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The depression scale for severe disability: a diagnostic tool for the assessment of depression in adults with severe and profound intellectual disabilities

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Louisiana State University and Agricultural and Mechanical College

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THE DEPRESSION SCALE FOR SEVERE DISABILITY:
A DIAGNOSTIC TOOL FOR THE ASSESSMENT OF DEPRESSION
IN ADULTS WITH SEVERE AND PROFOUND INTELLECTUAL DISABILITIES

A Dissertation

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by
Christopher Cooper
B.A., Tulane University, 1983
M.A., Southeastern Louisiana University, 2000
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Moreover, a special gratefulness and appreciation are due my wife Sholda, daughter Charis, and sons Justin, and Jerome whose love and support have greatly enriched my life and sustained me for the last six years. Finally, to Sholda and Charis you are now and will be forever the greatest love of my life.

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ABSTRACT

The Depression Scale for Severe Disability (DEPRESSED) is a clinically and empirically derived informant-report behavioral rating scale designed to measure depression in persons with severe and profound intellectual disabilities by assessing behavioral symptoms of depression. Behavioral symptoms of depression and item and factor analyses were used to construct the scale resulting in a 20-item four-factor solution producing factors that were labeled "Sleep"(F1), "Mood"(F2), "Skills"(F3), and "Motor"(F4). The DEPRESSED identified the core symptoms of depression including mood, anhedonia, sleep, appetite, fatigue, and psychomotor agitation and retardation. Internal consistency, interrater and test-retest reliability of the DEPRESSED scale were excellent. The DEPRESSED also demonstrated face and factorial validity and excellent construct and convergent validity with the DASH-II. Based on a preliminary psychometric evaluation, the DEPRESSED appears to be a reliable and valid measure for screening depression in individuals with severe and profound intellectual disabilities.

INTRODUCTION

<u>Intellectual Disability</u>

Intellectual Disability (ID) is an expression used to describe children and adults who demonstrate significant co-occurring deficits in the areas of intellectual functioning and adaptive behavior before the age of 18 years according to the Diagnostic and Statistical Manual of Mental Disorders Text Revision (*DSM-IV-TR*; American Psychiatric Association, 2000). Significant limitations in intellectual functioning are characterized by an intelligence quotient (IQ or IQ equivalent) approaching 70 or below (about 2 standard deviations below the mean)(American Psychiatric Association). According to the *DSM-IV-TR* criterion deficits in adaptive functioning must include significant limitations in at least two skill areas: communication, self-care, home living, social/interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health, and safety (American Psychiatric Association). Estimates of the prevalence of ID are approximately 1% in the general population (American Psychiatric Association). The current levels of ID with respect to IQ and adaptive functioning include Mild (50-55 to approximately 70), Moderate (35-40 to 50-55), Severe (20-25 to 35-40) and Profound (≤ 20 or 25) (American Psychiatric Association). Persons diagnosed with mild ID constitute 85% of the individuals

diagnosed with this disorder while persons with moderate ID include approximately 10% of this population (American Psychiatric Association). Moreover, children and adults diagnosed with severe ID make up approximately 3%-4& of the individuals diagnosed with this disorder while those with profound ID constitute 1%-2% of this population (American Psychiatric Association).

Psychopathology

Psychopathology or a mental disorder is defined as a clinically significant psychological or behavioral syndrome or a pattern that is associated with current distress, disability, or with a considerably increased risk of suffering death, pain, disability, or the loss of freedom (American Psychiatric Association, 2000). Dual diagnosis refers to the co-occurrence of psychopathology and ID (Matson, 1985, 1997; Matson & Bamburg, 1998; Reiss, 1990, 1993). For dually diagnosed individuals, psychopathology is precipitated, or maintained by a range of variables including genetics, lack of social supports, neurological abnormalities, negative life events, and limited coping skills.

Dual Diagnosis or Co-Occurring Disorders

Persons with ID are generally recognized as having an increased possibility of developing mental illness or a psychiatric disorder (Matson & Barrett, 1982; Reiss, Levitan, &

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McNally, 1982; Menolascino & Stark, 1984). According to researchers and clinicians, persons with ID evince the entire range of psychopathology seen in the general population (Charlot, Doucette, & Mezzacappa, 1993). For example, mood disorders (Matson, 1982) and anxiety disorders (Jackson, 1983) have been acknowledged and treated in this population. Furthermore, clinicians have identified schizophrenia (Menolascino, Reudrich, Golden, & Wilson, 1985), autism, tic disorders, eating disorders, sexual disorders, and conduct disorders in persons with ID (Reiss, 1994). In addition, anxiety disorders have been documented and treated in persons with ID (Jackson, 1983).

Prevalence rates for psychiatric disorders are greater for persons with ID as compared to the general population (American Academy of Child and Adolescent Psychiatry; AACP, 1999). Borthwick-Duffy (1994) estimated that the prevalence of psychopathology in persons with ID was higher as compared to adults with normal intelligence. In addition, Rutter, Tizard, Yule, Graham, and Whitmore (1976) reported that the prevalence of psychopathology in children with ID was three to four times greater than children with normal intelligence. Koller, Richardson, and Katz (1983) while investigating psychopathology across the life span of young adults with ID, reported a prevalence rate of approximately 60% in each age-period.

However, recent studies have reported prevalence rates of psychopathology in persons with ID ranging from 2%-14% (Bergman, 1991; Hurley, Folestein, Lam, 2003). Differences in sampling, diagnostic criteria or methodological flaws may account for the dissimilarity of prevalence rates in these studies.

Previously, researchers and clinicians attempted to apply traditional psychiatric categories to persons with dual diagnoses. For example, Reid (1980) diagnosed psychopathology in persons with co-occurring disorders using the ninth edition of WHO's *International Classification of Diseases* (ICD-9) and Menolascino (1990) applied the third edition of the American Psychiatric Association (APA) *Diagnostic and Statistical Manual* (*DSM-III,* American Psychiatric Association, 1980). However, the use of the standard diagnostic criteria was often inadequate for diagnosing psychopathology in persons with ID, especially those individuals with severe and profound ID. The assessment of psychopathology in persons with ID is often problematic because of the inability to assess the cognitive aspects of psychiatric disorders, physical disabilities, and the person's limited verbal skills (Borthwick-Duffy & Eyman, 1990). Sovner (1986) suggests that intellectual distortion results in unreliable self-report, psychosocial masking or the tendency for persons with ID to minimize their disabilities. Moreover, Sovner also indicates that restricted social experiences may complicate the

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diagnosis of psychopathology in this population. Diagnostic instruments designed for the general population are frequently inadequate in assessing psychopathology in persons with ID. (Rojahn & Tasse, 1996). Because of decreased functioning levels, communication skills, and life circumstances, the diagnosis of psychopathology in dually diagnosed individuals is primarily dependent on behavioral observations (AACP, 1999). Thus, alternative methods to assess psychopathology have been developed including direct observation and informant reports of affective, behavioral, and social patterns. Several behavioral checklists and rating scales have been constructed to measure psychopathology in persons with ID (MacLean, 1993). For example, Matson, Kazdin and Senatore (1983) developed the general psychopathology scale, the (PIMRA). Reiss (1987) developed the Reiss Screen for Maladaptive Behavior to measure psychopathology in persons with co-occurring disorders. Therefore, multi-method assessments including direct observation, informant reports, behavioral checklists, and rating scales maybe required for a comprehensive and reliable assessment of psychopathology in persons with ID.

Depression

Depressive disorders are among the most common psychiatric disorders differentiated by depressed mood, anhedonia, sleep and appetite disturbances, feeling of worthlessness, and thoughts of

death and dying (Arean and Chatav, 2003). According to Pincus and Pettit (2001), depression is second only to heart disease as the illness most responsible for poor quality of life and disability. Depression produces impairment in physical, social, and mental health. Depression is the fourth most expensive medical illness and the fourth leading cause of functional disability. Additionally, the risk of suicide is high among persons with depression with a 41-fold increase among depressed persons as compared to individuals with other diagnoses. Depression results in a greater loss of vocational and educational productivity than does hypertension, diabetes, arthritis, or chronic pulmonary disease (Dubovsky & Dubovsky, 2002). Moreover, the estimated total cost of treating depression in the United States in 1993 was 44 billion dollars (Hall & Wise, 1995).

The Diagnostic and Statistical Manual of Mental Disorders Text Revision (*DSM-IV-TR*; American Psychiatric Association, 2000) defines depression based on the criteria for a major depressive episode. Symptoms associated with a major depressive episode include depressed mood, anhedonia, changes in body weight and appetite, hypersomnia or insomnia, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness or inappropriate guilt, reduced ability to concentrate, and suicidal ideation. Depression is described

within the larger diagnostic category of a Mood Disorder. This category includes (a) Major Depressive Disorder, (b) Dysthymic Disorder, (c) Depressive Disorder Not Otherwise Specified, (d) Bipolar I Disorder, (e) Bipolar II Disorder, (f) Cyclothymic Disorder, (g) Bipolar Disorder Not Otherwise Specified, (h) Mood Disorder Due to a General Medical Condition, (i) Substance-Induced Mood Disorder and (j) Mood Disorder Not Otherwise Specified. The lifetime prevalence of depression ranges from 10%-25% for women and 5%-12% for men within the general population. Moreover, the point prevalence for depression ranges from 5%-9% for women and 2%-3% for men. However, the prevalence rates for depression appear to be unrelated to ethnicity, education, income, and marital status (American Psychiatric Association, 2000).

Depression and ID

Depression in persons with ID has been reported since the 19th century (Wilbur, 1877; Clouston, 1883; Ireland, 1898). In addition, Hurd (1888) investigated the co-occurrence of ID and depression. However, from the end of the 19th century to the middle 20th century, clinicians suggested that depression did not occur in persons with ID (Earl, 1961). This belief was based on the psychoanalytic tradition, which was the dominant school of thought in the fields of psychology and psychiatry during this time (Matson & Sevin, 1994). According to this theory, the

superego was a prerequisite for the occurrence of depression. Therefore, persons with ID and a developmentally delayed superego could not experience depression. However, diverging from the psychoanalytic tradition Menolascino (1969) reported the co-occurrence of depression, in individuals with ID. Furthermore, Carlson (1979) suggested that persons with ID exhibit symptoms of depression. Moreover, in a major review article Sovner and Hurley (1983) reported depression in persons with ID.

From the 1980's to the present, psychiatric disorders in persons with ID have received increased attention in the literature (Sturmey & Sevin, 1993). Researchers and clinicians have reported psychiatric disorders including depression in persons with ID (Eaton & Menolascino, 1982; Pawlarczyk & Beckwith, 1987). The majority of research with this population has focused on the presentation of affective disorders, particularly depression within the last ten years (Bergman, 1991; Campbell & Malone, 1991; Marston, Perry, & Roy, 1997; Meins, 1995). Currently depression is acknowledged as a psychiatric disorder that occurs in persons with ID (Menolascino & Stark, 1984; Reid, 1981; Szymanski & Crocker, 1989; Sovner & Lowry, 1990).

Depression is one of the most common psychiatric disorders diagnosed in adults with ID (Nezu, Nezu, Rothenberg,

Dellicarpini, & Groag, 1995). Common symptoms of depression in adults with ID include depressed mood, irritability, and sleep disturbance (Mc Brien, 2003). Persons with ID also exhibit depressive symptoms including loss of interest in preferred activities, withdrawal, and psychomotor retardation (Tsiouris, Mann, Patti, & Sturmey, 2003). Moreover, Helsel and Matson (1988) reported significant correlations between low social skills and depression in persons with ID. Ross and Oliver (2003) indicated that low levels of social support and poor social and communication skills contributed to depression in persons with ID. Researchers have also indicated that social avoidance is a clinical feature of depression in persons with ID (Esbensen, Rojahn, Aman & Ruedrich, 2003).

There is an emerging consensus among researchers that persons with ID experience depression at a higher rate as compared to persons without ID (Matson, Barrett, & Helsel, 1988; Iverson & Fox, 1989). However, research targeting the assessment and treatment of depression in persons with ID remains challenging (Cooper & Collacott, 1996). Without an accurate assessment, the diagnosis and treatment of depression in individuals with ID by clinicians remains complicated and problematic.

The purpose of this study was to develop a clinically and empirically derived informant-report behavioral rating scale,

the Depression Scale for Severe Disability (DEPRESSED) to measure depression in persons with severe and profound ID by assessing behavioral symptoms of depression, mood, anhedonia, somatic functioning, and cognition. In addition, the DEPRESSED was designed to assess social factors associated with depression in persons with severe and profound ID. Furthermore, the psychometric properties of the scale including its reliability and validity were assessed during this investigation.

LITERATURE REVIEW

Classification of Depression

Traditionally the standard diagnostic criteria designed for use in the general population has been used to diagnose depression in persons with ID (Smiley & Cooper, 2003). The *DSM-IV-TR* (American Psychiatric Association, 2000) describes depression based on the criteria for a major depressive episode. Symptoms associated with major depressive episode include depressed mood, anhedonia, changes in body weight and appetite, hypersomnia or insomnia, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness or inappropriate guilt, reduced ability to concentrate, and suicidal ideation. However, there is no standard classification system to diagnose depression in persons with ID (Clark, Reed, & Sturmey, 1991). Einfeld and Aman (1995) indicated that depression may present different symptomatology based upon the person's level of intellectual functioning.

