some extent psychiatric diagnosis mediate placement decisions, thus restrictiveness of placement was the factor most closely related to behavior disturbance.

In a 1990 follow-up study, Jacobson looked at those in New York State who were not previously diagnosed with a psychiatric disorder (N=41,512) and determined the rates of occurrence for various diagnostic categories. Using DSM-II criteria and documentation, rather than clinical judgement, six categories were defined: nonpsychotic organic brain syndrome; psychosis; neurosis; personality disorder; childhood behavior disorders; and unspecified diagnoses. For the severely and profoundly mentally retarded groups psychosis (range 1.9% to 4.6%) was reported significantly more frequently than nonpsychotic organic brain syndrome (range 1.4% to 2.1%), neurosis (range 0.1% to 1.0%), or personality disorder (range 1.0% to 2.4%), and this trend was upheld regardless of level of
mental retardation. However, severely and profoundly mentally retarded individuals had lower rates than mild and moderate groups in every category except the unspecified diagnoses (range 13.7% to 20.5%), which were disproportionately high for severely impaired subgroups. The author suggests that the overall rates of psychopathology are lower than other studies, perhaps because practitioners are not adequately trained to discern signs of different disorders in nonverbal individuals.

Iverson and Fox (1989) used a stratified random sample of service recipients of government agencies in a midwest county, to consider psychopathology, level of mental retardation and living environment in a sample of 165 adults. Using the informant version of the PIMRA (Psychopathology Instrument for Mentally Retarded Adults, based on DSM-II criteria) the study looked at mildly, moderately and severely handicapped individuals. The severe group included individuals with both severe and profound mental retardation. Overall, 35.9% of the sample met the criteria for the presence of psychopathology, with Anxiety disorder being the most commonly diagnosed problem. Subgroups reflected differing rates, with mildly mentally retarded at 54.5%, moderately mentally retarded at 31.5%, and severely and profoundly mentally retarded at 25.9%, with at least one significant subscale. There were no significant differences for restrictiveness of living situation in this sample. The authors suggest that mildly mentally retarded individuals with psychopathology may be overrepresented in this sample because the pool of
subjects were service recipients. In addition, the PIMRA was designed as a screening tool and only for mildly and moderately retarded adults. The instrument includes many more reports of verbalization than would be appropriate for the severely and profoundly impaired group, thus potentially deflating the rate for this subgroup.

There is reasonable doubt about our ability to precisely estimate the prevalence of psychiatric disorders in severely handicapped population on the basis of these studies. Some of the more troublesome problems in this line of research have already been touched on above but will be summarized here. First the selection of sample populations may play an important function in the data obtained. The use of institutionalized populations or service recipients may be more representative of one classification level of mental retardation, or diagnostic category than another, or may simply overrepresent dually diagnosed persons. Second, a major concern in these studies relates to the classification of mentally retarded individuals. Some studies lumped groups together in severe and profound ranges, while some studies failed to adequately describe the sources of classification. Finally, diagnostic criteria employed vary significantly from one study to another. Some studies have relied solely upon clinical judgement, poorly defined or outdated criteria for determining the existence and type of emotional disturbance, and far too often the reliability and validity of the diagnoses are questionable. These methodological discrepancies preclude comparisons between
studies and as a result the question of prevalence rates in various subgroups are rough estimates at best. Despite this confusion, some conclusions may be gleaned from these studies. It appears that persons with severe and profound mental retardation exhibit rates of psychopathology higher than the nonretarded population and it is suggested in a majority of the studies that the rates are also higher than those with mild and moderate mental retardation. It also appears that the presentation of psychopathology in severely and profoundly mentally retarded persons may change throughout the developmental periods of the life span; and that their rates within specific categories of psychopathology may differ from those with less severe intellectual impairments. The next section will review definitions of mental retardation.

Definitions

Mental retardation is generally identified in accordance with the American Association of Mental Deficiency definition (Grossman, 1983) which includes (a) low intelligence (e.g., two standard deviations below the mean on a standardized measure of IQ); (b) concurrent deficits in adaptive functioning; and (c) onset prior to 18 years of age. Persons who meet these criteria are generally classified in terms of their level of intellectual impairment. Mildly mentally retarded individuals are those who score between 2 and 3 standard deviations (SD) below the mean; Moderate, between 3 and 4 SD below; Severe, between 4 and 5 SD
below; and Profoundly mentally retarded persons score below 5 SD below the mean.

Intellectual functioning is typically assessed by the use of a standardized intelligence test. The Wechsler scales (Wechsler, 1967, 1974, 1981) and the Stanford-Binet (Thorndike, Hagen & Sattler, 1986) are the most commonly used measures. The Wechsler scales have the advantage of strong psychometric properties. However, they tend to have a high floor (IQ 45) which limits their adequacy with individuals in the lower three ranges of mental retardation. The Stanford-Binet, Forth Edition has a lower floor (IQ 36) and is thus more amenable to individuals functioning in the moderate to severe ranges of intellectual functioning. Non-verbal clients, as well as persons with severe and profound mental retardation often require the utilization of specialized tests (e.g., Leiter International Performance Scale, Hiskey-Nebraska test of Learning Aptitude, Test of Nonverbal Intelligence) or developmental scales (e.g., Bayley Scales of Infant Development, Cattell Infant Intelligence Test). While these instruments sometimes lack the rigorous psychometric properties of the Wechsler and Stanford-Binet, consideration for the subject’s capabilities and the purpose of the examination, typically guides test selection.

In 1992 the American Association on Mental Retardation (AAMR) published a new definition of mental retardation (Luckasson, Coulter, Polloway, Reiss, Schalock, Snell, Spitalnik, & Stark). The new definition represents a shift
in focus from the individual’s deficits to an interactive assessment of (a) the
person’s capabilities, (b) the environments in which they spend their time and (c)
the supports available to the person. The definition introduced a new
multidimensional assessment system which includes the following areas:

- **Dimension I:** Intellectual Functioning and Adaptive Skills
- **Dimension II:** Psychological/Emotional Considerations
- **Dimension III:** Physical/Health/Etiology Considerations
- **Dimension IV:** Environmental Considerations

The new definition specifies four levels of support: intermittent, limited, extensive
and pervasive. These levels of support are to be listed in each area of intellectual
functioning, adaptive skill, and each area of the other three dimensions as well.

In light of the recent interest in dual diagnosis, it is not surprising that the new
guidelines include the importance of identifying psychiatric factors, physical factors
and specifications for environmental and support needs. The new definition has
been supported by Arc (formerly Association for Retarded Citizens) and TASH
(The Association for the Severely Handicapped).

There has also been criticism of the new definition. MacMillan, Gresham,
and Siperstein (1993) cited three major areas of concern. First, MacMillan et.al.,
claim that the new guidelines call for 10 specific areas of adaptive skill assessment,
some of which have no reliable measures available. Second, the new definition
appears to raise the IQ cutoff from 70 to 75, which would inflate the number of
children being classified and particularly those in minorities. Third, the levels of support have supplanted the four levels of retardation customarily employed. MacMillan, et.al. argue that these classification criteria are less precise and less reliable than those they replace.

Reiss (1994) has argued that the new definition does not raise the cutoff but merely attempts to address a need for flexibility in interpreting the IQ score. He further suggests that MacMillan, et.al. (1993) have misunderstood the intention of the new definition, which is to conceptualize mental retardation as an interaction between person and environment, rather than a sole focus on the person’s intellectual deficits. Luckasson, et.al. (1992) suggested that there may be some correspondence between the four levels of support and the four levels of intellectual functioning.

The DSM-IV still delineates mental retardation in terms of the traditional four IQ levels, thus it is likely that this classification will continue to be used widely. In terms of level classification for research purposes, the new definition appears somewhat vague. However, Jacobson’s (1982) study which suggests a relationship between restrictiveness of setting and frequency of behavior problems would lend support for criteria more inclusive of environmental concerns. Certainly the inclusion of other factors besides intellectual and adaptive functioning is warranted if comprehensive placement and treatment decisions are to be derived from psychological assessments.
Classification of Psychopathology

The classification of psychopathology is typically based on the nosological approach which emphasizes the essential features of a specific disorder, the conditions and duration of its occurrence. The most widely used of these systems is the Diagnostic and Statistical Manual of Mental Disorders - Revised (DSM-III-R; American Psychiatric Association, 1987). Recently, the DSM-IV was released (American Psychiatric Association, 1994) and it represents some shifts in the current taxonomy.

The foundations for the DSM systems are two-fold. In 1883, Kraepelin published a taxonomy for mental illnesses in an effort to define by signs and symptoms those conditions for which no organic cause had been identified. He was an empiricist and used outcome data to study various disorders. As a result, Kraepelin later added course and prognosis information to the descriptive features, as criteria for certain disorders. However, the two earliest versions of the DSM were largely influenced by Freudian theory, citing psychodynamic and untestable causation for various disorders. As practitioners became increasingly concerned with reliability and validity of diagnostic categories, the empirical perspective of Kraepelin became the major foundation for DSM-III (Reiss, 1994).

The DSM-III-R system has been critically examined for use with severely handicapped individuals. There is general agreement that the DSM system can be applied to persons with mild handicaps with little or no modifications, yet the
utility of these systems has been questioned with individuals who have severe disabilities (MacLean, 1993; Stark, et al., 1988; Fraser, Leudar, Gray & Campbell, 1986; Dosen, 1993). Despite concerns about DSM-III-R categorization with this population, evidence suggests it is widely utilized and allows clinicians to describe and discuss many behavioral clusters. Some researchers in this field have proposed the use of DSM-III-R criteria with modification as an approach to determining the most appropriate classification of psychopathology in the severely mentally retarded (Matson, Gardner, Coe & Sovner, 1991; Sovner, 1986; Sovner & Lowry, 1990).

Classification of mental illness has four core purposes: (a) to contribute to clear communication, (b) to mark potential differences in cause, (c) to indicate the need for particular interventions and (d) to determine a prognosis (Achenbach, 1985). Certainly use of the most widely used nomenclature has advantages in persons with intellectual deficits. These four stated goals have the highest likelihood of being met for mentally retarded individuals if adaptations to classification and assessment systems are made conservatively and on the basis of empirical evidence. Yet, classification and diagnostic concerns with the mentally retarded are not limited to the classification system itself. Clinical biases are important phenomena in dual diagnosis.

The function of the diagnostician's concept of co-morbidity has been shown to be instrumental in the classification process. Reiss, Levitan and Szyszko (1982)
empirically demonstrated professionals tendency to disregard psychopathology in mentally retarded persons. In a controlled study, the authors presented experimental cases to randomly chosen professional psychologists and requested diagnostic impressions and treatment recommendations. The case scenario described a person with debilitating fear. Three groups differed only in that one script included a mentally retarded person, another an alcoholic and the control was of average intelligence. The authors found that mental retardation (and alcoholism) decreased the diagnostic importance of abnormal behavior. Those with the scripts including a mentally retarded individual were not only less likely to assign a distinct psychiatric disorder, they were also less likely to prescribe appropriate treatment (desensitization). This phenomenon was labeled "diagnostic overshadowing" by the authors. Diagnostic overshadowing refers to a general tendency to attribute maladaptive behavior to mental retardation rather than a separate primary disorder (Reiss, 1993).

In expansion studies, this phenomena was found to extend to other disorders (schizophrenia and personality disorder; Reiss, Levitan, & Szyszko, 1982), other disciplines (social work; Levitan & Reiss, 1983); and amount of previous experience with mentally retarded individuals was not found to reduce overshadowing (Reiss & Szyszko, 1983). Sprengler, Strohmer, and Prout (1990) demonstrated that the diagnostic overshadowing phenomenon is more pronounced with decreasing intellectual ability.
A number of explanations for diagnostic overshadowing have been offered. MacLean (1993) offered two hypotheses. First, clinicians may interpret emotional disturbance within a developmental framework, thereby ascribing certain behaviors to cognitive or emotional delays. Second, the possibility exists that this phenomenon is related to overlapping indices of psychopathology and mental retardation. Weisz (1981) found there is a natural tendency to attribute behavior to the most salient factor. Alford and Locke (1984) distinguished errors of omission, when symptoms are unrecognized, and errors of commission, when symptoms are recognized but given alternate explanations. They suggest that both of these phenomena may contribute to diagnostic overshadowing. Reiss (1994) proposed that some practitioners are concerned that the additional label may increase stigmatization of the patient, although there is no empirical evidence that dual diagnosis adds to the stigma of mentally retarded persons.

Reiss (1994) also identified the role of a more global attitudinal issue which may contribute to underdiagnosis. The tendency is labeled "issue avoidance". Reiss suggests that the general public attempts to deal with tragic individuals by de-humanization. The process of de-humanization allows the perceiver to psychologically distance himself or herself from mentally retarded or physically handicapped persons. If the handicapped individual is seen as emotionally and psychologically different, it is easier for society as a whole to deny that mentally retarded individuals are devalued, segregated and stigmatized. Thus, an attribution
to mental retardation, rather than the same vulnerability to emotional disorder found in intellectually normal individuals is consistent with the prevailing difference belief. Certainly all of these hypotheses have logical merit, and each may have its place in contributing to the underdiagnosis and underservice of mentally retarded persons with mental illness.

**Specification of Psychopathology in Severely Handicapped Persons**

Psychopathology refers to "a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is associated with present distress or disability (i.e., impairment in one or more important area of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom." (p. xxi, DSM-IV, American Psychiatric Association, 1994). Inherent in this definition is a decrease in previous functioning, thus most disorders include a prescribed period of occurrence and a course of deterioration. This section will review those mental disorders described in the DSM nomenclature which have been identified in severely and profoundly mentally retarded individuals and which represent subscales on the DASH. Each area will describe: (a) the DSM-III-R disorders, (b) significant changes in the DSM-IV categorization, (c) applications of the categories to severely and profoundly mentally retarded individuals (when different or difficult compared to the intellectually normal) and (d) a brief summary of incidence rates for that category, where the data are available.
Anxiety Disorders. Anxiety is an unpleasant emotional state with characteristic physiological, behavioral and subjective or cognitive components (Benson, 1990). According to DSM-III-R (American Psychiatric Association, 1987) anxiety disorders are generally characterized by two distinguishing features (a) symptoms of anxiety and (b) avoidance behavior. Panic Disorder and Generalized Anxiety Disorder are similar in that the predominant feature is the symptom(s) of anxiety, not associated with specific situations; panic involving more severe attacks of symptoms. In Panic Disorder with Agoraphobia, avoidance also appears predominant. In phobic disorders (Simple Phobia and Social Phobia) the anxiety experience and the avoidant response are manifested when an individual confronts a particular object or situation. Separation Anxiety Disorder is also seen in response to a particular event which involves the removal or withdrawal of a parental figure rather than the presence of the feared stimulus. Obsessive-Compulsive Disorder is marked by persistent, intrusive and senseless thoughts (obsessions) and by repetitive, purposeful, intentional behaviors (compulsions) performed in response to obsessions. Post-Traumatic Stress Disorder involves the re-experiencing a traumatic event, avoidance of stimuli associated with the event (or numbing of general responsiveness) and increased arousal.

The relevant DSM-IV changes to anxiety disorders for mentally retarded individuals are described briefly. DSM-IV acknowledges that panic attacks can occur as a part of any anxiety disorder. The name Simple Phobia has been
changed to Specific Phobia and four subtypes have been added to indicate the focus of the fear (Animal Type, Natural Environment Type, Blood-Injection-Injury Type, Situational Type, and Other Type). Recognition that obsessions and compulsions are unreasonable is no longer a criteria for Obsessive-Compulsive Disorder and the person may be specified as "With Poor Insight". Two disorders previously listed as specific to childhood have been subsumed under pre-existing anxiety disorders: Avoidant Disorder of Childhood is now classified with Social Phobia and Overanxious Disorder is now part of Generalized Anxiety Disorder. A new category, Acute Stress Disorder, describes acute reactions to extreme stress occurring within 4 weeks of the event and lasting 2 days to 4 weeks. This reaction is thought to predict later Posttraumatic Stress Disorder. Some criteria thresholds have been adjusted to reflect the findings of recent field trial data. Each of these changes can impact the diagnosis of mentally retarded individuals.

The assessment of anxiety in severely handicapped individuals requires a comprehensive procedure with several sources of information (Benson, 1990). The detection of anxiety syndromes in severely and profoundly mentally retarded persons is heavily dependent upon behavioral and avoidant responses. Subjective experience is typically reported verbally from anxiety disordered patients. Severely and profoundly mentally retarded persons may be nonverbal, thus anxiety symptoms must often be assumed on the basis of direct observation of physiological or behavioral indicators (e.g., crying, trembling, agitation, sweating, heavy
breathing, etc.). Avoidant behaviors can manifest as other symptomatic behaviors (e.g., somatization, non-compliance, aggression, self-injurious behaviors, etc.), complicating the diagnostic picture. Stereotypies and motor symptoms of anxiety or compulsions may also be difficult to distinguish (Ollendick, Oswald, & Ollendick, 1993), however, instruments to delineate these overlapping symptoms are being developed (Vitiello, Spreat, & Behar, 1989). Therefore, careful and comprehensive functional analyses are essential to rule on the question of anxiety disorder in the clinical presentation of mentally retarded persons.

The incidence of anxiety disorders in mentally retarded individuals has been reported at varying rates. Nezu, Nezu and Gill-Weiss (1992) reviewed the literature and found that for mentally retarded persons, rates of anxiety disorders and symptoms ranged from 1% to 25%, with the majority of studies reporting 10% or more. Philips and Williams (1975) studied 100 clinic referrals of mentally retarded children and found that 23.8% of the reported problems were "neurotic traits" such as phobias, obsessive-compulsive behaviors and anxiety reactions. Benson (1990) reported that anxiety rates in mentally retarded persons seems to hover around 20% to 25% in inpatient samples as well. All forms of anxiety disorders have been found to exist in mentally retarded persons, although simple or specific phobias and social phobias have been most frequently diagnosed (Reiss, 1994).
Mood Disorders. Mood refers to a prolonged emotion that affects an individual’s entire functioning. Mood disorders are characterized by a disturbance of mood and associated behavioral symptoms. Classification is divided into the Depressive Disorders and the Bipolar Disorders.

Depression. According to DSM-III-R (American Psychiatric Association, 1987), a depressive episode consists of a distinct period of depressed (or sometimes in children and adolescents, irritable) mood or a loss of interest or pleasure in all or almost all activities. Associated symptoms include: appetite disturbance; change in weight; sleep disturbance; psychomotor agitation or retardation; decreased energy; feelings of worthlessness or excessive or inappropriate guilt; difficulty thinking or concentrating; and recurrent thoughts of death, or suicidal ideation or attempts.

DSM-IV criteria for Major Depressive episode are similar to those above however, the new version includes a specifier that the symptoms cause clinically significant distress or impairment in the person’s important daily functioning. Thus, baseline mood and behavior play a more important function in the new diagnostic standard. This change is clinically relevant for mentally retarded persons since clinicians need to be more cognizant of the client’s previous level of functioning.

In individuals with severe and profound mental retardation, cognitive signs of depression (e.g., feelings of worthlessness, excessive guilt, suicidal ideation,
negative thinking, hopelessness, etc.) may be difficult to assess (Reiss, 1994). Yet, diagnosis can be reached on the basis of behavioral and vegetative symptoms (Sovner, 1986; Charlot, Doucette, & Mezzacappa, 1993; Matson, 1983). Careful attention must be paid to genetic history, irritability, changes in activity levels, changes in sleep and eating patterns, and loss of developmental skills (Berney & Jones, 1988). Sovner (1986) suggested distortion free criteria for diagnosis of Major Depression in mentally retarded persons, including: disturbance of mood characterized by sadness, withdrawal or agitation and any 4 of 9 symptoms (change in sleep, change in appetite/weight, onset or increase in self-injurious behavior, apathy, psychomotor retardation, loss of daily living skills, catatonic stupor or rigidity, spontaneous crying, fearfulness). Several researchers have noted that depression may be frequently overlooked in mentally retarded individuals, since lowered activity levels and withdrawal behavior may make the patient less of a management problem (Benson, 1990; Hasan & Mooney, 1979; Matson & Frame, 1986).

Depression has been reported in mentally retarded persons at all levels of intellectual functioning. Sovner and Hurley (1983) surveyed 25 published reports and found that both inpatient and clinic samples displayed the full range of affective disorders. Sovner and Pray (1993) reviewed epidemiological studies and reported rates between 0.9% and 3% of mentally retarded persons met criteria for Major Depression. Dosen and Gielen (1993) reported the incidence between 1.2% and
3.2% in the adult mentally retarded on the basis of their review. Recent studies have reported depressive disorder rates as high as 3.4% (Reiss, 1990) and 4.8% (Meins, 1993) in mentally retarded samples.

In a recent study of mentally retarded institutionalized adults, Charlot, Doucette, and Mezzacappa (1993) examined symptom presentation for a group diagnosed with affective illness and another group with other psychopathology. Their results are of interest because the majority of their subjects (74%) function in the severe and profound ranges of mental retardation. They found that subjects diagnosed with mood disorders displayed the full range of symptoms from the DSM-III-R diagnostic criteria. Depressed individuals tended to have less than one episode of disturbance per year. Twenty percent of those diagnosed with alternate forms of psychopathology, also met criteria for an affective disorder, suggesting that affective disorders may be underdiagnosed in this group. They also noted that irritable mood is often the affect displayed, and somatic complaints and conduct problems (agression) are frequent concomitants of affective disorders in mentally retarded adults. Other studies have confirmed the relationship between depression and aggression in mentally retarded persons (Laman & Reiss, 1987; Reiss & Rojahn, 1993). Charlot, et.al. (1993) suggest the need for a longitudinal perspective in diagnosing depression, including a review of long-term patterns and functioning. In addition, a developmental perspective is needed since mentally
retarded individuals' symptoms appear similar to those found in children suffering from affective disorder (Dosen & Gielen, 1993).

**Mania.** A manic episode, according to DSM-III-R (American Psychiatric Association, 1987), includes a distinct period during which the predominant mood is elevated, expansive or euphoric, with associated behavioral symptoms. The symptoms include: inflated self-esteem or grandiosity; decreased need for sleep; pressure of speech; flight of ideas; distractibility; increased goal-directed activity; psychomotor agitation; and excessive involvement in pleasurable activities which have high potential for painful consequences. In manic episodes the predominant mood may also be irritability, especially when the individual is thwarted.

The major changes in the DSM-IV criteria for a Manic Episode involve the specification of 1 week duration for manic symptoms. This criteria may be shortened if the condition requires the person to be hospitalized before a full week of the symptoms has passed. A new category for a Mixed Episode of mania and depression is more clearly delineated in DSM-IV. It calls for nearly every day in 1 week, when symptoms from both manic and depressive episodes are observed. In addition, a new specifier for "With Rapid Cycling" reflects evidence that a swift series of bipolar presentations may have implications for treatment.

Some authors have suggested that mentally retarded persons do not display classic manic symptoms of euphoria and flight of ideas (Sovner & Hurley, 1983; Reid, 1972). Others have suggested these symptoms may be distorted by limited
life experiences (Reiss, 1994; Sovner, 1986). Menolascino (1986) stated "When a normal person becomes manic, he thinks he's God. When a mentally retarded person becomes manic, he thinks he's not retarded" (cited in Sovner, 1986). Sovner and Hurley (1983) offered behavioral equivalents to DSM-III-R criteria including: a predominant boisterous or excited mood state; concentration on mastery of daily-living skills; increased maladaptive behavior at bedtime and/or upon awakening early; increased frequency of speech; disorganized speech; decrease in performance in daily work; aggressiveness; fondling others or public masturbation. Sovner and Hurley (1990) considered five assessment areas to be important for bi-polar diagnosis: a time line of biographical information (including family history) to monitor onset and course; sleep chart; behavior incident monitoring; bipolar mood logs; and psychotropic drug profiles.

