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Concurrent Validation of the Affective Scale of the Diagnostic Assessment for the Severely Handicapped (DASH) Scale

Richard M. Ostrom

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by

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ABSTRACT

Sixty-nine severely and profoundly retarded ambulatory clients in a residential setting were administered the Diagnostic Assessment for the Severely Handicapped (DASH) Scale. Three groups of 23 were selected based on previous psychiatric diagnosis and matched for social age. The first group contained clients with a diagnosis of bipolar disorder; the second group contained a mix of non-affective psychiatric diagnoses; and the third group included participants with no psychiatric diagnosis. Six one-way analyses of variance were conducted. All were significant. Post hoc analyses showed that the DASH effectively discriminated bipolar-disordered participants from those with no psychiatric diagnosis,

but not those with other types of psychiatric disorders. The DASH appears useful as an adjunct to other diagnostic techniques. It especially seems promising if employed prior to the introduction of psychotropic medication. Future studies are needed to determine the ability of the DASH to differentially diagnose among other specific psychiatric disorders.

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Chapter 1 Introduction

Diagnosis is of great consequence for the prognosis and treatment of psychiatric disorders. Diagnostic consistency was advanced with the development of the American Psychiatric Association's Diagnostic and Statistical Manual (4th ed.) (American Psychiatric Association, 1994). Although greater diagnostic consistency has been achieved over the past 2 to 3 decades, the process remains largely an art form featuring subjective clinical judgments. When attempting to differentiate between mental retardation and psychiatric disorders (Axis I and II disorders), the process becomes more opaque. In this case, the behavioral manifestations of mental subnormality due to developmental arrest must be differentiated from impairment or disruption in ongoing cognitive and affective functioning, such as the disrupted or regressed intellectual functioning common in psychosis.

Differentiating between mental subnormality and cognitive abnormality is difficult for two reasons. First, many shared characteristics can cloud the key differences between mental subnormality and cognitive abnormality. Second, there is no valid, and standardized method to discriminate objectively between the two conditions (Kazdin, Matson, & Senatore, 1983).

Increasing attention is being given to the issue of dual diagnosis in the severely/profoundly retarded population. A dual diagnosis occurs when some psychiatric disorder is diagnosed along with the client meeting the criteria for and being diagnosed as mentally retarded.

Recent epidemiological studies (Corbett, 1979; Lewis & MacLean, 1982; Gostason, 1985) have demonstrated that handicapped persons can develop all types of psychiatric disorders. Developmental disability in conjunction with a psychiatric disorder must be differentially diagnosed.

Statement of the Problem

Although there is a need for an instrument to assess psychopathology in severely and profoundly

mentally retarded persons, relatively little research has been conducted to develop such an instrument (Matson, Gardner, Coe, & Sovner, 1991a). The Diagnostic Assessment for the Severely Handicapped (DASH) has recently been developed by Matson at Louisiana State University to address this need. Currently, limited psychometric research has been conducted on the DASH. Matson has conducted construct and content validity studies indicating that the categories in the DASH are distinct factors in the diagnosis of psychiatric disorders in this population. The face validity of the items in the DASH has also been examined (Matson et al., 1991a).

The present study is a concurrent validity study seeking to demonstrate that the DASH can identify psychiatric disorder in general, and bipolar disorder in specific, in a sample of severely and profoundly mentally retarded clients living in a residential setting. The word nonretarded will be used throughout to denote persons of normal intelligence. This is the standard usage in the literature in this field.

Related Literature

Matson and Frame (1986) and Russell (1988) conducted survey studies which concluded that psychiatric/behavioral symptoms occur frequently within the mentally retarded population. However, as the level of retardation increases, the recognition of particular psychiatric disorders becomes more difficult. Costello (1982) emphasized the difficulty of diagnosing schizophrenia in the severely retarded.

Similarly, Sovner and Hurley (1983) noted that affective disorders (e.g., depression or mania) were very difficult to assess by clinical presentation only. This difficulty in assessment is due largely to the absence or unreliability of verbal input from most of the severely and profoundly retarded clients. Normally, the diagnosis of psychiatric disorders is centered around the client's verbal report of thoughts and feelings. Without this input, DSM-IV and other currently accepted diagnostic approaches are of limited usefulness.

Baumeister and MacLean (1979) suggest that the retarded are more susceptible to psychiatric disorders

than the nonretarded population due to their physical vulnerability. As the level of retardation increases, the level of physical vulnerability also increases. The previously cited epidemiological studies show that the lack of coping skills and general intellectual limitations predispose this population to be at risk for psychiatric disorders. The estimates of prevalence of psychiatric disorders in this population range from 7% to 59%, with the higher rates tending to be found in institutions (Costello, 1982). In addition to physical vulnerability and lack of intellectual and coping skills, the severely/profoundly retarded are further restricted in communication and social skills. The combination of these factors presumably explains the higher prevalence of psychiatric disorders in this group (Helsel and Matson, 1988).

Matson and Sevin (1988) pointed out that the usual assessment techniques (DSM-III-R, clinical interviews, and psychological testing) are not adequate for use with the mentally retarded population. They describe the need for an assessment device for the severely/profoundly retarded client by stating,

"...the extreme variability of behaviors in this population suggests the need for precise, detailed descriptions and the strict following of definitional guidelines in diagnosis in order to avoid analogue errors" (page 14).

The crux of the diagnostic/assessment problem is bound up in the very nature of mental retardation; that is, it is difficult to discern what disturbances of behavior are the direct result of subnormal intellectual functioning (Lewis and MacLean, 1982). Corbett has contended that the present diagnostic system does not have the predictive value for mentally retarded individuals that it reportedly has for nonretarded individuals.

Relatively little research has been conducted aimed at developing an instrument specifically for the assessment of psychopathology in the mentally retarded. More generally, very little research has been conducted concerning mental illness in the mentally retarded.

The lack of research in this area was demonstrated by Heaton-Ward (1977). It was noted that from 1962 through 1977, 1,300 papers were presented at the

International Congress for the Scientific Study of Mental Deficiency (ICSSMD) on mental retardation. Only 40 of these presentations addressed mental illness. Twenty of these 40 papers concerned autism, and only 2 concerned psychosis in the retarded.