Diagnosis of Depression

Meins (1995), Pawlarcyzk and Beckwith (1987) and Sturmey (1985) have suggested that adults with mild to moderate ID display the core symptoms of depression as described in the *DSM-IV-TR* (American Psychiatric Association). In addition, Reid (1972) reported that depression maybe diagnosed in persons with borderline to mild ID using the standard diagnostic criteria.

Persons with mild to moderate ID expressed depressive symptomatology similar to individuals without ID (Prout & Schaefer, 1985; Pawlarcyzk & Beckwith, 1987). For example, Szymanski and Biederman (1984) found that individuals with mild to moderate levels of ID were predisposed to verbalize depressive symptoms including depressed mood, a core symptom of depression.

The diagnosis of depression in persons with mild to moderate ID is often based upon the individual's self-report of mood, behaviors, cognitions, and vegetative functioning (Lowry, 1993). Depression may include verbal statements of dysphoria, self-depreciation, guilt, and somatic complaints (Beck, 1972). Stenfert Kroese (1997) reported that persons with mild to moderate ID could reliably self-report with modified versions of depression scales for persons with normal intelligence. Specifically, revised versions of the Beck Depression Inventory (BDI)(Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Zung self-rating depression scale (Zung, 1965) have been used to assess depression in persons with ID. Powell (2003) suggested that the Beck Depression Inventory maybe a better instrument for assessing depression in persons with mild to moderate ID as opposed to the Zung Self-Report Depression Scale. Specifically, Powell found that the psychometric properties of the BDI were similar in persons with or without ID. However, the self-report

of individuals with mild to moderate ID can be challenging because of difficulties due to memory, language, and social desirability (Stenfert Kroese, 1997). For example, persons with ID during self-report frequently attempt to minimize reported distress and provide socially acceptable answers (Sovener & Pary, 1993). Because researchers have produced equivocal findings (Kazdin, Matson, & Senatore, 1983), additional research is needed to assess the reliability and validity of modified depression questionnaires for adults with mild to moderate ID (Benson & Ivins, 1992; Cooper & Collacott, 1996).

The presentation of depression in adults with severe and profound ID has received limited attention in the literature (Ross & Oliver, 2003). Sovner (1986) indicated limitations of the standard diagnostic criteria for diagnosing depression in persons with severe to profound ID. According to Meins (1995), the *DSM-III-R* criteria were partially applicable to persons with severe and profound ID because of their inability to self-report feelings of worthlessness and inappropriate guilt, suicidal ideation and attempts at suicide, and decreased concentration and indecision. In addition, Davis, Judd, and Herman (1997), suggested that the standard diagnostic criteria may require modifications because it does not address behavioral change, a major factor in depression in persons with severe and profound ID. Matson and Barrett (1982) also reported that the diagnostic

system for affective disorders may not be applicable for persons

with severe to profound ID. Cooper and Collacott (1994) state

that limitations of the standard diagnostic criteria inhibit the

identification of clinical cases, research, and appropriate

treatment of persons with ID (Cooper & Collacott, 1994).

Pawlarcyzk and Beckwith (1987) in a review of depressive

symptoms reported increased frequencies of depressed mood, and

psychomotor disturbances including hyperactivity, lethargy, and

speech mutism. In addition Pawlarcyzk and Beckwith (1987) also

found anhedonia, feelings of worthlessness, sleep disturbances,

and weight or appetite disturbances in persons with severe to

profound ID. Within this population, depression has also been

associated with social withdrawal, somatic complaints, increased

dependency, irritability, and disturbances of vegetative

function (Warren, Holroyd, & Folstein 1989). Prasher and Hall

(1996) reported that psychomotor retardation was related to

depression in persons with severe to profound ID. Researchers

and clinicians have also found that poor social skills were

related to depression in persons with ID (Reiss & Benson, 1985;

Laman & Reiss, 1987). Collacot and Cooper (1992) also suggested

that declines in adaptive behavior were linked to depression in

persons with ID. Meins (1995) stated that irritableness,

psychomotor agitation, and crying were connected with depression

in persons with severe and profound ID. Additionally, Meins

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suggested an association between depression and suicide in persons with ID.

Several researchers have suggested that "atypical symptoms," "depressive equivalents" or "behavioral depressive equivalents" such as aggression and self-injurious behavior (SIB) are indicative of depression in persons with severe and profound ID (Martson, Perry, & Roy, 1997; Reiss & Rojahn, 1993; Sovner & Hurley, 1983). Challenging behaviors such as aggression and SIB have been associated with depression in persons with ID (Meins, 1995; Sovner & Hurley). Additionally, definitions of problematic behaviors have included the increase or onset of maladaptive behaviors and/or decrease of adaptive skills (Charlot, Doucette, & Mezzacappa, 1993; Meins, 1995; Sovner & Lowry, 1990). However, other researchers have suggested that challenging or maladaptive behaviors should not be assumed symptoms of depression in persons with severe and profound ID (Schroeder, 1991; Tsiouris, Mann, Patti, & Sturmey, 2003). Esbensen, Rojahn, Aman, and Ruedrich (2003) reported that challenging behaviors were highly correlated with the level of ID. Murphy (1994) reported that challenging behaviors were multi-factorial in their etiology. Additionally, Ross and Oliver (2003), suggested that Meins (1995) and Sovner and Hurley (1983) studies indicating an association between depressive symptoms and challenging behaviors or "atypical symptoms" in persons with

severe and profound ID are questionable because they did not

consider the possible influence of confounding variables, and

typically involved a small number of participants. Furthermore,

Ross and Oliver (2003) suggest that "atypical symptoms" studies"

often used operational definitions that were not well defined

and modified diagnostic criteria that included atypical

symptoms.

Reid (1972) stated that the diagnosis of depression in

persons with severe and profound ID should be based on

behavioral observations of sleep and weight patterns including

early morning awakenings and significant weight gain or loss.

Reid also reported in his investigation of depression in persons

with ID, behavioral symptoms of psychomotor retardation and

agitation and somatic complaints including headaches, abdominal

pain, and behavioral regression. Rivinus and Harmatz (1979)

reported that the diagnosis of depression in persons with severe

and profound ID should be based on vegetative states and

behavioral observations. Moreover, Szymanski and Biederman

(1984) found that individuals with severe and profound ID

typically presented behavioral and vegetative symptoms of

depression.

The diagnosis of depression in persons with severe and

profound ID remains problematic because several symptoms in the

DSM-IV-TR are based on the self-report of cognitive and

behavioral symptoms. Typically, the ability to self-report symptoms of depression are limited or absent in the majority of this population (Ross & Oliver, 2003). The diagnosis of depression in individuals with severe and profound ID is also complicated by the unreliability of self-reported symptoms (Ruedrich, Wadle, Sallach, Hahn, & Menolascino, 1987). In addition, the diagnosis of depression in this population is challenging because of diagnostic overshadowing. Reiss and Szyszko (1982) defined diagnostic overshadowing as the predisposition to ascribe psychopathology to an individual's ID rather than a co-occurring psychiatric disorder.

Subsequently, researchers and clinicians have generally agreed that the standard general population diagnostic criterion is not appropriate without modification for persons with ID particularly for individuals with severe and profound ID (Ross & Oliver, 2003; Smiley & Cooper, 2003). Sturmey (1985) found that the majority of research studies on depression in persons with ID used modified diagnostic criteria suggesting limitations of its reliability and validity with this population. Moreover, Meins (1993) states that the validity of existing instruments for diagnosing depression in adults with severe and profound ID is questionable.

To address these problems in the standard diagnostic criteria, the concept of behavioral symptoms of depression were

developed within this population (Reiss, 1993; Cooper &

Collacott, 1996; Hurley, 1996; Davis, Judd, & Herman, 1997;

Marston, Rush, Hamilton, Anderson, Bamburg, & Bagio, *et al*.

1999; Charlot, 1997; Clarke & Gomez, 1999; Einfeld & Tonge,

1999; Evans, Cotton, Einfield, & Florio, 1999). Clinicians have

identified behavioral symptoms, observable behaviors for a

disorder that do not require an individual's verbal report,

which are likely to be associated with a psychiatric disorder

(Sturmey, 1998). Consequently, Lowry (1998) proposed behavioral

symptoms for depression for individuals with ID.

Tsiouris (2001) suggested behavioral symptoms maybe

potential indicators of depression in persons with severe and

profound ID. Common depressive symptoms in persons with ID were

depressive effect or irritable mood; sleep disturbances,

appetite disturbances, anhedonia, social isolation, and

psychomotor agitation. Moreover, Charlot, Doucette, & Mezzacappa

(1993) found sleep and appetite disturbances, and changes in

activity level were associated with depression in persons with

ID. Sleep, eating difficulties, and irritability was reported to

be associated with depression in persons with ID (Matson et al.,

1999). Cooper and Collacott (1994) stated that crying;

hypochondriasis, diurnal mood variations, and reduced speech

were correlated with depression in persons with ID. In addition,

poor social skills have been linked with depression in persons

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with severe and profound ID (Prasher & Hall, 1996).

Sovner and Hurley (1983) have suggested the substitution of behavioral symptoms of depressive criteria for persons with severe and profound ID. Likewise, Lowry (1993) has indicated that the symptoms of depression in persons with severe and profound ID should be assessed through observations of overt behavior associated with *DSM* criteria. Lowry and Charlot (1992) published a report of a man in his early 40's with profound ID and depression. Depressed mood was evidenced by episodes of crying or speaking in a whining tone of voice. Anhedonia involved refusing to participate in social/recreational activities. Diminished appetite was displayed by refusing to eat his meals. Sleeping 10 to 14 hours per night indicated hypomania in the depressed man. Fatigue and loss of energy was exhibited by the excessive amount of time spent lying down in his bed during the day.

This is an example of an adapted phenomenological approach to diagnosing depression in persons with ID while using standard psychiatric diagnoses and criteria benchmarks. Therefore, by evaluating depressive symptoms that focus on overt actions, clinicians can diagnose depression in persons with severe and profound ID (Lowry, 1998). This method considers the overt behaviors linked with the symptoms of depression without relying on the ability or motivation of the person with ID to self-

report. Symptomatic behaviors associated with each *DSM-IV-TR* symptom for depression are based on behavioral observations of depressed persons with ID and self-reports of depressed persons (Lowry). The diagnosis of a major depressive disorder in a person with ID is made if he or she exhibits a particular cluster of behavioral symptoms evidenced throughout the day for a period of at least two weeks and one of which must be associated with depressed mood or significantly diminished interest in activities (Lowry).

Prevalence of Depression

Prevalence studies of depression in persons with ID have found different estimates within this population ranging from 2% (Corbett, 1979), 4.8% (Meins, 1993), and 8.2% (Menaloscino, Levitas & Grieiner, 1986). Eaton and Menolascino (1982) found that the prevalence rate of psychiatric disorders including depression was at least twice the rate within the general population. Reiss (1982) in a study of 66 individuals with ID in a community mental health setting reported a 14% prevalence rate for depression. Sovner and Pary (1993) in a review of epidemiological studies found a prevalence rate of depression between 0.9% and 3% for persons with ID. In addition, Dosen and Gielen (1993) reported a prevalence rate of depression between 1.2% and 3.2% for adults with ID. However, Meins (1993) reported a 4.8% prevalence rate for depression in persons with ID. Lowry

(1998) in a review of prevalence studies of depression in person with ID reported that approximately 10% of the population suffered from depression. This disparity in prevalence rates among these studies maybe attributed to methodological or design flaws, sampling, differences in diagnostic criteria, and use of standard assessment instruments.

Several large-scale prevalence studies have reported different rates of depression in persons with ID. Charlot, Doucette, & Mezzacappa (1983) examined the incidence of major depression among 640 adults with ID in a large residential facility and found that 6.9% of the population had a diagnosis of major depression. Reiss and Rojahn (1993), in a survey of 528 adults and adolescents with ID, reported that 8.9% of the sample met the criterion for depression. In a study of 798 adults with ID living in the community and institutions, Meins (1995) reported that 3.2% of the sample met the criteria for depression.

Recent prevalence studies of depression in persons with ID report rates ranging from 1.5% to approximately 4% (Cooper & Bailey, 2001; Deb, Thomas, & Bright, 2001; Dekker & Koot, 2003; Emerson, 2003). However, Smiley and Cooper (2003) report that the prevalence of depression in persons with ID maybe unknown because depressed persons move in and out of depressive episodes. Because of these transitions from depressive episodes,

the period prevalence of depression maybe considerably higher than the point prevalence within this population.

Researchers have indicated an increased prevalence rate of depression in several diagnostic subgroups. Depression has been reported in persons with ID who ranged from 16 to 70 years of age, and there is some indication that depression occurs more frequently in females than males with ID (Pawlarcyzk & Beckwith, 1987). Cooper, Collacott, and Mc Grother (1992) reported an increased prevalence of depression in adults with Downs Syndrome as compared to other causes for ID. Wright (1982) stated that adults with autism might be at an increased risk for developing depressive episodes.