In 1936, Duncan, Penrose and Turnbull reported on manic-depressive psychosis in mental defectives, claiming that mania was four times as common in mentally retarded persons as melancholia. Reid (1972) reported a rate of 1.2% prevalence in an inpatient population of 500 mentally retarded persons. Heaton-Ward (1977) noted that 2% of mentally retarded adults in four hospitals met bipolar illness criteria. Charlot, Doucette and Mezzacappa (1993) reported that mentally retarded adults in all ranges of intellectual functioning were diagnosed with bipolar disorder and that 43% of those who met criteria were said to have manic episodes more than 6 times yearly. Other cases of rapid cycling bipolar
disorders are reported in the literature (Wieseler, Campbell, & Sonis, 1988; Sovner, 1989; McElroy, Keck, Pope & Hudson, 1988) with some suggesting this may be a more common course in mentally retarded persons than in the normal population (Reid & Naylor, 1976; Jones & Berney, 1987).

**Pervasive Developmental Disorder/Autism.** DSM-III-R criteria for Autism include qualitative impairments in the development of: reciprocal social interaction; verbal and nonverbal communication skills; and in imaginative activity (e.g., restricted repertoire of activity and interests, stereotyped or repetitive activities) (American Psychiatric Association, 1987). On the basis of research evidence Autism is regarded as the most severe and prototypical form of Pervasive Developmental Disorder; however the general descriptions are the same. Individuals who carry these diagnoses are extremely heterogeneous in the symptoms they manifest, yet the core clinical disturbance usually covers these general developmental areas.

The most significant change to this category in the DSM-IV system is that Pervasive Developmental Disorders and Autism are now coded on Axis I rather than Axis II.

Since one of the hallmark features of pervasive developmental disorders is communication and speech deficits, the diagnostic picture is complicated in a different manner from other categories discussed thus far. Early research with autistic children stressed normal intellectual functioning (Kanner, 1943). There is
now general agreement that the majority of autistic children also have subnormal intellectual functioning (Ritvo, et.al., 1989; Schreibman, 1988; Romanczyk, Lockshin, & Harrison, 1993). Estimates of the concurrence of autism and mental retardation range between 70% and 90% of those diagnosed autistic. Rutter and Schopler (1988) found that autistic children are less able to discriminate social/emotional cues than non-autistic children matched for mental age. Impaired language, sequencing, abstraction of meaning and coding functions were reported below expected levels of mental delay for children with pervasive developmental disorders (Ritvo & Freeman, 1979). Bartak and Rutter (1976) compared a group of mentally retarded autistic children with autistic non-retarded children. The mentally retarded group displayed a more severely autistic picture with more serious social impairments, lack of emotional expression, inability to cooperate in play, and more withdrawal from adults. In addition the mentally retarded children engaged in more stereotypies, self injury, and attachment to odd objects. Thus, one key to diagnosis of autistic disorders in mentally retarded individuals depends on a developmental perspective and reliance upon well researched norms of expected levels of performance in given areas. In addition, careful assessment of clusters of behaviors which fit a pervasive developmental disorder picture is required.

With the concordance rates stated above it is not surprising to find a higher incidence of pervasive developmental disorders in mentally retarded samples than
in the general population (between 0.02% and 0.07%; Rutter, 1991). Jacobson (1982) reported that 1% of mentally retarded individuals without psychiatric diagnosis were considered autistic, while 5% of those with a psychiatric diagnosis were also considered to be autistic. This suggests that autistic mentally retarded persons may have additional diagnostic complications which warrant further attention and treatment. Perhaps because autism/pervasive developmental disorder has been classified as an Axis II diagnosis, many studies of psychopathology in mentally retarded persons have not reported rates of these disorders. It is hoped that the DSM-IV change will produce a shift in this view and that future research will include this category in dual diagnosis evaluations, in order to obtain better prevalence and co-morbidity data.

Schizophrenia. According to DSM-III-R (American Psychiatric Association, 1987), schizophrenia involves a period of disturbed functioning below the highest level previously achieved and includes: delusions; hallucinations; certain disturbances in affect; and disturbed form of thought. More specifically, schizophrenia is thought to involve the following areas of functioning: content of thought (delusions), form of thought (loosening of associations or poverty of speech), perception (hallucinations), affect (flat or inappropriate to content), sense of self (loss of ego boundaries), volition (inadequate interest or ability to engage in goal-directed activity), impaired interpersonal functioning (withdrawal or emotional detachment), and psychomotor behavior (reduced spontaneous movement
or catatonia). While not all of these symptoms are required for diagnosis, DSM-III-R criteria included the presence of either delusions or hallucinations or both for diagnosis.

DSM-IV represents a shift in criteria, requiring the presence of two or more of the following, present for a 1 month period: (a) delusions, (b) hallucinations, (c) disorganized speech (e.g., frequent derailment or incoherence), (d) grossly disorganized or catatonic behavior, and (e) negative symptoms, i.e., affective flattening, alogia, or avolition (p. 285, American Psychiatric Association, 1994). This change is significant for assessment of mentally retarded individuals because it is now possible to make a diagnosis of schizophrenia without being able to determine if hallucinations or delusions are present (Reiss, 1994).

Schizophrenia has been one of the most controversial diagnostic categories with respect to severely and profoundly retarded individuals. In the middle of the nineteenth century Morel (a French physician) determined that psychosis and mental retardation were manifestations of the same "degenerative trait" (Reiss, 1994). Later distinctions between insanity and mental retardation made dual diagnosis widely accepted. However, the debate about whether or not a diagnosis of schizophrenia was possible in severely handicapped individuals continues today (Batchelor, 1964; Reid 1993). With the change in DSM-IV, a diagnosis of schizophrenia is possible without the confirmation of hallucinations and delusions, thus disorganized speech, catatonic states and emotional blunting in a regressive
pattern may be considered evidence of psychotic process and may encourage new and needed research. It should be noted however, that severely handicapped individuals can exhibit signs of hallucinations and delusions (Turner, 1989). Kay (1989) developed a standardized battery of tests to differentially study changes in cognitive functioning. Since schizophrenia is largely an abnormal thought disorder, and mental retardation a subnormality with developmental causality, Kay suggests that a diagnosis is possible when disruption or regression is found relative to the individual's own cognitive profile. This research is preliminary but holds promise and again points to the importance of knowing premorbid functioning.

Most diagnoses of schizophrenia in mentally retarded persons have relied upon systematic approaches patterned after the DSM systems. Menolascino and Swanson (1982) found that 20.4% of mentally retarded persons referred for psychiatric assessment in community based services in Nebraska were diagnosed with schizophrenic disorder. Jacobson (1990) found that psychosis (5.69%) was reported to occur at rates significantly in excess of nonpsychotic brain syndrome (1.97%), neurosis (1.49%) and personality disorders (3.99%). This finding held for severely and profoundly mentally retarded adults, as well as mildly and moderately impaired groups. In a study of a state residential facility for mentally retarded adults (N=1,273), Crews, Bonaventura, and Rowe (1994) found that 2.99% met criteria for Schizophrenia or Psychotic Disorder NOS. Pray (1993) studied admissions to acute psychiatric hospital wards over a 62 month period and
found that among mentally retarded patients (all levels of functioning) chronic schizophrenia was the most common diagnosis (17%). Despite methodological and clinical problems in diagnosis, sufficient evidence exists to conclude that psychotic disorders are found in persons with all levels of mental retardation.

**Stereotypy/Tics and Self Injurious Behavior.** DSM-III-R (American Psychiatric Association, 1987), defines stereotypy as intentional and repetitive behavior that serve no constructive, socially appropriate purpose. Common stereotypies include: body rocking, hand flapping, head banging, grimacing, mouthing, hair-pulling, self-biting, spinning, tapping, etc. Tics are defined as involuntary, sudden, rapid, recurrent, nonrhythmic, stereotyped, motor movement or vocalization. Tics are experienced as irresistible but can be suppressed for varying lengths of time. Examples of motor tics are: eyeblinking, neck jerking, jaw popping, shoulder shrugging, facial grimacing etc. Vocal tics include: echolalia, coprolalia, grunting, snorting, etc. The major distinction between a stereotypy and a tic is that the former is viewed as intentional, while the latter, is considered involuntary. Stereotypy and Tics are grouped together on the DASH because the voluntary/involuntary distinction is not clinically relevant for this population. However, self-injurious behavior, which is subsumed under Stereotypy/Habit Disorder in DSM-III-R, is separated in the DASH ratings from Stereotypy and Tics, because this distinction is clinically significant.
The DSM-IV criteria for Tic Disorders are similar to those above however, the new edition includes a specifier that the symptoms cause clinically significant distress or impairment in functioning. Stereotypy/Habit Disorder has been renamed Stereotypic Movement Disorder and now includes a specifier for "With Self-Injurious Behavior".

Stereotypies and tics are fairly straightforward in terms of diagnosis in mentally retarded persons at all levels of functioning. Most of the research on stereotypies has focused on self-injurious behavior or treatment procedures. Very little information is available on prevalence rates for tics and stereotypies without self-injury. Stereotypies are thought to be 4 to 5 times more prevalent in mentally retarded persons than in the normal population (McGrath & Kelly, 1987). Jacobson (1982) found the incidence of stereotyped behaviors was 7% to 9% of mentally retarded persons.

Self-injurious behavior (SIB) has been reported at varying rates. DSM-IV (American Psychiatric Association, 1994) reports between 2% and 3% mentally retarded children and adolescents in community settings exhibit SIB, and that rates in adult with severe and profound mental retardation in institutions are as high as 25%. Studies confirm these reports with rates at 1.7% to 2.0% in community settings (Rojahn, 1986; Reiss, 1990). Institutionalized mentally retarded persons rates have been found at 14% (Maisto, Baumeister, Maisto; 1978); 21.7% (Hill, Balow & Brinks, 1985); and 10% (Schroeder, Schroeder, Smith & Dalldorf, 1978).
There is consensual data from these studies to suggest that rates of SIB increase with declining intellectual functioning.

**Elimination Disorders.** Functional Encopresis and Enuresis are diagnostic categories in the DSM-III-R (American Psychiatric Association, 1987), which refer to repeated involuntary passage of feces and voiding of urine respectively, into clothing or inappropriate places. In the DSM-IV criteria, the Encopresis duration criteria has been reduced from 6 months to 3 months; whereas Enuresis has been changed from twice monthly to twice weekly for 3 consecutive months (with the ability to diagnose below this threshold if symptoms cause clinically significant distress or impairment in functioning).

**Eating Disorders.** Four eating disorders are distinguished in the DSM-III-R: Anorexia Nervosa; Bulimia Nervosa; Pica; and Rumination Disorder of Infancy. Although examples of Anorexia Nervosa have been reported in mentally retarded persons in case studies (Cottrell & Crisp, 1984; Szymanski & Biederman, 1984) eating disturbances more typically reported in this population are Pica and Rumination Disorder. Pica refers to the ingestion of nonnutritive substances. Pica is excluded in the presence of Schizophrenia or a Pervasive Developmental Disorder. Rumination Disorder is the repeated regurgitation and rechewing of food accompanied by significant weight loss or failure to make expected weight gains.

With the DSM-IV, Pica can be diagnosed along with Schizophrenia or a Pervasive Developmental Disorder and weight criteria have been eliminated for the
Rumination Disorder, since clinically significant impairment can be present without weight reflections.

Pica and Rumination Disorder have been reported primarily in treatment studies. Pica is thought to increase in prevalence with decreased intellectual functioning (DSM-IV, American Psychiatric Association, 1994). Another eating related problem found in mentally retarded persons is obesity. Various studies have found rates of obesity as high as 45% for males and 58% for females (Fox & Rotatori, 1982; Kelly, Rimmer, & Ness, 1986; Rimmer, Braddock, & Fujiura, 1993). O'Brien and Whitehouse (1990) recently studied deviant eating behaviors of 48 moderately to severely handicapped adults. Subjects were found to exhibit: eating more than normal meals; particular food choices (e.g., sweets, no vegetables, etc); eating between meals; excessive searching for food; and consuming an abundance of one certain type of food when choices were provided. This research is significant because the findings concerning obesity suggest that some deviant eating behaviors may be present which contribute to the endangerment of health in mentally retarded individuals. More research is need in this area.

Sleep Disorders. DSM-III-R (American Psychiatric Association, 1987), distinguishes between Dyssomnias (disturbances in the amount, quality or timing of sleep) and Parasomnias (abnormal occurrences during sleep). Dyssomnias include: Insomnia (difficulty initiating or maintaining sleep), Hypersomnia
(excessive daytime sleep, sleepiness, or prolonged transition to a fully awake state) and Sleep-Wake Schedule Disorder (a mismatch between a person’s environment and their circadian rhythm). Parasomnias include: Dream Anxiety Disorder and Sleepwalking Disorder.

DSM-IV shows a reorganization of this group of disorders. Sleep disorders are now grouped into primary sleep disorders, those related to another mental disorder, those due to general medical condition and substance induced. These changes may be helpful for delineating etiology of sleep disturbances in mentally retarded individuals. Sleep-Wake Schedule Disorder has been renamed Circadian Rhythm Sleep Disorder and Dream Anxiety Disorder has been renamed Nightmare Disorder. Two additional categories are Narcolepsy (irresistible attacks of refreshing sleep daily) and Breathing-Related Sleep Disorder (sleep disruption due to abnormalities of ventilation), previously considered outside the realm of "Mental Disorders".

Very little research has been conducted in the area of sleep disorders in mentally retarded persons. Okawa and Sasaki (1987) have postulated that normal sleep/wake cycles are a developmental process. Infants have their own sleep/wake cycle. Maturation in social and environmental adaptation are seen as contributing to the conversion to a circadian rhythm. These authors suggest that severely handicapped individuals may fail to respond to visual and social contacts and thus remain delayed in developing a normal sleep/wake cycle. More research is needed
concerning the incidence and presentation of sleep disturbances in mentally retarded persons.

**Sexual Disorders.** Sexual Disorders in the nonretarded population involve both Paraphilias and Sexual Dysfunctions (DSM-III-R; American Psychiatric Association, 1987). Paraphilia includes sexual activity characterized by recurrent intense sexual urges and sexually arousing fantasies involving: nonhuman objects; the suffering or humiliation of oneself or one's partner; or children or nonconsenting persons. There are nine categories of Paraphilias: (a) Pedophilia; (b) Exhibitionism; (c) Transvestism; (d) Voyeurism; (e) Frotteurism; (f) Fetishism; (g) Sexual Sadism; (h) Sexual Masochism and (i) Paraphilia Not Otherwise Specified. Gender Identity Disorder (considered with the disorders of childhood) involves a recurrent discomfort about one's assigned sex. The only relevant change in this area in the DSM-IV is that Gender Identity Disorder is now grouped with the aforementioned sexual disorders rather than in the childhood section.

While cases of sexual disorder have been treated and reported in mentally retarded individuals (Coe & Matson, 1993), the area of sexuality and mental retardation suffers from a lack of empirical data and biases about what constitutes appropriate sexual behavior. Matson and Russell (1994) have developed a comprehensive assessment instrument, with which to begin empirical examination of sexual behaviors of mental retarded persons. Severely and profoundly mental retarded adults have most often been treated for exhibitionism (Fox, 1976; Lutzker,
1974); public masturbation (Barmann & Murray, 1981; Cook, et.al., 1978; Luiselli et.al., 1977) and inappropriate touching or fondling of others (Wong, Gaydos & Fuqua, 1982; Kolvin, 1967; Lutzer, 1983).

Organic Syndromes. Organic Mental Syndromes refer to psychological or behavioral abnormalities associated with transient or permanent dysfunction of the brain (American Psychiatric Association, 1987). Two types of organic mental disorder are relevant to the category on the DASH: Delirium and Dementia. Delirium is marked by a reduced ability to maintain attention to external stimuli and appropriately shift to new stimuli, and disorganized thinking, as manifested by rambling, irrelevant, or incoherent speech. These symptoms are accompanied by reduced level of consciousness, sensory misperceptions, disturbed sleep-wake cycle, disorientation to time, place and person, and memory impairment. The course is typically brief and onset is usually sudden. In contrast, Dementia is often gradual in onset and often though not always, the course is prolonged and degenerative. Memory impairment is the most prominent symptom of Dementia, although impairment in thinking, judgement, and impulse control as well as personality change are also seen.

The term "organic mental disorder" has been eliminated from DSM-IV because it implied that other categories did not have an "organic" component. The class of disorders discussed above are now entitled: Delirium, Dementia, and Amnestic and Other Cognitive Disorders. Some Delirium criteria have been
dropped due to difficulty in their evaluation (e.g., reduced level of consciousness, psychomotor changes, etc.) and disorganized thinking is no longer a required symptom because of difficulties in assessing mute patients. The criteria for Dementia have likewise been reorganized and simplified in an effort to focus on multiple cognitive deficits that include memory impairment. Personality change has been shifted to an associated feature rather than a criterion. These changes can simplify diagnosis and make these categories more applicable to mentally retarded persons.

Harper and Wadsworth (1990) noted that symptoms or changes in abilities, as mentally retarded persons age are often inappropriately attributed to mental retardation. These authors suggest periodic examination of intellectual, orientation, adaptive and emotional functioning in order to avoid attributing symptomatology to either aging or mental retardation.

The incidence of organic brain syndromes has been well documented. What is unclear in most studies is the specification of the particular type(s) of disorder observed. Pary (1993) studied mentally retarded elderly adults admitted for acute hospitalization and found that 10.3% of elderly adults met criteria for organic syndromes. Crews, Bonaventura and Rowe (1994) studied residents of a state residential facility for mentally retarded adults (N=1,273). These data suggested that 0.55% met criteria for Organic Mental Disorders (Alzheimer, Senile dementia and Organic Mental Syndrome NOS). Harper and Wadsworth (1990) studied 90
mentally retarded adults over the age of 45 from various placement settings. Thirty percent (27 people) of those tested showed significant declines in IQ scores; of that 30%, 14 had lost abilities in orientation to time and place. Adaptive behavior declines, problem behavior and depressive symptom increases were also noted. None of these individuals with noted declines were identified by service providers. These studies suggest that organic syndromes do occur in mentally retarded individuals.

Impulse Control Disorders. The essential features of Impulse Control Disorders are: a failure to resist the temptation to perform some act that is harmful to another; an increase in tension or arousal prior to the act; and an experience of pleasure, gratification or release while committing the act (DSM-III-R; American Psychiatric Association, 1987). In Intermittent Explosive Disorder, aggressive or destructive cases, the degree of aggressiveness during a explosive episode is considered grossly out of proportion to precipitating factors. This diagnosis excludes those who present generalized impulsiveness or aggressiveness between episodes. DSM-IV eliminates the exclusion of those with generalized impulse/aggression control problems between explosive episodes, based upon field trial data, suggesting this is a more relevant clinical picture. The DASH items include such behaviors as: hitting, biting, unprovoked rage, property destruction, elopement, firesetting, taking another’s property or belongings, etc.
Aggressive behaviors represent a prevalent, chronic and socially disruptive problem in mentally retarded persons (Gardner & Cole, 1993). Jacobson (1982) reported that 10.9% of 32,000 subjects displayed physical assault. These data also suggested increasing rates with decreasing levels of functioning (mild - 5.5%, moderate - 8.5%, severe - 13.9%, and profound - 17.3%). Quine (1986) reported that over 20% of 399 severely mentally retarded children exhibited problems of aggression. Benson (1985) found 20.8% of adult referrals to a community mental health center demonstrated physical aggression.

**Assessment of Dually Diagnosed Individuals**

Like the disorders of childhood, mentally retarded persons are most often brought to the attention of service providers by their caregivers, who may not always be sensitive to subtle yet important symptoms and contributing factors to the presenting problem (Reiss, 1994). It is therefore incumbent upon clinicians to provide the most comprehensive assessment possible. For example, if a caregiver presented a patient exhibiting aggressive behavior, a number of organic or environmental causes could be involved, including: partial complex seizure activity; paranoid states; various affective states (e.g., pain, frustration, anger, depression); medication side effects; learned behavior; skills deficits; or personality disorder (Nezu, Nezu & Gill-Weiss, 1992; Reiss, 1994).

Reiss (1993) described four guidelines for untangling the sometimes ambiguous signs of psychopathology in mentally retarded. First, diagnose patterns
of symptomatology, meaning that the clinician should be cognizant of any correlations between a behavior and various forms of psychopathology and then determine if any of those patterns exist for the patient. Second, diagnose changes in behavior. With the exception of personality disorders, psychiatric disorders typically have an onset, a change or decline in the individual’s functioning. Third, make allowances for the impact of intellectual handicaps on the expression of symptomatology. This has been eluded to in previous sections, explaining that avoidance behaviors may take the form of maladaptive responses, depression may be manifested by irritable mood, or grandiosity may be less salient compared to intellectually normal persons, etc. Fourth, clinicians should admit the limitation of knowledge. With severely and profoundly mentally retarded individuals the behaviors may be so ambiguous that a confident diagnosis is not always possible and should not be made.

Nezu, Nezu, and Gill-Weiss (1992) noted that proponents of formal diagnostic assessment and those focused on behavioral analysis of discrete target behaviors may once have appeared at odds, however; dual diagnosis calls for evaluations inclusive of both these processes. Singh, Sood, Sonenklar and Ellis (1991) provided an assessment model which is sequenced and includes both broad and narrow spectrum analyses. The authors suggest a multimodal process beginning with the determination of verbal and cognitive skills (using standardized intelligence tests) and adaptive behavior (using standardized measures). Second
they recommend the use of screening instruments to determine symptom patterns on the basis of client self-report, informant report and case history. Case records should be used to illicit information about the previous functioning, onset of illnesses (physical and mental) and previous treatments (Reiss, 1994). Third, clinical interviews may be conducted. Matson and Frame (1986) advise that comprehension of abstract concepts, attention and memory span, medication effects, and multiple handicaps may influence the interview as well as the psychological problems manifested in mentally retarded persons. Forth, self-report or informant report rating scales and checklists geared to the presenting mental illness may help to rule on the diagnosis. Fifth, direct behavior observations and experimental analyses in real life situations may provide the most telling evidence. Finally, laboratory measures may also aid in determining some factors (e.g., neurological or neuropsychological procedures). Diagnostic and treatment formulations are the result of synthesizing these various sources of data. The rest of this section will discuss assessment tools (rating scales and behavioral checklists) which are relevant for use in the assessment (particularly screening) of severely and profoundly mentally retarded persons with mental illness. One value of comprehensive behavior rating scales involves reduction in interview bias (Matson & Frame, 1986). Interviewers and informants are subject to overlooking or forgetting some important symptoms, thus the structure of extensive checklists helps to circumvent neglecting significant details.
Before discussing the rating scales designed specifically for screening psychopathology in mentally retarded individuals, adaptive behavior measures will be reviewed. Adaptive behavior is equally important as intelligence in determining a patient's strengths and weaknesses and can aid in the determination of further assessment steps in preliminary phases of assessment. Generally there is agreement that adaptive behavior refers to an individual's ability or lack of ability to perform the tasks necessary for independent functioning (Sattler, 1990). Most tests of adaptive behavior include the dimensions of functional independence (daily living, communication, and domestic skills), personal responsibility, social responsibility and social adaptation (Leland, 1991). There are a number of measurement tools that have established adequate reliability and validity and are well standardized. Two such measures are the AAMD Adaptive Behavior Scales (ABS; Nihira, Foster, Shellhaas, & Leland, 1974) and the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984). Both of these instruments have the advantages of comprehensive inquiry concerning maladaptive behaviors. The AAMD-ABS is normed on a population of institutionalized mentally retarded and provides percentile ranks within each of 24 subtest areas, according to age group. Of particular interest in the assessment of psychopathology in mentally retarded persons are the dimensions which measure maladaptive functioning (Part II). The 14 domains are: (1) Violent and Destructive Behavior, (2) Antisocial Behavior, (3) Rebellious Behavior, (4) Untrustworthy Behavior, (5) Withdrawal, (6) Stereotyped
Behavior and Odd Mannerisms, (7) Inappropriate Interpersonal Manners, (8) Unacceptable Vocal Habits, (9) Unacceptable or Eccentric Habits, (10) Self-Abusive Behavior, (11) Hyperactive Tendencies, (12) Sexually Aberrant Behavior, (13) Psychological Disturbances, and (14) Use of Medications. Part II can provide a basis of comparison on various maladaptive behaviors over time and it can help to identify areas in need of further assessment and intervention.

The Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984) provide a normative comparison with nonretarded individuals as well as various supplemental mentally retarded norm groups (ambulatory, non-ambulatory, institutionalized and non-institutionalized). The Vineland provides scores in four major areas of functioning (Communication, Daily Living Skills, Socialization and Motor Skills), a Maladaptive Behavior assessment, and total composite score of adaptive functioning. Standard scores, age equivalents and levels of functioning (low, adequate, above average, etc.) are options for interpretation. The Vineland Maladaptive Behavior domain consists of two parts, 27 minor maladaptive items and 9 major maladaptive items. These items are scored for frequency as well as intensity. Because the AAMD-ABS and the Vineland are so widely used with mentally retarded persons and they are so well standardized, they can provide important screening information, baseline data and aids to treatment evaluation.

Over the last 10 years a number of rating scales have been developed which may aid professionals in the diagnoses of emotional disorders in the mentally
retarded. Among these are the Aberrant Behavior Checklist (ABC; Aman & Singh, 1986); Behavior Disturbance Scale (Leudar et al., 1984); Emotional Disorders Rating Scale (Feinstein et al., 1988); Psychopathology Instrument for Mentally Retarded Adults (PIMRA, Matson, 1988); Reiss Screen for Maladaptive Behavior (Reiss, 1988); and Diagnostic Assessment for the Severely Handicapped (DASH, Matson et al., 1990). Of these instruments only the ABC and the DASH were specifically designed for mentally retarded individuals in the severe and profound ranges of functioning.

Empirically derived classification systems offer considerable promise in clarifying prevalence rates and possible differences in the types of disorders found more or less frequently with different levels of intellectual impairment. These methods typically rely on normative studies and factor analytic procedures of a relatively large number of behaviors (usually observed and reported by a caregiver). This approach to classification has produced methods of assessment which are based on observable behavior and afford the researcher both objectivity and estimates of reliability of measurement (Quay, 1979). Empirically derived studies of psychopathology in mentally retarded persons have generally revealed about six major areas of disorders: (a) aggression/self injury; (b) mood disturbances: lability, lethargy and withdrawal; (c) idiosyncratic movement or stereotypies; (d) antisocial patterns; (e) overactivity/noncompliance; (f)

The Aberrant Behavior Checklist (ABC; Aman & Singh, 1986) was initially developed to assess the effects of various pharmacological, behavioral, dietary or other treatments on behavior of mentally retarded children and adults. It was generated with samples in the moderate to profound ranges of functioning. On the basis of informant report, subjects are scored on 5 subscales: (a) Irritability, Agitation, Crying; (b) Lethargy, Social Withdrawal; (c) Stereotypic Behavior; (d) Hyperactivity, Noncompliance; and (e) Inappropriate Speech. There is substantial reliability data for this instrument when used with institutionalized mentally retarded person in the moderate to profound ranges. While the ABC was not designed for use as a screening or diagnostic tool, it may be useful in the screening phases of assessment and as an aid in treatment outcomes.

The Diagnostic Assessment for the Severely Handicapped (DASH) Scale

Description of the DASH. The DASH (Matson, et al. 1991) is a behavioral rating scale which was derived from DSM-III-R categories. Those psychiatric disorders which are described in this classification system and found to occur in severely and profoundly mentally retarded individuals were considered. Literature reviews of the prevalence of various disorders and other scales designed for use with mentally retarded persons were consulted (e.g., BDS, ABC). The authors attempted to construct a comprehensive assessment tool to address a wide range of
nonverbal aberrant behaviors and symptoms, as well as some verbal items. While there is not a direct correspondence between the subscales and DSM-III-R criteria, every effort was made to develop a scale directly comparable with present psychiatric classification (Matson, et al., 1991). Two main considerations guided the transformation of DSM-III-R criteria into items: (a) appropriateness to subjects with severe disabilities and (b) comprehensibility to informants (Coe, 1988). The authors caution that the DASH is a screening instrument and ought never be used as the sole criteria for diagnosis.

The DASH consists of 12 demographic items (see Table 1) and 86 scale items (see Table 2). Thirteen subscales were identified from this search (a) Anxiety, (b) Mood Disorder - Depression, (c) Mood Disorder - Mania, (d) Autism, (e) Schizophrenia, (f) Stereotypies/Tics, (g) Self-injurious Behaviors, (h) Elimination Disorders, (i) Eating Disorders, (j) Sleep Disorders, (k) Sexual Disorders, (l) Organic Syndromes, and (m) Impulse Control and Miscellaneous Problems.

The DASH is administered to third party informants. Each item is scored on three dimensions: frequency, duration, and severity. Each dimension is operationally defined to elicit accurate and reliable information (see Table 3). The scale is administered by a mental health professional who reads items aloud to an informant with extensive contact with the individual being evaluated (usually
Table 1
Diagnostic Assessment for the Severely Handicapped (DASH) Scale
Background Information

(Interview Version)

| Name | ____________________________ |
| Date of Birth | ____________________________ |
| Date of Rating | ____________________________ |
| Age | ____________________________ |
| Interviewer | ____________________________ |
| Informant | ____________________________ |

1. Individual’s race.
   1. White
   2. Black
   3. Other

2. Sex.
   1. Female
   2. Male

3. Level of mental retardation
   1. Profound
   2. Severe

4. Physical disabilities.
   1. Blind
   2. Deaf
   3. Epileptic
   4. Confined to bed or wheelchair
   5. In coma or semi-conscious
   6. Cerebral Palsy
   7. Other
   8. No Physical disability or none of above

(table con’d.)
5. Living situation.  
1. Family Home  
2. Group Home  
3. Institution  
4. Other  

6. 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  

7. 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  

8. How much contact does the informant have on a daily basis with the individual?  
1. More than 12 hours  
2. 7 to 12 hours  
3. 2 to 6 hours  
4. 1 hour or less  

9. In what setting does most of the contact take place?  
1. Sheltered workshop/day class  
2. Living area/residential setting  
3. Treatment/consultation  
4. Other  

10. What is the ratio of retarded persons to caretakers in this setting?  
1. 1 retarded person to more than 1 caretaker  
2. 1 retarded person to 1 caretaker  
3. 2 to 5 retarded persons to 1 caretaker  
4. 6 to 10 retarded persons to 1 caretaker  
5. More than 10 retarded persons to 1 caretaker  

11. How long has the 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  

(table con’d.)
12. Present Psychotropic Medication(s):

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<th>Name</th>
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Table 2
The Diagnostic Assessment for the Severely Handicapped (DASH) Scale - Items Arranged by Subscale

1) **ANXIETY**

1. Trembles or shakes when confronted with certain objects or situations
2. Runs away or hides from certain objects or situations
3. Clings to family or staff when confronted with certain objects or situations
4. Cries when confronted with certain objects or situations
5. Visibly sweats when confronted with certain objects or situations
6. Breathing becomes heavier or faster when confronted with certain objects or situations
7. Becomes agitated or cries when separated from familiar people
8. Trembles or shakes for no obvious reason

2) **MOOD DISORDER - DEPRESSION**

1. Has difficulty getting to sleep
2. Wakes up frequently during the night
3. Has difficulty staying awake during the day
4. Has a large appetite
5. Has little appetite
6. Is cranky or irritable
7. Cries easily or cries for no apparent reason
8. Lacks interest in a favorite activity or object
9. Responds slowly
10. Is restless or agitated
11. Complains about physical disabilities
12. Complains about mental disabilities
13. Complains about lack of things to amuse self with or do
14. Complains about absence of particular individuals
15. Speech or sound production is slow or lacks emotion

3) **MOOD DISORDER - MANIA**

1. Has decreased need for sleep
*2. Is restless or agitated
3. Talks loudly
4. Is extremely happy or cheerful for no obvious reason
*5. Is cranky or irritable

(table con’d.)
3) **MOOD DISORDER - MANIA** Continued

*6. Is easily distracted
7. Talks quickly

4) **PERVERSIVE DEVELOPMENTAL DISORDER / AUTISM**

1. Resists or ignores attempts by others to interact with him/her
2. Repeats the same words or sounds
3. Talks about the same subject or concern over and over
4. Engages in repetitive body movements such as rocking, spinning or handflapping
5. Amuses self with limited set of objects or highly repetitive activities
6. Becomes upset with a change in routine or surroundings

5) **SCHIZOPHRENIA**

1. Mood seems totally unrelated to what is going on around him/her
2. Stands or sits in bizarre or inappropriate positions
3. Talks with imaginary people or inanimate objects such as televisions or pictures
4. Sees things that are imaginary
5. Hears things that are imaginary
6. Experiences touch or other sensations on his/her skin that are imaginary
7. Speech is a jumble of words or ideas that make little or no sense

6) **STEREOTYPES / TICS**

*1. Repeats the same words or sounds
*2. Talks about the same subject or concern over and over
3. Collects or hoards objects
*4. Engages in repetitive body movements such as rocking, spinning or handflapping
*5. Amuses self with limited set of objects or highly repetitive activities
6. Exhibits a period of sudden motor or vocal activity such as twitching tapping or yelling
7. Sucks or mouths parts of his/her body

7) **SELF INJURIOUS BEHAVIORS**

1. Bites self
2. Bangs head against objects
3. Hits self

*(table con’d.)*
7) **SELF INJURIOUS BEHAVIORS** - Continued
   4. Picks at sores or wounds
   5. Pulls own hair out

8) **ELIMINATION DISORDERS**
   1. Fails to control bowel movement
   2. Fails to control bladder

9) **EATING DISORDERS**
   1. Vomits or regurgitates food
   2. Tries to or actually eats objects that are not food such as paper, paint chips or toys
   3. Steals food
   4. Quickly consumes a large amount of food in a short period of time
   *5. Has little appetite
   6. Chokes on food or becomes sick because he/she eats too fast

10) **SLEEP DISORDERS**
   1. Sleepwalks
   2. Wakes up crying or screaming
   *3. Has difficulty getting to sleep
   *4. Wakes up frequently during the night
   *5. Has difficulty staying awake during the day

11) **SEXUAL DISORDERS**
   1. Strips off clothing or exposes self in public
   2. Masturbates in public
   3. Engages in inappropriate touching or fondling of others

12) **ORGANIC SYNDROMES**
   1. Speech is harder to understand
   2. Forgets words or uses words less correctly than before
   3. Is unable to remember things that he/she once knew
   *4. Is restless or agitated
   *5. Responds slowly
   6. Is easily distracted
   (table con’d.)
12) **ORGANIC SYNDROMES** - Continued
7. Does not respond to loud or nearby sound
8. Does not respond to nearby light or movement
9. Displays rapid change in mood

13) **IMPULSE CONTROL & MISCELLANEOUS BEHAVIOR PROBLEMS**

1. Is impatient when waiting for needs or demands to be met
2. Hits or pinches other people
3. Bites other people
4. Throws objects at other people
5. Verbally abuses people (for example yelling and shouting)
6. Handles or plays with saliva, nasal mucus or bowel movements
7. Resists instruction or guidance from family of staff
8. Exhibits excessive need for attention or approval from others
9. Displays unprovoked temper tantrum or rage
10. Is easily frustrated by the difficulty of a task
11. Takes another person's property or belongings
12. Damages or destroys property
13. Runs away from supervision
14. Engages in unprovoked screaming or yelling
15. Starts a fire
16. Curses

(* Indicates item appeared on a previous subscale)
Table 3
Frequency and Duration Ratings for the Diagnostic Assessment for the Severely Handicapped (DASH) Scale

**Frequency** = How often has this behavior occurred during the last 2 weeks?

0  Not at all
1  Between 1 and 10 times
2  More than 10 times

**Duration** = How long has this behavior been occurring for this individual?

0  Less than 1 month
1  1 to 12 months
2  Over 12 months
a relative or direct care staff member). The Appendix contains a copy of the DASH Manual which details the instructions for administration.

Two subscale scoring methods were used in the initial studies of the DASH. For the first five subscales, which represent more classic forms of psychopathology, endorsement of more than half of the subscale's items (frequency dimension) qualified the individual to meet criteria for consideration on that subscale. For the remaining eight subscales, endorsement of a single item with a severity rating of one or two qualified as consideration for that disorder. The authors' noted that these criteria were set arbitrarily on the basis of clinical judgement. It was determined that multiple symptoms would best approximate DSM-III-R diagnostic classes on the first five subscales, but a significantly disturbing single item could be considered in the latter subscale areas (Matson, Gardner, Coe & Sovner, 1991).

Reliability of the DASH. Two studies of the reliability of the DASH have been conducted. The first was part of the initial development of the instrument (Matson, et al., 1991). Inter-rater reliability was examined using 29 informant-interviewer pairs. While this was a small sample the initial results were promising with proportion of agreement ratings yielding reliability coefficients of 0.91 for the frequency dimension, 0.95 for duration and 0.96 for severity.

Internal consistency values were established by computing the coefficient alpha statistic on a sample of 504 severely and profoundly mentally retarded adults.
form institutions in two states. These results varied substantially between subscales ranging from 0.84 for elimination disorders and 0.20 for schizophrenia. Most subscales were reported to obtain coefficients in the 0.40 to 0.60 range.

The second reliability study using the DASH was conducted by Sevin (1992). The sample included 658 severely and profoundly mentally retarded adults. Inter-rater reliability was calculated for 73 subjects using percentage agreement and kappa coefficients. Again, mean percentage agreements across items showed promise; 0.86 for frequency, 0.85 for duration and 0.95 for severity. Kappa values for most items ranged from 0.4 to 0.75 in both frequency and duration dimensions, suggesting adequate agreement. Severity rating kappa values were consistently low. Kappa values were also adequate for most subscales, with the exception of the Anxiety and Schizophrenia subscales which indicated poor agreement.

Sevin (1992) also examined test-retest reliability on 41 subjects over a two week period using the same interviewer-informant pairs. These findings were similar to those for inter-rater and suggested adequate stability for the frequency and duration dimensions (kappa values ranged from 0.4 and 0.75) but poor stability for the severity ratings.

Using the entire sample, Sevin (1992) also conducted analyses of internal consistency. Alpha values ranged from 0.39 to 0.78, with most subscale values
below 0.70. Like the initial study, these data suggest that the subscale items do not tap unitary dimensions of behavior.

In summary, two studies have examined the reliability of the DASH (Matson, et al., 1991; & Sevin, 1992). Inter-rater reliability using percentage agreements were consistently high in both studies. When these data were corrected for chance agreement using the kappa coefficient a slightly different picture emerged. The frequency and duration dimensions appear to be adequately reliable, however the severity ratings failed to meet minimum standards for agreement. Sevin (1992) offered two possible explanations for this finding. First, severity ratings were more frequently endorsed as zero than frequency or duration, thus the percentage agreement values would tend to be inflated and kappa values would be lowered. Second, severity ratings differed from frequency and duration in that they call for qualitative rather than quantitative judgements. This may have negatively affected reliability. Stability analyses were similar in that frequency and duration coefficients suggested adequate reliability for most items while severity ratings were less than satisfactory. These findings are particularly important for future studies using the DASH since eight of the subscales have relied upon severity ratings of one or two as criteria for subscale endorsement. Thus, examination of the distributions on these eight subscales, using the more reliable dimensions could produce more meaningful cut-off criteria.
A second major finding impacting this and future studies with the DASH concerns the Anxiety and Schizophrenia subscales. Sevin’s (1992) findings suggest that the inter-rater as well as stability data do not support the use of these subscales for research purposes. It has been suggested that schizophrenia does not exist in the severely impaired population (Reid, 1976) yet, it may be more appropriate to conclude that schizophrenia and anxiety are more difficulty to assess in a severely handicapped population, perhaps due to the heavy reliance of self-reported information required to identify these syndromes.

Prevalence Data from the DASH. In the preliminary DASH study (Matson, et al., 1991) the number of endorsements per item were calculated. These data suggested that elimination problems, autistic behaviors and stereotypies were the most commonly reported. In Sevin’s (1992) study stereotypies, self-injury, and aggression were the most common behavior disturbances, while autistic and manic symptoms were the most common of the more classic psychopathological disorders. Considering Sevin’s findings about the questionable reliability of severity ratings, as well as Anxiety and Schizophrenia subscales data concerning subscale prevalence was difficult to interpret. The current study will exclude analyses of the severity dimension, Anxiety and Schizophrenia subscales due to these findings.

Factor Analysis of the DASH. Matson, Coe, Gardner, and Sovner (1991) conducted a factor analytic study of the DASH using the original standardization sample. This analysis yielded six factor scales: (I) Emotional Lability, (II)
Aggression/Conduct Disorder, (III) Language Disorder/Verbal Aggression, (IV) Social Withdrawal/Stereotypy, (V) Eating Disorder, (VI) Sleep Disorder. Alpha coefficients for the six factors ranged from 0.62 to 0.80. Table 4 lists item descriptions for the six factors. Sevin (1992) also reported adequate reliability for the DASH factors.
Table 4  
The Diagnostic Assessment for the Severely Handicapped (DASH) Scale -  
Items Arranged by Factor

**Factor 1  Emotional Lability**
1. Exhibits a period of sudden motor or vocal activity such as twitching tapping or yelling  
2. Engages in unprovoked screaming or yelling  
3. Cries easily or cries for no apparent reason  
4. Cries when confronted with certain objects or situations  
5. Displays unprovoked temper tantrum or rage  
6. Wakes up crying or screaming  
7. Displays rapid change in mood  
8. Pulls own hair out

**Factor 2  Antisocial/Conduct Disorder**
1. Hits or pinches other people  
2. Damages or destroys property  
3. Resists instruction or guidance from family or staff  
4. Strips off clothing or exposes self in public  
5. Runs away from supervision  
6. Throws objects at other people  
7. Masturbates in public  
8. Bites other people

**Factor 3  Language Disorder/Verbal Aggression**
1. Talks Loudly  
2. Talks about same object or concern over and over  
3. Talks quietly  
4. Verbally abuses people  
5. Curses  
6. Speech is a jumble of words or ideas that make little or no sense  
7. Complains about absence of a particular individual  
8. Talks with imaginary people or inanimate objects such as televisions or pictures

(table con’d.)
Factor 4  Social Withdrawal/Stereotypy

1. Resists or ignores attempts by others to interact with him/her
2. Mood seems totally unrelated to what is going on around him/her
3. Amuses self with a limited set of objects or highly repetitive activities
4. Is easily distracted
5. Repeats same words or sounds
6. Speech or sound production is slow or lacks emotion
7. Engages in repetitive body movements such as rocking, spinning, or handflapping
8. Responds slowly

Factor 5  Eating Disorder

1. Quickly consumes a large amount of food in a short period of time
2. Has a large appetite
3. Chokes on food or becomes sick because he/she eats too fast
4. Vomits or regurgitates food
5. Is extremely happy or cheerful for no obvious reason
6. Trembles or shakes for no obvious reason

Factor 6  Sleep Disorder

1. Has decreased need for sleep
2. Has difficulty getting to sleep
3. Wakes up frequently during the night
CHAPTER 3 MATERIALS AND METHODS

Purpose of the Study

Psychopathology often includes significant impairment to an individual’s behavioral, affective and cognitive functioning. Adaptive functioning in the everyday tasks of life, is often seriously diminished by the presence of a psychiatric condition. Psychopathology in mentally retarded persons can have devastating effects on mentally retarded individuals and their caregivers, in terms of personal suffering and restricted well-being. Current findings in the area of dual diagnosis indicate that mentally retarded persons are subject to the full range of clinical syndromes. Diagnostic categorization appears to follow the same general standards that apply to nonretarded individuals. However, difficulties with self-report information and restricted real world experience may contribute to the manifestation of symptoms and syndromes that appear somewhat different in the severely handicapped from typical clinical pictures. These data offer the opportunity to study how the manifestation of psychopathology in severely handicapped persons differs from our current understanding of psychopathology. With these delineations defined, practitioners in applied settings will be more informed as to the signs and patterns of psychopathology and better able to detect disorders which are currently underidentified. Mentally retarded persons already have intellectual limitations which impair learning and daily functioning and restrict integration into educational, social, employment and community settings. In many
cases identification of psychopathology can lead to application of effective treatments which can reduce barriers to the community and lead to improved quality of life. Thus, developing norm references for this population is particularly compelling.

This study examined a large normative reference group for psychopathology in institutionalized severely and profoundly mentally retarded individuals using the DASH. This goal was accomplished by combining data sets from three states. The purpose for combining these data sets was to develop a normative sample more nationally representative than those presented in recent studies and to insure large enough samples of individuals with different symptoms to study the proposed hypotheses. While using an institutionalized sample limits widespread generalization to non-institutionalized mentally retarded adults, these data represent important incidence information for those who reside and work in facilities for the severely handicapped. The study describes the relative frequency of various symptoms and syndromes within the whole sample. Another objective is to determine optimum cutoff scores, indicating the need for further assessment in a particular area of psychopathology for the individual. An analysis of the differences between those who function in the severely mentally retarded range and the profoundly mentally retarded range has not been conducted in this detail using a standardized instrument before. It is hypothesized that differences will be noted
in psychopathology between severely and profoundly mentally retarded groups (Hypothesis 1).

Item analyses within subscales will help to illuminate whether there are critical items that distinguish those who exhibit symptoms from those who meet DASH criteria for diagnosis. It is hypothesized that some items will be more frequently reported, more critical to the diagnostic picture than others and maintained for longer durations (Hypothesis 2).

Additional studies will attempt to answer specific questions about the importance of age and gender in particular areas of psychopathology. The investigation will include an analysis of whether certain findings in the study of normal clinical samples hold true with the severely and profoundly mentally retarded. Gender factors are clearly found in the area of depression where females are reported to have higher incidence than males. Pervasive developmental disorders are found to be more prevalent in males than females. Females have been reported to exhibit non-confrontational impulse control behaviors, whereas males are typically more combative. These gender differences will be investigated to determine whether similar patterns apply to the severely handicapped. It is hypothesized that gender differences will be noted for individuals with depression, pervasive developmental disorders and aggression (Hypothesis 3).

Age differences will also be examined. Elderly people in the normal population exhibit a higher incidence of organic syndromes and sleep disorders than
their younger counterparts. There is some evidence that suggests similar patterns in the mentally retarded. Some research also suggests that a general shift from conduct problems to emotional problems occurs in mentally retarded persons as they age. It is hypothesized that elderly mentally retarded persons will differ from younger mentally retarded adults in the areas of Organic Syndromes, Sleep Disorders, emotional (Depression and Mania) and conduct disturbances (Impulse Control/Behavior Problems) (Hypothesis 4).

In less severely impaired groups, a relationship between depression and aggression has been repeatedly established. This study will examine whether the same is found in severely handicapped persons. Depressed mentally retarded adults are expected to display concomitant aggressive behaviors (Impulse Control/ Behavior Problems) (Hypothesis 5).

Normative information can play an important auxiliary role in guiding future treatments and research with this population, because clinicians typically operate with general heuristics about the way that psychopathology is manifested. Confirming that these same heuristics are applicable or need revision when diagnosing severely handicapped individuals, can improve the efficiency and accuracy of assessment and diagnosis, leading to improvements in treatment.
Method

Subjects

The sample for this study was developed by combining two existing data sets. One data set consisted of 813 participants from state schools, group homes and mental retardation centers in Texas, while the other data set included 525 adults from similar facilities in Louisiana and Wisconsin. Thus, 1338 subjects were considered in the sample. Thirty-two subjects were eliminated because they were under 18 years of age and 47 additional subjects were eliminated because they functioned in mild and moderate ranges of mental retardation. The remaining 1259 subjects were at least 18 years of age and considered to be severely or profoundly mentally retarded according to American Association on Mental Deficiency (1983) criteria, with deficits on standardized measures of both intellectual and adaptive behavior evident prior to age 18.