Lange (1990) indicates that the situation has not really improved in the past 12 years. He states,

> In contrast to the number of studies on lithium for the general population, for the key words lithium and mental retardation, only 51 entries were listed during the same time interval. This is compared to 5,416 entries in the literature for lithium since 1970 (nonretarded population). (page 448)

Lange (1990) reports that the four major studies that have been conducted in the United Kingdom agree that schizophrenia is a problem of the mildly and moderately retarded people, and cannot be diagnosed on clinical grounds in the more severe and profound ranges of retardation. These were clinical studies and of better design than most other studies in this area.

The diagnoses in these studies were made on the basis of a DSM clustering of symptoms approach to diagnosis.

Lowry and Sovner (1992) outlines several rationales for the development of better psychiatric assessment techniques for use with severely or profoundly retarded persons. First, good psychiatric assessment can make an important difference in the use of psychotropic medication for this population. Currently, psychotropic medications are administered without a reliable data base in many instances. Assessment is a major part of the decision-making process. Second, careful assessment is a prerequisite in the development of an overall treatment plan. Finally, increased diagnostic precision can lead to more precision in the annual plan of care required by law for all mentally retarded persons in the country.

The medical model is based on the principle that a specific condition requires a specific treatment. That is, syndrome X requires drug Y. In the severely/profoundly retarded population, psychiatric disorders have not yet been well diagnosed. Therefore, a skilled application of psychotropic medications

becomes difficult. Concomitantly, research into drug efficacy is limited. Behavioral treatments and research in the application of behavior modification techniques with the mentally retarded will also be better focused with better assessment techniques. Increasing the clinician's ability to see and describe deviations from the expected patterns of behavior would obviously aid in refining treatment. Recognizing behavior clusters helps in creating hypotheses about what is motivating the client's behavior. This is also a more efficient method than looking at behaviors in isolation. Building on this foundation, reinforcers and substitute behaviors can be better selected.

As mentioned previously, the extent to which assessment techniques used with the nonretarded can be applied to the retarded is not known. Evidence exists to support the notion that these techniques are not generalizable to the severely/profoundly retarded population. Even when the assumption is made that the etiology of psychiatric impairment is the same regardless of the level of cognitive/intellectual functioning, it may be that the expression of the

impairment takes on a unique form. Because of the limited cognitive ability and restricted experiences of the severely/profoundly retarded, it can be predicted that psychiatric symptom presentation will be more difficult to differentiate than in the nonretarded population.

The existence of "primitive behaviors" in the severely/profoundly retarded population further complicates the assessment process. These behaviors can be thought of as occurring earlier in life than more complex behaviors. If these primitive behaviors are seen in a nonretarded person, their presence indicates psychiatric impairment. The presence of these behaviors in the severely/profoundly retarded does not necessarily indicate impairment. It depends upon the person's mental age and overall development. Clinicians assessing both nonretarded and retarded children and adolescents encounter similar challenges. Here discussion will be confined to severely/profoundly retarded adults.

The DASH

The Diagnostic Assessment for the Severely Handicapped (DASH) Scale is an instrument currently being developed under the direction of Matson at Louisiana State University. The intention is that when it is completed mental health technicians will be able to survey the psychiatric problems of specific people within the severely/profoundly retarded population. Normative data have recently been gathered in various settings (Matson et al., 1991a). These data will be used to develop a picture of the severely/profoundly retarded person.

The individual DASH questions were selected on the basis of face validity and their presence in diagnostic instruments for other populations. That is, based on clinical experience, other instruments, and the DSM-III-R. Thus, the item content and clusters of the DASH resemble other diagnostic approaches such as DSM-III-R.

The DASH is composed of two parts. The first part is a general information section. Under this heading occurs questions concerning staffing ratio, mental

retardation classification, medication, and physical disabilities of the individual. The second part is a behavior rating section. This section contains 86 items, each of which is rated according to 3 dimensions: frequency, duration (history), and severity. It is administered by a clinician to an informant who knows the client well. The administration takes about 30 minutes.

The items chosen for inclusion in the DASH were selected by its author based on clinical experience, other instruments (used for different populations), and the DSM-III-R. They represent 12 categories of behavior disorder: anxiety, affective disorders, autism, schizophrenia, stereotypies, self-injurious behavior, elimination disorders, eating disorders, sleep disorders, sexual disorders, organic syndromes, and disorders of impulse control.

As mentioned previously, each of the 86 questions in the behavior assessment section of the DASH can be rated on the dimensions of severity, duration, and frequency. Each of these dimensions is rated 0, 1, or 2. The rating is done according to specific criteria

contained in the instructions accompanying the instrument. An individual's score on a psychiatric category is developed by addition of the item scores associated with that category. A higher score indicates a greater probability of that specific psychiatric category. Since these items are ordinal level data, it is not possible to say that a score that is twice another score means that the person possess twice the amount of that psychiatric symptom category.

Validity

Since the present study is an examination of the concurrent validity of one of the categories of the DASH, it is important to examine the subject of validity in general, and concurrent validity in specific. The three main types of validity will be discussed initially, followed by a discussion of concurrent validity.

The Standards for Educational and Psychological Tests and Manuals (1985) specify 5 areas of technical standards for test construction and evaluation to consider when creating or evaluating a test: a) validity, b) reliability and errors of measurement, c)

test development and revision, d) scaling, norming, score compatibility, and equating; and e) test publication: technical manuals and user's guide.

According to the standards, validity is the most important consideration in the test evaluation. Validity refers to the appropriateness, meaningfulness, and usefulness of the inferences made from the instrument. Test validation is a process of accumulating evidence which can support such inferences made from the instrument. Validity refers to the degree to which the evidence collected can support inferences made from scores on the test. That is, the inferences regarding specific uses of the tests are being validated, the test itself is not being validated (Messick, 1975).

The evidence for validity can be gathered in more than one manner. Traditionally, validity is grouped in the following categories: content, construct, and criterion-related. This does not imply that they are completely distinct groups, because it is not possible to make rigorous distinctions among the categories.