Based on existing studies it is impossible to assess the prevalence of depression in persons with ID with adequate precision. First, prevalence studies frequently suffer from methodological or design flaws. In addition, dissimilar results can be attributed to sample selections, which involve only clinically referred and/or institutionalized groups, which may not generalize to larger populations. Additionally, differences in the diagnostic criteria used by investigators, may contribute to different rates for depression within this population. In the majority of cases, researchers did not describe the diagnostic criteria. Furthermore, the reliability and validity of rating instruments used to make diagnoses of depression were not

frequently described in these studies. Moreover, with the possible exception of the Isle of Wright studies (1964-1974), methods of assessing psychiatric disorders in the majority of studies were global in nature, relying on general clinical impressions.

Etiology of Depression

Biological Models

The biological models of depression consist primarily of genetic influences and neurochemical theories. Genetic affects of depression are based on adult studies that indicate depression is predisposed in certain families (Sullivan, Neale, & Kendler, 2000). Englund and Klein (1990) suggest that monoaygotic twins have a greater concordance rate for depressive disorders than dizgotic twins. Family studies indicate that the onset of depression is more likely in people with depressed relatives than those without depressed family members (Marazita, Neiswanger, Cooper, Zubenko, Giles, Frnak et al., 1997). Proximate relatives of persons with depression have an increased prevalence as compared to unrelated persons. Direct genetic evaluations based on comparing depressed with nondepressed controls on characteristics with genes associated with neurotransmitters related to depressive disorders imply genetic influences on depression (Dikeos, Papadimitriou, Avramopoulos, Karadima, Daskalopoulou, Souery, et al., 1999).

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Paykel (1982) reports that family studies based on family history, twin, and adoption populations suggest a genetic influence on depression.

Neurochemical theories of depression are based primarily on neurochemical and neuroendocrine processes. Kazdin and Marciano (1998) reported neurochemical and neuroendocrine anomalies in persons with depression. Researchers have suggested that serotonergic neurotransmitter processes and catecholeamine neurotransmitters are strongly implicated in depression (Hammen & Rudolph, 2003). Willner (1985) states that neurotransmitter differences within the brain maybe associated with depression. Moore and Bona (2001) suggest that neurotransmitter dysregulation results in depression. Neuroendocrine theories suggest that dysregulation of the hypothalamic-pituitary-adrenal (HPA) processes are associated with depression. Subsequently, the dexamethasone suppression test (DST) was developed to assess depression based on HPA functioning. However, the DST has produced inconsistent results and its effectiveness in diagnosing depression has been questioned (Birmaher, Ryan, Dahl, Rabinovich, Ambrosini, Williamson, et al., 1992). Depression has been correlated with an increased production of cortisol and abnormalities in thyroid functioning (Arean and Chatav, 2003). The Growth hormone (GH) has also been indicated as a biological marker for depression. Researchers have found that depressed

individuals hyposecrete GH (Hammen & Rudolph). In addition,
Dinan (1998) reported a decreased GH response in depressed
adults.

Biological models of depression have found support among
persons with ID. Fisman, Wolf, Ellison, and Freeman (2000)
reported that the rates of depression were higher among parents
of children with PDD and Down syndrome as compared to a control
group. Kobe and Hammer (1994) reported a greater overall rate of
depression for parents of children with ID.

Cognitive Models

Cognitive theories of depression have focused on negative
or maladaptive belief systems that are based on information-
processing/cognitive schemas (Hammen & Rudolph, 2003). Beck's
cognitive model of depression is predicated on three aspects of
cognitive functioning in depression. Depressed persons engage in
systematic biases or errors in cognition that results in
negative automatic thoughts of people, situations, and events.
In addition, depressed persons exhibit maladaptive cognitive
"schemas," or internal structures that direct information
processing and produce negative cognitions linked with
depression. Moreover, Beck suggests that these negative
cognitive patterns (schemas) become activated and structure the
interpretations made by the depressed person. Overall, this
negative interpretation according to Beck results in a depressed

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mood (Emmelkamp, 1974). Beck (1970) states that this negative

cognitive traid of negative perceptions of the self, world, and

the future generates depression in which a depressing event

results from an individual's perception and evaluation. Within

this model, negative thoughts generate negative feelings that

produce a negative mood (Beck). The goal of cognitive theory is

to identify the primary schemas and assumptions that support

patterns of stereotypical negative cognitions and to change

specific errors in negative beliefs (Emmalkamp, 1994).

Beck (1970) suggested that cognitive theories of depression

maybe applicable to persons with ID. In a case study, Beck

described a woman with depression and ID who attempted to avoid

undesirable activities resulting in negative perceptions of her

environment. Further, evidence for cognitive theories of

depression among adults with mild ID was found in a systematic

study of self-report measures of depression and automatic

thoughts (Nezu, Nezu, Rothenberg, DelliCarpini, & Groag, 1995).

Scores on the self-report measures of depression were

significantly correlated with negative cognitive variables

including maladaptive automatic thoughts. Because of the

prerequisite developmental level of cognitive processing,

persons with severe and profound ID maybe precluded from

cognitive theories of depression. Moreover, this may limit the

application of cognitive theories of depression to persons with mild to moderate levels of ID.

Behavioral Models

Behavioral models of depression presuppose that depression is associated with a decrease in behaviors that result in positive reinforcement. Behavioral theories for depression target monitoring and increasing positive daily activities, improving social and communication skills and increasing daily activities (Craighead, Hart, Craighead, & Itardi, 2002). According to the behavioral model, depressive symptoms are considered to result from problems in interactions with the social environment(Kazdin & Marciano, 1998). Traditionally, behavioral models have conceptualized depression as resulting from skill deficits and an inability to obtain positive reinforcement. Behavioral models of depression have emphasized learning, environmental consequences and behavioral skills deficits. Overall, behavioral theories of depression focus on the effectiveness of positive reinforcement received by the person from significant others.

Lewinsohn (1975) suggests that depressive symptoms result from low-rates of response-contingent reinforcement and increased rates of reinforcement for adaptive behaviors will decrease depression. Moreover, Lewinsohn (1974) states depression is associated with low rates of positive

reinforcement resulting from poor social competence. Furthermore, Lewinsohn suggests limited positive feedback may result from skill deficiencies that interfere with establishing satisfactory relationships. Lewinsohn and Libet (1973) also reported that depressed individuals obtained decreased social reinforcement from others, and interacted with a smaller range of people than non-depressed persons. Moreover, the limited ability of individuals to exhibit prosocial behaviors reduces the amount of satisfaction acquired from others through social interactions. According to Ferster (1973), positive and negative reinforcement strengthens depressive behaviors while the lack of reinforcement or extinction decreases depressive behaviors.

Support for behavioral theories of depression has been reported throughout the treatment literature. For example, Schloss (1982) examined the verbal interactions between depressed and non-depressed persons with ID. Schloss reported that depressed individuals obtained a decreased number of interactions and these interactions were predominately action as compared to non-depressed peers. In addition, researchers have designed treatments based on behavioral therapy to reduce the symptoms of depression among persons with ID including negative self-statements, suicidal statements, and somatic complaints (Matson, 1982; Matson, Dettling, & Senatore, 1981).

<u>Cognitive-Behavioral Models</u>

Cognitive-behavioral theory suggests that depression results from a depressed person's negative views of the world, self, and her or his future (Craighead, Hart, Craighead, & Itardi, 2002). Cognitive-behavioral theories of depression are also based on self-control and attributional models. Rehm's (1977) self-control theory suggests that depression results from negative self-evaluations, lack of self-reinforcement, and high rates of self-punishment. Rehm states depression occurs because of maladaptive self-control behaviors including unacceptable self-monitoring. Depressed individuals with self-monitoring deficits concentrate on negative events and immediate behavioral outcomes. Moreover, a demanding self-evaluation standard and inaccurate internal attributions of causality by depressed persons are examples of self-evaluation problems. In addition, Rehm proposes that depressed persons self-administer high rates of punishment and low rates of reinforcement.

Seligman's (1975) learned helplessness theory provides the framework for the cognitive-behavioral attribution model of depression. Seligman indicates that learned helplessness is the failure to address a challenging situation or learning that personal actions will not positively affect behavior (Abramson, Seligman, & Teasdale, 1978). Learned helplessness is based on the attribution of negative outcomes to internal, global, and

stable factors and positive outcomes to external, specific, and unstable factors (Abramson, Seligman, & Teasdale). Abramson, Metalsky, and Alloy (1989) also suggest a "hopelessness" depression that results from the interaction of negative life events and pessimistic expectations about the future.

Researchers have evidenced support for the cognitive-behavioral theory of depression in persons with ID. According to Reynolds and Miller (1985), learned helplessness has a higher prevalence in persons with ID. Nezu, Nezu, Rothenberg, DelliCarpini, & Groag (1995) indicated that self-reported feelings of hopelessness were found to be associated with depression in persons with ID. Berman (1967) found that persons with ID experiencing depression expressed feelings of hopelessness and helplessness. Barnhill (2001) also found a relationship between depression, hopelessness, and learned helplessness in persons with ID.

Interpersonal Models

Interpersonal models indicate depression occurs within a psychosocial and interpersonal context. In addition, a person's interpersonal relationships may contribute to the initiation and continuance of depression (Craighead, Hart, Craighead, & Itardi, 2002). The goals of interpersonal models are to decrease depressive symptoms and to improve interpersonal functioning. According to the interpersonal model, depression has been

associated with low levels of social resources (Billings, Cronkite, & Moss, 1983). Lin and Dean (1984) found that social support has a direct affect on depression. Holahan and Moos (1981) suggested that social support from family and co-workers were significantly related to changes in depression.

Coyne (1976) reports that persons with depression participate in a decreased number of social interactions because of social skills problems and decreased opportunities to participate in prosocial activities. In addition, Coyne suggests that behaviors exhibited by depressed persons maybe related to the responses of others. Depressed persons produce a negative affect when they interact within their social environment. Consequently, the depressed person is rejected regardless of his or her positive qualities. Overall, depressive behavior results in negative affect, punishment, and adverse contingencies from others.

Researchers have suggested an association between depressed mood, poor social skills, and low levels of social support in persons with ID (Benson, Reiss, Smith, & Laman, 1985; Reiss & Benson, 1985). Laman and Reiss (1987) suggest that depressed mood in persons with ID was associated with poor social skills and social support. Specifically depressed mood was negatively correlated with social skills and social support. Moreover, decreased social skills were associated with low levels of

social support. According to Laman and Reiss, persons with ID
and depression were socially withdrawn and interacted less with
others. In addition, their social interactions were more
incompatible and unproductive.

Assessment of Depression

According to Bramston and Fogarty (2000), multi-method, and
multi-informant strategies are required to assess
psychopathology in persons with ID including a case record
review, interviews, observations, descriptive assessments, and
functional assessments. Reiss (1993) suggests that patterns of
symptomatology, changes in behavior, and modifications for the
influence of ID on symptomatic presentation should be used to
assess pathology in persons with ID.

Depression is commonly assessed by clinical interviews,
self-report ratings, clinician ratings, informant ratings, and
direct observation. However, difficulties with reliability and
validity have been reported for assessments and screening tools
that measure depression in persons with ID (Meins, 1996; Rojahn
and Warren, 1994).

Depression Instruments

Clinical Interviews

Clinical interviews are common assessment methods for
assessing depression within the general population (Reynolds &
Baker, 1988). Clinical interviews have also been used to

diagnose depression in persons with mild and moderate ID. However, Sovner (1986) reported that traditional clinical interviews used to diagnosis depression in persons with ID have significant limitations including requirements for language and verbal competencies.

Clinical Interview Schedule (CIS)(Standardized Psychiatric Interview) was developed to provide *ICD-9* psychiatric diagnoses including depression in adults without ID. The CIS was subsequently modified to assess adults with ID (Ballinger, Armstrong, Presley, & Reid, 1975). The CIS consists of four parts: medical and psychiatric history, psychiatric symptoms, family and personal history, and challenging behaviors. The test-retest reliability of the CIS was reported to be fair (Reid, Ballinger, Heather, & Melvin, 1984). The interrater reliability of the CIS was found to be .78 for the psychiatric symptoms and .85 for the challenging behaviors (Ballinger, Armstong, Presley, & Reid, 1975). Moreover, the convergent validity of the CIS with psychiatric ratings was found to be .55 (Ballinger, Armstong, Presley, & Reid, 1975). However, the CIS may not be suitable for individuals with severe and profound ID because of language and cognitive limitations (Aman, 1991).

Self-Report Measures

Reynolds and Baker (1988) state that self-report measures are frequent assessment measures for depression. Self-report

measures are considered cost-effective and efficient however they are generally exceptionally inclusive and have a propensity to over diagnose depression (Arean & Chatav, 2003). Self-report measures including the Beck Depression Inventory (Beck, Ward, Mendelson, & Mock, 1961) and the Zung Depression Rating Scale (Zung, 1965) designed for use within the general population have also been used to diagnose depression in persons with mild to moderate ID. However, researchers suggest that persons with ID are not reliable sources for self-report information (Sovner; Iverson & Fox, 1989). Moreover, language and verbal competencies are substantial restrictions for self-report measures.