All residents in all facilities were eligible to participate. In some facilities all residents were included. In other facilities with extremely large census, subjects were selected for inclusion if they were scheduled for an annual evaluation during a four month period of data collection. This procedure was designed to ensure randomness and as a result, more representative data. In the large facilities subjects represented approximately one third of residents.

Demographic data were compared between the two data sets to ascertain a general sense of the equivalence of the samples. The mean age for the Texas
sample was 38.81, while the mean age for the Louisiana/Wisconsin sample was 38.57, with standard deviations of 13.86 and 14.31 respectively. Slight differences were noted in age categories (18-29 years, 30-39 years, 40-49 years, and 50+ years), $\chi^2(3, n=1259) = 79.24$, $p < .01$. In the younger groups the proportions were similar, whereas the Louisiana/Wisconsin group showed proportionately fewer 40-49 year olds and the Texas sample, proportionately fewer 50 years and older. In the Texas group there were 460 males (58%) and 334 females (42%), while the second sample had 249 males (54%) and 216 females (46%). A chi-square evaluation revealed that gender frequency distributions were unrelated to the source data set, $\chi^2(1, n=1259) = 2.29$, $p = .129$. Race distributions also revealed some differences, $\chi^2(3, n=1259) = 79.24$, $p < .01$. In the Texas sample there were 558 white (70%), 134 black (17%), 99 hispanic (12%), and 3 Asian (0.4%) adults. The Louisiana/Wisconsin group had 413 white (89%) and 52 black (11%) adults. Differences were accounted for by the absence of Hispanic and Asian subjects in the second data set. These discrepancies notwithstanding, samples were considered largely comparable in terms of subject composition. In actuality, these discrepancies supported combining the data sets to achieve a sample more reflective of the wider community.

Table 5 displays the demographic data for the total sample population, and separated by level of mental retardation. Severely retarded individuals compose 44.9% of the overall sample, while profoundly mentally retarded persons represent
55.1%. The severely and profoundly mentally retarded groups are similar in terms of age, sex, and race. Differences between severely and profoundly mentally retarded groups are apparent in the area of physical disabilities, where higher percentages of people in the profoundly mentally retarded group are afflicted with every disability, than those persons functioning in the severe range. In the severely mentally retarded group, 237 people had a total of 265 physical disabilities. In the profoundly mentally retarded group, 398 people had a total of 850 physical disabilities, thus many more individuals in this group had multiple physical handicaps. Overall, the highest proportion of the sample had no physical disability (49.5%). Epilepsy was the most common physical disability at 27.2% of the total sample and non-ambulatory status (21.8%) was the second most frequent physical disability.

Raters and Informants

All assessments were conducted by personnel within the participating institutions or trained graduate and undergraduate students. A rater or interviewer was the person responsible for administration of the DASH. For the Texas sample raters were mental health or mental retardation professionals (staff psychologists, QMRPs or case managers) with at least a bachelors degree. For the Louisiana and Wisconsin sample 55 graduate and undergraduate student raters were trained to conduct the interviews including five practice administrations of the DASH. Raters (and seven Facility Project Coordinators) were trained in the study procedures by
Table 5
Subject Demographics

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Severe Mentally Retarded N = 565</th>
<th>Profoundly Mentally Retarded N = 694</th>
<th>Total Sample N = 1259</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>38.34</td>
<td>39.03</td>
<td>38.72</td>
</tr>
<tr>
<td>SD</td>
<td>13.83</td>
<td>14.17</td>
<td>14.02</td>
</tr>
<tr>
<td>Range</td>
<td>18 - 83</td>
<td>18 - 97</td>
<td>18 - 97</td>
</tr>
<tr>
<td>18 - 29 years</td>
<td>174</td>
<td>213</td>
<td>387</td>
</tr>
<tr>
<td>30 - 39 years</td>
<td>184</td>
<td>216</td>
<td>400</td>
</tr>
<tr>
<td>40 - 49 years</td>
<td>106</td>
<td>107</td>
<td>213</td>
</tr>
<tr>
<td>50 years and over</td>
<td>101</td>
<td>158</td>
<td>259</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>322</td>
<td>387</td>
<td>709</td>
</tr>
<tr>
<td>Female</td>
<td>243</td>
<td>307</td>
<td>450</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>461</td>
<td>510</td>
<td>971</td>
</tr>
<tr>
<td>Black</td>
<td>79</td>
<td>107</td>
<td>186</td>
</tr>
<tr>
<td>Hispanic</td>
<td>24</td>
<td>75</td>
<td>99</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

(table con’d.)
Severely Mentally Retarded
N = 565
44.9%

Profoundly Mentally Retarded
N = 694
55.1%

Total Sample
N = 1259
100%

<table>
<thead>
<tr>
<th>Physical Disability</th>
<th>Severely Mentally Retarded</th>
<th>Profoundly Mentally Retarded</th>
<th>Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blind</td>
<td>23 (4%)</td>
<td>111 (15.9%)</td>
<td>134 (10.3%)</td>
</tr>
<tr>
<td>Deaf</td>
<td>34 (6%)</td>
<td>53 (7.6%)</td>
<td>87 (6.9%)</td>
</tr>
<tr>
<td>Epileptic</td>
<td>78 (13.8%)</td>
<td>265 (38.2%)</td>
<td>333 (27.2%)</td>
</tr>
<tr>
<td>Non ambulatory</td>
<td>55 (9.7%)</td>
<td>220 (31.7%)</td>
<td>275 (21.8%)</td>
</tr>
<tr>
<td>Coma</td>
<td>0 (0%)</td>
<td>4 (0.005%)</td>
<td>4 (0.003%)</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>26 (4.6%)</td>
<td>98 (14.1%)</td>
<td>124 (9.8%)</td>
</tr>
<tr>
<td>Other</td>
<td>49 (8.6%)</td>
<td>99 (14.2%)</td>
<td>148 (11.7%)</td>
</tr>
<tr>
<td>None</td>
<td>328 (58%)</td>
<td>296 (42.7%)</td>
<td>624 (49.5%)</td>
</tr>
<tr>
<td>Total Physical Disabilities</td>
<td>265</td>
<td>850</td>
<td>1115</td>
</tr>
</tbody>
</table>
a Project Research Assistant. Facility Project Coordinators supervised, monitored and collected assessments within the respective facility. The Project Research Assistant made monthly site visits to monitor the progress and integrity of the assessments.

Informants were those individuals selected to answer the actual assessment questions concerning specific subject behaviors. Direct care staff with a minimum of one month working knowledge of the subject served as the informants. In most cases (89%) the informants had greater than six months regular contact with the subject and in 78.4% of cases, the working knowledge of the person was one year or longer. When an informant had insufficient knowledge to answer an item, other staff with more experience and/or documentation from case files were consulted.

Measures

The assessment consisted of two parts: 1) a 12 item background information questionnaire (see Table 1) and 2) the DASH scale. (see Table 2). For each subject the background information was completed by raters on the basis of case files, medical records, and routine psychological and educational evaluations. The DASH measures were completed by a rater based on the responses of an informant. All protocols considered for analysis were complete.

Design

After a description of the subject sample (see Table 5), appropriate diagnostic indexes for the DASH were established, on the basis of norms rather
than clinical judgement. The study examined the number and percent of the population with no subscale elevations, one subscale elevation, two subscale elevations, etc. This examination yielded general information concerning the levels of psychopathology in the sample.

The second examination included the subscale and factor distributions. Means and standard deviations for each reliable subscale were computed for frequency and duration. Severely and profoundly mentally retarded groups, were examined separately to determine if differences exist in their subscale patterns of psychopathology. Distributions for the factors established in earlier study (Matson, Gardner, Coe, & Sovner, 1991) were also conducted, including comparisons between levels of mental retardation. The analysis of the norms for 11 subscales was designed to yield information concerning what might be expected from institutionalized severely and profoundly mentally retarded adults.

Second, frequency of endorsements were computed for each item. These data demonstrate frequency and variance in behavior problems exhibited in the sample population. The most frequent and durable items were examined within subscales and for the total DASH scale. Critical items within subscales were determined by dichotomizing subscale distributions into those above and below the cut score. Then differences between percent endorsement per item for the two groups were computed and critical items are identified by the difference score. Items with the greatest difference scores were considered critical to the diagnostic
picture, since they represent items more strongly associated with those high in the particular area of psychopathology. This data is expected to yield new information concerning what behaviors might be considered to be diagnostically significant from this population on the DASH.

Gender differences were examined for three areas of psychopathology. Mean scores for male and females were compared for the Depression subscale, and the Pervasive Developmental Disorder/Autism subscale. The Impulse Control/Behavior Problems subscale was divided into confrontational and non-confrontational items and examined separately. Means for males and females were compared to determine whether members of this population exhibit traditional differences in the depression, pervasive developmental disorders and styles of conduct disruption displayed. Independent t-tests were computed to examine differences between means on the frequency dimension.

Age differences were studied for five subscales. Using extreme group comparisons (those under 30 years and those 50 and older) mean scores on the Organic Syndromes, Sleep Disorder, Depression, Mania and Impulse Control subscales were compared with independent t-tests.

The relationship between depression and aggression was examined. Those who meet Depression subscale criteria were compared with the rest of the sample by testing whether the mean of Impulse Control/Behavior Problems subscale was
higher for this group than non-depressed persons. An independent t-test was employed.
CHAPTER 4 RESULTS AND DISCUSSION

Results

General Findings

The data were analyzed to ensure that the assumptions for the analyses were met. As a screening tool, it is useful to establish DASH subscale indices which signify that a particular score on a subscale warrants further assessment. Cutoff scores were developed for each subscale by adding one standard deviation to the subscale mean and rounding to the lowest integer. Table 6 shows the cutoff scores for the 11 subscales and the actual number of subjects who scored above the cutoff for each subscale. Distributions above cutoff criteria, varied somewhat from the expected 16%. Self Injurious Behaviors (21.3%), Elimination Disorders (19.7%), Sexual Disorders (18.4%) and Depression (17.6%) are among the subscales which exhibit rates above the expected figure. Subscales that produced lower than expected frequencies above the cutoff score were Sleep Disorders (8.1%), Eating Disorders (9.8%), and Mania (11.9%).

Subscale Elevations. The number of subscales for which each subject showed elevation(s) was determined by first comparing the individual’s score with the cutoff score for each subscale. The number of subscale elevations above the

1 Many researchers have shown that even considerable departures from normality and homogeneity of variance have relatively little influence upon the t-test (Young & Veldman, 1965; Boneau, 1960; Scheffe, 1959; Lindquist, 1953). Robustness to these violations is particularly powerful when sample sizes are large, ratio of n’s is less than 1.5 (larger to smaller) and alpha levels are conservative; thus, the data herein meet these qualifying conditions and the statistical analyses are considered robust despite some non-normality and heterogeneity in the variances (Stephens, 1994).
Table 6
Diagnostic Indices for DASH Subscales

<table>
<thead>
<tr>
<th>SUBSCALE</th>
<th>Range Possible</th>
<th>Cutoff Score</th>
<th>1SD Above Mean</th>
<th>Number of Subjects</th>
<th>Scored above cutoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression (0 - 30)</td>
<td></td>
<td>5</td>
<td>222</td>
<td>(17.6%)</td>
<td></td>
</tr>
<tr>
<td>Mania (0 - 16)</td>
<td></td>
<td>4</td>
<td>150</td>
<td>(11.9%)</td>
<td></td>
</tr>
<tr>
<td>Pervasive Developmental Disorder/Autism (0 - 12)</td>
<td>4</td>
<td>187</td>
<td>(14.9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stereotypies/Tics (0 - 14)</td>
<td></td>
<td>4</td>
<td>214</td>
<td>(17.0%)</td>
<td></td>
</tr>
<tr>
<td>Self Injurious Behavior (0 - 10)</td>
<td></td>
<td>2</td>
<td>269</td>
<td>(21.4%)</td>
<td></td>
</tr>
<tr>
<td>Elimination Disorders (0 - 4)</td>
<td></td>
<td>2</td>
<td>249</td>
<td>(19.8%)</td>
<td></td>
</tr>
<tr>
<td>Eating Disorders (0 - 12)</td>
<td></td>
<td>2</td>
<td>124</td>
<td>(9.8%)</td>
<td></td>
</tr>
<tr>
<td>Sleep Disorders (0 - 10)</td>
<td></td>
<td>2</td>
<td>102</td>
<td>(8.1%)</td>
<td></td>
</tr>
<tr>
<td>Sexual Disorders (0 - 6)</td>
<td></td>
<td>1</td>
<td>232</td>
<td>(18.4%)</td>
<td></td>
</tr>
<tr>
<td>Organic Syndrome (0 - 18)</td>
<td></td>
<td>4</td>
<td>213</td>
<td>(16.9%)</td>
<td></td>
</tr>
<tr>
<td>Impulse Control (0 - 32)</td>
<td></td>
<td>6</td>
<td>191</td>
<td>(15.2%)</td>
<td></td>
</tr>
</tbody>
</table>
cutoff score was summed for each subject. The subjects were then categorized according to their total number of subscale elevations. Table 7 shows the number and percent of the subjects who had elevated scores by the number of subscales, for severely and profoundly mentally retarded groups and the total sample. Thirty-six percent of the sample had no elevations above cutoff scores, with severely mentally retarded persons slightly higher (40.4%) than the profoundly mentally retarded group (33.4%). Profoundly mentally retarded persons appeared to have a higher rate of single subscale elevations (27.2%) than did the severely mentally retarded group (19.8%). Nearly 64% of the sample had behaviors indicative of a need for further assessment of psychopathology, and of these over ½ showed elevated scores on a single subscale, while nearly ¾ (40% of the total sample) showed problems on 2 or more subscales.

Hypothesis 1. Relationships with Levels of Mental Retardation

Subscales - Frequency Dimension. Table 8 shows the means and standard deviations for frequency ratings on each of the 11 reliable subscales and total scores. Severely and profoundly mentally retarded group scores are displayed, as well as the total sample values. A series of 12 two-tailed independent t-tests were conducted, using a Bonferroni method as a correction for experiment-wise error (α = .004), to determine whether significant differences between severely and profoundly mentally retarded groups exist. This analysis indicated there were significant differences between the two groups on two subscales: Elimination
Table 7
Frequency of Sample Scored Above One Standard Deviation Above the Mean
by Number of Subscales

<table>
<thead>
<tr>
<th></th>
<th>Severely Mentally Retarded N=565</th>
<th>Profoundly Mentally Retarded N=694</th>
<th>Total Sample N=1259</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>No Subscale Elevations</td>
<td>228</td>
<td>40.4</td>
<td>232</td>
</tr>
<tr>
<td>Single Subscale</td>
<td>112</td>
<td>19.8</td>
<td>189</td>
</tr>
<tr>
<td>Two Subscales</td>
<td>79</td>
<td>14.0</td>
<td>88</td>
</tr>
<tr>
<td>Three Subscales</td>
<td>57</td>
<td>10.1</td>
<td>70</td>
</tr>
<tr>
<td>Four Subscales</td>
<td>29</td>
<td>5.1</td>
<td>40</td>
</tr>
<tr>
<td>Five Subscales</td>
<td>24</td>
<td>4.2</td>
<td>22</td>
</tr>
<tr>
<td>Six Subscales</td>
<td>19</td>
<td>3.4</td>
<td>22</td>
</tr>
<tr>
<td>Seven Subscales</td>
<td>9</td>
<td>1.6</td>
<td>11</td>
</tr>
<tr>
<td>Eight or more Subscales</td>
<td>8</td>
<td>1.5</td>
<td>20</td>
</tr>
</tbody>
</table>
Table 8
Means and Standard Deviations for Frequency Dimension by Subscale

<table>
<thead>
<tr>
<th>SUBSCALE</th>
<th>Range Possible</th>
<th>Severely Mentally Retarded N=565</th>
<th>Profoundly Mentally Retarded N=694</th>
<th>Total Sample N=1259</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Depression</td>
<td>(0 - 30)</td>
<td>3.25</td>
<td>2.64</td>
<td>2.92</td>
</tr>
<tr>
<td>Mania</td>
<td>(0 - 16)</td>
<td>2.09</td>
<td>2.27</td>
<td>1.92</td>
</tr>
<tr>
<td>PDD/Autism</td>
<td>(0 - 12)</td>
<td>1.97</td>
<td>2.26</td>
<td>2.22</td>
</tr>
<tr>
<td>Stereotypies/Tics</td>
<td>(0 - 14)</td>
<td>2.36</td>
<td>2.37</td>
<td>2.40</td>
</tr>
<tr>
<td>SIB</td>
<td>(0 - 10)</td>
<td>0.69</td>
<td>1.16</td>
<td>0.79</td>
</tr>
<tr>
<td>Elimination</td>
<td>(0 - 4)</td>
<td>0.28**</td>
<td>0.74</td>
<td>1.04**</td>
</tr>
<tr>
<td>Eating Disorders</td>
<td>(0 - 12)</td>
<td>0.82</td>
<td>1.20</td>
<td>0.90</td>
</tr>
<tr>
<td>Sleep Disorders</td>
<td>(0 - 10)</td>
<td>0.94**</td>
<td>1.29</td>
<td>0.68**</td>
</tr>
<tr>
<td>Sexual Disorders</td>
<td>(0 - 6)</td>
<td>0.65</td>
<td>1.10</td>
<td>0.53</td>
</tr>
<tr>
<td>Organic Syndrome</td>
<td>(0 - 18)</td>
<td>2.41</td>
<td>2.44</td>
<td>2.38</td>
</tr>
<tr>
<td>Impulse Control</td>
<td>(0 - 32)</td>
<td>3.39</td>
<td>3.35</td>
<td>3.11</td>
</tr>
<tr>
<td>Total Score</td>
<td>(0 - 168)</td>
<td>16.74</td>
<td>12.30</td>
<td>16.44</td>
</tr>
</tbody>
</table>

** = significant difference between severely and profoundly mentally retarded groups (p<.004)
Disorders were more frequent in the profoundly mentally retarded group than for severely mentally retarded persons, $t(1257) = 10.78$, $p < .001$, $\eta^2_p = .08$; and Sleep Disorders were more frequent for the severely mentally retarded group than profoundly mentally retarded persons, $t(1257) = 3.73$, $p = .0002$, $\eta^2_p = .01$. No difference was noted for the total scale score between the severely and profoundly retarded groups on the frequency dimension.

Subscales - Duration Dimension. Table 9 shows the means, standard deviations, and valid Ns (subscales and total scores) for the duration ratings when a frequency rating of 1 or 2 was endorsed, for severely and profoundly mentally retarded groups and the total sample. A series of 12 t-tests were performed with an alpha level adjusted for family wise error by the Bonferroni correction method ($\alpha = .004$). A significant difference was noted for the total scale duration scores between the severely and profoundly retarded groups, with profoundly retarded adults showing higher duration scores overall, $t(1226) = 5.82$, $p < .001$, $\eta^2_p = .027$. Nine of the subscales also showed that profoundly mentally retarded adults had significantly higher duration scores than severely retarded persons. These included Depression, $t(994) = 6.73$, $p < .001$, $\eta^2_p = .21$; Mania, $t(840) = 4.24$, $p < .001$, $\eta^2_p = .18$; Pervasive Developmental Disorders, $t(795) = 5.26$, $p < .001$, $\eta^2_p = .12$; Stereotypies and Tic Disorders, $t(880) = 5.92$, $p < .001$, $\eta^2_p = .07$; Self Injurious
Table 9
Means and Standard Deviations for Duration Dimension by Subscale
(Frequency Ratings 1 & 2)

<table>
<thead>
<tr>
<th>SUBSCALE (range)</th>
<th>Severely Mentally Retarded N=565</th>
<th>Profoundly Mentally Retarded N=694</th>
<th>Total Sample N=1259</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Valid N</td>
</tr>
<tr>
<td>Depression (0-30)</td>
<td>2.41**</td>
<td>3.03</td>
<td>475</td>
</tr>
<tr>
<td>Mania (0-16)</td>
<td>2.41**</td>
<td>3.12</td>
<td>392</td>
</tr>
<tr>
<td>PDD/Autism (0-12)</td>
<td>2.79**</td>
<td>2.71</td>
<td>340</td>
</tr>
<tr>
<td>Stereotypies/Tics (0-14)</td>
<td>2.44</td>
<td>2.56</td>
<td>388</td>
</tr>
<tr>
<td>SIB (0-10)</td>
<td>1.21**</td>
<td>1.52</td>
<td>182</td>
</tr>
<tr>
<td>Elimination (0-4)</td>
<td>1.07**</td>
<td>1.29</td>
<td>94</td>
</tr>
<tr>
<td>Eating Disorders (0-12)</td>
<td>1.26**</td>
<td>1.28</td>
<td>234</td>
</tr>
<tr>
<td>Sleep Disorders (0-10)</td>
<td>0.84**</td>
<td>1.18</td>
<td>167</td>
</tr>
<tr>
<td>Sexual Disorders (0-6)</td>
<td>1.03</td>
<td>1.20</td>
<td>241</td>
</tr>
<tr>
<td>Organic Syndrome (0-18)</td>
<td>2.55</td>
<td>2.53</td>
<td>394</td>
</tr>
<tr>
<td>Impulse Control (0-32)</td>
<td>3.54**</td>
<td>4.71</td>
<td>461</td>
</tr>
<tr>
<td>Total Score (0-164)</td>
<td>12.8**</td>
<td>14.25</td>
<td>552</td>
</tr>
</tbody>
</table>

** = significant difference between severely and profoundly mentally retarded groups (p<.008)
Behavior, \( t(453) = 4.33, p < .001, \eta_p^2 = .001 \); Elimination Disorders, \( t(358) = 10.74, p < .001, \eta_p^2 = .32 \); Eating Disorders, \( t(535) = 7.65, p > .001, \eta_p^2 = .18 \); Sleep Disorders, \( t(466) = 7.02, p < .001, \eta_p^2 = .02 \); and Impulse Control/Behavior Problems, \( t(963) = 4.46, p < .001, \eta_p^2 = .10 \). No duration differences were noted for the Sexual Disorders and Organic Syndromes subscales between the two levels of mental retardation.