Table 1 presents a summary of the different types of validity according to various sources.

TABLE 1

Types of Validity

I.	Content
	Face
	Logical
II.	Construct
	Developmental Changes
	Correlations with other Tests in the Same Domain
	Factor Analysis
	Internal Consistency
	Convergent
	Discriminant
	Experimental Intervention
	Known-group Differences
III.	Criterion
	Concurrent
	Predictive

Note. Sources: Anastasi (1988), D. Mueller (1986).

The standards state that evidence of validity should be presented along with the rationale used to support the conclusions. This process needs to occur for each type of inference for which the test is recommended. Validity relating to the subscales and the procedure, sample composition, and any factors which may influence validity should also be reported.

Content validity. This refers to the systematic examination of test content to determine whether it covers a representative sample of the behavior domain being measured (Kerlinger, 1986). Content validity is the only type for which evidence is logical rather than statistical. This is the type of validity sought in achievement tests. It is built into the tests during test development through the choice of appropriate items. According to Anastasi (1988), primary reliance on content validity is usually inappropriate for a personality test. Other types of validation are necessary for personality tests to be verified for inferences to be made legitimately.

Personality tests are not based on a specified course of instruction or a known set of prior experiences from which a test author can draw items during test construction. Rather, people are likely to vary in their psychological processes when responding to the test items, thereby measuring different functions. In truth, the content of personality tests reveals more about the hypotheses of the test author in choosing a certain content to measure a certain trait.

There are two types of content validity according to Anastasi: face validity and logical validity. When a reading of the test items leads the reader to conclude that the test is measuring what it is supposed to be measuring, face validity has been achieved. Matson chose items for the DASH that appear to be associated with psychopathology in the severely and profoundly retarded. He relied on his considerable experience in this field, knowledge of other diagnostic tests, and the inclusion of the DSM-III-R criteria (Matson et al., 1991a).

In referring to logical validity, the Standards states that content-related evidence serves as a

significant demonstration of validity for a test's use. In addition, a clear definition of the universe represented, its relevance to the proposed use, and the procedures followed in generating test content to represent that universe should be described. When subject matter experts are used to demonstrate logical validity, the qualifications of the experts, along with the procedures used to obtain a consensus on test items, should be reported.

Anastasi asserts that content validity is less applicable to affective trait measurement. This is because it is difficult to define the "universe" of a psychological construct. This is especially difficult when attempting to define psychopathology in the severely/profoundly retarded.

Construct validity. Construct validity is the most general type of validity. Kerlinger (1986) describes construct validity as basically judgmental. It incorporates evidence from studies of the content and criterion related validity of the test (Anastasi, 1988). The construct measured should be embedded in a conceptual framework which specifies the meaning of the

construct, distinguishes it from other constructs, and suggests how measures of the construct should relate to the variables (Standards, 1985).

The construct validity of an instrument refers to how well the instrument represents the construct whose name appears in the title. The concern of construct validity is not to explain a single behavior or item response. Rather, it seeks to account for consistency in item responses which have a small number of determinants, or sometimes one major determinant.

When a test is proposed as a measure of a construct, the proposed interpretation of the test score must be explicitly stated. In addition, evidence needs to be presented to support such inferences. Evidence also needs to demonstrate that the test scores are more closely related to theoretically related variables than to variables not included in the theoretical framework. This requirement also applies to all subscales.

There are 7 specific techniques available for construct validation: developmental changes, correlations with other tests, factor analysis,

internal consistency, convergent and discriminant validation, experimental interventions, and known-group differences (Anastasi, 1988; Kerlinger, 1986; Mueller, 1986).

The technique of age differentiation is used to demonstrate developmental changes. Naturally this would not apply to any construct that did not exhibit clear and consistent age changes. Anastasi (1988) notes that the area of personality measurement has limited use for the technique of age differentiation.

Correlations between a new test and earlier well-established tests of a similar nature can be cited as evidence of construct validity. Correlations need to be moderately high, but not so high that the need for the test is questioned because there is so much similarity (Anastasi, 1988).

Factor analysis is a further technique for demonstrating construct validity. Factor anaysis is a sophisticated statistical technique used to analyze the interrelationships of data. It displays the common traits that would account for the correlations obtained among measures (tests, test items, or other measures

depending on the level of analysis). The process involves reducing the number of variables from, for example, the items of a test down to a small number of factors. After the factors have been identified they can be used to describe the factorial make-up of the test. Once the factorial composition of the test is determined, the items can then be characterized in terms of the major factors determining their scores. Each factor is given a weight, or loading, indicating how highly it correlates with the test.

Internal consistency applies to both reliability and validity. It gives evidence of construct validity by showing whether items on a scale have a high level of intercorrelation. High levels of intercorrelation imply that the items are measuring the same underlying variable, that is, that a construct is being measured. Meuller (1986) notes that the demonstrated presence of a construct does not imply it is the correct construct (the one purportedly measured by the instrument). That is, internal consistency cannot be solely relied on in the validation process.

Convergent validity is the broad area of how well a test correlates with other variables with which it should theoretically correlate (Anastasi, 1988).

Discriminant validity is demonstrated through discriminant analysis. This is a sophisticated statistical procedure, (similar to factor analysis (described above), which is used for predicting group membership from multiple variables. This can be used to find groups of variables or measures that could predict group membership, such as diagnostic category. Thus, it could be a first step in establishing predictive validity (see later in this section).

Another source of data to demonstrate construct validity is experiments on the effect of selected variables on test scores (Anastasi, 1988). This is a variant of the known group method (Meuller, 1986). This approach entails comparing the mean scores of a group know to be high in the construct with a group known to be low. Naturally, it is assumed that the experimental treatment is effective for this approach to be used.

Finally, construct validity can be demonstrated by an approach called known-group differences. It is assumed when an instrument shows differences between groups that are known to be different that it is demonstrating the construct it purports to.

Criterion validity. According to Kerlinger (1986), every test instrument requires validation by relating the performance on that instrument to performance on other measures (criteria). Test performance can be evaluated against these other measures. Anastasi (1988) conceives of criterion validity as assessing how effective a test is at predicting a person's behavior in specific situations.