Zung Self-Rating Depression Scale (Zung SDS) is a 20-item self-administered scale developed to measure the behavioral manifestations of depression in adults without ID. The Zung has been used to assess depression in adults with borderline to moderate ID. It is one of the most commonly used depression scales. The Zung is sensitive to depression severity however; it excludes atypical symptoms of depression (Mullen, J., Endicott, J., Hirschfeld, R. M. A., Yonkers, K., Targum, S. D., & Bullinger, A. L., 2004). Powell (2003) reported an internal consistency of .58. Helsel and Matson (1998) reported fair internal consistency. Additional studies have reported some evidence of construct and convergent validity (Kazdin, Matson, Senatore 1983; Reiss & Benson, 1985).

Beck Depression Inventory (BDI) is a 21-item instrument designed

to assess the behavioral symptoms of depression in adults

without ID. For adults with borderline to moderate ID, a

modified 13-item version of the scale has been used to measure

depression (Beck & Steer, 1987). Helsel and Matson (1988)

reported an internal consistency of .59 for the scale.

Convergent validity has been reported for the BDI with the

Hamilton Psychiatric Rating Scale for Depression .73, Zung Self

Report Depression Scale .76, and the MMPI Depression Scale .76

(Beck, Steer, & Garbin, 1988). In addition, supplementary

studies have found support for both convergent and construct

validity of the BDI (Prout & Schaefer, 1985; Nezu, Nezu,

Rothenberg, Dellicarpini & Grag, 1995).

Prout-Strohmer Personality Inventory (PSPI) is a 162-item scale

that was developed for adolescents and adults with borderline to

mild ID to assess psychiatric disorders. The PSPI consists of

five subscales including a depression subscale (Prout &

Strohmer, 1989). The internal consistency and the test-retest

reliability of the PSPI were excellent with a mean alpha

coefficient of .84 and .81 (Aman, 1991). The PSPI demonstrated

excellent content validity and good convergent validity (Aman,

1991).

The Self-Report Depression Questionnaire was developed for

adolescents and adults with mild to moderate ID. The Self-Report

Depression Questionnaire is a 32-item instrument used to screen depression in persons with ID (Reynolds & Baker, 1988). Reynolds and Baker reported an internal reliability of .90 and a test-retest reliability of .63 for the instrument. The Self-Report Depression Questionnaire demonstrated good content validity. In addition, Reynolds and Baker (1988) reported good convergent validity with the clinical interview and the Hamilton Depression Rating Scale.

Reynolds Adolescent/Child Depression Scale (RADS/RCDS) is a 30-item self-report measure based on the *DSM-IV* that was designed to assess depression in adults and children with borderline to moderate ID (Reynolds, 1987). Reynolds and Miller (1985) have reported excellent internal consistency, good convergent validity, and evidence of construct validity for the instrument.

Minnesota Multiphasic Personality Inventory (MMPI) (168) is a short modified version of the MMPI that has been used to measure psychiatric symptoms in persons with mild to moderate ID. The MMPI-168 has a separate depression subscale (Overall & Gomez-Mont, 1974). Mc Daniel (1977) found good test-retest reliability and criterion validity for the scale. In addition, evidence of convergent validity has been reported between the MMPI-168 and the RSMB (Johns & Mc Daniel, 1998).

Informant-Rating Scales

Informant-rating scales have been designed to measure a range of behaviors including psychopathology and depression in persons with ID (Matson and Bamburg, 1998; Matson and Gardner, Coe, & Sovner, 1991; Reiss, 1990). Informant rating scales are typically economical, efficient, flexible, and consumer-friendly (Lecavalier & Aman, 2004). Additionally normative data are available for numerous rating scales and a wide range of informants can complete them (Lecavalier & Aman). In general, informant-rating scales have proven to be reliable and valid in assessing psychopathology in persons with ID (Matson & Bamburg, 1998; Matson, Le Blanc, Weinheimer, & Cherry, 1999; Matson, Mayville, Bielecki, Barnes, Bamburg & Baglio, 1998).

Informant-rating scales rely on information obtained from a familiar person, typically a direct care staff or a family member. Moreover, they are the most commonly used method to assess depression in persons with ID (Mc Brien 2003). However, only a limited number of informant-rating scales have been designed to assess depression in persons with ID (Sturmey, Reed, & Corbett, 1991). These measures were specifically designed to assess depression within this special population. Moreover, these measures have included both general psychopathology instruments with depression subscales and depression specific assessments. However, according to Aman

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(1991), the majority of these instruments have not been subjected to independent or extensive psychometric evaluations. The Mental Retardation Depression Scale (MRDS) was developed to assess depression in persons with mild, moderate, severe, and profound ID (Meins, 1996). However, the MRDS consists of only 9 items limiting its reliability. Additionally, no further studies have been conducted to investigate the reliability and validity of the MRDS or its treatment utility for depression in persons with severe and profound ID (Mc Brien, 2003).

The Reiss Screen for Maladaptive Behavior was developed to screen psychopathology and challenging behaviors in adults with mild to severe ID (Reiss, 1987). The Reiss Screen is a 36-item psychometric instrument that consists of eight subscales including a depression (physical signs) and depression (behavioral signs) subscales. Scale items include behavioral equivalents and atypical symptoms not incorporated in the *DSM*. Additionally, the measure consists of six items not assigned to scales but according to the author is clinically significant and useful. The interrater reliability of the depression (behavioral signs) subscale and the depression (physical signs) subscales were .79. The test-retest reliability of the depression (behavioral signs) was found to be .72 and the test-retest reliability of the depression (physical signs) was .74. Internal consistencies were adequate for most subscales (Aman, 1991).

Studies have found support for evidence of construct validity (Reiss & Rojahn, 1993). Overall, the Reiss Screen's psychometric data suggests that the scale compares positively with other available instruments (Aman, 1991).

The Reiss Screen (Child Version) was developed to screen psychopathology in children with ID. The Reiss Screen (Child Version) is a 60-item screening instrument with a depression subscale including depressed mood, anhedonia, sleep disturbances and social deficits. The median internal consistency of the scale was found to .81 while the mean interrater reliability was .46. (Lecavalier & Aman, 2004) Reiss and Rojahn (1993) did report evidence of construct validity for the scale. Moreover, Reiss and Valenti-Hein (1994) provided evidence of criterion validity. In general the psychometric data of the Reiss Screen (Child Version) is generally positive (Lecavalier & Aman)

The Mood, Interest, and Pleasure Questionnaire (MIPQ) was designed to assess depression in persons with severe to profound ID. The MIPQ consists of 25 items and 2 subscales, mood and interest/pleasure (Rosss & Oliver, 2003). Ross and Oliver reported an interrater reliability ranging from .69 to .76 and an internal reliability of .89 to .94 for the scale. In addition, the MIPQ demonstrated evidence of convergent validity with the Aberant Behavior Checklist (ABC). The MIPQ was the first measure to examine the construct of depression in persons

with severe and profound ID by using informant-based questionnaires or interviews and behavioral methods. However, as noted previously, the MIPQ only assesses two of the core symptoms of depression, mood and anhedonia while excluding weight, sleep and concentration disturbance, psychomotor agitation, feeling of worthless or guilt, fatigue, thoughts of death or suicide and social skills deficits.

The Assessment of Dual Diagnosis (ADD) was developed to assess the frequency, duration, and severity of symptoms representative of psychiatric disorders in persons with mild and moderate ID (Matson & Bamburg, 1998). The ADD is a 79-item screening measure that consists of 13 subscales including a depression subscale. The subscales are used to screen for psychiatric symptoms related to *DSM-IV* criteria. Matson and Bamburg (1998) reported an interrater reliability of .98 and a test-retest reliability of .94 for the depression subscale. Moreover, the ADD demonstrates excellent internal consistency and content validity (Matson 1997). Overall, the ADD demonstrates good reliability and validity and is the only instrument for adults with mild to moderate ID based on the *DSM-IV* taxonomy (Lecavalier & Aman, 2004).

The Diagnostic Assessment for the Severely Handicapped II (DASH-II) was developed to assess symptoms characteristic of psychiatric disorders in persons with severe to profound ID

(Matson, 1994). The DASH-II is an 84-item screening instrument that consists of 13 subscales including a mood subscale. Mood scale items include both atypical symptoms and behavioral equivalents. The items focus on observable behaviors and are used for screening purposes to assess the frequency, duration, and severity of psychiatric symptoms related to *DSM* criteria. The interrater reliability of the DASH-II mood subscale was found to be .92 and the test-retest reliability of subscale was reported to be .88 (Matson, 1994). The depression subscale of the DASH-II displayed convergent validity of .75 with the Aberrant Behavior Checklist (ABC) (Paclawskyj, Matson, Bambur, & Baglio 1997). The DASH-II is one of the most commonly used scales for measuring psychopathology for adolescents and adults with severe and profound ID (Lecavalier & Aman, 2004).

Emotional Disorders Rating Scale-Developmental Disabilities (EDRS-DD) is a 59-item instrument for assessing psychiatric symptoms in developmentally disabled children and adolescents with mild to moderate ID (Feinstein, Kaminer, & Barrett, 1988). The EDRS-DD consists of eight subscales including a depressive mood subscale. The mean coefficient alpha for the scale was reported to be .51 (Aman, 1991). Moreover, the mean interrater reliability was found to be .39 while the mean test-retest reliability was reported as .72 (Aman, 1991). Evidence of convergent validity was reported between the depressive mood

subscale of the EDRS-DD and the Hamilton Depression Rating Scale (Hamilton, 1960) and the Children's Depression Rating Scale (Poznanski, Cook, & Carrol, 1979).

Strohmer-Prout Behavior Rating Scale (SPBRS) is a 135-item scale developed to measure psychiatric symptoms and challenging behaviors of adolescents and adults with borderline to mild ID (Strohmer & Prout, 1989). The instrument consists of twelve subscales including a depression subscale. The SPBRS demonstrates excellent internal consistency and a mean interrater reliability of .78 (Aman, 1991). Moreover, the SPBRS exhibited evidence of content, criterion, and convergent validity with the Child Behavior Checklist (Aman, Achenback & Edelbrock, 1979). According to Aman (1991) the SPBRS is one of the superior informant-rating scales. Overall, the SPBRS is a soundly-developed instrument for assessing psychiatric symptoms (Lecavalier & Aman, 2004).

Instruments with Self-Report Measures and Informant-Rating Scales

The Clinical Behaviour Checklist for Persons with Intellectual Disabilities (CBDPID) is a 30-item checklist designed to assess depression, psychiatric symptoms, and challenging behaviors in persons with ID using the *ICD-10* criteria (Marston, Perry, & Roy, 1997). A brief 5-item version of the scale has demonstrated good internal consistency and evidence of criterion validity

(Tsiouris, Mann, Patti, & Sturmey, 2003). However, additional research is needed to establish the reliability of the checklist in screening for depression in persons with ID.

The Psychiatric Assessment Schedule for Adults with a Developmental Disability (PAS-ADD) is a 145-question measure designed to assess a range of psychiatric disorders including depression (Moss, Patel, Prosser, Goldberg, Simpson, & Rowe et. al., 1993). The PAS-ADD was developed to assess psychopathology in persons with all levels of ID. Overall, the interrater reliability of the PAS-ADD has been found to be good (Patel, Goldberg, & Moss, 1993).

The Glasgow Depression Scale for People with a Learning Disabilitiy (GDS-LD) is a 20-item self-report instrument based on the DC-LD diagnostic criteria that was developed to assess depression in persons with mild and moderate ID (Cuthill, Espie, & Cooper, 2003). Cuthill, Espie, & Cooper reported test-retest reliability of .97 and internal reliability of .90 for the GDS-LD. The informant version of the GDS-LD was found to have an internal reliability of .88 and interrater reliability of .98. The validity of the GDS-LD is questionable however due to its development using the *DC-LD* diagnostic criteria.

The Anxiety, Depression and Mood Subscale (ADAMS) is a 28-item empirically based instrument designed to measure anxiety, depression and mood disorders in persons with mild to profound

ID. The ADAMS consists of five subscales including a depressed

mood subscale (Esbensen, Rojahn, Aman, & Ruedrich, 2003). The

internal consistency of the ADAMS subscales ranged from .75 to

.83, and interrater reliability from .37 to .62 (Lecavalier &

Aman, 2004). According to Lecavalier & Aman (2004) the ADAMS

appears to be a psychometrically sound instrument for assessing

depression among individuals with ID.

RATIONALE

Depression scales designed for persons with average intelligence are not likely to be applicable to persons with severe and profound ID. Therefore, the primary goal of this study was to develop a measure for this special population. Persons with severe and profound ID typically exhibit expressive communication deficits resulting in an incomplete and inaccurate assessment of their psychiatric symptoms (Einfield, 1992). For example, the diagnosis of depression is primarily based on the self-report of cognitive and behavioral symptoms. However, persons with severe and profound ID are often unable to relate depressive symptoms because of communication skills deficits (Mc Brien, 2003). Specifically, most individuals with severe and profound ID frequently cannot report cognitive symptoms of depression including feelings of guilt and worthlessness or recurrent thoughts of death or suicidal ideation (Smiley & Cooper, 2003). Suicide ideation and decreased concentration and indecisiveness are additional cognitive symptoms of depression that persons with severe and profound ID are frequently unable to report (Meins, 1995).