**Factors - Frequency Dimension.** Table 10 shows the frequency dimension means and standard deviations for each factor. Severely and profoundly mentally retarded groups are displayed separately as well as the total sample. Severely and profoundly mentally retarded groups were examined for differences on mean factor scores by multiple two tailed independent t-tests (6 in all), using a Bonferroni correction (\( \alpha = .008 \)). The analyses indicated there were significant differences between the two groups on four factors. Two factors showed that severely mentally retarded persons were significantly higher on frequency scores than profoundly mentally retarded adults: Language Disorders/Verbal Aggression, \( t(1257) = 7.25, p < .001, \eta_p^2 = .40 \); and Sleep Disorders, \( t(1257) = 5.72, p < .001, \eta_p^2 = .02 \). Two other factors showed that profoundly mentally retarded persons had significantly higher frequency than severely mentally retarded adults: Social Withdrawal/Stereotypy, \( t(1257) = 4.38, p < .001, \eta_p^2 = .01 \); and Eating Disorders, \( t(1257) = 3.94, p < .001, \eta_p^2 = .01 \).
Table 10
Means and Standard Deviations for Frequency Dimension by Factor

<table>
<thead>
<tr>
<th>FACTOR (Score Range)</th>
<th>Severe Mentally Retarded N=565</th>
<th>Profoundly Mentally Retarded N=694</th>
<th>Total Sample N = 1259</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Emotional Lability (0-16)</td>
<td>1.27</td>
<td>1.79</td>
<td>1.56</td>
</tr>
<tr>
<td>Antisocial/Conduct Disorder (0-16)</td>
<td>1.85</td>
<td>2.05</td>
<td>1.68</td>
</tr>
<tr>
<td>Language Disorder/Verbal Aggression (0-16)</td>
<td>1.71**</td>
<td>2.33</td>
<td>0.86**</td>
</tr>
<tr>
<td>Social Withdrawal/Stereotypy (0-16)</td>
<td>2.56**</td>
<td>2.59</td>
<td>3.26**</td>
</tr>
<tr>
<td>Eating Disorder (0-12)</td>
<td>0.93**</td>
<td>1.45</td>
<td>1.30**</td>
</tr>
<tr>
<td>Sleep Disorder (0-6)</td>
<td>0.63**</td>
<td>1.06</td>
<td>0.32**</td>
</tr>
</tbody>
</table>

** = significant difference between severely and profoundly mentally retarded groups (p < .008)
Factors - Duration Dimension. Table 11 shows the factor means, standard deviations, and valid Ns for duration ratings when a frequency rating of 1 or 2 was endorsed. Severely and profoundly retarded scores are displayed, as well as the total sample values. A series of 6 two tailed independent t-tests were performed, using the Bonferroni method to correct for experiment-wise error rate ($\alpha = .008$). For two factors the profoundly mentally retarded group had significantly higher scores than severely mentally retarded persons; Social Withdrawal/Stereotypy, $t(916) = 7.13, p < .001, \eta^2 = .16$; and Sleep Disorder, $t(276) = 6.15, p < .001, \eta^2 = .13$.

Hypothesis 2. Differences in Item Frequency, Critical Importance and Duration.

Table 12 shows the items for each of the 11 subscales, ranked according to overall frequency of endorsement. Critical items are those thought to distinguish individuals who score above the cutoff score for a subscale from the rest of the sample. For each item, the percent of subjects scoring below the cutoff for whom an item was endorsed was subtracted from the percent of subjects scoring above the cutoff for whom an item was endorsed. A difference of 25% or greater was identified as the value for determining that an item would be considered of critical importance in helping to distinguish individuals with high scores in that area of psychopathology.
Table 11
Means and Standard Deviations for Duration Dimension by Factor
(Frequency Ratings 1 & 2)

<table>
<thead>
<tr>
<th>FACTOR (Score Range)</th>
<th>Severe Mentally Retarded N=565</th>
<th>Profoundly Mentally Retarded N=694</th>
<th>Total Sample N=1259</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Valid N</td>
</tr>
<tr>
<td>Emotional Lability (0-16)</td>
<td>2.24</td>
<td>2.96</td>
<td>268</td>
</tr>
<tr>
<td>Antisocial/Conduct Disorder (0-16)</td>
<td>1.84</td>
<td>2.22</td>
<td>362</td>
</tr>
<tr>
<td>Language Disorder/Verbal Aggression (0-16)</td>
<td>2.71</td>
<td>3.15</td>
<td>322</td>
</tr>
<tr>
<td>Social Withdrawal/Stereotypy (0-16)</td>
<td>3.12**</td>
<td>3.16</td>
<td>392</td>
</tr>
<tr>
<td>Eating Disorder (0-12)</td>
<td>1.94</td>
<td>1.87</td>
<td>232</td>
</tr>
<tr>
<td>Sleep Disorder (0-6)</td>
<td>0.62**</td>
<td>0.98</td>
<td>167</td>
</tr>
</tbody>
</table>

** = significant difference between severely and profoundly mentally retarded groups (p<.008)
Table 12
Item Endorsement by Subscale for the Frequency Dimension

<table>
<thead>
<tr>
<th>DEPRESSION ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Cranky/Irritable</td>
<td>446</td>
<td>35.4</td>
<td>67.6</td>
<td>28.5</td>
<td>39.1</td>
</tr>
<tr>
<td>*Responds slowly</td>
<td>401</td>
<td>31.9</td>
<td>70.3</td>
<td>23.6</td>
<td>46.7</td>
</tr>
<tr>
<td>Restless/Agitated</td>
<td>288</td>
<td>22.9</td>
<td>47.3</td>
<td>17.6</td>
<td>29.7</td>
</tr>
<tr>
<td>*Large appetite</td>
<td>238</td>
<td>18.9</td>
<td>40.1</td>
<td>14.4</td>
<td>25.7</td>
</tr>
<tr>
<td>Difficulty staying awake</td>
<td>206</td>
<td>16.4</td>
<td>42.8</td>
<td>10.7</td>
<td>32.1</td>
</tr>
<tr>
<td>Difficulty getting to sleep</td>
<td>204</td>
<td>16.2</td>
<td>36.0</td>
<td>12.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Complains about physical</td>
<td>134</td>
<td>10.6</td>
<td>23.9</td>
<td>7.8</td>
<td>16.1</td>
</tr>
<tr>
<td>Speech is slow</td>
<td>133</td>
<td>10.6</td>
<td>27.9</td>
<td>6.8</td>
<td>21.1</td>
</tr>
<tr>
<td>*Lacks interest</td>
<td>122</td>
<td>9.7</td>
<td>33.3</td>
<td>4.6</td>
<td>28.7</td>
</tr>
<tr>
<td>Wakes up frequently</td>
<td>95</td>
<td>7.5</td>
<td>25.2</td>
<td>3.8</td>
<td>21.4</td>
</tr>
<tr>
<td>Cries easily</td>
<td>88</td>
<td>7.0</td>
<td>20.3</td>
<td>4.1</td>
<td>16.2</td>
</tr>
<tr>
<td>Little appetite</td>
<td>31</td>
<td>4.8</td>
<td>11.3</td>
<td>3.5</td>
<td>7.8</td>
</tr>
<tr>
<td>Complains absence of individuals</td>
<td>44</td>
<td>3.5</td>
<td>8.6</td>
<td>2.4</td>
<td>6.2</td>
</tr>
<tr>
<td>Complains about mental</td>
<td>33</td>
<td>2.6</td>
<td>10.8</td>
<td>0.9</td>
<td>9.9</td>
</tr>
<tr>
<td>Complains of boredom</td>
<td>23</td>
<td>1.8</td>
<td>3.2</td>
<td>1.5</td>
<td>1.7</td>
</tr>
</tbody>
</table>

* = Critical Item (Above cut score % - Below cut score % ≥ 25%)  Bold letters = 3 most distinguishing critical items

(table con'd.)
<table>
<thead>
<tr>
<th>MANIA ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Cranky/Irritable</td>
<td>446</td>
<td>35.4</td>
<td>75.3</td>
<td>30.0</td>
<td>45.3</td>
</tr>
<tr>
<td>*Restless/Agitated</td>
<td>288</td>
<td>22.9</td>
<td>80.0</td>
<td>15.1</td>
<td>64.9</td>
</tr>
<tr>
<td>*Extremely happy</td>
<td>278</td>
<td>22.1</td>
<td>63.3</td>
<td>16.5</td>
<td>46.8</td>
</tr>
<tr>
<td>*Easily distracted</td>
<td>265</td>
<td>21.0</td>
<td>61.3</td>
<td>15.6</td>
<td>45.7</td>
</tr>
<tr>
<td>*Rapid changes in mood</td>
<td>175</td>
<td>13.9</td>
<td>64.0</td>
<td>7.1</td>
<td>56.9</td>
</tr>
<tr>
<td>*Talks loudly</td>
<td>135</td>
<td>10.7</td>
<td>50.0</td>
<td>5.4</td>
<td>44.6</td>
</tr>
<tr>
<td>Talks quickly</td>
<td>80</td>
<td>6.4</td>
<td>28.0</td>
<td>3.4</td>
<td>24.6</td>
</tr>
<tr>
<td>Decreased need for sleep</td>
<td>44</td>
<td>3.5</td>
<td>10.0</td>
<td>2.6</td>
<td>7.4</td>
</tr>
</tbody>
</table>

* = Critical Item (Above cut score % - Below cut score % = > 25%) Bold letters = 3 most distinguishing items
<table>
<thead>
<tr>
<th>PDD / AUTISM ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Repetitive body movements</td>
<td>371</td>
<td>29.5</td>
<td>69.5</td>
<td>22.5</td>
<td>47.0</td>
</tr>
<tr>
<td>*Resists or ignores others</td>
<td>289</td>
<td>23.0</td>
<td>67.4</td>
<td>15.2</td>
<td>52.2</td>
</tr>
<tr>
<td>*Limited activities</td>
<td>287</td>
<td>22.8</td>
<td>63.6</td>
<td>15.7</td>
<td>47.9</td>
</tr>
<tr>
<td>*Repeats words or sounds</td>
<td>282</td>
<td>22.4</td>
<td>75.4</td>
<td>13.2</td>
<td>62.2</td>
</tr>
<tr>
<td>*Talks about same subject over and over</td>
<td>227</td>
<td>18.0</td>
<td>48.1</td>
<td>12.8</td>
<td>35.3</td>
</tr>
<tr>
<td>*Upset by change</td>
<td>178</td>
<td>14.1</td>
<td>43.3</td>
<td>9.0</td>
<td>34.3</td>
</tr>
</tbody>
</table>

* = Critical Item (Above cut score % - Below cut score % = > 25%)  Bold letters = 3 most distinguishing items

(table con’d.)
### STEREOTYPIES / TICS ITEMS

<table>
<thead>
<tr>
<th>STEREOTYPIES / TICS ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Repetitive body movements</td>
<td>371</td>
<td>29.5</td>
<td>73.4</td>
<td>20.5</td>
<td>47.0</td>
</tr>
<tr>
<td>*Sudden motor/vocal activity</td>
<td>359</td>
<td>28.5</td>
<td>66.4</td>
<td>20.8</td>
<td>45.6</td>
</tr>
<tr>
<td>*Limited activities</td>
<td>287</td>
<td>22.8</td>
<td>61.2</td>
<td>14.9</td>
<td>47.9</td>
</tr>
<tr>
<td>*Repeats words or sounds</td>
<td>282</td>
<td>22.4</td>
<td>68.7</td>
<td>12.9</td>
<td>62.2</td>
</tr>
<tr>
<td>*Talks about same subject over</td>
<td>227</td>
<td>18.0</td>
<td>45.8</td>
<td>12.3</td>
<td>33.5</td>
</tr>
<tr>
<td>Collects or hoards objects</td>
<td>162</td>
<td>12.9</td>
<td>31.3</td>
<td>9.1</td>
<td>22.2</td>
</tr>
<tr>
<td>Sucks or mouths body parts</td>
<td>101</td>
<td>8.0</td>
<td>22.0</td>
<td>5.2</td>
<td>16.8</td>
</tr>
</tbody>
</table>

* = Critical Item (Above cut score % - Below cut score % => 25%)
Bold letters = 3 most distinguishing items
### SELF INJURIOUS BEHAVIOR ITEMS

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bites self</td>
<td>228</td>
<td>18.1</td>
<td>42.8</td>
<td>11.4</td>
<td>31.4</td>
</tr>
<tr>
<td>Hits self</td>
<td>180</td>
<td>14.3</td>
<td>53.5</td>
<td>3.6</td>
<td>49.9</td>
</tr>
<tr>
<td>Picks at sores</td>
<td>145</td>
<td>11.5</td>
<td>42.4</td>
<td>3.1</td>
<td>39.3</td>
</tr>
<tr>
<td>Bangs head</td>
<td>112</td>
<td>8.9</td>
<td>34.9</td>
<td>1.8</td>
<td>33.1</td>
</tr>
<tr>
<td>Pulls hair out</td>
<td>33</td>
<td>2.6</td>
<td>8.9</td>
<td>0.9</td>
<td>8.0</td>
</tr>
</tbody>
</table>

### ELIMINATION DISORDERS ITEMS

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fails to control bladder</td>
<td>294</td>
<td>23.4</td>
<td>82.7</td>
<td>8.7</td>
<td>74.0</td>
</tr>
<tr>
<td>*Fails to control bowels</td>
<td>252</td>
<td>20.0</td>
<td>92.0</td>
<td>2.3</td>
<td>89.7</td>
</tr>
</tbody>
</table>

* = Critical Item (Above cut score % - Below cut score % = > 25%)  
Bold letters = 3 most distinguishing items  

(table con’d.)
<table>
<thead>
<tr>
<th>EATING DISORDERS ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Steals food</td>
<td>239</td>
<td>19.0</td>
<td>76.6</td>
<td>12.7</td>
<td>63.9</td>
</tr>
<tr>
<td>*Quickly consumes food</td>
<td>210</td>
<td>16.7</td>
<td>69.4</td>
<td>10.9</td>
<td>58.5</td>
</tr>
<tr>
<td>*Eats objects that are not food</td>
<td>116</td>
<td>9.2</td>
<td>37.1</td>
<td>6.2</td>
<td>30.9</td>
</tr>
<tr>
<td>*Chokes on food or vomits</td>
<td>112</td>
<td>8.9</td>
<td>44.4</td>
<td>5.0</td>
<td>39.4</td>
</tr>
<tr>
<td>Little appetite</td>
<td>61</td>
<td>4.8</td>
<td>13.7</td>
<td>3.9</td>
<td>9.8</td>
</tr>
<tr>
<td>Vomits or regurgitates food</td>
<td>38</td>
<td>3.0</td>
<td>16.1</td>
<td>1.6</td>
<td>14.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SLEEP DISORDERS ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Difficulty staying awake</td>
<td>206</td>
<td>16.4</td>
<td>48.0</td>
<td>13.6</td>
<td>34.4</td>
</tr>
<tr>
<td>*Difficulty getting to sleep</td>
<td>204</td>
<td>16.2</td>
<td>71.6</td>
<td>11.3</td>
<td>60.3</td>
</tr>
<tr>
<td>*Wakes up frequently</td>
<td>95</td>
<td>7.5</td>
<td>52.9</td>
<td>3.5</td>
<td>49.4</td>
</tr>
<tr>
<td>Sleepwalks</td>
<td>61</td>
<td>4.8</td>
<td>26.5</td>
<td>2.9</td>
<td>23.6</td>
</tr>
<tr>
<td>*Wakes up crying / screaming</td>
<td>57</td>
<td>4.5</td>
<td>32.4</td>
<td>2.1</td>
<td>30.3</td>
</tr>
</tbody>
</table>

* = Critical Item (Above cut score % - Below cut score % => 25%)  Bold letters = 3 most distinguishing items
<table>
<thead>
<tr>
<th>SEXUAL DISORDERS ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strips clothing/exposes self</td>
<td>251</td>
<td>19.9</td>
<td>67.7</td>
<td>9.2</td>
<td>58.5</td>
</tr>
<tr>
<td>*Masturbates in public</td>
<td>138</td>
<td>10.9</td>
<td>49.6</td>
<td>2.2</td>
<td>47.4</td>
</tr>
<tr>
<td>Inappropriate touching of others</td>
<td>97</td>
<td>7.7</td>
<td>24.1</td>
<td>4.0</td>
<td>20.1</td>
</tr>
</tbody>
</table>

* = Critical Item (Above cut score % - Below cut score % = > 25%)
<table>
<thead>
<tr>
<th>ORGANIC SYNDROME ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Responds slowly</td>
<td>401</td>
<td>31.9</td>
<td>71.8</td>
<td>23.7</td>
<td>48.1</td>
</tr>
<tr>
<td>*No response to nearby light/movement</td>
<td>355</td>
<td>28.2</td>
<td>57.3</td>
<td>22.3</td>
<td>35.0</td>
</tr>
<tr>
<td>*Restless/Agitated</td>
<td>288</td>
<td>22.9</td>
<td>46.9</td>
<td>18.0</td>
<td>28.9</td>
</tr>
<tr>
<td>*Easily distracted</td>
<td>265</td>
<td>21.0</td>
<td>51.6</td>
<td>14.8</td>
<td>36.8</td>
</tr>
<tr>
<td>*Rapid change in mood</td>
<td>175</td>
<td>13.9</td>
<td>39.4</td>
<td>8.7</td>
<td>30.7</td>
</tr>
<tr>
<td>*No response to nearby sound</td>
<td>157</td>
<td>12.5</td>
<td>35.7</td>
<td>7.7</td>
<td>28.0</td>
</tr>
<tr>
<td>*Speech harder to understand</td>
<td>129</td>
<td>10.2</td>
<td>34.7</td>
<td>5.3</td>
<td>29.4</td>
</tr>
<tr>
<td>Unable to remember things once known</td>
<td>95</td>
<td>7.5</td>
<td>24.4</td>
<td>4.1</td>
<td>20.3</td>
</tr>
<tr>
<td>Forgets words/poor usage</td>
<td>46</td>
<td>3.7</td>
<td>11.7</td>
<td>2.0</td>
<td>9.7</td>
</tr>
</tbody>
</table>

* = Critical Item (Above cut score % - Below cut score % = > 25%)  **Bold letters** = 3 most distinguishing items
<table>
<thead>
<tr>
<th>IMPULSE CONTROL / BEHAVIOR PROBLEMS ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Above Cut Score Percent Endorsed</th>
<th>Below Cut Score Percent Endorsed</th>
<th>% Difference Between Above and Below Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Impatient when waiting</td>
<td>414</td>
<td>32.9</td>
<td>70.2</td>
<td>26.2</td>
<td>44.0</td>
</tr>
<tr>
<td>*Hits/pinches others</td>
<td>384</td>
<td>30.5</td>
<td>71.2</td>
<td>23.2</td>
<td>48.0</td>
</tr>
<tr>
<td>*Resists instruction/guidance</td>
<td>356</td>
<td>28.3</td>
<td>74.3</td>
<td>20.0</td>
<td>54.3</td>
</tr>
<tr>
<td>*Unprovoked temper/rage</td>
<td>237</td>
<td>18.8</td>
<td>66.0</td>
<td>10.4</td>
<td>55.6</td>
</tr>
<tr>
<td>*Need for attention/approval</td>
<td>226</td>
<td>18.0</td>
<td>52.4</td>
<td>11.8</td>
<td>40.6</td>
</tr>
<tr>
<td>*Unprovoked screaming/yelling</td>
<td>181</td>
<td>14.4</td>
<td>48.7</td>
<td>8.0</td>
<td>40.5</td>
</tr>
<tr>
<td>*Takes property or belongings</td>
<td>166</td>
<td>13.2</td>
<td>37.2</td>
<td>8.9</td>
<td>28.3</td>
</tr>
<tr>
<td>*Easily frustrated by tasks</td>
<td>153</td>
<td>12.2</td>
<td>37.2</td>
<td>7.7</td>
<td>29.5</td>
</tr>
<tr>
<td>*Throws objects at others</td>
<td>140</td>
<td>11.1</td>
<td>36.1</td>
<td>6.6</td>
<td>29.5</td>
</tr>
<tr>
<td>*Curses</td>
<td>121</td>
<td>9.6</td>
<td>31.9</td>
<td>5.6</td>
<td>26.3</td>
</tr>
<tr>
<td>*Runs away from supervision</td>
<td>120</td>
<td>9.5</td>
<td>35.6</td>
<td>4.9</td>
<td>30.7</td>
</tr>
<tr>
<td>*Verbally abuses people</td>
<td>113</td>
<td>9.0</td>
<td>36.6</td>
<td>4.0</td>
<td>32.6</td>
</tr>
<tr>
<td>Handles saliva/mucus/feces</td>
<td>97</td>
<td>7.7</td>
<td>18.3</td>
<td>5.8</td>
<td>12.5</td>
</tr>
<tr>
<td>*Damages or destroys property</td>
<td>91</td>
<td>7.2</td>
<td>35.1</td>
<td>2.2</td>
<td>32.9</td>
</tr>
<tr>
<td>Bites others</td>
<td>83</td>
<td>6.6</td>
<td>24.6</td>
<td>3.4</td>
<td>21.2</td>
</tr>
<tr>
<td>Starts a fire</td>
<td>5</td>
<td>0.4</td>
<td>1.6</td>
<td>0.2</td>
<td>1.4</td>
</tr>
</tbody>
</table>

* = Critical item (Above cut score % - Below cut score % = > 25%) Bold letters = 3 most distinguishing items
Table 13 lists the 20 most frequently endorsed items on the full DASH scale. These items represent the behaviors most commonly exhibited in the sample population overall. Table 14 shows the 10 least frequently endorsed items for the full DASH scale on this sample. These items represent the least commonly exhibited behaviors in this population of severely handicapped individuals.

Table 15 shows item distributions by subscale for duration. The frequency of endorsement for the item represents the valid N for that item. Mean duration values per item are listed as well as the frequency of responses at each level of duration (less than 1 month, 1-12 months, and longer than 12 months). For all subscales, over 40% of the duration item endorsements were longer than 12 months, and for most subscales (8 of 11) duration endorsements longer than 1 year were well above 50% of the total duration endorsements. Table 16 shows a rank order of the 20 items with the highest mean for duration. While the frequency of theses symptoms is variable, they represent those symptoms which maintain over the longest intervals. Table 17 shows the 10 items of shortest mean duration on the full DASH scale. Again frequency of behaviors varies greatly, however these items represent behaviors which were least durable in this sample.