Concurrent validity. If the criterion measure is available at the time of testing, then concurrent validity is being studied. Under appropriate circumstances, data obtained in a concurrent validation study allows inferences to be made as to the probable present standing of an individual on the criterion. In other words, concurrent validity reflects only the status quo at a certain time. Currently, there are construct and content validity studies available on the

DASH, but no concurrent validity studies (Matson et al., 1991a).

Predictive validity. Predictive validity refers to a test's ability to predict the results of a future criterion measure. The better the correlation between the test and a criterion measure, the better the predictive validity of the test. Currently, there are no predictive validity studies available concerning the DASH.

Anastasi (1988) asserts that the test development process should follow these steps: a theoretical description of the test, item development and selection, psychometric investigation, and normative data collection. As mentioned earlier, this process is just beginning with the DASH. Clearly, much investigation of this diagnostic measure will need to occur in the future.

Present Study

The present study fits into the psychometric investigation step of the above process. Matson et al. (1991a, 1991b) indicate that several factors are needed in the research design for this type of study. These

are: a) developing several comparison groups one of which acts as the control, b) matching across comparison groups according to social (rather than chronological) age, and ability to ambulate independently, c) obtaining ratings on the instrument, d) building in inter-rater and psychiatric diagnosis reliability checks, and e) statistical analysis.

Three equal-sized groups will be matched for social age (SA). One will be composed of persons with no current psychiatric diagnosis, one of persons with some psychiatic diagnosis (primarily schizophrenia), and one of persons with the diagnosis of bipolar disorder. Additionally, clients will be selected based on their ability to ambulate without staff assistance other than by wheelchair. Ratings for each client will be obtained by interviewing a direct care staff member who has known the client for at least one month. A one-way analysis of variance will be conducted comparing the mean frequency scores of the three groups on the Affective scale of the DASH. This is referred to as an intact groups comparison.

Hypotheses

First, it is hypothesized that the DASH Affective Scale will discriminate between clients who have a psychiatric diagnosis of bipolar disorder and those who have no psychiatric disorder.

A second hypothesis is that subjects in the bipolar-disordered group will have higher mean frequency scores on the Affective scale than a mixed psychiatric disorder group.

Thus, the hypotheses are that the DASH Affective Scale can can detect the presence of a psychiatric disorder, and differentially diagnose bipolar disorder.

Summary

Diagnosis is of great consequence in the treatment of psychiatric conditions. The usual psychiatric diagnostic procedures, i.e., clinical interview, observation, psychometric assessment, and the application of DSM-IV criteria are of doubtful validity with the severely/profoundly retarded population. A further challenge is the difficulty in discriminating between intellectual subnormality and behavioral abnormality.

Relatively little research has been conducted to develop an instrument to specifically assess psychopathology in the severely/profoundly retarded. Matson has developed the Diagnostic Assessment for the Severely Handicapped (DASH) Scale to assess psychopathology in this group. No concurrent validation studies have yet appeared in the literature due to the newness of this instrument.

A concurrent validation study of the Affective Scale of the DASH was conducted. It was hypothesized that the mean frequency score for a specific criterion group previously diagnosed with bipolar disorder (3) would be higher than the mean frequency scores for a mixed psychiatric diagnosis group (2), which in turn would score higher than the non-psychiatric diagnosis group (1). That is, the mean frequency scores for the Affective Scale would be ranked: 3 > 2 > 1.

Chapter 2 Methods

The present study examined the concurrent validity of the Affective scale of the Diagnostic Assessment for the Severely Handicapped (DASH) Scale (Matson et al., 1991a). Severely and profoundly retarded clients in a residential setting were studied.

Subjects

All of the participants in the study were residents of Fairview Training Center in Salem, Oregon. Fairview was founded in 1908 as a hospital for the mentally retarded. At its high point, Fairview was as large as a small town. At that time, there were nearly 3,000 full-time residents, and a similar number of staff. At the present time, Fairview is in the process of significantly reducing the number of clients in keeping with an agreement between the State of Oregon and the United States Department of Justice.

Fairview serves clients who have been found eligible to receive Medicare funding through the Health Care Financing Administration (HCFA). In order to be

classified as eligible for Medicare funding, the client must be assessed as being two or more standard deviations below the mean on a standardized intelligence test and on a standardized instrument for assessing adaptive skills, e.g., the Vineland Adaptive Behavior Scale (VABS). In cases where it was not possible to obtain a valid testing on a standardized measure of intelligence, the level of intellectual functioning is inferred from the results of the standardized test of adaptive skills.

As of November 1, 1995, there were approximately 370 clients residing at Fairview. In the course of the systematic placement of clients into community residences, the higher functioning clients have been placed more easily than those with more difficult care requirements. Because of this process, the majority of the clients now living at Fairview are severely and profoundly retarded.

The terms severely and profoundly retarded, as defined in the DSM-IV, refer to those people who are roughly 4 to 5 standard deviations below the mean on standardized tests of intelligence and adaptive

ability. The severely retarded clients are generally regarded as 4 or more standard deviations below the mean, and the profoundly retarded are considered to be 5 or more standard deviations below the mean. For adults this roughly corresponds to a full-scale IQ of between 20-39 on the Wechsler Adult Intelligence Scale - Revised (WAIS - R) for the severely retarded, and less than 20 on the WAIS - R for the profoundly retarded. Each category is similar for adaptive skill level, and both intelligence and adaptive skill deficits must be present to make the diagnosis.

The 69 participants in the study had social ages ranging from 7 months to 5 years. The average social age was 23 months. There were 25 women and 34 men ranging from 21 to 58 years old. All were caucasian. As mentioned previously, 23 carried no psychiatric diagnosis, 23 carried a psychiatric diagnosis other than affective disorder, and 23 carried a diagnosis of bipolar disorder.

A list of the clients was obtained from the data base kept by the institution. All of those clients not previously classified in the institutional records as

severely or profoundly retarded were excluded from the study. The remaining clients were then classified on the basis of institutional records according to psychiatric diagnosis (or no psychiatric diagnosis) and the ability to ambulate without staff assistance.