According to Shaw and Bud (1982), clinical interviews and self-report measures used to assess depression in persons with ID present several limitations. Specifically, these assessments have insufficient psychometric information and validity because

of the exclusion of persons with ID from the normative samples. Because persons with ID present a diverse range of limitations including cognitive and communication deficits, the assessment of psychopathology with measures specific to individuals with ID is especially important (Sovner, 1986).

Because of the discrepancies in population characteristics, there is a need for standardized instruments to assess depression in persons with severe and profound ID (Clark, Reed, & Sturmey, 1991). Standardized assessments provide a methodology for studying depression in large samples of persons with ID and depression, investigating the prevalence of depression, and conducting epidemiological studies and other relevant research. Thus, developing standardized assessment instruments are an important initial first in studying depression in this population. In general, informant-rating scales have proven to be reliable and valid given the impracticability of self-report in persons with severe and profound ID (Matson & Bamburg, 1998; Matson, Le Blanc, Weinheimer, & Cherry, 1999; Matson, Mayville, Bielecki, Barnes, Bamburg & Bagilo; 1998).

METHOD

<u>Participants</u>

The participants for this study were 144 randomly selected persons diagnosed with severe and profound ID residing at Pinecrest Developmental Center, Columbia Developmental Center and Leesville Developmental Center, state developmental centers located in Louisiana. Participants also lived in community homes, group homes or supervised independent living settings. Participants were males 54.2% and females 45.8% with 38.2% of the respondents diagnosed with severe ID and 61.8% diagnosed with profound ID. Participants were African-Americans 27.8% and Caucasian 72.2% and ranged in ages from 14 to 86 years with a mean age of 51.6 years and a standard deviation of 13.3 years. The modal age was 48.0 years and the median age of the respondents was 52.0 years.

Within this study, 52.8% of the participants were not prescribed psychotropic medications however 6.3% were administered antidepressant medications. The small number of participants receiving antidepressant medication during this investigation suggests that the behavioral symptoms of depression reported by the informants' maybe valid indicators of depression. Additionally 11.8% of the participants were prescribed atypical antipsychotics, 0.7% antipsychotics, 8.3% mood stabilizers, 12.5% anticonvulsants, and 7.6% multiple

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psychotropics. The majority of the participants who received multiple psychotropic medications typically were prescribed an atypical antipsychotic and a mood stabilizer. The minimum number of medications prescribed for a respondent was 0 and the maximum was 7. The mean number of prescribed medications was 1.9, with a mode and median of 0 and a standard deviation of 2.5.

Participants in this investigation were diagnosed with a multiplicity of psychiatric diagnoses. In the sample, 2.8% were diagnosed with major depressive disorder, 7.6% with bipolar I disorder, 2.8% with a mood disorder, 1.4% with depressive disorder, .7% with bipolar II disorder, and 2.8% with bipolar nos. In addition, 2.1% of the respondents were diagnosed with anxiety disorder, .7% with posttraumatic stress disorder, and .7% with a generalized anxiety disorder. Within the sample, .7% were diagnosed with a delusional disorder, and .7% with dementia. In addition, .7% of the sample was diagnosed with childhood disintegrative disorder, .7% with a tic disorder, 5.6% with stereotypic movement disorder, 2.8% with pica, 6.9% with pervasive developmental disorder, 10.4% with autistic disorder, .7% with rumination disorder, and .7% with a conduct disorder. Furthermore 1.4% of the respondents were diagnosed with schizophrenia, and 2.1% with psychotic disorder nos. However 45.1% of the participants were not diagnosed with an axis I psychiatric disorder.

Table 1. Participant Demographics

Age	(n	%)	Psychotropics	(n	%)
10-19	2	1.39	None	76	52.8
20-29	5	3.47	Anticonvulsants	18	12.5
30-39	21	14.58	Atypical Antipsychotics	17	11.8
40-49	35	24.31			
50-59	43	29.86	Mood Stabilizers	12	8.3
60-69	24	16.67	Multiple	11	7.6
70-79	12	8.33	Antidepressants	9	6.3
80-89	2	1.39	Antipsychotics	1	0.7
Minimum	14		Minimum		0
Maximum	86.0		Maximum		7
Mean	51.61		Mean		1.9
Mode	48.0		Mode		0
St. Deviation	13.3		St. Deviation		2.5

Gender	(n	%)	Diagnoses	(n	%)
Male	78	54.2	No Diagnosis	65	45.1
Female	66	45.8	Autistic	15	10.4
Ethnicity			Bipolar I	11	7.6
African	40	27.8	Pervasive Developmental	10	6.9
Caucasaian	104	72.2	Stereotypic Movement	8	5.6
Level of ID			Major Depressive	4	2.8
Severe	55	38.2	Bipolar NOS	4	2.8
Profound	89	61.8	Mood Disorder	4	2.8
			Pica	4	2.8
			Anxiety	3	2.1
			Psychotic	3	2.1
			Schizophrenia	2	1.4
			Depressive	2	1.4
			Bipolar II	1	.7
			Delusional	1	.7
			Post Traumatic Stress	1	.7
			Childhood Disintegrative	1	.7
			Tic	1	.7
			Dementia	1	.7
			Rumination	1	.7

(table 1 continued)

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Conduct Disorder	1	.7
Generalized Anxiety	1	.7

Institutional Review Board approval for this study was previously obtained. Diagnoses of ID were determined based on individual intelligence tests (e.g. Wechsler Adult Intelligence Scale-III, Stanford-Binet IV, Stanford-Binet V or the Leiter International Performance Scale Revised) and adaptive behavior scales (e.g. VABS or ABS). The Stanford-Binet and Wechsler are individually administered intelligence tests that have been used extensively with verbal persons with diagnoses of severe and profound ID. The Leitier-R is an individually administered intelligence test for nonverbal individuals, which has been utilized with persons with severe and profound ID.

Materials

The DEPRESSED was designed as a depression-screening instrument for persons with diagnoses of severe and profound ID. The scale consisted of items recognized as significant for the assessment of depression within this population. Scale items were projected to identify distinguishing behaviors or behavioral symptoms of depression among persons with severe and profound ID (Lowry, 1993, 1998). The preliminary scale items were developed based on the DSM-IV-TR criteria, IC-D 10 criteria, previously published assessment instruments (e.g.

DASH-II, ADD, SPSS, MESSIER), research studies, and the clinical assessment of persons with severe and profound ID. Scale items were also constructed from a review of the current assessment and treatment literature for depression in persons with severe and profound ID and consultations with psychologists, and direct care staff. Subsequent to feedback and consultations with mental health professionals and staff, items were revised and items were added or deleted to produce the preliminary scale. The scale items were written so that a positive endorsement of an item indicated the presence of a depressive symptom and no endorsement indicated the absence of symptoms. The DEPRESSED score sheet contained relevant demographic information, including the participant's name, gender, ethnicity, date of birth, ID level, psychiatric diagnosis, psychotropic medications, and physical disabilities. Respondents' demographic information was obtained from his or her medical chart. Each item was rated on a three point Likert-type scale consisting of "0", "1", or "2" for the frequency, duration and severity. The frequency of the depressive behavior was rated on how many days the behavior occurred during the last two weeks. The duration of the depressive behavior was rated to indicate the overall length of time the behavior had been observed by the informant. The severity of the depressive behavior was rated on the degree of distress or impairment of social or occupational functioning for

that individual. For the frequency dimension, a rating of "0" indicated no occurrence of the behavior, a "1" indicated that the behavior occurred between 1 and 7 days, and a "2" specified that the behavior occurred more than 7 days. For the duration dimension, a rating of "0" indicated that the behavior had occurred between 1 and 12 months, a "1" indicated that the behavior had occurred between 1 to 2 years, and a "3" indicated that the behavior had occurred over 2 years. On the severity dimension, a rating of "0" specified that the behavior caused no distress or impairment in social or work functioning a "1" specified that the behavior caused moderate distress or impairment in social or work functioning and a "2" indicated that the behavior caused severe distress or impairment in social or work functioning.

Procedures

Direct care staff served as informants during the administration of the DEPRESSED. Informants were the participant's direct care staff, and group leader who were most familiar with that person. Each staff that served as the informant provided behavioral supports, active treatment (meaningful activities), and personal care to the participant for at least six months at the developmental center or in the community. Each direct care staff was asked to rate a single individual and to respond to the scale items along the three

dimensions, frequency, duration, and severity. The interviewers were graduate psychology students who had been trained to administer the scale. Training of interviewers included practice administrations of the DEPRESSED. To ensure consistency during data collection, instructions for completing the assessment were read from a prepared script.

The direct care staff and the interviewer completed the DEPRESSED in approximately 15 minutes. First, the interviewer questioned the direct care staff person on the frequency of the scale item. Subsequently, the informant rated the item as either a "0" for no occurrence of the behavior, a "1" indicating that the behavior occurred between 1 and 7 days or a "2" indicating that the behavior occurred more than 7 days. For duration, a rating of "0" specified that the behavior had occurred between 1 to 12 months; a "1" specified that the behavior had occurred between 1 to 2 years, and a "3" indicating that the behavior had occurred over 2 years. Subsequently, the interviewer asked the staff person to rate the severity of the scale items. Direct care staff rated the item as either a "0" the behavior caused no distress or impairment in social or work functioning a "1" specified that the behavior caused moderate distress or impairment in social or work functioning and a "2" indicated that the behavior caused severe distress or impairment in social or work functioning.

A second DEPRESSED was administered to 20% (N = 29) of direct care staff following the primary data collection to assess interrater reliability. Raters completed a second DEPRESSED using a second (independent) direct care staff person for 20% (N = 29) randomly selected participants. This assessment was completed on the identical day and work shift to ensure that the two raters were observing comparable behaviors or behavioral symptoms. Interrater reliability was calculated to assess the consistency of observations across different direct care staff.

Test-Retest reliability was assessed by re-administering the DEPRESSED to 20% (N = 29) direct care staff two weeks following the primary data collection. The direct care staff completed a second DEPRESSED for 20% (N = 29) randomly selected participants. This assessment was completed on the identical day and work shift to ensure that the staff person was observing comparable behaviors or behavioral symptoms. Test-Retest reliability was calculated to assess the temporal stability of the ratings.

Factorial validity for the DEPRESSED was evidenced by empirical test construction utilizing factorial analysis. Construct validity was determined by comparing DEPRESSED items targeting specific symptoms necessary for diagnosis of depression including depressed mood, anhedonia, weight disturbance, sleep disturbance, psychomotor agitation or

retardation, and fatigue or loss of energy to a DSM-IV-TR checklist for Major Depressive Episode. Comparing DEPRESSED scores to DSM-IV-TR checklist scores evidenced construct validity. Convergent validity was determined by comparing the DEPRESSED to the Diagnostic Assessment of the Severely Handicapped (DASH-II). Convergent validity between the DEPRESSED and the DASH-II psychopathology scale was calculated by comparing DEPRESSED scores to the Mood subscale scores of the DASH-II (Matson, 1994).

RESULTS

Test construction for the DEPRESSED consisted of item analytic and factor analytic methods as suggested by Nunnally (1978). Frequency scores of the 144 participants' responses for the preliminary 46 item DEPRESSED were subjected to an item analysis and a principal component analysis (PCA) to produce the DEPRESSED scale.

The item analytic procedure used consisted of correlating each item with the total score (minus item) to indicate the average correlation of the item with all other scale items. To construct a discriminating and homogenous scale, items with high correlations between $r = .25$ and $r = .80$ were maintained while items with low or negative correlations $r < .25$ were deleted from the scale as recommended by Kline (1986). These items included # 3 "Has stomach problems (e.g. constipation or diarrhea)," # 10 "Has lost interest in sexual activities (e.g. masturbation)," #11 "Stays in room alone," #17 "Sleeps more than 12 hours," and #27 "Vocalizes or talks less than usual." In addition, items deleted from the scale because of negative or low correlations included #30 "Talks of being dumb," #38 "Talks about being dead," #40 "Talks about death or people who have died," #41 "Isolates self from others (e.g. staff or peers)" and #46 "Displays a weight gain (e.g. 5, 10, or more than 15 pounds)." Items with zero variances were also deleted from the

preliminary DEPRESSED scale. These items included #29 "Talks of being ugly," #31 " Talks of being bad," and #39 "Has attempted suicide."

PCA was the factor analytic technique selected to reduce the 33-item DEPRESSED to a smaller set while providing an empirical summary of the data (Tabachnick & Fidell, 2001). Principal components was the extraction method selected for the PCA. Consequent to extraction, orthogonal rotation was used to rotate the factors. Varimax was the orthogonal rotation method chosen for the PCA.