Hypothesis 3. Relationships with Gender

Four syndromes were studied for gender effects: Depression, Pervasive Developmental Disorders, Confrontational Aggressive Behaviors, and
Table 13
Rank Order of the 20 Most Frequently Endorsed Items on Frequency Dimension

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Frequency</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Cranky/Irritable</td>
<td>446</td>
<td>35.4</td>
</tr>
<tr>
<td>2) Impatient when waiting for needs to be met</td>
<td>414</td>
<td>32.9</td>
</tr>
<tr>
<td>3) Responds slowly</td>
<td>401</td>
<td>31.9</td>
</tr>
<tr>
<td>4) Hits or pinches other people</td>
<td>384</td>
<td>30.5</td>
</tr>
<tr>
<td>5) Engages in repetitive body movements</td>
<td>371</td>
<td>29.5</td>
</tr>
<tr>
<td>6) Exhibits sudden motor or vocal activity</td>
<td>359</td>
<td>28.5</td>
</tr>
<tr>
<td>7) Resists instruction or guidance</td>
<td>356</td>
<td>28.3</td>
</tr>
<tr>
<td>8) Does not respond to nearby light/ movement</td>
<td>355</td>
<td>28.2</td>
</tr>
<tr>
<td>9) Fails to control bladder</td>
<td>294</td>
<td>23.4</td>
</tr>
<tr>
<td>10) Resists or ignores attempts to interact</td>
<td>289</td>
<td>23.0</td>
</tr>
<tr>
<td>11) Restless/Agitated</td>
<td>288</td>
<td>22.9</td>
</tr>
<tr>
<td>12) Amuses self with limited objects/activities</td>
<td>287</td>
<td>22.8</td>
</tr>
<tr>
<td>13) Repeats the same words or sounds</td>
<td>282</td>
<td>22.4</td>
</tr>
<tr>
<td>14) Happy/cheerful for no obvious reason</td>
<td>278</td>
<td>22.1</td>
</tr>
<tr>
<td>15) Mood seems unrelated to surroundings</td>
<td>277</td>
<td>22.0</td>
</tr>
<tr>
<td>16) Easily distracted</td>
<td>265</td>
<td>21.0</td>
</tr>
<tr>
<td>17) Strips off clothing/ exposes self</td>
<td>251</td>
<td>19.9</td>
</tr>
<tr>
<td>18) Steals food</td>
<td>239</td>
<td>19.0</td>
</tr>
<tr>
<td>19) Has a large appetite</td>
<td>238</td>
<td>18.9</td>
</tr>
<tr>
<td>20) Displays unprovoked temper/rage</td>
<td>237</td>
<td>18.8</td>
</tr>
</tbody>
</table>
Table 14
Rank Order of the 10 Least Frequently Endorsed Items on Frequency Dimension

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Frequency</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>84) Starts a fire</td>
<td>5</td>
<td>0.4</td>
</tr>
<tr>
<td>83) Complains of lack of things to do</td>
<td>23</td>
<td>1.8</td>
</tr>
<tr>
<td>81.5) Complains about mental disabilities</td>
<td>33</td>
<td>2.6</td>
</tr>
<tr>
<td>81.5) Pulls own hair out</td>
<td>33</td>
<td>2.6</td>
</tr>
<tr>
<td>80) Vomits or regurgitates food</td>
<td>38</td>
<td>3.0</td>
</tr>
<tr>
<td>78.5) Complains about absence of individuals</td>
<td>44</td>
<td>3.5</td>
</tr>
<tr>
<td>78.5) Has decreased need for sleep</td>
<td>44</td>
<td>3.5</td>
</tr>
<tr>
<td>77) Forgets words or uses words less correctly than before</td>
<td>46</td>
<td>3.7</td>
</tr>
<tr>
<td>76) Wakes up crying or screaming</td>
<td>57</td>
<td>4.5</td>
</tr>
<tr>
<td>75) Sleepwalks</td>
<td>61</td>
<td>4.5</td>
</tr>
<tr>
<td>74) Has little appetite</td>
<td>61</td>
<td>4.8</td>
</tr>
</tbody>
</table>
Table 15
DASH Item Distributions Duration Dimension (Frequency Rating 1 or 2)

<table>
<thead>
<tr>
<th>DEPRESSION ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cranky/Irritable</td>
<td>446</td>
<td>35.4</td>
<td>0.88</td>
<td>229</td>
<td>43</td>
<td>174</td>
</tr>
<tr>
<td>Responds slowly</td>
<td>401</td>
<td>31.9</td>
<td>1.28</td>
<td>127</td>
<td>35</td>
<td>239</td>
</tr>
<tr>
<td>Restless/Agitated</td>
<td>288</td>
<td>22.9</td>
<td>1.79</td>
<td>8</td>
<td>45</td>
<td>235</td>
</tr>
<tr>
<td>Large appetite</td>
<td>238</td>
<td>18.9</td>
<td>1.80</td>
<td>15</td>
<td>17</td>
<td>206</td>
</tr>
<tr>
<td>Difficulty staying awake</td>
<td>206</td>
<td>16.4</td>
<td>1.40</td>
<td>40</td>
<td>44</td>
<td>122</td>
</tr>
<tr>
<td>Difficulty getting to sleep</td>
<td>204</td>
<td>16.2</td>
<td>0.68</td>
<td>128</td>
<td>13</td>
<td>63</td>
</tr>
<tr>
<td>Complains about physical</td>
<td>134</td>
<td>10.6</td>
<td>0.59</td>
<td>85</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>Speech is slow</td>
<td>133</td>
<td>10.6</td>
<td>1.38</td>
<td>32</td>
<td>18</td>
<td>83</td>
</tr>
<tr>
<td>Lacks interest</td>
<td>122</td>
<td>9.7</td>
<td>1.20</td>
<td>33</td>
<td>31</td>
<td>58</td>
</tr>
<tr>
<td>Wakes up frequently</td>
<td>95</td>
<td>7.5</td>
<td>1.08</td>
<td>37</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td>Cries easily</td>
<td>88</td>
<td>7.0</td>
<td>1.75</td>
<td>5</td>
<td>12</td>
<td>71</td>
</tr>
<tr>
<td>Little appetite</td>
<td>61</td>
<td>4.8</td>
<td>1.44</td>
<td>11</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>Complains absence of individuals</td>
<td>44</td>
<td>3.5</td>
<td>1.64</td>
<td>3</td>
<td>10</td>
<td>31</td>
</tr>
<tr>
<td>Complains about mental</td>
<td>33</td>
<td>2.6</td>
<td>0.45</td>
<td>25</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Complains of boredom</td>
<td>23</td>
<td>1.8</td>
<td>0.87</td>
<td>11</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Totals</td>
<td>2516</td>
<td>--</td>
<td>--</td>
<td>789</td>
<td>317</td>
<td>1410</td>
</tr>
</tbody>
</table>

▲ = 3 most durable items (mean duration score)

(table con’d.)
<table>
<thead>
<tr>
<th>MANIA ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cranky/Irritable</td>
<td>446</td>
<td>35.4</td>
<td>0.88</td>
<td>229</td>
<td>43</td>
<td>174</td>
</tr>
<tr>
<td>►Restless/Agitated</td>
<td>288</td>
<td>22.9</td>
<td>1.79</td>
<td>8</td>
<td>45</td>
<td>235</td>
</tr>
<tr>
<td>Extremely happy</td>
<td>278</td>
<td>22.1</td>
<td>1.41</td>
<td>65</td>
<td>33</td>
<td>180</td>
</tr>
<tr>
<td>►Easily distracted</td>
<td>265</td>
<td>21.0</td>
<td>1.74</td>
<td>19</td>
<td>30</td>
<td>216</td>
</tr>
<tr>
<td>Rapid changes in mood</td>
<td>175</td>
<td>3.9</td>
<td>1.62</td>
<td>21</td>
<td>24</td>
<td>130</td>
</tr>
<tr>
<td>Talks loudly</td>
<td>135</td>
<td>10.7</td>
<td>1.67</td>
<td>13</td>
<td>18</td>
<td>104</td>
</tr>
<tr>
<td>►Talks quickly</td>
<td>80</td>
<td>6.4</td>
<td>1.69</td>
<td>7</td>
<td>11</td>
<td>62</td>
</tr>
<tr>
<td>Decreased need for sleep</td>
<td>44</td>
<td>3.5</td>
<td>0.77</td>
<td>23</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Totals</td>
<td>1711</td>
<td>--</td>
<td>--</td>
<td>385</td>
<td>212</td>
<td>1114</td>
</tr>
</tbody>
</table>

► = 3 most durable items (mean duration score)

(table con’d.)
<table>
<thead>
<tr>
<th>PDD / AUTISM ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>► Repetitive body movements</td>
<td>371</td>
<td>29.5</td>
<td>1.66</td>
<td>49</td>
<td>28</td>
<td>294</td>
</tr>
<tr>
<td>► Resists or ignores others</td>
<td>289</td>
<td>23.0</td>
<td>1.84</td>
<td>2</td>
<td>43</td>
<td>244</td>
</tr>
<tr>
<td>► Limited activities</td>
<td>287</td>
<td>22.8</td>
<td>1.68</td>
<td>29</td>
<td>33</td>
<td>225</td>
</tr>
<tr>
<td>Repeats words or sounds</td>
<td>282</td>
<td>22.4</td>
<td>1.65</td>
<td>36</td>
<td>27</td>
<td>219</td>
</tr>
<tr>
<td>Talks about same subject over and over</td>
<td>227</td>
<td>18.0</td>
<td>1.30</td>
<td>67</td>
<td>19</td>
<td>141</td>
</tr>
<tr>
<td>Upset by change</td>
<td>178</td>
<td>14.1</td>
<td>1.49</td>
<td>33</td>
<td>25</td>
<td>120</td>
</tr>
<tr>
<td>Totals</td>
<td>1634</td>
<td>--</td>
<td>--</td>
<td>216</td>
<td>175</td>
<td>1243</td>
</tr>
</tbody>
</table>

► = 3 most durable items (mean duration score)
<table>
<thead>
<tr>
<th>STEREOTYPIES / TICS ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>►Repetitive body movements</td>
<td>371</td>
<td>29.5</td>
<td>1.66</td>
<td>49</td>
<td>28</td>
<td>294</td>
</tr>
<tr>
<td>Sudden motor/vocal activity</td>
<td>359</td>
<td>28.5</td>
<td>1.20</td>
<td>125</td>
<td>38</td>
<td>196</td>
</tr>
<tr>
<td>►Limited activities</td>
<td>287</td>
<td>22.8</td>
<td>1.68</td>
<td>29</td>
<td>33</td>
<td>225</td>
</tr>
<tr>
<td>►Repeats words or sounds</td>
<td>282</td>
<td>22.4</td>
<td>1.65</td>
<td>36</td>
<td>27</td>
<td>219</td>
</tr>
<tr>
<td>Talks about same subject over</td>
<td>227</td>
<td>18.0</td>
<td>1.33</td>
<td>67</td>
<td>19</td>
<td>141</td>
</tr>
<tr>
<td>Collects or hoards objects</td>
<td>162</td>
<td>12.9</td>
<td>1.33</td>
<td>47</td>
<td>14</td>
<td>101</td>
</tr>
<tr>
<td>Sucks or mouths body parts</td>
<td>101</td>
<td>8.0</td>
<td>1.45</td>
<td>23</td>
<td>10</td>
<td>68</td>
</tr>
<tr>
<td>Totals</td>
<td>1789</td>
<td>--</td>
<td>--</td>
<td>376</td>
<td>169</td>
<td>1244</td>
</tr>
</tbody>
</table>

► = 3 most durable items (mean duration score)

/table con’d./
### Self Injurious Behavior Items

<table>
<thead>
<tr>
<th>Acts</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bites self</td>
<td>228</td>
<td>18.1</td>
<td>0.96</td>
<td>101</td>
<td>36</td>
<td>91</td>
</tr>
<tr>
<td>Hits self</td>
<td>180</td>
<td>14.3</td>
<td>1.54</td>
<td>33</td>
<td>17</td>
<td>130</td>
</tr>
<tr>
<td>Picks at sores</td>
<td>145</td>
<td>11.5</td>
<td>1.01</td>
<td>63</td>
<td>18</td>
<td>64</td>
</tr>
<tr>
<td>Bangs head</td>
<td>112</td>
<td>8.9</td>
<td>1.71</td>
<td>2</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>Pulls out hair</td>
<td>33</td>
<td>2.6</td>
<td>1.03</td>
<td>13</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Totals</td>
<td>698*</td>
<td>--</td>
<td>--</td>
<td>212</td>
<td>142</td>
<td>323</td>
</tr>
</tbody>
</table>

*Note: For 22 values, occurrence was endorsed, but duration was a missing value.

### Elimination Disorders Items

<table>
<thead>
<tr>
<th>Acts</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fails to control bladder</td>
<td>294</td>
<td>23.4</td>
<td>1.63</td>
<td>34</td>
<td>32</td>
<td>224</td>
</tr>
<tr>
<td>Fails to control bowel movement</td>
<td>252</td>
<td>20.0</td>
<td>1.53</td>
<td>47</td>
<td>25</td>
<td>180</td>
</tr>
<tr>
<td>Totals</td>
<td>546*</td>
<td>--</td>
<td>--</td>
<td>81</td>
<td>57</td>
<td>404</td>
</tr>
</tbody>
</table>

*Note: For 4 values, occurrence was endorsed, but duration was a missing value.

- = 3 most durable items (mean duration score)
<table>
<thead>
<tr>
<th>EATING DISORDERS ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steals food</td>
<td>239</td>
<td>19.0</td>
<td>1.31</td>
<td>56</td>
<td>53</td>
<td>130</td>
</tr>
<tr>
<td>► Quickly consumes food</td>
<td>210</td>
<td>16.7</td>
<td>1.70</td>
<td>19</td>
<td>26</td>
<td>165</td>
</tr>
<tr>
<td>Eats objects that are not food</td>
<td>116</td>
<td>9.2</td>
<td>1.03</td>
<td>52</td>
<td>9</td>
<td>55</td>
</tr>
<tr>
<td>Chokes on food or vomits</td>
<td>112</td>
<td>8.9</td>
<td>0.65</td>
<td>71</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td>► Little appetite</td>
<td>61</td>
<td>4.8</td>
<td>1.44</td>
<td>11</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>► Vomits or regurgitates food</td>
<td>38</td>
<td>3.0</td>
<td>1.55</td>
<td>4</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Totals</td>
<td>776</td>
<td>--</td>
<td>--</td>
<td>213</td>
<td>118</td>
<td>445</td>
</tr>
</tbody>
</table>

► = 3 most durable items (mean duration score)

(table con’d.)
<table>
<thead>
<tr>
<th>SLEEP DISORDERS ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty staying awake</td>
<td>206</td>
<td>16.4</td>
<td>1.40</td>
<td>40</td>
<td>44</td>
<td>122</td>
</tr>
<tr>
<td>Difficulty getting to sleep</td>
<td>204</td>
<td>16.2</td>
<td>0.68</td>
<td>128</td>
<td>13</td>
<td>63</td>
</tr>
<tr>
<td>Wakes up frequently</td>
<td>95</td>
<td>7.5</td>
<td>1.08</td>
<td>37</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td>Sleepwalks</td>
<td>61</td>
<td>4.8</td>
<td>0.13</td>
<td>56</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Wakes up crying or screaming</td>
<td>57</td>
<td>4.5</td>
<td>1.04</td>
<td>25</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>Totals</td>
<td>623</td>
<td>--</td>
<td>--</td>
<td>286</td>
<td>77</td>
<td>260</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEXUAL DISORDERS ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strips off clothing/exposes self</td>
<td>251</td>
<td>19.9</td>
<td>.76</td>
<td>139</td>
<td>32</td>
<td>80</td>
</tr>
<tr>
<td>Masturbates in public</td>
<td>138</td>
<td>10.9</td>
<td>1.49</td>
<td>32</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Inappropriate touching of others</td>
<td>97</td>
<td>7.7</td>
<td>1.48</td>
<td>17</td>
<td>16</td>
<td>64</td>
</tr>
<tr>
<td>Totals</td>
<td>486</td>
<td>--</td>
<td>--</td>
<td>188</td>
<td>54</td>
<td>244</td>
</tr>
</tbody>
</table>

* = 3 most durable items (mean duration score)
<table>
<thead>
<tr>
<th>ORGANIC SYNDROME ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responds slowly</td>
<td>401</td>
<td>31.9</td>
<td>1.28</td>
<td>127</td>
<td>35</td>
<td>239</td>
</tr>
<tr>
<td>No response to nearby light/movement</td>
<td>355</td>
<td>28.2</td>
<td>0.93</td>
<td>172</td>
<td>36</td>
<td>147</td>
</tr>
<tr>
<td>►Restless/Agitated</td>
<td>288</td>
<td>22.9</td>
<td>1.79</td>
<td>8</td>
<td>45</td>
<td>235</td>
</tr>
<tr>
<td>►Easily distracted</td>
<td>265</td>
<td>21.0</td>
<td>1.74</td>
<td>19</td>
<td>30</td>
<td>216</td>
</tr>
<tr>
<td>►Rapid change in mood</td>
<td>175</td>
<td>13.9</td>
<td>1.62</td>
<td>21</td>
<td>24</td>
<td>130</td>
</tr>
<tr>
<td>No response to loud/nearby sound</td>
<td>157</td>
<td>12.5</td>
<td>1.09</td>
<td>67</td>
<td>9</td>
<td>81</td>
</tr>
<tr>
<td>Speech harder to understand</td>
<td>129</td>
<td>10.2</td>
<td>1.22</td>
<td>45</td>
<td>11</td>
<td>73</td>
</tr>
<tr>
<td>Unable to remember things once known</td>
<td>95</td>
<td>7.5</td>
<td>1.04</td>
<td>41</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Forgets words/poor usage</td>
<td>46</td>
<td>3.7</td>
<td>0.70</td>
<td>27</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Totals</td>
<td>1911</td>
<td>--</td>
<td>--</td>
<td>527</td>
<td>205</td>
<td>1179</td>
</tr>
</tbody>
</table>

► = 3 most durable items (mean duration score)

(table con’d.)
<table>
<thead>
<tr>
<th>IMPULSE CONTROL ITEMS</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt; 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impatient when waiting</td>
<td>414</td>
<td>32.9</td>
<td>1.24</td>
<td>135</td>
<td>43</td>
<td>236</td>
</tr>
<tr>
<td>Hits/pinches</td>
<td>384</td>
<td>30.5</td>
<td>1.15</td>
<td>140</td>
<td>48</td>
<td>196</td>
</tr>
<tr>
<td>Resists instruction/guidance</td>
<td>356</td>
<td>28.3</td>
<td>1.39</td>
<td>88</td>
<td>41</td>
<td>227</td>
</tr>
<tr>
<td>Unprovoked temper tantrum/rage</td>
<td>237</td>
<td>18.8</td>
<td>1.61</td>
<td>26</td>
<td>41</td>
<td>227</td>
</tr>
<tr>
<td>Need for attention/approval</td>
<td>226</td>
<td>18.0</td>
<td>1.53</td>
<td>41</td>
<td>24</td>
<td>161</td>
</tr>
<tr>
<td>Unprovoked screaming or yelling</td>
<td>181</td>
<td>14.4</td>
<td>1.78</td>
<td>8</td>
<td>23</td>
<td>150</td>
</tr>
<tr>
<td>Takes property or belongings</td>
<td>166</td>
<td>13.2</td>
<td>1.40</td>
<td>41</td>
<td>18</td>
<td>107</td>
</tr>
<tr>
<td>Easily frustrated by tasks</td>
<td>153</td>
<td>12.2</td>
<td>1.69</td>
<td>13</td>
<td>22</td>
<td>118</td>
</tr>
</tbody>
</table>

► = 3 most durable items (mean duration score)

(table con’d.)
<table>
<thead>
<tr>
<th>IMPULSE CONTROL ITEMS CONTINUED</th>
<th>Frequency of Endorsement</th>
<th>Percent of Sample</th>
<th>Mean Duration</th>
<th>Score 0 = &lt; 1 month</th>
<th>Score 1 = 1-12 months</th>
<th>Score 2 = &gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throws objects at others</td>
<td>140</td>
<td>11.1</td>
<td>1.04</td>
<td>60</td>
<td>14</td>
<td>66</td>
</tr>
<tr>
<td>Curses</td>
<td>121</td>
<td>9.6</td>
<td>1.85</td>
<td>2</td>
<td>14</td>
<td>105</td>
</tr>
<tr>
<td>Runs away from supervision</td>
<td>120</td>
<td>9.5</td>
<td>1.52</td>
<td>16</td>
<td>26</td>
<td>78</td>
</tr>
<tr>
<td>Verbally abuses people</td>
<td>113</td>
<td>9.0</td>
<td>1.73</td>
<td>9</td>
<td>12</td>
<td>92</td>
</tr>
<tr>
<td>Handles saliva/mucus/feces</td>
<td>97</td>
<td>7.7</td>
<td>1.41</td>
<td>24</td>
<td>9</td>
<td>64</td>
</tr>
<tr>
<td>Damages property</td>
<td>91</td>
<td>7.2</td>
<td>1.76</td>
<td>2</td>
<td>18</td>
<td>71</td>
</tr>
<tr>
<td>Bites others</td>
<td>83</td>
<td>6.6</td>
<td>1.10</td>
<td>35</td>
<td>5</td>
<td>43</td>
</tr>
<tr>
<td>Starts a fire</td>
<td>5</td>
<td>0.4</td>
<td>0.40</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>2887</td>
<td>--</td>
<td>--</td>
<td>644</td>
<td>358</td>
<td>1885</td>
</tr>
</tbody>
</table>

► = 3 most durable items (mean duration score)
Table 16
Rank Order of the 20 DASH Items of Longest Duration
(Frequency of 1 or 2)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Mean Duration (SD)</th>
<th>Valid N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Curses</td>
<td>1.85 (.40)</td>
<td>121</td>
</tr>
<tr>
<td>2) Resists other's attempts to interact</td>
<td>1.84 (.39)</td>
<td>289</td>
</tr>
<tr>
<td>3) Has a large appetite</td>
<td>1.80 (.53)</td>
<td>238</td>
</tr>
<tr>
<td>4) Is restless or agitated</td>
<td>1.79 (.47)</td>
<td>288</td>
</tr>
<tr>
<td>5) Unprovoked screaming/yelling</td>
<td>1.78 (.51)</td>
<td>181</td>
</tr>
<tr>
<td>6) Damages or destroys property</td>
<td>1.76 (.48)</td>
<td>91</td>
</tr>
<tr>
<td>7) Cries easily or for no reason</td>
<td>1.75 (.55)</td>
<td>88</td>
</tr>
<tr>
<td>8) Is easily distracted</td>
<td>1.74 (.58)</td>
<td>265</td>
</tr>
<tr>
<td>9) Verbally abuses people</td>
<td>1.73 (.60)</td>
<td>113</td>
</tr>
<tr>
<td>10) Bangs head against objects</td>
<td>1.71 (.59)</td>
<td>31</td>
</tr>
<tr>
<td>11) Quickly consumes large amount of food</td>
<td>1.70 (.63)</td>
<td>210</td>
</tr>
<tr>
<td>12) Talks quickly</td>
<td>1.69 (.63)</td>
<td>80</td>
</tr>
<tr>
<td>13) Is easily frustrated by tasks</td>
<td>1.69 (.62)</td>
<td>153</td>
</tr>
<tr>
<td>14) Amuses self with limited objects/activities</td>
<td>1.68 (.65)</td>
<td>287</td>
</tr>
<tr>
<td>15) Talks loudly</td>
<td>1.67 (.64)</td>
<td>135</td>
</tr>
<tr>
<td>16) Engages in repetitive body movements</td>
<td>1.66 (.70)</td>
<td>371</td>
</tr>
<tr>
<td>17) Repeats the same words or sounds</td>
<td>1.65 (.70)</td>
<td>282</td>
</tr>
<tr>
<td>18) Complains about absence of particular individuals</td>
<td>1.64 (.61)</td>
<td>44</td>
</tr>
<tr>
<td>19) Fails to control bladder</td>
<td>1.63 (.70)</td>
<td>294</td>
</tr>
<tr>
<td>20) Displays rapid change in mood</td>
<td>1.62 (.69)</td>
<td>175</td>
</tr>
</tbody>
</table>
Table 17
Rank Order of the 10 DASH Items of Shortest Duration
(Frequency of 1 or 2)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Mean Duration (SD)</th>
<th>Valid N</th>
</tr>
</thead>
<tbody>
<tr>
<td>84) Sleepwalks</td>
<td>.13 (.46)</td>
<td>61</td>
</tr>
<tr>
<td>83) Visibly sweats when confronted with certain objects</td>
<td>.21 (.59)</td>
<td>68</td>
</tr>
<tr>
<td>82) Experiences sensations on skin that are imaginary</td>
<td>.22 (.50)</td>
<td>134</td>
</tr>
<tr>
<td>81) Starts a fire</td>
<td>.40 (.89)</td>
<td>5</td>
</tr>
<tr>
<td>80) Complains about mental disabilities</td>
<td>.45 (.83)</td>
<td>33</td>
</tr>
<tr>
<td>79) Complains about physical disabilities</td>
<td>.59 (.83)</td>
<td>134</td>
</tr>
<tr>
<td>78) Chokes on food or becomes sick because s/he eats too fast</td>
<td>.65 (.90)</td>
<td>112</td>
</tr>
<tr>
<td>77) Hears things that are imaginary</td>
<td>.68 (.81)</td>
<td>98</td>
</tr>
<tr>
<td>76) Has difficulty getting too sleep</td>
<td>.70 (.89)</td>
<td>204</td>
</tr>
<tr>
<td>75) Forgets words or uses words less correctly than before</td>
<td>.75 (.82)</td>
<td>46</td>
</tr>
</tbody>
</table>
Non-confrontational Aggressive Behaviors. Means and standard deviations for males and females on these four measures are displayed in Table 18. Differences between males and females in these areas of psychopathology were examined by a series of two tailed independent t-tests, using a Bonferroni correction (α = .0125). The results indicated that males and females did not differ significantly in any of the individual analyses, however; males had higher means which approached significance on 3 of the 4 evaluations. These subscale differences included: Depression, t(1257) = 2.44, p = .0148, η² = .005; Pervasive Developmental Disorders, t(1257) = 2.43, p = .0153, η² = .005; and Non-confrontational Aggressive Behaviors, t(1257) = 2.48, p = .0131, η² = .005.