Diagnoses are developed through the use of clinical interviews with the person (or someone who knows the person well if non-verbal), observations across a variety of settings, a review of the medical records, and at least one meeting with the non-professional and professional care team members. These diagnoses were made at the time of admission, and are rechecked at least annually. It was noted at this point that the most common psychiatric diagnosis given to severely or profoundly retarded clients at Fairview was bipolar disorder. This group provided a natural subgroup of severely or profoundly retarded clients with a current psychiatric diagnosis. An equal number of the remaining psychiatrically diagnosed clients were chosen who could be matched with the bipolar group according to their social age. This group was composed

primarily of clients who had been previously diagnosed as schizophrenic.

Finally, the same sized group was selected from the clients listed who did not have a psychiatric diagnosis. These clients were also matched with the bipolar group on the dimension of social age. The eligible clients in this final group were assigned to the group randomly. A random numbers table was used in this process.

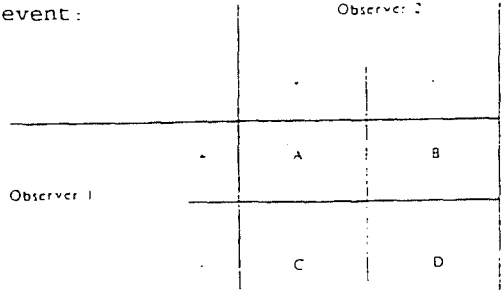
Social age was determined by the use of the Vineland Adaptive Behavior Scales (VABS). It is the mean of the age equivalents found in the various skill domains, for example communication. VABS scores were obtained from institutional records. Since DASH results have previously been shown to vary with social age, it is believed that social age must be controlled. Matching is a first control (Matson, et al., 1991a).

Interviews were conducted by psychology undergraduate students on an individual basis. Training of the interviewers included practice administrations of the DASH in the presence of the trainer. The trainer conducted a second administration

on every 10th administration to check for inter-rater reliability.

Inter-rater reliability was calculated by setting up a two-by-two contingency table of the possible agreements and disagreements between two observers on the occurrence (+) or nonoccurrence (-) of an event. The percentage of agreement (PO), the percentage nonagreement (PNO), and the overall percentage of agreement (OPA) were then calculated.

The following is the two-by-two contingency table of possible aggeements and disagreements of two observers on the occurrence (+) or nonoccurrence (-) of an event:



The values of observer agreement formulas range between 0 (no agreement) and 100 (total agreement). The percentage agreement on occurrence (PO) is:

$$PO = \frac{A}{A + B + C} \times 100$$

Percentage agreement on nonoccurrence (PNO) is:

$$PNO = \frac{D}{B + C + D} \times 100$$

Overall percentage agreement on occurrence and nonoccurrence (OPA) is:

$$OPA = \frac{A + D}{A + B + C + D} \times 100$$

The overall percentage of agreement on occurrence and nonoccurrence was 81%. That is, the inter-rater reliability was 81%, which is considered to be acceptable in this type of study.

Instrument

The Diagnostic Assessment for the Severely Handicapped (DASH) Scale was developed by Matson (1986) at Louisiana State University for use in assessing symptoms typically reported in research and clinical practice as troublesome for many severely or profoundly mentally retarded persons (Matson et al., 1991a; 1991b). The items that make up this scale were taken from the American Psychiatric Association's Diagnostic and Statistical Manual 3rd ed.-Revised (American Psychiatric Association, 1987), as well as previously published studies of this population (Aman, M.G.,

population (Aman, Singh, Stewart, & Field, 1985; Leuder, Fraser, & Jeeves, 1984).

The DASH is a multidimensional instrument that assesses the frequency, severity, and the history of specific symptoms and conditions. Included are anxiety, depression, pervasive developmental disorders, and impulse control problems. Inter-rater reliability when using direct care staff in diagnosing psychiatric conditions was previously studied (Matson, et al., 1991b). It was shown that direct care staff could provide reliable ratings of the behavior of profoundly and severely retarded clients. Several distinct conditions could be identified including pervasive developmental disorder, impulse-control problems, eating disorders, stereotypies, and tics. However, the DASH subscales were organized along the same lines as the DSM-IV classifications.

The DASH consists of 2 sections. The first is a background section composed of questions about the client's medical background, the staffing ratio on the ward, and any physical disabilities. The second part is a behavior rating section. The behavior rating

section contains 86 items, each of which is rated on three dimensions: frequency, duration (history), and severity.

The DASH is designed to be administered by interviewing a respondent who has known and directly cared for the client for at least 1 month. The administrator fills out the DASH based on the responses given by the respondent in the four areas for each scale item: frequency during the previous 2 weeks, duration, severity, and frquency during the previous year. The responses are structured so that a 0, 1, or 2 score can be entered. This interview format is necessary because nearly all of the clients are nonverbal.

The data for the occurrence of symptoms during the 2 weeks preceeding evaluation, and for the previous year were gathered in the same manner. A 0, 1, or 2 rating was used for each symptom. Naturally, 0 indicates an absence of the symptom. A 1 indicates that the symptom ocurred from 1 - 10 times during the interval in question. A 2 indicates that the symptom occurred more than 10 times during the interval. If

the informant responded that the symptom had occurred in the previous 2 weeks, then no rating was assigned for the presence of symptoms during the previous year. That is, the occurrence of the symptom in the 2 weeks preceeding the evaluation presupposes the occurrence during the previous year.

The items on the DASH were chosen based on their face validity from the test author's viewpoint. The test author's clinical experience, knowledge of other diagnostic instruments, and interpretation of the relevant DSM-III criteria were the basis for the decision about the face validity.

Some research has been conducted concerning the content validity of the DASH (Matson et al., 1991a; Matson et al. 1991b). In addition, the 13 subscales have been factor analyzed. Six orthogonal scales representing 39% of the variance were demonstrated. It was noted that the loadings of the 86 scale items onto these 6 scales was largely in the vegetative symptoms area. The inter-rater reliability has been demonstrated to be quite high (.90 or higher) indicating that direct care staff are able to provide

reliable information concerning the scale items (Matson et al., 1991b).