To determine the appropriate number of factors for extraction, the Kaiser stopping rule and the Scree Test were used during the investigation. Kaiser's (1960) stopping rule is a mathematical procedure that retains factors with eigenvalues with a minimum value of one. Eigenvalue size is the criterion to determine the adequacy of extraction and the appropriate number of factors according to Kaiser (1960). With no predetermined limitations on the number of factors, eleven factors with eigenvalues greater than one, 6.29, 2.67, 2.11, 1.92, 1.73, 1.66, 1.51, 1.41, 1.24, 1.14 and 1.03, were identified during the initial factor solution. However, the Kaiser stopping rule may over or underestimate the number of factors in the data set and distort the rotational structure (Tabachnick & Fidell, 2001; Comrey, 1978).

Cattell's (1966) Scree test is a graphical procedure that plots factors against eigenvalues. The first eigenvalues in the visually steep and negatively decreasing decent are retained while the eigenvalues in the gradual decent are deleted (Bryant and Yarnold, 1995). The criteria determined by the Scree plot (Cattell, 1966) suggested that the factor solution should contain four factors. The Scree test is highly reliable and usually accurate within one or two factors of identifying the appropriate number of factors for extraction (Tabachnick & Fidell, 2001; Gorsuch, 1983).

The PCA was rerun with principal components and varimax rotation specifying the extraction of four factors with eigenvalues of 6.29, 2.67, 2.11, and 1.92. These four factors were selected because of their large eigenvalues approximating two or greater and they accounted for 39% of the total variance. Moreover, differences in eigenvalue size were small subsequent to the fifth factor suggesting an adequate factor solution of approximately four to five factors. When the PCA was rerun with five factors, the fifth factor produced four factor loadings greater than .30, the criterion for interpretation chosen by the investigator. However, two of the factor loadings were complex variables and were deleted as suggested by Tabachnick and Fidell (2001). The resultant two factor loadings were deleted because the interpretation of factors defined by one or two variables

produces uncertainty (Tabachnick & Fidell). These results provide support for the four-factor solution.

The four-factor solution resulted in factors that were classified as (F1) "Sleep," (F2) "Mood," (F3) "Skills," and (F4) "Motor." Twenty items loaded on one of the four identified factors. Moreover, thirteen items did not load on a specific factor and were deleted from the final scale.

The Sleep factor included items related to a sleep disturbance including waking frequently from sleep, sleeping less than four hours, waking up earlier in the mornings, and difficulties falling asleep. The Mood factor contained items suggestive of a depressed mood including crying, sobbing, or whining, sad vocalizations, irritability, anhedonia, increased vocalizations, agitation and hyperactivity. The Skills factor incorporated items associated with personal self-care including decreased self-participation and increased direct care staff assistance with bathing, dressing, and eating skills. The Motor factor included items connected to psychomotor retardation including decreased motor activity, decreased energy level, slow body movements, sits often, decreased appetite and fatigue. Subsequently four items loaded on the Sleep subscale, eight items on the Mood subscale, three items on the Skills subscale, and five items on the Motor subscale to comprise the final DEPRESSED scale.

Table 2. Factor Loadings of the Four-Factor Solution

DEPRESSED Factors

Scale Items	F1	F2	F3	F4
1. Displays depressed mood	.22	**.60**	.10	.28
2. Cries, sobs, or whines	.25	**.52**	−.06	.11
4. Displays irritability	.29	**.53**	.17	.08
5. Complains of being sick	−.06	.21	.36	.10
6. Talks about being sad	−.12	**.70**	.18	−.00
7. Vocalizes or talks more than usual	.32	**.38**	.00	.30
8. Has lost interest in enjoyable activities	.13	**.62**	−.11	.13
9. Has lost interest in work	.51	.10	.20	−.04
12. Likes activities without others	.20	−.12	.14	.14
13. Displays a weight loss	.08	.08	−.16	.72
14. Has a decreased appetite	.16	.08	−.19	**.43**
15. Has an increased appetite	.17	.29	.14	−.03
16. Sleeps less than 4 hours	**.83**	.11	−.01	.13
18. Has trouble falling asleep	**.70**	.03	.20	−.07
19. Wakes often from sleep at night	**.84**	.14	−.06	.14
20. Wakes up 1 or 2 hours earlier in the mornings	**.77**	.18	−.10	.37
21. Sleeps during the day	.33	.04	.37	.15
22. Has very slow body movements	−.16	.09	.41	**.54**
23. Hass less motor activity	−.08	−.15	.24	**.67**

24. Displays agitation	.30	**.34**	.00	.18
25. Displays more motor activity	.37	.26	.25	.11
26. Displays hyperactivity	.12	**.30**	.01	.39
28. Vocalizes or talks slower than usual	−.19	.30	.11	−.02
32. Displays loss of energy	.04	.13	.34	**.45**
33. Lays in bed often	.05	.25	.07	.20
34. Sits often	.23	.10	.22	**.50**
35. Has trouble making decisions	−.12	.56	.16	.05
36. Has memory loss	.07	.14	−.15	−.01
37. Distracted easily	.12	.17	.13	.44
42. Requires more staff assistance to bathe self	.25	.09	**.80**	.06
43. Requires more staff assistance to dress self	.06	.41	**.74**	−.03
44. Requires more staff assistance with eating	.16	.16	**.82**	.06
45. Displays less social interaction with others	.32	−.12	.40	.16

Each of the twenty items in the four-factor solution was correlated with the subscale scores (item-deleted) of Sleep, Mood, Skills, and Motor to determine the validity of the model. The four sleep items were significantly correlated with the Sleep subscale, the eight mood items were considerably correlated with the Mood subscale, the three skill items were appreciably correlated with the Skills subscale, and the five motor items were correlated with the Motor subscale.

Table 3. Item Total Correlations

| | | Item Totals | | |
Scale Items+	Sleep	Mood	Skills	Motor
Depressed	.32	**.69**	.25	.36
Cries	.26	**.66**	.18	.13
Irritability	.32	**.66**	.27	.24
Sad	.07	**.49**	.27	.12
Vocalizes/Talk	.37	**.60**	.24	.28
Anhedonia	.20	**.55**	.11	.12
Appetite	.19	.20	−.05	**.42**
Sleeps less	**.91**	.36	.19	.18
Sleep trouble	**.67**	.23	.23	.17
Wakes often	**.93**	.35	.14	.20
Wakes earlier	**.91**	.51	.14	.35
Moves slow	.07	.20	.39	**.60**
Less Motor	.07	.12	.20	**.58**
Agitation	.27	**.58**	.17	.20
Hyperactivity	.17	**.57**	.11	.28
Energy loss	.14	.27	.27	**.65**
Sits often	.27	.30	.24	**.74**
Bathe self	.23	.26	**.89**	.32
Dress self	.12	.33	**.88**	.28
Eating	.18	.24	**.89**	.36

+ Complete item descriptions are listed in Appendix A

Significant correlations between the DEPRESSED items and sleep subscale items were as follows: sleeps less $r = .91$, sleep trouble $r = .67$, wakes often $r = .93$, and wakes earlier $r = .91$. Considerable correlations between the DEPRESSED items and mood subscale items were as follows: depressed $r = .69$, cries $r = .66$, irritability $r = .66$, sad $r = .49$, vocalizes/talk $r = .60$, anhedonia $r = .55$, agitation $r = .58$ and hyperactivity $r = .57$. In addition, major correlations between the DEPRESSED items and skills subscale items were as follows: bathe self $r = .89$, dress self $r = .88$, and eating $r = .89$. Moreover, sizeable correlations between the DEPRESSED items and motor subscale items were as follows: appetite $r = .42$, moves slow $r = .60$, less motor $r = .58$, energy loss $r = .65$, and sits often $r = .74$.

The internal consistency of the DEPRESSED scale and subscales were assessed through calculation of Cronbach's or coefficient alpha. Cronbach's alpha is a measure of item homogeneity and the degree to which an item is correlated with the remaining items on a particular subscale (Anastasi & Urbina, 1997; Cronbach, 1951). To measure inter-item consistency, coefficient alpha was calculated for each subscale and the full scale. The coefficient alphas for the Depressed subscales were Sleep $r = 0.88$, Mood $r = 0.74$, Skills $r = 0.86$ and Motor $r = 0.55$. The coefficient alpha for the full scale was $r = 0.82$.

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The internal consistencies for the full scale, Mood subscale, Sleep subscale, and Skills subscales were good to excellent as recommended by Cicchetti and Sparrow (1981). The internal consistency for the Motor subscale was fair (Cicchetti & Sparrow).

To assess the reliability of the scale both test-retest and interrater reliability were measured during the study. Test-retest reliability data was collected on 29 participants, who comprised 20% of the sample two weeks following the primary data collection. Reliability was calculated using an Intraclass Correlation Coefficient (ICC) with a one-way random effects model. The test-retest reliability for the full scale was $r = .87$, $p < .01$. The ICCs for the Depressed subscales were Sleep $r = -.70$, $p < .01$, Mood $r = .85$, $p < .01$, Skills $r = .96$, $p < .01$ and Motor $r = .81$, $p < .01$. As recommended by Cicchetti and Sparrow (1981), the test-retest reliability of the full scale, Mood subscale, Skills subscale, and Motor subscale were excellent. The test-retest reliability of the Sleep subscale was poor (Cicchetti & Sparrow, 1981).

Interrater reliability data was collected on 29 participants, who comprised 20% of the sample following the primary data collection. This assessment was completed on the identical day and work shift as the previous data collection. Reliability was calculated using an Intraclass Correlation

Coefficient (ICC) with a one-way random effects model. The interrater reliability for the full scale was $r = .86$, $p < .01$. The ICCs for the Depressed subscales were Sleep $r = .73$, $p < .01$, Mood $r = .87$, $p < .01$, Skills $r = .89$, $p < .01$, and Motor $r = .87$, $p < .01$. Based on Cicchetti and Sparrow (1981) criteria, the interrater reliability of the full scale, Mood subscale, Skills subscale, and Motor subscales were considered excellent. The interrater reliability of the Sleep subscale was good (Cicchetti & Sparrow, 1981).

Factorial validity for the DEPRESSED was evidenced by the four-factor solution resulting from the PCA. Construct validity was determined by comparing DEPRESSED items targeting symptoms needed for the diagnosis of depression including depressed mood, anhedonia, weight disturbance, sleep disturbance, psychomotor agitation or retardation, and fatigue or loss of energy to the *DSM-IV-TR* checklist for Major Depressive Episode. The correlation between DEPRESSED items and the corresponding criteria for Major Depressive Episode of the *DSM-IV-TR* were calculated using a phi coefficient. *DSM-IV-TR* symptoms of a Major Depressive Episode represent dichotomies. Subsequently, positive item endorsements of either a 1 or 2 on the frequency dimension of the DEPRESSED were translated into categorical item endorsements, resulting in an artificial dichotomy.

Table 4. Correlations between the DEPRESSEED and DSM Items

Depressed Items+   DSM-IV-TR Items++

	Mood	Anhedonia	Weight/Appetite	Sleep
Depressed	**.50****	.14*	.30**	.21*
Cries	**.52****	.12	.17*	.21*
Irritability	**.67****	.26**	.05	.17*
Sad	.18*	.10	.01	.08
Vocalizes/Talk	.21*	.13	.16	.13
Anhedonia	.05	**.31****	.29**	.04
Appetite	.18*	.11	**.57****	.14
Sleeps less	.24**	.17*	.17*	**.38****
Sleep trouble	.17*	.09	.15	.26**
Wakes often	.22**	.19*	.20*	**.36****
Wakes earlier	.27**	.19*	.23**	**.40****
Moves slow	.09	.02	.11	.19*
Less Motor	.04	.07	.22**	.13
Agitation	.38**	.17*	.19*	.27**
Hyperactivity	.16	.21*	.38**	.24**
Energy loss	.22**	.18*	.15	.26**
Sits often	.21*	.23**	.23**	.23**
Bathe self	.14	.13	−.01	.16

| Dress self | .15 | .14 | .06 | .03 |
| Eating | .15 | .14 | .06 | .18* |

Depressed Items	DSM-IV-TR Items	
	Psychomotor	Fatigue
Depressed	.23**	.30**
Cries	.28**	.18*
Irritability	.28**	.25**
Sad	.12	.12
Vocalizes/Talk	.36**	.17*
Anhedonia	.10	.02
Appetite	.23**	.23**
Sleeps less	.17*	.20*
Sleep trouble	.06*	.13
Wakes often	.18*	.16
Wakes earlier	.23**	.27**
Moves slow	.27**	.20*
Less Motor	.25**	.13*
Agitation	**.45**	.16
Hyperactivity	**.61**	.32**

(table 4 continued)

Energy loss   .19*   **.57****

Sits often   .22   **.83****

Bathe self   .14   .18*

Dress self   .16   .21*

Eating   .16   .21*

** Denotes a significance level of *p* < .01

* Denotes a significance level of *p* < .05

\+ Complete DEPRESSED item descriptions are listed in Appendix A

++ Complete DSM-IV-TR item descriptions are listed in Appendix B

     Significant correlations between the DEPRESSED items and the *DSM-IV-TR* symptoms for major depressive episode were as follows: depressed mood and mood r = .50, p < .01, cries and mood r = .52, p < .01, irritability and mood r = .67, p < .01, anhedonia and anhedonia r = .31, p < .01, appetite and weight/appetite r = .57 p < .01. In addition, significant correlations between the Depressed items and the DSM-IV-TR symptoms of Major Depressive Episode were as follows: sleeps less and sleep r = .38, p < .01, wakes often and sleep r = .36, p < .01, wakes earlier and sleep r = .40, p < .01, agitation and psychomotor agitation/retardation r = .45, p < .01, hyperactivity and psychomotor agitation/retardation r = .61, p < .01, energy loss and fatigue r = .57, p < .01 and sits

often and fatigue $r =.83$ $p < .01$. The phi correlation for validity between the DEPRESSED and the *DSM-IV-TR* checklist was .97, $p < .01$.