Hypothesis 4. Relationships with Age

Age factors were studied for 5 subscales (Depression, Mania, Impulse Control/Behavior Problems, Organic Syndrome and Sleep Disorders) by examining scores in extreme groups, those less than 30 years and those 50 years and older. Table 19 shows means and standard deviations for the two extreme age groups on the 5 subscales. Again, a series of two tailed independent t-tests, using a Bonferroni correction (α = .01), was employed to determine where differences between the two groups exist. The results indicated that the younger and older age groups did not differ significantly on any of the individual analyses, however older adults had higher scores on the Organic Syndrome subscale which approached significance, t(644) = 2.42, p = .016, η² = .009.
Table 18
Subscale Means and Standard Deviations by Gender

<table>
<thead>
<tr>
<th>SUBSCALE</th>
<th>Range Possible</th>
<th>Mean (SD)</th>
<th>Males N = 709</th>
<th>Females N = 550</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>(0 - 30)</td>
<td>3.24 (2.89)</td>
<td>2.85 (2.61)</td>
<td></td>
</tr>
<tr>
<td>Pervasive Developmental Disorder</td>
<td>(0 - 12)</td>
<td>2.25 (2.39)</td>
<td>1.93 (2.09)</td>
<td></td>
</tr>
<tr>
<td>Autism</td>
<td>(0 - 14)</td>
<td>1.09 (1.60)</td>
<td>1.11 (1.56)</td>
<td></td>
</tr>
<tr>
<td>Confrontational Aggression</td>
<td>(0 - 18)</td>
<td>2.04 (2.25)</td>
<td>1.74 (1.98)</td>
<td></td>
</tr>
</tbody>
</table>
Table 19
Subscale Means and Standard Deviations by Age

<table>
<thead>
<tr>
<th>SUBSCALE</th>
<th>Range Possible</th>
<th>Age &lt; 30 ( N = 387 )</th>
<th>Mean (SD)</th>
<th>Age &gt; 50 ( N = 259 )</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>(0 - 30)</td>
<td>3.01 (2.74)</td>
<td>3.30 (3.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mania</td>
<td>(0 - 16)</td>
<td>1.97 (2.18)</td>
<td>2.29 (2.45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulse Control / Behavior Problems</td>
<td>(0 - 32)</td>
<td>3.21 (3.44)</td>
<td>3.34 (3.47)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic Syndrome</td>
<td>(0 - 18)</td>
<td>2.31 (2.33)</td>
<td>2.76 (2.30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleep Disorders</td>
<td>(0 - 10)</td>
<td>0.93 (1.34)</td>
<td>0.70 (1.21)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hypothesis 5. Depression/Aggression Relationship

In order to examine the relationship between depression and aggression, subjects were categorized as depressed or non-depressed by using the aforementioned cutoff score of 1 standard deviation above the mean on the Depression subscale. The two groups were compared for the means on the Impulse Control/Behavior Problems subscale. The mean for the high scoring Depression group was 6.16 whereas the non-depressed group mean was 2.61. An independent t-test revealed that depressed mentally retarded adults had significantly higher scores on the Impulse Control/ Behavior Problems subscale than non-depressed persons, t(1257) = 14.72, p < .001, η² = .18.

Discussion

The goal of this study was to develop a large nationally representative normative sample to study psychopathology in severely and profoundly mentally retarded institutionalized adults based upon the DASH scale. One objective was to determine optimum cutoff scores, indicating the need for further assessment in a particular area of psychopathology for the individual. Descriptions of the relative frequency and duration of various symptoms and syndromes within the sample was also an objective. Finally, analyses of differences based on level of mental retardation, gender, and age variables were conducted.
General Findings

Subject Demographics. Mental retardation is a condition with many different and complex etiologies including genetic abnormalities, chromosomal disorders, prenatal and perinatal diseases and insults, as well as environmental factors (Deitz & Repp, 1989). Many of these conditions include physically disabling conditions. It is therefore not surprising to find that this sample of severely mentally handicapped persons also have concomitant physical disabilities, nor is it unusual that the more severe intellectual impairments are associated with multiple and complex physical disorders. The subject demographics are thus generally consistent with what is expected in this population.

Subscale Indices. Cutoff scores for the 11 subscales were established on the basis of two rationales (see Table 6). First, the DASH is a screening instrument. As this label implies, the information yielded is designed to be only a step in the early stages of a full assessment procedure. It is important therefore to ensure that individuals who display psychopathology are not missed due to lack of appropriate consideration. These conservative cutoff scores are designed to include all persons who may exhibit the disorder of concern. Future validation studies, which would clarify the relationship between various cutoff scores and actual diagnosis rates could help to pinpoint more appropriate cutoff scores. Second, it is a consistent finding that mentally retarded persons exhibit higher rates of psychopathology than non-retarded individuals (rates range from 9% to 71%)
(Borthwick-Duffy, 1994; Nezu, et. al., 1992; Matson & Frame, 1986). Thus, cutoff scores for this population should reflect that consideration. A cutoff score of 1 standard deviation above the mean indicates that approximately 16% of the sample would be considered for further evaluation on any given subscale. This figure is fairly consistent with reported rates of psychopathology in mentally retarded adults.

These cutoff scores are slightly different from the arbitrary cutoff scores originally established for the DASH. In the former system, scores in classical psychopathology areas (Depression, Mania and Pervasive Developmental Disorders) were considered to warrant further investigation if a subject exhibited 50% or more items at either frequency level (1 = 1-10 incidents in 2 weeks; or 2 = 10 or more incidents in 2 weeks). Cutoff scores based on means consider the frequency value and are more conservative in terms of the actual needed number of symptoms displayed. For behavioral subscales (Stereotypies/Tic Disorders, Self Injurious Behaviors, Elimination Disorders, Eating Disorders, Sleep Disorders, Sexual Disorders, Organic Syndromes, and Impulse Control/Behavior Problems) the previous system suggested that subjects be considered for subsequent evaluation when any single item recorded a severity rating of 1 or 2. While the severity rating scale demonstrated questionable reliability, the logic here may still be appropriate. Thus any scores in the areas of Self Injurious Behaviors, Impulse Control/Behavior Problems, Sexual Behaviors, Eating Disorders, etc. should be
treated cautiously to determine whether a significant clinical issue warrants attention in terms of assessment and treatment.

Frequency rates based on subscale cutoff scores suggest that in this sample some subscales have higher rates of inclusion than others. Self Injurious Behaviors (21.3%), Elimination Disorders (19.7%), Sexual Disorders (18.4%) and Depression (17.6%) are among the subscales which exhibit rates above the expected 16% of the sample. Non-normality notwithstanding, these subscale frequencies indicate relatively high incident rates. Subscales that produced lower than expected frequencies above the cutoff score were Sleep Disorders (8.1%), Eating Disorders (9.8%), and Mania (11.9%). Although these differences are subtle they suggest that some areas of psychopathology are more prevalent than others in this sample. Two factors may contribute to the subscales that have higher rates. First, self-injury, sexual disorders and elimination delays represent significant obstacles to community residential placement, thus these behaviors may play a role in the selection of an institutional placement. Another possibility, (especially for depression and sexual misbehaviors) is that these scores may include the influence of iatrogenic effects of the institutional setting.

Subscale Elevations. The subscale elevations (see Table 7) revealed that approximately 64% of the overall sample showed at least one subscale elevation, warranting further assessment. This rate is consistent with those found by Jacobson (1982) who reported that approximately 65% of severely and profoundly
retarded adults evidenced behavior problems. While subscale elevation does not mean diagnosis, this figure represents a high degree of potential psychopathology consistent with previous reports (Borthwick-Duffy, 1994). Validation studies would perhaps rule out some portion of these subjects from diagnosis, however; this finding is consistent with high rates reported in the literature. It was also noted that nearly 40% of the sample showed multiple subscale elevations, which suggests the possibility that many severely and profoundly mentally retarded adults may exhibit multiple forms of psychopathology and/or behavior problems concomitantly.

Hypothesis 1. Relationships with Level of Mental Retardation

**Frequency Dimension.** Few significant differences were noted between severely and profoundly mentally retarded persons in terms of the frequency with which they demonstrate various types of psychopathology. Elimination Disorders was a noted exception. It is possible that elimination delays are more frequent in profoundly mentally retarded persons due to higher rates of physical disability which may mediate this problem, at least in some cases. Cognitive delays may also be so impaired, so as to prevent acquisition of this developmental task. Profoundly mentally retarded persons also had significantly higher scores on the Social Withdrawal/Stereotypies and Eating Disorder factors. Examination of the items in the Social Withdrawal/Stereotypies factor (see Table 4) suggests that this factor includes in part, the measurement an individual's limitations in interactions,
concentration, speech, vocabulary, affect, response time and breadth of activities. It is therefore not surprising to find that profoundly mentally retarded persons scored higher in this area. A review of the item distributions in the Eating Disorders factor suggests that profoundly retarded persons differed from severely mentally retarded adults due to higher rates of "choking on food because s/he eats to fast" and "vomits or regurgitates food". This is consistent with previous findings that rumination disorders are increasingly prevalent with decreasing intellectual functioning. In some cases, these behaviors may also be mitigated by physical limitations.

One subscale and two factors also revealed significant differences due to severely mentally retarded adults exhibiting higher frequency than profoundly mentally retarded persons. The Sleep Disorders subscale and factor confirmed a difference in this area. Item distributions were examined and the main difference appeared to be a relatively large proportion of severely mentally retarded subjects with highly frequent "difficulty getting to sleep at night". Profoundly mentally retarded persons also appeared to have slightly higher rates of "difficulty staying awake during the daytime". Sleep disturbances in mentally retarded persons have been virtually ignored in the literature. It is difficult to understand what factors may contribute to this finding. Suggested lines of study might include medications and their side effects, environmental deprivation variables and functional analyses
of bedding procedures and consequences to difficulties in sleeping and sleeping during the daytime.

Severely mentally retarded adults also had higher frequency on the Language Disorders/Verbal Aggression factor. Items on this factor all reflect some aspect of speaking. Since decreasing IQ is associated with increasing speech impairments and deficits, it is not surprising to find that severely retarded persons have more maladaptive speech patterns than the profoundly mentally retarded group. Thus, this difference may be as much a measure of verbal behavior as verbal maladaptive behavior. Of note is the fact that this factor was the only significant frequency difference associated with a moderate effect size (ηr²= .40). Because large sample sizes can produce significant differences which may be of relatively minimal clinical value, effect sizes were presented. In general, level of mental retardation accounted for relatively small amounts of the variance (ηr² ranges .01 to .08, with the Language Disorder exception) in subscale and factor frequency score differences.

For most subscale and factor scores, severely and profoundly mentally retarded persons did not evidence significant differences in the frequency of occurrence. This correspondence in frequency of problem behaviors between levels of mental retardation is not consistent with previous findings (Williams, 1971; Jacobson, 1982). Methodological differences between studies may account for some of these discrepant results. For example, many studies that report
discrepant rates on the basis of level of mental retardation, failed to separate severely and profoundly mentally retarded groups (Balthazar & English, 1969; Eaton & Menolascino, 1982; Iverson & Fox, 1989). Assessment methods and diagnostic criteria also vary greatly. DASH data represent the only method specifically designed to detect psychopathology in severely and profoundly mentally retarded adults. The hypothesis that level of mental retardation would affect the frequency of psychopathology was supported for two subscales (Elimination Disorders and Sleep Disorders) and four factors (Social Withdrawal/Stereotypies, Eating Disorders, Sleep Disorders, Language Disorder/Verbal Aggression). Total scale scores did not produce significant frequency differences between severely and profoundly mentally retarded adults in institutional settings. It may be concluded that in institutional settings, clinicians might not expect to see large differences in the frequency with which severely and profoundly mentally retarded individuals exhibit symptoms of psychopathology, except in circumscribed areas of functioning.

Duration Dimension. The second portion of the hypothesis proposed that there would be differences between severely and profoundly mentally retarded groups involved the analysis of scores on the duration dimension. Here, differences between the two groups were much more striking (see Table 9). All significant differences suggest that profoundly mentally retarded adults have more durable symptoms than severely mentally retarded persons. This finding held for
the full DASH scale duration mean, as well as 9 of 11 subscales. In all subscale areas of psychopathology except Sexual Disorders and Organic Syndromes, profoundly mentally retarded adults exhibited the symptoms over longer periods of time. Two factors also resulted in significantly discrepant scores between severely and profoundly mentally retarded groups, Social Withdrawal/Stereotypies and Sleep Disorder. Of note is the finding the sleep disturbances tend to be more enduring for profoundly mentally retarded persons, despite their more frequent occurrence in severely mentally retarded adults. Effect sizes associated with duration dimension differences were only slightly higher than the frequency dimension (range $\eta^2 = .02$ to .21), suggesting that level of mental retardation still accounted for relatively small amounts of the variance in subscale and factor duration score differences.

A number of studies have examined the durability of mental health disorders in mentally retarded persons and all have confirmed a high degree of persistence of symptomatology (Reid, et. al., 1984; James, 1986; Linden and Forness, 1986). However, no studies have focused on severely handicapped individuals and none have examined the relationship of level of mental retardation to durability of symptoms. A number of factors may contribute to increasing duration of symptoms with decreasing IQ levels. First, symptoms may be less readily identified in profoundly retarded persons and thus remain untreated more frequently and for longer periods of time. Second, cognitive and/or physical impairments
may limit treatment effectiveness for some symptoms, thus improvements may have occurred for some subjects, that would not be reflected in DASH scores unless a problem had been completely eliminated. Finally, since a large percentage of the sample showed the potential for multiple mental health disorders, medications for one disorder may have adverse side effects on treatments for other behaviors or they may simply cause other symptoms which are justifiably (or unjustifiably) tolerated.

The duration dimension analyses confirm the hypothesis that there are differences in the manifestation of psychopathology between severely and profoundly mentally retarded adults in institutional placements. While the frequency of symptoms were generally not remarkably different for the two groups, the duration study confirms that there are significant differences, which are clinically important as well. Comprehensive assessment and treatment protocols are particularly compelling for institutionalized mentally retarded adults due to the maintenance of these behaviors over time, and special efforts to address the needs of the profoundly mentally retarded group may be required.

**Hypothesis 2. Differences in Item Frequency, Critical Importance and Duration**

**Frequency Dimension.** An analysis of the items for the DASH was conducted to identify item frequency, critical items and item durations by subscale. Table 12 shows the item frequency and critical items by subscale. The critical items for each subscale define those behaviors associated with the disorder that are
most characteristic in institutionalized severely and profoundly mentally handicapped individuals. Critical items for the Depression subscale include "cranky/irritable" and "restless/agitated" suggesting that irritable mood is more predominant than sadness for this sample. "Responds slowly", "lacks interest in things once enjoyed" and "difficulty staying awake during the daytime" are suggestive of the low activity levels evident in this depressed population. "Large appetite" is also a critical item and far more predominant than "little appetite". Mania critical items also include "cranky/irritable" and "restless/agitated", along with "easily distracted", "extremely happy" and "rapid changes in mood". These critical items suggest a picture of the manic individual marked by irritable and happy moods with rapid changes between the two. Pervasive Developmental Disorders/Autism items were all considered critical, meaning they all discriminated those who scored above the cutoff score from those who scored below it. "Repeats words and sounds", "resists or ignores others", "limited activities" and "repetitive body movements" were the most discriminating items. Critical items for the Stereotypies/Tic Disorder subscale are similar to those mentioned for PDD, but they include "sudden motor or vocal activity".

For the Self Injurious Behavior subscale, "hits self" and "picks at sores" were the most critical discriminators, with "bangs head against objects" and "bites self" close behind. Two items were most distinguishing for the Eating Disorders subscale: "steals food" and "quickly consumes a large amount of food", although
"eats objects that are not food" and "vomiting/choking on food because of eating too fast", are also critical items. "Difficulty getting to sleep" is the most discriminating Sleep Disorder, with "wakes up frequently", "difficulty staying awake during daytime", and "waking up crying or screaming" also distinguishing elevated from non-problematic subscale scores. For Sexual Disorders two items were critical, "strips clothing/exposes self" and "public masturbation". For Organic Syndromes "responds slowly", "easily distracted" and "no response to nearby light or movement" represent the items which help differentiate high from low subscale scoring persons. "Unprovoked temper tantrums/rages", "resists instruction or guidance", and "hits/pinches others" are high discriminators on the Impulse Control/Behavior Problem subscale. For most subscales the critical items also represent some of the most frequent items for the entire sample, thus clinicians should be cautioned against jumping to conclusions on the basis of a few item endorsements simply because they are all critical items. Instead, follow-up assessment should be carefully pursued. Future research focusing on validation of DASH subscales scores as predictors of diagnosis, would contribute greatly to our understanding of critical or discriminating items.

The listings of the most and least frequently endorsed items (see Tables 13 and 14) are included to provide a picture of the symptoms which are most and least common overall among institutionalized severely and profoundly mentally retarded adults. Items in the most common list are from a broad range of subscales. Items
which were endorsed for over 30% of the sample include: "cranky/irritable", "impatient when waiting for needs to be met", "responds slowly", and "hits or pinches others". Items in this listing, endorsed for an individual, may or may not be associated with any particular type of psychopathology. Institutions that observe these high rates for these or certain other behaviors may want to develop treatment protocols for the entire facility, so that staff responses do not inadvertently reinforce and maintain problem behaviors. Of the 10 least frequently endorsed behaviors, 4 involve verbal behaviors. "Starting fires", "pulling out own hair", "regurgitates food", "decreased need for sleep", "wakes up screaming or crying", "sleepwalks" and "little appetite" are also among the least common behaviors. These behaviors may be relatively rare in institutionalized samples.

**Duration Dimension.** Table 16 shows each item mean duration, and frequency of endorsement for each of the three response choices, listed by subscale. The items in this table remain in order of the frequency of endorsement so that discrepancies between an item’s frequency and duration are visually apparent. The 3 most durable items, as measured by the mean for the item, are identified. A visual inspection suggests that an item’s frequency is not necessarily related to its duration.

For the Depression subscale "restless/agitated", "large appetite" and "cries easily" appear to be the most durable behaviors. In all 56% of the endorsed items on this subscale had been occurring for more than one year. For the Mania
subscale "restless/agitated" is again one of the most durable symptoms, as are "easily distracted" and "talks quickly". For the Mania subscale 65.1% of endorsements were 1 year or longer. Of note for these subscales is "crankiness/irritability" which was reported to be highly frequent, but was low in duration, suggesting that situation variables may be involved. The Pervasive Developmental Disorders subscale reflects a fairly high correspondence between frequency rankings and duration rankings, as does the Stereotypies/Tic Disorder subscale. The percent of endorsements at 1 year of longer was near 70% for both of the later subscales.

Self Injurious Behavior items, generally had slightly lower duration means than most of the subscales, perhaps due to more focused treatment efforts in this potentially dangerous area of behavior. Also, 46.2% of item endorsements were 1 year or more, which is a slightly lower rate than most subscales. Items in this subscale of the longest duration were "bangs head against objects", "hits self" and "pulls own hair out". Seventy-three percent of Elimination Disorders item endorsements were 1 year or more. Eating disordered behaviors with longest mean durations were "quickly consumes large amounts of food", "regurgitates food" and "has little appetite". Sleep Disorder item endorsements of 1 year or more duration represent only 41.7% of the responses, relatively low compared to other subscales. "Difficulty staying awake in daytime", "wakes up frequently during the night" and "wakes up crying/screaming" were the items with the largest mean durations.
Interestingly, "difficulty getting to sleep", which is a high frequency item, especially for severely mentally retarded persons, was low in duration and in most cases the problem had existed for less than one month. Sexual Disorder items longer than 1 year represent about 50% of the subscale endorsements. About 62% of the Organic Syndrome duration responses fell in the 1 year or longer range. Items with the largest mean durations in this subscale are "restless/agitated", "easily distracted" and "rapid change in mood". Items representing the more classic signs of organic problems (memory loss, loss of responsiveness, etc.) were of more recent onset. Impulse Control/Behavior Problem items with longest duration were "unprovoked screaming or yelling", "curses" and "damages property". Sixty-five percent of the responses on this subscale were 1 year or longer. In general, item duration responses tended to be bimodal with the majority of behaviors in the 1 year or more category, and less than 1 month the second most frequent category. This pattern held true for all 11 subscales, suggesting that most symptoms evidenced in the sample were either long term problem or of fairly recent onset.

The items of longest duration for the full DASH scale are listed in Table 17. Items from the Impulse Control/Behavior problem subscale are most represented, along with items from the Depression, Mania, Pervasive Developmental Disorder, and Eating Disorder subscales ("bangs head against objects" was also of long duration). Behaviors on this list may be less amenable
to treatment or they may be underidentified and/or untreated. Table 17 shows the items of shortest duration on the full DASH scale. These behaviors represent the most transient behavior problems in this sample of severely and profoundly mentally retarded adults.

In summary, item analyses helped to identify the most commonly exhibited behaviors within subscales and for the full DASH scale. Critical items were identified which are suggestive of the symptoms most commonly found in individuals who score high on a particular subscale. Duration item analysis revealed that frequency of an item is not necessarily predictive of the behavior's persistence. Most symptoms exhibited were maintained for periods of a year or more. These results support the hypothesis that differences would be found in item frequency, critical importance, and duration.

Hypothesis 3. Relationships with Gender

Three questions were posed about the ways that males and females may differ in the manifestation of psychopathology. First, in the normal population, depressive episodes occur twice as frequently in women as in men (DSM-IV, American Psychiatric Association, 1994). Studies of mentally retarded clinical samples (outpatient and inpatient hospitals) have also supported the idea that being female is a risk factor for depressive symptomatology (Reiss & Trenn, 1984; Reid & Ballinger, 1987; Reiss, 1988). To determine whether this finding holds for institutionalized severely and profoundly mentally retarded adults, a comparison of
means for males and females, on the Depression subscale was undertaken. The results did not support a difference between men and women in terms of depressive symptoms, in fact males had a higher degree of depression which approached significance (see Table 19). This study differs from stated reports in two major areas, setting and level of mental retardation. It is possible that environmental factors (social/developmental demands, social skills deficits, reinforcement schedules) and psychological factors (learned helplessness, self-control deficits) thought to contribute to depression, may be more equated for males and females functioning in an institutional environment. In addition, extreme cognitive deficits may mediate or override other vulnerabilities in a way that diminishes gender effects.

Pervasive Developmental Disorders are reported at rates four to five times higher in males than females, however females with this disorder are more likely to exhibit more severe mental retardation (DSM-IV, American Psychiatric Association, 1994). This study compared means on the Pervasive Developmental Disorder subscale to determine whether males and females differ in terms of this disorder, in this sample. Results of the analysis showed that males had a slightly higher rate of Pervasive Developmental Disorder symptomatology, which approached significance (see Table 19). This suggests that in severely handicapped institutionalized populations, the prevalence of Pervasive Developmental Disorder
may be less likely to manifest at the highly discrepant rates between males and females, typically found in the general population.

The final gender question in this study involved differences between males and females in the types of aggressive behaviors exhibited. In the general population, males with conduct problems more frequently display fighting, stealing, property destruction, etc., while females typically exhibit lying, running away, prostitution, etc. at higher rates (DSM-IV, American Psychiatric Association, 1994). To test the differences in the severely and profoundly mentally retarded sample, Impulse Control/Behavior Problems were divided into confrontational and non-confrontational categories, and means for males and females were compared for both subsets. For the confrontational subset no difference was found between males and females (see Table 19). In terms of non-confrontational aggression, males had higher rates which approached significance. These results suggest that aggressive behaviors do not follow the gender distinctions found in the general population. Again, environmental factors and developmental demands in an institutional setting, as well as social learning experiences may possibly balance the effects of gender in the acquisition and maintenance of aggressive behaviors.