Each of the 86 items on the DASH is scored for severity, duration (history), and frequency. It was decided that only the frequency score would be used in the analysis. The severity rating refers to such information as the need for medical attention during an episode of the behavior. Severity was not the aspect of the behavior of concern here. The present study examines whether or not the symptom was present.

The scores on the Affective scale of the DASH were summed within each group. The Affective scale is composed of 21 items relating to depression and mania, eg. "is restless or agitated", "wakes up frequently during the night". These items are given a 0, 1, or 2 score by the respondent depending upon the frequency. A score of 2 indicates that the symptom occurred more than 10 times in the previous 2 weeks. The arithmetic mean of the scores was compared using a one-way analysis of variance. A significance level of .05 was used to make decisions about support for the research hypothesis.

Procedures

Five junior and senior undergraduate psychology students were trained to properly administer the DASH. The training was conducted by a licensed psychologist who is familiar with the proper administration techniques. Each of these interviewers was randomly assigned to approximately equal sized client groupings. A random number table was used to complete the random assignments.

Three practice administrations were done by each of the interviewers. These were conducted in the presence of the trainer while the trainer filled out the same form. The interrater reliability was calculated, and the interrviewers were debriefed.

Every 10th administration was checked for inter-rater reliability. The trainer interviewed the same respondent within 48 hours of the original administration. The results obtained by the trainer were compared to those obtained by the other administrators. The inter-rater reliability was computed by a simple ratio of items scored identically compared to the total number of items. All of the

protocols were kept in the sample regardless of how well they matched the scoring by the trainer.

Research Design

An intact groups design was implemented. A one-way analysis of variance was conducted comparing the mean frequency scores of the three groups. The nominal independent variable in this design was group membership, since that occurs according to criteria established by the researcher. The groups were: no psychiatric diagnosis, mixed psychiatric diagnosis, and bipolar disorder. The dependent variable was the mean frequency score for each group on the Affective scale and on the Depression and Mania subscales of the DASH.

Three groups of clients were matched as closely as possible according to social age. Social age served as a control variable. That is, the amount that social age was allowed to vary was restricted as much as possible given the verities of the sample. This reduced the nonsystematic variance. Nonsystematic variance can mask the effect being studied.

Social age, chronological age, and gender are dimensions that could have been matched across groups.

Chronological age was thought to be of little consequence since the age at onset of bipolar disorder is nearly always after the early 20s (Diagnostic and Statistical Manual-Revised, 3rd ed., 1987). As mentioned previously, gender has not been shown to be a significant factor (Matson, et al., 1991a). In addition, the groups were not matched for gender because the preponderance of the Fairview clients with bipolar disorder were males (approximately 80%). The sample size available was not large enough to allow matching for gender when the percentage of males in the bipolar disorder group was so high. In addition, the DSM-III-R reports that bipolar disorder occurs about as frequently in males as females.

For the above reasons, it was decided that matching across groups would only be done for social age. Also, in this sample social age is the most meaningful of the three dimensions. It must be remembered that these clients are severely and profoundly developmentally delayed. This means that they did not properly develop socially and intellectually beyond a very early developmental level.

Most of the clients in the study have not developed intellectually beyond the 3 year old level, although they are chronologically and biologically adults. Clearly, it is more meaningful to compare a client who is at an overall developmental level of 6 months with another client at the 6 month level than to compare two 30-year-olds of vastly different developmental levels.

Chapter 3 Results

Introduction

The results are presented in two sections. First, descriptive statistics are presented. Second, tests of the experimental hypotheses are presented.

Descriptive Statistics

The study sample was composed of 69 severely/profoundly retarded persons living in a residential treatment coenter. The social ages of the participants ranged from 7 months to 5 years. The average social age was twenty-three months. There were 25 women and 34 men ranging from 21 to 58 years old. All were caucasian.

As mentioned previously, 23 carried no psychiatric diagnosis, 23 carried a psychiatric diagnosis other than affective disorder, and 23 carried a diagnosis of bipolar disorder. All were able to ambulate without assistance. The persons in the study sample had a

variety of other physical disabilities such as epilepsy, or cerebral palsy.

Table 2 displays the means and standard deviations of the groups on the Affective scale and Mania and Depression subscales of the DASH. The results for the presence of symptoms for the previous 2 weeks and the full year previous to the evaluation are displayed separately.

Table 2

Means and Standard Deviations on the Affective Scale and Mania and Depression subscales of the DASH

	Two Weeks		Full Year	
Affective Scale	*M*	*SD*	*M*	*SD*
Group 1	6.317	4.194	6.200	4.137
Group 2	9.414	6.242	9.400	6.291
Group 3	10.505	3.192	10.333	3.694
Total	8.745	4.542	8.586	5.409
Mania subscale				
Group 1	3.304	2.914	2.750	2.593
Group 2	4.782	2.843	4.850	2.834
Group 3	5.696	2.823	5.667	2.473
Total	4.594	2.860	4.379	2.877
Depression subscale				
Group 1	4.783	3.029	4.782	2.938
Group 2	6.130	3.969	6.739	5.154
Group 3	7.592	3.751	7.783	3.044
Total	6.168	3.583	6.435	3.994

Note. *N* = 69; *n* = 23 in each group

Because the sample was comprised of intact groups it was possible that uncontrolled demographic factors might account for group differences. Consequently, the demographic variables of client gender, the length of time the informant knew the person prior to the evaluation, and whether the person was receiving psychotropic medication were correlated with the Affective scale and Mania and Depression subscales on the DASH. Table 3 displays these results. None of the correlations were significant. Therefore, it was decided that an analysis for main effects with these factors as covariates was not warranted.

Table 3

Correlations of Demographic Variables with Affective Scale and Mania and Depression subscales on the DASH

	Affective	Mania	Depression
Gender	.052	-.036	.096
Time Known	.036	-.075	.054
Medications	.036	.010	.171

Note. N = 69

Analytical Statistics

First, it was hypothesized that the DASH would discriminate between clients who have a psychiatric diagnosis of bipolar disorder and those who have no psychiatric disorder.