The correlation between the DEPRESSED items and the Mood subscale items of the DASH-II was calculated using the Pearson product moment correlation. Significant correlations between the DEPRESSED items and DASH-II Mood subscale items were as follows: depressed and agitation $r = .51$, $p < .01$, wakes often and sleep $r = .41$, $p < .01$, appetite and appetite $r = .52$, $p < .01$, sleeps less and sleep $r = .42$, $p < .01$, wakes often and sleep $r = .54$, $p < .01$, wakes earlier and sleep $r = .47$, $p < .01$, depressed and irritability $r = .60$, $p < .01$, irritability and irritability $r = .46$, $p < .01$, and hyperactivity and irritability $r = .45$ $p < .01$. In addition, significant correlations between the Depressed items and DASH-II Mood subscale items were as follows: appetite and psychomotor retardation $r = .48$, $p < .01$, sleeps less and sleep $r = .76$, $p < .01$, sleep trouble and sleep $r = .62$, $p < .01$, wakes often and sleep $r = .67$, $p < .01$, wakes earlier and sleep $r = .68$, $p < .01$, moves slow and psychomotor retardation $r = .53$, $p < .01$, anhedonia and anhedonia $r = .54$, $p < .01$, sad and sad $r = .38$, $p < .01$, cries and mood $r = .51$, $p < .01$, and agitation and mood $r = .42$, $p < .01$.

Table 5. Correlations between the DEPRESSED and DASH-II Items

Depressed Items+   DASH-II Mood Subscale Items++

Depressed Items+	9	14	18	19
Depressed	**.51****	.21*	.27**	.10
Cries	.38**	.16	.08	.29**
Irritability	.35**	.35**	.30**	.21*
Sad	.27**	−.03	.02	.12
Vocalizes/Talk	.32**	.10	.17*	.17*
Anhedonia	.23**	.04	.11	.08
Appetite	.30**	.10	**.52****	.20*
Sleeps less	.41**	.34**	.41**	**.42****
Sleep trouble	.29**	.31**	.28**	.31**
Wakes often	.44*	**.41****	.38**	**.54****
Wakes earlier	.47**	.38**	.43**	**.47****
Moves slow	.29**	.19*	.23**	−.02
Less Motor	.20*	−.01	.12	−.01
Agitation	.30**	.16	.18*	.40**
Hyperactivity	.45**	.15	.07	.10

Energy loss	.28**	.21**	.14	.02
Sits often	.14	.35**	.29**	.00
Bathe self	.23**	.32**	.26**	.05
Dress self	.37**	.14	.08	.03
Eating	.37**	.33**	.32**	.17*

	26	34	39
Depressed	**.60**	.24**	.23**
Cries	.28**	.10	.19*
Irritability	**.46**	.07	.34**
Sad	.33**	.04	.07
Vocalizes/Talk	.29**	.15	.36**
Anhedonia	.33**	.30**	.22**
Appetite	.23**	**.48**	.20*
Sleeps less	.27**	.13	**.76**
Sleep trouble	.23**	.25**	**.62**
Wakes often	.30**	.14	**.67**
Wakes earlier	.31**	.21*	**.68**
Moves slow	.16	.02	.08
Less Motor	.10	.06	.18*
Agitation	.20	.11	.23**
Hyperactivity	**.45**	.14	.20*

(table 5 continued)

Energy loss	.35**	.19*	.15	
Sits often	.21*	.02	.24**	
Bathe self	.19*	.12	.29**	
Dress self	.25**	.10	.09	
Eating	.32**	.11	.15	

	48	53	57	70
Depressed	.15	.09	.25**	.22**
Cries	.18*	−.05	.13	.03
Irritability	.01	.05	.16	.04
Sad	.14	.08	.31**	**.38**
Vocalizes/Talk	.15	.16	.19*	−.07
Anhedonia	.22**	.04	**.54**	.07
Appetite	.02	.04	.24**	−.08
Sleeps less	−.01	.04	.11	−.02
Sleep trouble	.03	−.06	−.04	.05
Wakes often	−.05	.05	.17*	−.01
Wakes earlier	.02	.11	.13	−.03
Moves slow	.21*	**.53**	.08	.10
Less Motor	.15	.15	−.06	.02
Agitation	.19*	.09	−.00	.10
Hyperactivity	.11	.02	.17*	.05

(table 5 continued)

Energy loss	.20*	.17*	.08	.15
Sits often	.19*	.18*	.06	.08
Bathe self	.07	−.06	−.07	.07
Dress self	.29**	.06	.15	.05
Eating	.12	.07	−.07	.17*

	72	80
Depressed	.08	.36**
Cries	.10	**.51****
Irritability	.02	.27**
Sad	.26**	.14
Vocalizes/Talk	−.01	.35**
Anhedonia	.22**	.27**
Appetite	.04	.25**
Sleeps less	.02	.24**
Sleep trouble	.07	.02
Wakes often	.07	.25**
Wakes earlier	.04	.42**
Moves slow	−.05	.05
Less Motor	−.08	.08
Agitation	.18*	**.42****
Hyperactivity	.04	.32**

Energy loss	−.10	.04
Sits often	−.04	.00
Bathe self	−.05	−.07
Dress self	.11	−.08
Eating	−.06	−.03

** Denotes a significance level of *p* < .01

* Denotes a significance level of *p* < .05

+ Complete DEPRESSED item descriptions are listed in Appendix A

++ Complete DSM-IV-TR item descriptions are listed in Appendix C

The phi correlation for validity between the DEPRESSED and the DSM-IV-TR checklist for Major Depressive Episode was .97, *p* < .01 which is excellent according to Cicchetti and Sparrow (1981). The Person product moment correlation between the DEPRESSED and the Mood subscale was *r* = .79, *p* < .01 which is excellent based on Cicchettti and Sparrow's criteria.

DISCUSSION

Depression is a common, chronic, and disabling condition that affects a significant proportion of the general adult population within the United States (Kessler, Berglund, Demler, Jin, Koretz, Merikangas, et al., 2003; Greenberg, Stiglin, Finkelstein, & Berndt, 1993). Depression is also the fourth most disabling medical condition based on years lived with a disability and premature death (Murray & Lopez, 1996). Similarity, depression is a common problem among persons with ID (Smiley and Cooper, 2003; Matson, Rush, Hamilton, Anderson, Bamburg, Bagilo et al., 1999). The prevalence of depression in persons with ID ranges from 1.5% to approximately 17% (Cooper & Bailey, 2001; Meins, 1993; Deb, Thomas, & Bright, 2001; Reiss, 1982; Dekker & Koot, 2003; Emerson, 2003; Mc Dermott, Moran, Platt, Issac, Wood & Dasari, 2005). Researchers and clinicians have reported an increased prevalence of depression in persons with ID as compared to the general population (Borthwick-Duffy, 1994).

The purpose of this study was to develop a clinically and empirically derived informant-report behavioral rating scale to measure depression in persons with severe and profound ID by assessing behavioral symptoms of depression. Additionally, the DEPRESSED was designed to assess social factors associated with depression in persons with severe and profound ID.

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The preliminary 46-item DEPRESSED was developed based on the *DSM-IV-TR* criteria, *IC-D 10* criteria, previously published assessment instruments, research studies, and the clinical assessments of depression in persons with severe and profound ID. Scale items were also constructed from a review of the current assessment and treatment literature for depression in persons with severe and profound ID and consultations with psychologists and direct care staff.

Test construction for the DEPRESSED consisted of item analytic and factor analytic methods as suggested by Nunnally (1978). Participants' responses for the preliminary 33 item DEPRESSED were subjected to an item analysis and a principal component analysis (PCA) to produce the DEPRESSED scale. The purpose of the item analysis was to select test items that would build a homogenous and discriminating scale (Kline, 1986). In addition, as indicated by Nunnally (1978), the item analysis significantly reduced the number of participants required for the PCA. Item analysis was utilized to construct a discriminating and homogenous scale, by maintaining items with high item-total correlations and deleting items with low or negative correlations as recommended by Kline (1986) resulting in a 33-item scale.

PCA was the factor analytic technique selected to reduce the 33-item DEPRESSED to a smaller set while providing an

empirical summary of the data (Tabachnick & Fidell, 2001).

According to Lindemen and Gold (1980) PCA produces results with increased interpretability and is more mathematically based than exploratory functional analysis (EFA). Moreover, the function of the PCA was to produce both measurement efficiency and parsimony (Bryant & Yarnold, 1995). Principal components was the extraction method selected for the PCA. Moreover, principal components indicate a mathematically determined and empirical solution (Tabachnick & Fidell, 2001).

Subsequent to extraction, orthogonal rotation was used to rotate the factors in order to improve the description, interpretability, and reporting and scientific utility of the solution without changing the underlying properties of the factor solution (Tabachnick & Fidell, 2001).

Varimax was the orthogonal rotation method chosen for the PCA in order to decrease the complexity of the factors and to increase the variance of the factor loadings by maximizing high loadings and minimizing low loading for each factor (Tabachnick & Fidell, 2001). Moreover, Kline (1986) suggests the utilization of Varimax rotation for scale construction. The function of the Varimax rotation was to produce multiple values in each column of the factor loadings approximating zero in order to produce simple structure while maintaining the independence between factors (Bryant and Yarnold, 1995).

To determine the appropriate number of factors for extraction, two stopping rules were used during the investigation, the Kaiser stopping rule and the Scree Test. Kaiser's (1960) stopping rule is a mathematical procedure that retains factors with eigenvalues with a minimum value of one. According to Kaiser, eigenvalue size is the criterion to determine the adequacy of extraction and the appropriate number of factors. With no predetermined limitations on the number of factors, eleven factors with eigenvalues greater than one were identified during the initial factor solution. However, Tabachnick and Fidell (2001) suggest that the Kaiser stopping rule may over or underestimate the number of factors in the data set. Moreover, Comrey (1978) states that retaining all factors with eigenvalues greater than or equal to one tends to produce high communalities, too many factors, and distorts the rotational structure. Comrey suggests that researchers should consider alternative stopping procedures and examine rotated solutions with different number of factors instead of relying simply on the eigenvalue–one criteria of Kaiser's stopping rule.

Cattell's (1966) Scree test is a graphical procedure that plots factors against eigenvalues. Factors are set along the x-axis and eigenvalues are plotted against the y-axis. The Scree plot is typically visually steep and negatively decreasing for the first factors and then gradually descends into a slow but

diminishing pattern of eigenvalues. The eigenvalues in the steep decent are retained while the eigenvalues in the gradual decent are deleted (Bryant and Yarnold, 1995). The criteria determined by the Scree plot (Cattell, 1966) suggested that the factor solution should contain four factors. According to Tabachnick and Fidell (2001), the Scree test is usually accurate within one or two factors of identifying the appropriate number of factors for extraction. Moreover, Gorsuch (1983) suggests that Scree test is highly reliable when the sample size is large, communality values are high, and each factor has several variables with high loadings (Tabachnick and Fidell).

The PCA was rerun with principal components and varimax rotation specifying the extraction of the first four factors. These factors were selected because of their large eigenvalues approximating two or greater and they accounted for 39% of the total variance. Moreover, differences in eigenvalue size were small subsequent to the fifth factor. This suggests an adequate factor solution of approximately four to five factors. However, when the PCA was rerun with five factors, the fifth factor produced four factor loadings greater than .30, the criterion for interpretation chosen by the investigator. Variables with factor loadings greater than .30 were retained from the analysis for consideration in the interpretation of the meaning of the variable (Bryant and Yarnold, 1995). However, two of the factor

loadings were complex variables. As indicated by Tabachnick and Fidell (2001), complex variables that suggest the influence of more than one factor should be avoided because they make the interpretation of factors more ambiguous. Moreover, Tabachnick and Fidell state that the interpretation of factors defined by one or two variables produces uncertainty. These results provide support for the four-factor solution.

In addition, the four-factor solution was supported by Thurston's (1947) simple structure that states that each variable should have a minimum of one factor loading of approximately zero on at least one of the factors while most of the variables should have factor loadings that approximate zero for most of the factors. Moreover, for each factor, there should be at least as many variables with factor loadings approximating zero and factors. Furthermore, several variables should load on only one factor for factor pairs. Lindeman, Mercenda, and Gold (1980) state that simple structure represents the model factor-analytic solution. Kline (1986) suggests that simple structure should be a determinant for the appropriate number of factors to extract. According the Kline the rationale for simple structure is Occam's Razor, the most basic and economical statement is the best explanation for a set of facts.