Hypothesis 3 proposed that differences would be observed between males and females in three areas: Depression, Pervasive Developmental Disorders and types of aggressive behaviors displayed. None of these differences were fully supported by the results. It was conjectured that perhaps extreme cognitive deficits
and environmental factors in institutions contribute to a more homogeneous manifestation of psychopathology between males and females than is typically found in the general population. While gender effects in the psychopathology of mentally retarded persons have been studied in a rather cursory manner, the results of this study support some previous reports that gender is generally unrelated to the overall presence of psychopathology in this sample (Iverson & Fox, 1989; Borthwick-Duffy, 1994).

Hypothesis 4. Relationships with Age

It was hypothesized that extreme age groups (under 30 years and 50 and older) would vary significantly in the manifestation of psychopathology in five areas: Depression, Mania, Impulse Control/Behavior Problems, Organic Syndromes and Sleep disorders. In their longitudinal study, Koller, et. al. (1983) found that mentally retarded persons tended to shift from conduct problems in the earlier years to more emotional disturbances in their later years. If this were the case for institutionalized severely and profoundly mentally retarded adults, one would expect to see higher rates of Impulse Control/Behavior Problems in the younger age group than the older, and higher rates of Depression and Mania in the older age category than younger. Table 19 shows that the means for these subscales, none of which differed significantly due to age group. In the Koller, et. al. (1983) study the age group comparisons were between much younger persons. It may be that their finding was limited to the developmental period between adolescence and
young adulthood. In this adult sample, the frequency of these disturbances appears to remain steady across age spans.

While the age at onset for organic syndromes depends on the etiology, it is usually late in life (DSM-IV, American Psychiatric Association, 1994). Means for the two age groups were compared on the Organic Syndrome subscale to determine whether organic syndromes are more common for elderly persons in the institutionalized mentally retarded group. The older group had higher scores on this subscale which approached significance. It may be that the wide variety of organic etiologies for mental retardation also predisposes younger mentally retarded persons to forms of organic syndromes. On the other hand, organic syndromes are usually measured by a deterioration in cognitive processes; it is possible that sensitivity to these changes in severely and profoundly mentally retarded persons requires more detailed assessment to detect true differences between these age groups. Harper and Wadsworth (1990) studied a group of mentally retarded adults using a labor intensive test battery, and found declines in intellectual functioning, adaptive functioning, behavior, and orientation to time and place for approximately 15% of their sample; however, none of the subjects were identified by service providers as warranting evaluation in these areas. Clarification of age differences in this area may come only as a result of the predictive validation of the DASH subscale.
Sleep Disorders are also reported to be more prevalent in older adults than in younger persons in the normal population (DSM-IV, American Psychiatric Association, 1994). Sleep Disorders were not shown to be more frequent in the elderly group than the younger group of severely and profoundly mentally retarded persons in this sample. In fact younger adults in this population had a higher mean frequency of sleep disturbances than did older adults, although the difference only approached significance. A cursory view of the sleep items response distributions for the two groups, suggested that younger people may have had more frequent "difficulty getting to sleep at night" than the older adults in the sample. Survey data support that younger adults also complain more frequently of this difficulty than the elderly in the normal population; however in the current study sample this seems to outweigh frequently night awakenings, which is typically more prevalent in normal elders, than any younger non-retarded adult sleep disturbance. As discussed earlier, the literature on sleep disturbances in mentally retarded persons is so limited, that it is difficult to surmise any particular reason for this finding. It may be that night awakenings occur less frequently for elderly mentally retarded persons than for the general population; alternatively, perhaps when they do occur in institutions, pharmacological treatments are more readily implemented and the problem resolved.

Severely and profoundly mentally retarded persons did not appear to differ by age category in any of the areas of psychopathology studied. These behaviors
all appeared at stable rates across different age groups. The hypothesis that extreme age groups would differ in terms of frequency in certain areas of psychopathology was not supported by the data.

**Hypothesis 5. Depression/Aggression Relationship**

There is evidence of a strong relationship between depression and aggression in mentally retarded persons (Reiss & Rojahn, 1993; Sovner, et al., 1993; Laman & Reiss, 1987). This investigation was designed to examine whether persons scoring above the cutoff score on the DASH Depression subscale would have a higher frequency of aggression as measured by the Impulse Control/Behavior Problems score, than those scoring low on the Depression subscale. The results showed a highly significant difference between the two groups, with a small to moderate effect size. The hypothesis that there would be a difference in aggression rates, between depressed and non-depressed institutionalized severely and profoundly mentally retarded adults was supported by these data. This finding has serious assessment and treatment implications. Aggressive behavior tend to be much more disturbing to the surrounding environment than depressive symptoms. Thus, depression may tend to be under-identified, particularly in mentally retarded persons, where self-report of emotion distress is often limited by deficit verbal skills. For example, a patient may be irritable, restless, have sleep difficulties and appetite disturbance, and at the same time hit and pinch others, resist instruction, become easily frustrated, throw objects
at others and become verbally abusive. The tendency for clinicians may often be to use psychopharmacological treatments to calm the patient down and restore the environmental homeostasis, while perhaps further complicating the individual’s clinical picture and learning potential. The etiological relationship between depression and aggression is not clarified by this finding, however; it appears to be a common co-morbid relationship in mentally retarded persons and it is just one example of the urgent need for comprehensive assessment and treatment for severely and profoundly mentally retarded adults.
CHAPTER 5 SUMMARY AND CONCLUSIONS

This study examined psychopathology in a large institutionalized population of severely and profoundly mentally retarded adults using the DASH scale. Subscales with the highest rates of frequency were Self Injurious Behavior, Elimination Disorders, Sexual Disorders and Depression. Sixty-four percent of the sample showed elevation on at least one subscale of the DASH, with nearly 40% showing two or more subscale elevations. Severely and profoundly mentally retarded groups differed in terms of frequency on the Elimination Disorders and Sleep Disorders subscales, but not on full scale scores. In terms of duration of symptoms, profoundly mentally retarded individuals had significantly more persistent behaviors on the full scale scores and all subscales except Organic Syndromes and Sexual Disorders. Items were analyzed for differences in frequency, critical importance to the subscale elevation, and duration. No significant gender or age differences were found in various areas of psychopathology. Depressed mentally retarded adults were found to exhibit significantly higher rates of aggression than non-depressed persons.

The current study had certain limitations which may provide useful guidelines for future research. Two areas that may influence the manifestation of psychopathology in severely and profoundly mentally retarded adults were not considered in these analyses: physical disabilities and medications. First, various physical handicaps may influence and/or co-vary with the presentation of symptoms...
and syndromes in severely handicapped individuals. Second, the effects of medications were not considered here and should be studied in future research. Jacobson (1988) found that psychotropic recipient rates increased with severity of mental retardation and restrictiveness of setting, thus the impact of medications in institutionalized severely handicapped populations is likely to have serious clinical implications. Third, since 40% of this sample showed the possibility of multiple psychiatric problems, research on co-morbidity and patterns of co-morbid disorders could help to further define and unravel the complexity of the problems seen in this population. Finally, in light of the high frequency and duration of both symptoms and disorders evidenced in the literature and in this study, the need for comprehensive screening and assessment with institutionalized severely and profoundly mentally retarded adults is clear. Studies which solidify the predictive value of the DASH in diagnostic and assessment protocols would be extremely useful.
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APPENDIX
Appendix
Diagnostic Assessment of the Severely Handicapped (DASH) Scale

User's Manual

The Diagnostic Assessment for the Severely Handicapped rating scale is designed to provide a comprehensive structured survey of the psychiatric problems of an individual with severe or profound mental retardation. The scale is designed to be completed by a mental health professional (referred to in the scale and scale manual as the interviewer). Although the interviewer may complete the scale on his/her own if s/he has sufficient contact with the individual to be rated, the DASH is primarily intended to be administered to an informant such as a relative of the individual or a direct care staff member who in most cases has more extensive contact with the person to be rated. The interviewer should read this manual and be thoroughly acquainted with its contents before using it in order to maximize ratings’ reliability and validity.

Explanation of the scale content

The DASH consists of two sections: 1) background information and 2) behavior ratings.
Section 1: Background Information

This section of the scale focuses on variables that could influence the behavior of the rated individual as well as the informant's perceptions of this behavior-setting, ratio of retarded persons to caretakers, medication etc. Completing this section is fairly straightforward. It may be filled out by the interviewer alone or in conjunction with the informant. Unit or medical records should be consulted wherever necessary and available to ensure accuracy of data such as mental retardation classification and medication. An individual may have more than one physical disability (Item 4). Item 12 requires that information concerning psychotropic medication be written down.

Section 2: Behavior rating section

The second section is intended to provide an assessment of the maladaptive behaviors that an individual with severe or profound mental retardation exhibits as reported by an informant who has had close contact with this person. Each item is rated for the three dimensions of frequency, duration and severity. The informant has three choices from which to choose for each dimension. Ratings supplied by informants may be based on personal observations or knowledge acquired from other staff or family members.

Dimension 1: Frequency - How often has the behavior occurred during the last two weeks?
The frequency dimension is fairly straightforward. Choices range from "not at all" (0) to "more than 10 times" (2) in a two week period.

**Dimension 2: Duration - How long has this behavior been occurring for?**

The duration dimension ranges from "Less than a month" (0) to "over 12 months (over a year)" (2). The informant should be informed it is not necessary that the behavior has always been a problem with the same intensity or frequency that it has occurred during the last two weeks.

**Dimension 3: Severity - How serious has the behavior been during the last two weeks?**

Choices range from "this behavior causes no disruptions or damages" (0) to "this behavior has caused injury or property damage at least once" (2). A rating of 0 indicates that the behavior did not disrupt programming or the activities of others - e.g. fellow residents, staff or family members and did not cause any injuries or property damages. A rating of 1 indicates that the behavior did not cause any injuries or damages but did interrupt the activities of peers, family or staff members at least once. Typical interruptions could involve making fellow residents cry or agitated or forcing staff members to interrupt their training activities or routines to address the behavior - e.g. giving verbal prompts, restraining, disciplining or consoling the individual. To merit a 2 rating the behavior must have caused on one occasion during the last two
weeks minor physical injury to the individual or another person such as cuts, sprains, or bruises or caused minor property damage such as damaging destroying or loosing small personal items, e.g. pencils, books, or toys. The 2 rating would also be chosen if more severe physical injuries or property damage occurred at least once during the two week period.

Note that if the behavior has not occurred during the last two weeks, e.g. a rating of 0 for frequency, the administrator can dispense with asking about duration and severity for that behavior, i.e. Dimensions 2 and 3. In such a case, Dimension 2 would be scored "0 - less than 1 month" and Dimension 3 would be scored "0 - this behavior has caused no disruptions or damages" and the administrator could proceed to the next item.

Scale administration instructions

The DASH requires informants to proceed and supply a considerable amount of information. It is therefore to the interviewer's advantage to make the informant's task as easy as possible. With this goal in mind, the following suggestions for scale administration are provided: 1) the interviewer and the informant should stand or sit side by side so that both individuals can view the scale form being completed; and/or 2) the interviewer should provide the informant with a second copy of the scale to follow along while the scale is being completed. The informant may find a copy especially useful for keeping
track of the definitions assigned to different points along the three rated dimensions - frequency, duration and severity.

The background information section may be completed with the assistance of the informant if desired but no set order or format for completing this first section is stipulated. The test interviewer needs only to ensure that the background information data is accurate for the two week period for which behavior ratings are being provided.

Administration of the behavior rating section is more closely structured. The interviewer should read instructions and items as they are written in the scale booklets and manuals. Explanation of the individual items is, however, permitted and may sometimes be necessary. A guide may be found at the end of this manual that is intended to assist explanation and scoring of a number of DASH items.

The following instructions should be read to the informant unacquainted with the DASH prior to completing the behavior rating section:

"I am going to read you a number of behaviors which (name of individual being rated) may or may not perform. For each of these behaviors, I will ask you to indicate 1) how often has this behavior occurred during the last two weeks?; 2) how long this behavior has been occurring?; and 3) how serious has this behavior been during the last two weeks?"
"First I will read you a behavior and then ask you to tell how often this behavior has occurred during the last two weeks. Choose one of the three possible answers - either 0) (the behavior has occurred) not at all (during the last two weeks; 1) (the behavior occurred) between 1 and 10 times (during the last two weeks); or 2) (the behavior occurred) more than 10 times (during the last two weeks). Choose the one answer which seems most appropriate. If the behavior has not occurred at all during the last two weeks, I will then go on to the next item. If the behavior has occurred during the last two weeks, I will then ask you about the duration and severity of the behavior.

"When I ask you about the duration of the behavior, I want you to tell me how long this behavior has been occurring. Once again choose one of the three possible answers - 0) (the behavior has been occurring for) less than 1 month; 1) (the behavior has been occurring for) between 1 and 12 months; or 2) (the behavior has been occurring for) over 12 months, that is over one year. Note that it is not necessary that the behavior has always been occurring with the same frequency or severity as it is now when making a judgement of duration.

"When I ask you how serious the behavior has been when it occurred during the last two weeks, you will again choose one of three possible answers - 0) this behavior has caused no disruptions or damages (during the last two
weeks); 1) this behavior has caused no injuries or damages but has interrupted the activities of peers, family or staff members AT LEAST ONCE (during the last two weeks); or 2) this behavior has caused injury to the individual or another person or property damage AT LEAST ONCE (during the last two weeks).

"An example of a disruption could be making fellow residents cry or agitated or forcing staff members to interrupt their training activities or routines to address the behavior - e.g. giving verbal prompts, restraining, disciplining or consoling the individual. Examples of physical injury can include anything from simple cuts, sprains, or bruises to very serious injuries. Examples of property damage can include anything from damaging, destroying or loosing small personal items such as classroom materials, (pencils, books, etc.) clothing or toys to destroying large or expensive items.

"You may base your responses on information you have received from others who have also had contact with (name of individual being rated) as well as what you have personally observed."

After the interviewer has ensured that the informant understands the instructions, the actual ratings can begin. For each item, the interviewer should emphasize reading the item as it is written in the scale booklet. Refer to the guide at the end of this manual for discussion of particular items. For at least
the first few items the interviewer may wish to read the possible choices for all three dimensions until the informant no longer requires prompting. At that point the interviewer can simply read the individual items and have the informant respond with his/her choices for each dimension.

**Items**

Selection of items for inclusion in the DASH was based on examination of existing psychiatric rating scales as well as the diagnostic criteria outlined in the American Psychiatric Association's Diagnostic and Statistical Manual 3rd Edition-Revised (DSM-III-R). The goal was to select a representative range of items that reflected the psychiatric problems of individuals with mental retardation. Items were chosen which could be rated for individuals with little or no language. Note that for items referring to or requiring language (e.g., 25, 35, 42, 50, 52, 56, 61, 65, 67, 69, 71, 73) the rated individual may use sign or spoken language.

The 13 subscales are as follows:

1) **ANXIETY**
Items in this scale are designed to tap various indices of anxiety from basic motor and autonomic indices to avoidance responses. The individual may show anxiety towards specific objects or people or particular activities.

2) **MOOD DISORDER - DEPRESSION**

3) **MOOD DISORDER - MANIA**

Items are separated into two classes - those reflecting depression and those reflecting mania.

4) **PERVASIVE DEVELOPMENTAL DISORDER / AUTISM**

According to present DSM-III-R criteria, autism is diagnosed only if impairments in social behaviors and communication are significantly below achieved developmental level. As a result, autism is difficult to diagnose in individuals with more extreme forms of mental retardation since their attained level of cognitive development is relatively limited. For the purposes of the DASH scale, however, items are to be endorsed independently of present cognitive level.

5) **SCHIZOPHRENIA**

At present this disorder is especially difficult to identify and evaluate in individuals with severe and profound levels of retardation. Although certain diagnosis may be impossible to make, the clinician may wish to consider the possible presence of schizophrenic or schizophrenic-like disorders. For this
reason, items pertaining to diagnosis of schizophrenia have been included. For
text items 65, 67 and 69, the informant should be certain that the rated individual
is having hallucinations. For these items the individual should specifically state
that he hears, sees or feels things that are clearly imagined. Do not accept
intuitions formed for nonverbal individuals.

6) STEREOTYPIES / TICS
Some of these items may be indicative of autistic disturbances while others may
reflect forms of schizophrenia or mental retardation.

7) SELF INJURIOUS BEHAVIORS

8) ELIMINATION DISORDERS
This category covers basic enuretic and encopretic activity.

9) EATING DISORDERS
Covered in this category are rumination, pica, bulimia, and anorexia.

10) SLEEP DISORDERS
With the exception of nightmares (2. wakes up crying and screaming), this
category addresses dyssomnias rather than parasomnias, the former being more
readily evaluated in limited verbal populations.

11) SEXUAL DISORDERS
This set of items addresses inappropriate behaviors related to the genitals or physical contact which may appear in individuals with severe and profound mental retardation.

12) ORGANIC SYNDROMES

Items assigned to this section reflect impairment in basic cognitive, perceptual and motor processes. These impairments may reflect either damage to the nervous system in its infancy due to genetic defect or environmental factors or subsequent deterioration in status.

13) IMPULSE CONTROL & MISCELLANEOUS BEHAVIOR PROBLEMS

This category groups together a number of behaviors which are important but may not be readily assigned to any other single category.
Explanation of individual items

(The interviewer should refer to this guide in scoring and explaining items to the informant)

1. Include kicking.

3. Score only if stripping occurs in inappropriate place or at inappropriate time.

5. Examples: cannot be or work alone for any significant period of time, requires the presence of others almost constantly, frequently asks for help or approval from others, frequent hugging of staff, etc.

6. Specifically complains or expresses unhappiness about not being able to complete task, being stupid or crazy etc. The individual must actually communicate this feeling with language. (No inferences on the basis of nonverbal communication allowed.)

7. Seems happy, sad, anxious for no discernable reason, e.g., emotion not due to the present situation. Examples include bursting out into laughter or tears without provocation.


11. Does not respond to intense or adjacent VISUAL stimulation.

12. When waiting for assistance or needs to be met, becomes angry or upset.

17. Does not respond to intense or adjacent AUDITORY stimulation.
21. Loses temper for without provocation. Examples include flying into a rage for no reason or becoming enraged in response to a reasonable and reasonably made request or instruction.

23. Does not want to play or socialize with caretakers or peers.

25. Specifically complains about having nothing to do (do not infer from nonverbal behavior).

30. Except food which is covered by Item 8.

42. Include echolalia-repeating words or sounds that he/she has previously heard.

45. Language or communication skill has deteriorated from a previous level.

46. Memory for expressive language has deteriorated from a previous level.

52. Memory for expressive language has deteriorated from a previous level.

61. Endorse this item for cases where the individual has speech but communicates crazy or nonsensical impressions or ideas. Do not include cases which apparently reflect limited or incorrect use of language.

65. Not applicable if nonverbal.

66. Do not endorse if the person cannot sit or stand properly (e.g., due to physical impairment).

67. See item 65.

69. See item 65.
71. Specifically complains or expresses unhappiness about physical handicaps, e.g., blindness, walking difficulties, etc. The individual must actually communicate his feeling with language. (No inferences on basis of nonverbal communication allowed.)

74. Becomes angry or sad when unable to complete task or operation.

76. May include cases where the individual merely places things in mouth.

85. See item 2.
DASH ITEMS FOR PRESENTATION TO AN INFORMANT

1. Hits or pinches other people
2. Bangs head against objects
3. Strips off clothing or exposes self in public
4. Clings to family or staff when confronted with certain objects or situations
5. Exhibits excessive need for attention or approval from others
6. Complains about mental disabilities
7. Mood seems totally unrelated to what is going on around him/her
8. Steals food
9. Is restless or agitated
10. Talks with imaginary people or inanimate objects such as televisions or pictures
11. Does not respond to nearby light or movement
12. Is impatient when waiting for needs or demands to be met
13. Throws objects at other people
14. Has difficulty staying awake during the day
15. Runs away or hides from certain objects or situations
16. Has decreased need for sleep
17. Does not respond to loud or nearby sound
18. Has little appetite
19. Wakes up frequently during the night

20. Hits self

21. Displays unprovoked temper tantrum or rage

22. Amuses self with limited set of objects or highly repetitive activities

23. Resists or ignores attempts by others to interact with him/her

24. Runs away from supervision

25. Complains about lack of things to amuse self with or do

26. Cries when confronted with certain objects or situations

27. Is cranky or irritable

28. Engages in inappropriate touching or fondling of others

29. Collects or hoards objects

30. Takes another person’s property or belongings

31. Resists instruction or guidance from family or staff

32. Engages in repetitive body movements such as rocking, spinning or handflapping

33. Becomes upset with a change in routine or surroundings

34. Fails to control bowel movement

35. Speech or sound production is slow or lacks emotion

36. Becomes agitated or cries when separated from familiar people
37. Exhibits a period of sudden motor or vocal activity such as twitching
tapping or yelling
38. Quickly consumes a large amount of food in a short period of time
39. Is easily distracted
40. Has difficulty getting to sleep
41. Sleepwalks
42. Repeats the same words or sounds
43. Damages or destroys property
44. Starts a fire
45. Speech is harder to understand
46. Is unable to remember things that he/she once knew
47. Masturbates in public
48. Is extremely happy or cheerful for no obvious reason
49. Has a large appetite
50. Talks about the same subject or concern over and over
51. Engages in unprovoked screaming or yelling
52. Forgets words or uses words less correctly than before
53. Handle or plays with saliva, nasal mucus or bowel movements
54. Responds slowly
55. Picks at sores or wounds
56. Verbally abuses people (for example yelling and shouting)
57. Bites other people
58. Lacks interest in a favorite activity or object
59. Chokes on food or becomes sick because he/she eats too fast
60. Vomits or regulates food
61. Speech is a jumble of words or ideas that make little or no sense
62. Bites self
63. Talks loudly
64. Trembles or shakes when confronted with certain objects or situations
65. Hears things that are imaginary
66. Stands or sits in bizarre or inappropriate positions
67. Experiences touch or other sensations on his/her skin that are imaginary
68. Breathing becomes heavier or faster when confronted with certain objects or situations
69. Sees things that are imaginary
70. Talks quickly
71. Complains about physical disabilities
72. Trembles or shakes for no obvious reason
73. Complains about absence of particular individuals
74. Is easily frustrated by the difficulty of a task
75. Visibly sweats when confronted with certain objects or situations

76. Tries to or actually eats objects that are not food such as paper, paint chips or toys

77. Displays rapid change in mood

78. Sucks or mouths parts of his/her body

79. Fails to control bladder

80. Wakes up crying or screaming

81. Cries easily or cries for no apparent reason

82. Pulls own hair out

83. Curses

84. Has difficulty staying awake during the day

85. Exhibits excessive need for attention or approval from others

86. Bangs head against objects
VITA

Martha Lyle Hamilton was born and raised in Rochester, New York. She was awarded a bachelor's degree from the State University of New York, College at Purchase, in 1976; and a Master of Science (in Counseling) from the State University of New York, College at Oswego, in 1986. After moving to southeast Louisiana in 1985, Ms. Hamilton worked as a behavioral family therapist in a therapeutic foster care program with Associated Catholic Charities of New Orleans.

Since entering the doctoral program at Louisiana State University in 1988, Ms. Hamilton has developed clinical and research interests in the area of developmental disabilities, with particular focus on dually diagnosed individuals. She has worked extensively with autistic children, and mentally retarded children, adolescents and adults in inpatient hospital settings, as well as community group homes. Ms. Hamilton maintained her interest in foster children and parent training through a consultant position with the Casey Family Program of Baton Rouge throughout her tenure at L.S.U. She complete her Clinical Internship at Tulane Medical Center in 1994. After graduation, Ms. Hamilton plans to work at Southeast Louisiana Hospital in Mandeville, on the Developmental Neuro-Psychiatry Unit, an adolescent unit for dually diagnosed youth.
DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Martha Lyle Hamilton

Major Field: Psychology

Title of Dissertation: A Normative Study of the Diagnostic Assessment for the Severely Handicapped (DASH) Scale

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

June 15, 1995