Second, it was hypothesized that subjects in the bipolar-disordered group would have higher mean frequency scores on the Affective scale than a mixed psychiatric disorder group.

Thus, the hypotheses are that the DASH Affective scale can detect the presence of a psychiatric disorder, and differentially diagnose bipolar disorder.

One-way ANOVAs were conducted to test for group differences on the Affective scale of the DASH. Post hoc analyses testing for significant group differences on the Mania and Depression subscales were also conducted. These were conducted on two sets of data. The first set contained information only on whether the symptom had occurred during the 2 weeks previous to the interview. The second set contained information on whether the symptoms had occurred at all during the

year prior to the interview. The significance level for all of the analyses was set at the .05 level.

Symptoms for past 2 Weeks. The results of the one-way ANOVA conducted across groups for the mean frequency scores on the Affective scale of the DASH during the 2 weeks prior to the interview indicated a statistically significant difference, F (2,66) = 4.608; $p < .05$. Subsequent post hoc tests (Tukey-HSD test) indicated that the DASH was sensitive enough to discriminate between the no- psychiatric-diagnosis group and the bipolar-disordered group. The Affective scale mean for the no-psychiatric-diagnosis group was 6.317, while the mean score for the bipolar-disordered group was 10.505. Table 4 displays these results.

Table 4

Analysis of Variance for Group Differences on DASH Affective Scale for Two Weeks Prior to Evaluation

Source	SS	df	F	p
Between Groups	.408	2	4.608	.013
Within Groups	2.924	66		
Total	3.332	68		

Tukey - HSD Procedure

Mean	Group	1	2	3
6.316	1			
9.414	2			
10.505	3	*		

Note: N = 69

* Denotes pairs of groups significantly different at the .05 level

The one-way ANOVA for the Mania subscale of the DASH based on the informant's report of the presence of symptoms during the 2 weeks prior to the interview showed a significant difference, F (2,66) = 4.011; p < .05. A post hoc test was able to discriminate between the bipolar-disordered group and the psychiatric-diagnosis group, but not between other groups. Table 5 displays these results.

Table 5

Analysis of Variance for Group Differences on DASH Mania subscale for Two Weeks Prior to Evaluation

Source	SS	df	F	p
Between Groups	.512	2	4.011	.023
Within Groups	3.214	66		
Total	3.726	68		

Tukey - HSD Procedure

Mean	Group	1	2	3
3.304	1			
4.182	2			
5.696	3	*		

Note: N = 69

* Denotes pairs of groups significantly different at the .05 level

Analysis of variance for the Depression subscale of the DASH based on the frequency of these symptoms during the 2 weeks prior to the interview resulted in a significant main effect F (2,66) = 3.796; $p < .05$. Post hoc tests revealed that there were significant differences between the no-psychiatric diagnosis group and the bipolar-disordered group. However, it did not discriminate between the bipolar-disordered group and the mixed-psychiatric-diagnosis group. Table 6 displays these results.

Table 6

Analysis of Variance for Group Differences on DASH Depression subscale for Two Weeks Prior to Evaluation

Source	SS	df	F	p
Between groups	.432	2	3.796	.028
Within groups	3.332	66		
Total	3.764	68		

Tukey - HSD Procedure

Mean	Group	1	2	3
4.783	1			
6.130	2			
7.592	3		*	

Note: *N* = 69

* Denotes pairs of groups significantly different at the .05 level

In summary, for the prior 2 weeks, the mean frequency score for Affective symptomatology for the bipolar-disordered group was significantly higher than the mean score for the no-psychiatric-diagnosis group, but was not significantly higher than the mean score for the psychiatric-diagnosis group. Similarly, both the Depression and Mania subscales also discriminated the bipolar-disordered group from the no-diagnosis group, but showed no differences between the bipolar-disordered group and the psychiatric-diagnosis group.

Symptoms for past year. The one-way ANOVAs conducted across groups when symptoms for the entire year prior to the interview were included yielded results similar to those for the past 2 weeks. The Affective Scale showed a significant main effect, $F(2,66) = 3.369$; $p < .05$. Post hoc tests showed a significant difference between the bipolar-disordered group and the no-psychiatric-diagnosis group. However, it was not able to discriminate between the bipolar-disordered group and the psychiatric-diagnosis group. Table 7 displays these results.

In summary, for the prior 2 weeks, the mean frequency score for Affective symptomatology for the bipolar-disordered group was significantly higher than the mean score for the no-psychiatric-diagnosis group, but was not significantly higher than the mean score for the psychiatric-diagnosis group. Similarly, both the Depression and Mania subscales also discriminated the bipolar-disordered group from the no-diagnosis group, but showed no differences between the bipolar-disordered group and the psychiatric-diagnosis group.

Symptoms for past year. The one-way ANOVAs conducted across groups when symptoms for the entire year prior to the interview were included yielded results similar to those for the past 2 weeks. The Affective scale showed a significant main effect, $F(2,66) = 3.369$; $p < .05$. Post hoc tests showed a significant difference between the bipolar-disordered group and the no-psychiatric-diagnosis group. However, it was not able to discriminate between the bipolar-disordered group and the psychiatric-diagnosis group. Table 7 displays these results.

Table 7

Analysis of Variance for Group Differences on the DASH Affective Scale (full year)

Source	SS	df	F	p
Between Groups	182.069	2	3.369	.041
Within Groups	1486.000	66		
Total	1668.069	68		

Tukey - HSD Procedure

Mean	Group	1	2	3
6.200	1			
9.400	2			
10.333	3	*		

Note: N = 69

* Denotes pairs of groups significantly different at the .05 level

Analysis of variance of the Mania subscale for the data reflecting the year previous to the interview showed a significant main effect for groups, F (2,66) = 6.251; $p < .05$. This subscale is the only one able to discriminate the no-psychiatric-diagnosis group (1) from both the bipolar-disordered group (3), and the psychiatric-diagnosis group (2). However, post hoc tests did not show a significant difference between the bipolar and psychiatric-diagnosis groups. Table 8 displays these results.