The adequacy of the four-factor solution was indicated by the Scree test (Cattell, 1966), and met Gorsuch (1983) criteria.

Moreover, the four-factor solution was an intellectual and parsimonious solution that was supported by Thurston's (1947) simple structure. The four-factor solution resulted in factors that were classified as (F1) "Sleep," (F2) "Mood," (F3) "Skills," and (F4) "Motor." The Sleep factor includes items related to initial, middle, and terminal insomnia. The Mood factor contained items suggestive of a depressed mood, anhedonia, irritability, hyperactivity and agitation. The Skills factor included decreased self-participation and increased direct care staff assistance with bathing, dressing, and eating skills. The Motor factor included items relating to decreased motor activity, and fatigue. Subsequently four items loaded on the Sleep subscale, eight items on the Mood subscale, three items on the Skills subscale, and five items on the Motor subscale to comprise the final DEPRESSED scale.

The DEPRESSED exhibited an internally consistent factor structure, clearly interpretable factors, and a reasonable model fit. The factors demonstrated face validity and appeared to be measuring an underlying construct. In addition, scale items correlated most highly with their hypothesized factor, which provides additional support for this model. Item-total correlations were used to determine the validity of the four-factor solution. Each item in the factor solution was correlated with the subscale scores (item-deleted) of Sleep, Mood, Skills,

and Motor. Each scale item correlated most significantly with its factor subscale.

The initial psychometric properties of the DEPRESSED were studied during this investigation. Internal consistency as measured by coefficient alpha was excellent for the DEPRESSED scale, r = .82. The internal consistency for the Mood subscale was good while the internal consistency for the Sleep and Skills subscales were excellent. However, the motor subscale demonstrated fair internal consistency. Overall, these results suggest that a significant portion of the variance in DEPRESSED scores is explained by common factors underlying item performance (Crocker & Algina, 1986). These results were confirmed during the PCA. Moreover, these results suggest that multiple direct care staff recognizes the behavioral symptoms of the core features of depression assessed by the DEPRESSED across brief periods.

Both the test-retest and interrater reliability of the entire scale were calculated using the intraclass correlation coefficient and are excellent. The test-retest reliability of the scale was r = .87. This result suggests that ratings remained generally consistent across short periods. The test-retest reliability of the Skills, Mood, and Motor subscales of the DEPRESSED were excellent. According to Aman (1991), the reliability of most rating instruments usually does not exceed

the range of .60 to .74. However, the test-retest reliability of the Sleep subscale was lower than acceptable. This result may be attributable to the test-retest sample size. In addition this result may be explained by the fact that the direct care staff involved in the data collection, the morning and evening shifts, were not present during the primary sleep hours of the participants possibly resulting in inconsistency of the ratings. In addition, dissimilarities in sleep scores maybe attributed to normal differences in antecedent stimuli or normal alterations in sleep contingencies.

The interrater reliability of the scale was excellent, r = .86. This finding indicates that high correlations and consistency were found between raters. The interrater reliability of the Skills, Mood, and Motor subscales were excellent. Additionally, the interrater reliability of the Sleep subscale was good. Overall, both the test-retest and the interrater reliability support the efficacy of the DEPRESSED in producing consistent depression ratings in individuals with severe and profound ID.

The results of the comparison of positive endorsements on the DEPRESSED with the symptoms of Major Depressive Disorder based on the *DSM-IV-TR* checklist suggested that specific items from the DEPRESSED could reliably identify primary criteria linked with depression. Positive endorsements on the DEPRESSED

were highly correlated with the core symptoms of Major Depressive Disorder associated with the *DSM-IV-TR* checklist. Moreover, the full scale DEPRESSED was highly correlated with the *DSM-IV-TR* checklist. These finding suggests that the DEPRESSED demonstrates excellent construct validity. Face validity for the DEPRESSED was demonstrated by inclusion of behavioral symptoms of depression resulting from psychiatric taxonomy, depression instruments, and current assessment and treatment research literature.

Factorial validity was evidenced for the DEPRESSED by the empirical derivation of the instrument by factorial analysis resulting in a four-factor solution. Additionally, a comparison of the DEPRESSED items with the Mood subscale items of the DASH-II indicated that the scale could reliably identify symptoms related to depression. The DEPRESSED scale was significantly correlated with the DASH-II Mood Disorders subscale. The validity of the Mood subscale in identifying depression in persons with severe and profound ID has been previously reported (Matson, 1994). The face, factorial, construct and convergent validity of the DEPRESSED suggest its utility in identifying depression in persons with severe and profound ID.

The results of this investigation suggest that behavioral symptoms of depression may be used to diagnose depression in persons with severe and profound ID (Reiss, 1993; Marston, Rush,

Hamilton, Anderson, Bamburg, & Bagio, *et al.* 1999; Charlot, 1997; Clarke & Gomez, 1999; Einfeld & Tonge, 1999; Evans, Cotton, Einfield & Florio, 1999). The DEPRESSED identified behavioral symptoms of depression within this population (Lowry, 1993; Sovner and Hurley, 1983, Reiss, 1993; Cooper & Collacott, 1996; Tsiouris, 2001). Similarly, the DSM utilizes behavioral symptoms to diagnose depression in children for the core symptoms of depressed mood and weight/appetite. Specifically, for children irritable mood may be substituted for depressed mood in adults. Additionally, failure to make expected weight gains in children may be substituted for significant weight loss or decrease in appetite in adults.

Depressive symptoms identified by the DEPRESSED included depressed or irritable mood, sleep disturbances, appetite disturbances, anhedonia, psychomotor agitation or retardation and fatigue. The DEPRESSED factors of Sleep, Skills, Mood, and Motor suggest that depression in persons with severe and profound ID may be assessed through observations of overt behaviors associated with DSM criteria or behavioral symptoms (Lowry, 1993). The Sleep subscale was associated with insomnia. The Mood subscale was associated with depressed mood, anhedonia, irritability, hyperactivity, and agitation. Additionally, the Motor subscale was related to psychomotor retardation, fatigue, and eating disturbances. Moreover, the Skills subscale was

connected with a depressed mood and anhedonia. Previous studies have supported this model by reporting depressive symptoms in persons with severe and profound ID including sad mood, irritability, anhedonia, appetite disturbance, motor disturbance, sleep disturbance, fatigue, and increased speech/vocalizations (Charlot, Doucette, & Mezzacappa, 1993; Meins 1995; Davis, Judd & Herrman, 1997; Hurley, 1996; Ross & Oliver, 2003; Smiley & Cooper, 2003, Cooper & Collacott, 1994; Meins, 1995; Tsiouris, 2001; Marston, Perry & Roy, 1997; Matson, Rush, Hamilton, Anderson, Bamburg, Bagilo, et al.,1999).

However, the DEPRESSED similar to previous studies did not find evidence of behavioral symptoms for feelings or worthlessness or guilt, concentration disturbances, or thoughts of death or suicide (Meins, 1995). This outcome may be attributable to several factors including the prevalence of participants who were nonverbal or exhibited limited verbal skills. Additionally, the behavioral symptoms for feelings of worthlessness or guilt, concentration disturbances, or thoughts of death or suicide may involve a more subjective rather than a direct evaluation by the direct care staff. In addition, because of the prevalence of persons residing in developmental centers with 24- hour supervision, the majority of participants may not have had the opportunity to formulate a specific plan for committing suicide or experienced a suicide attempt.

There were four principal limitations to this study. The DEPRESSED may falsely identify individuals with other psychiatric disorders including autistic spectrum disorders based on the behaviors delineated in the scale. Further studies investigating this issue would be beneficial. In addition, this preliminary study accounts for only 39% of the total variance associated with depression in persons with severe and profound ID. The DEPRESSED functions well psychometrically, however the internal consistency of the motor subscale and the test-rest reliability of the sleep scale may not be as satisfactory as desired and maybe worthy of additional research. Additional research should target the evaluation of the internal consistency of motor subscale and test-retest reliability of the sleep scale. Furthermore, clinicians and researchers should recognize that the DEPRESSED assessment does not specify a diagnosis of Major Depressive Disorder. Both clinician judgment and additional behavioral observations should supplement the results of the DEPRESSED.

Future research should build on this study to validate the measurement of depression in persons with severe and profound ID with clinically and empirically derived assessment instruments. The four subscales of the DEPRESSED, Sleep, Mood, Skills, and Motor should be used in clinical trials and epidemiological studies. In addition, future studies should consider large

community and residential samples and a longitudinal approach when assessing depression within this population. Moreover, potential studies may investigate the effects of demographic variables on the factors of depression identified by the DEPRESSED. Furthermore, additional studies may address the use of the DEPRESSED in adolescents and younger adults.

The present study has potential implications for both research and professional practice. Reliable and valid instruments are needed to accurately access depression in persons with severe and profound ID. According to Aman (1991), the lack of uniform or adequate assessment instruments have delayed clinical research. The DEPRESSED may assist in this outcome subsequent to further reliability and validity studies and the development of norms. The DEPRESSED appears to be clinically applicable for this population. Moreover, the DEPRESSED may result in a more accurate diagnosis of depression for individuals with severe and profound ID. The DEPRESSED evaluates the frequency, duration, and intensity of an individual's depression while producing an overall depression score. The DEPRESSED may also assist in establishing best practice guidelines for pharmacological and behavioral interventions for depression in persons with severe and profound ID based on improved diagnostic accuracy (Matson & Sevin, 1994).

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To conclude, the DEPRESSED to the best of my knowledge is the first clinically and empirically derived-informant report behavioral rating scale and appears to be a promising instrument for assessing depression in persons with severe and profound ID. The preliminary analysis of the psychometric properties of the DEPRESSED is encouraging and further validation of the measure is warranted.

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APPENDIX A

DEPRESSED SCALE ITEMS

01. Displays depressed mood (e.g. face, voice, or posture).

02. Cries, sobs, or whines.

03. Displays irritability (e.g. screaming, cursing or hitting
     Others.

04. Talks about being sad.

05. Vocalizes or talks more than usual.

06. Has lost interest in enjoyable activities.

07. Has a decreased appetite (e.g. eats less than 3 meals or
     refuses meals).

08. Sleeps less than 4 hours a night

09. Has trouble falling asleep (e.g. awake in bed for more
     Than 1 hour).

10. Wakes often from sleep at night.

11. Wakes up 1 or 2 hours earlier in the mornings.

12. Has very slow body movements.

13. Has less motor activity (e.g. walks slower or moves
     wheelchair slower).

14. Displays agitation (e.g. hand wringing, nail biting, hair
     pulling or lip biting).

15. Displays hyperactivity (e.g. can't sit still, fidgets, or
     Squirms).

16. Displays loss of energy (e.g. sluggishness, tiredness, or weariness).

17. Sits often.

18. Requires more staff assistance to bathe self.

19. Requires more staff assistance to dress self.

20. Requires more staff assistance with eating.

APPENDIX B

DSM–IV–TR CHECKLIST ITEMS

01. Depressed mood most of the day, nearly every day as
    indicated by either subjective report (e.g. feels sad or
    empty) or observation made by others (e.g. appears
    tearful). **Note**: in children and adolescents, can be
    irritable mood.

02. Marked diminished interest or pleasure in all, or almost
    all, activities most of the day, nearly every day (as
    indicated by either subjective account or observation
    made by others).

03. Significant weight loss when not dieting or weight gain
    (e.g. a weight change of more than 5% of body weight in
    a month), or decrease or increase in appetite nearly
    every day, **Note**: In children consider failure to make
    expected weight gains.

04. Insomnia or hypersomnia nearly every day.

05. Psychomotor agitation or retardation nearly every day
    (observable by others, not merely subjective feelings of
    restlessness or being slowed down).

06. Fatigue or loss of energy nearly every day.

APPENDIX C

DASH MOOD SUBSCALE ITEMS

09. Is restless or agitated.

14. Has difficulty staying awake during the day.

18. Has little appetite.

19. Wakes up frequently during the night.

26. Is cranky or irritable.

34. Speech or sound production is slow or lacks emotion.

39. Has difficulty getting to sleep.

48. Has a large appetite.

53. Responds slowly (i.e. response latency after prompt, or

     is slow moving).

57. Lacks interest in a favorite activity or object.

70. Complains about physical disabilities.

71. Complains about the absence of particular individuals.

80. Cries easily or cries for no obvious reason.

VITA

Christopher L. Cooper was born in Shreveport, Louisiana. He graduated from Jesuit High School in 1979 and enrolled in Tulane University. At Tulane, his major course of study was psychology with additional course work in philosophy and sociology. Mr. Cooper received his Bachelor of Science degree in psychology in 1983 from Tulane University. Subsequently, he enrolled part-time in the graduate psychology program at Southeastern Louisiana University at Hammond in 1992 and received his Master's degree in psychology in 2000. Mr. Cooper enrolled in the doctoral program at Louisiana State University in 2001 with an emphasis in clinical psychology focusing on the assessment and treatment of individuals with ID, and a minor in school psychology. Mr. Cooper attended South Arkansas Regional Health Center for his pre-doctoral internship.