Table 8

Analysis of Variance for Group Differences on DASH Mania subscale (full year)

Source	SS	df	F	p
Between Groups	87.355	2	6.251	.003
Within Groups	384.300	66		
Total	471.655	68		

Tukey - HSD Procedure

Mean	Group	1	2	3
2.750	1			
4.850	2	*		
5.667	3	*		

Note: N = 69

* Denotes pairs of groups significantly different at the .05 level

Analysis of variance for the Depression subscale of the DASH for the symptoms during the previous year also yielded significant effects, F (2,66) = 3.599; p < .05. Post hoc tests were able to discriminate between the bipolar-disordered group and the no-psychiatric-diagnosis group, but not between the other groups. Table 9 displays these results.

Table 9

Analysis of Variance for Group Differences on DASH Depression subscale (full year)

Source	SS	df	F	p
Between Groups	106.695	2	3.599	.032
Within Groups	978.260	66		
Total	1084.956	68		

Tukey - HSD Procedure

Mean	Group	1	2	3
4.7826	1			
6.7391	2			
7.7826	3		*	

Note: N = 69

* Denotes pairs of groups significantly different at the .05 level

Summary of Results

The results of the one-way ANOVAs conducted across groups for the the DASH yielded significant main effects for the data occurring 2 weeks prior to the evaluation on the Affective scale, and both the Mania and Depression subscales. It also yielded significant main effects for the data occurring within one year prior to the evaluation on the Affective scale, and both the Mania and Depression subscales.

Post hoc tests revealed significant differences between the no-psychiatric-diagnosis group and the bipolar-disordered group for data occurring 2 weeks and a full year prior to the evaluation on the Affective scale and on the Mania and Depression subscales. In addition, the Mania subscale for the full year prior to the evaluation yielded a significant difference between the mixed psychiatric-diagnosis and no-psychiatric-diagnosis groups. However, no post hoc tests showed significant differences between the bipolar-disordered and mixed-psychiatric diagnosis groups.

Chapter 4 Discussion

Clinicians delivering mental health services to the mentally retarded are becoming increasingly aware of the difficulty in differentiating between mental subnormality and cognitive abnormality. Retarded persons tend to have characteristics which can cloud the differences between these areas. Additionally, there is great need for a valid, standardized instrument to aid the clinician in discriminating objectively between the two conditions (Kazdin, Matson, & Senatore, 1983).

The severely/profoundly retarded present an especially difficult diagnostic task. For many of the persons in this category the difference between mental subnormality and cognitive abnormality is blurred. Additionally, a high percentage of the persons in this category lack speech, an important source of clinical information.

Epidemiological studies conducted over the past two decades indicate that retarded persons can develop

all types of psychiatric disorders (Corbett, 1979; Lewis & MacLean, 1982; Gostason, 1985). Mental health professionals serving this population must be aware of the possibility of a psychiatric disorder along with the presence of retardation.

Currently, relatively little research has been conducted to develop a diagnostic instrument for use with the severely/profoundly retarded (Matson, Gardner, Coe, & Sovner, 1991a). The Diagnostic Assessment for the Severely Handicapped (DASH) has recently been developed by Matson at Louisiana State University to address the need for such an instrument. Matson has conducted construct, content, and face validity studies (Matson et al., 1991a).

Survey studies conducted by Matson and Frame (1986) and Russell (1988) indicate that psychiatric symptoms occur frequently within the mentally retarded population. Additionally, as the level of retardation increases, the recognition of particular psychiatric disorders becomes more difficult.

Affective disorders such as depression or mania are noted to be very difficult to assess by clinical

presentation only. Sovner and Hurley (1983) note that this is due largely to the absence or unreliability of verbal input from most of the severely and profoundly retarded clients.

Baumeister and MacLean (1979) develop the thinking that the retarded are more susceptible to psychiatric disorders than the nonretarded due to their greater physical vulnerability. As the level of retardation increases, the level of physical vulnerability also increases. Also, the lack of coping skills and general intellectual limitations predispose this population to be at risk for psychiatric disorders.

In addition to physical vulnerability and lack of intellectual and coping skills, the severely/profoundly retarded are restricted in communication and social skills. The combination of these factors helps to explain the higher prevalence of psychiatric disorders in this group (Helsel and Matson, 1988).

Lewis and MacLean (1982) describe the difficulty in the diagnostic/assessment process as bound up in the nature of mental retardation. That is, factoring out

cognitive abnormality from subnormal intellectual functioning is a significant challenge.

Several reasons for developing better psychiatric assessment techniques for use with severely or profoundly retarded persons are given by Sovner (1992). First, valid diagnoses are necessary for the proper prescibing of psychotropic medication. Second, careful assessment is a prerequisite in the development of an overall treatment plan. Finally, increased diagnostic precision leads to the development of better annual treatment plans.

As mentioned previously, the extent to which assessment techniques used with the nonretarded can be applied to the retarded is not known. Evidence exists to support the notion that these techniques are not generalizable to the severely/profoundly retarded population.

The existence of "primitive behaviors" in the severely/profoundly retarded population further complicates the assessment process. These behaviors can be thought of as occurring earlier in life than more complex behaviors. If these primitive behaviors

are seen in a nonretarded person, their presence indicates psychiatric impairment. The presence of these behaviors in the severely/profoundly retarded does not necessarily indicate impairment. It depends upon the person's mental age and overall development.

This study was conducted to assess the concurrent validity of the Affective scale on the Diagnostic Assessment of the Severely Handicapped (DASH). While numerous validation studies are needed to assess the overall validity of the DASH, this study was limited to the Affective scale and post hoc comparisons of the Mania and Depression subscales.

Validation studies on the other clinical scales of the DASH are needed as part of the ongoing validation process. The discussion of validity in chapter two describes the types of validity in more detail. Each of the clinical scales of the DASH needs concurrent validation. That is, each clinical scale needs to be compared with diagnoses developed independently of the DASH. The reliability of the independent diagnoses should also be checked. Ideally, these studies should be conducted in a variety of settings.

The first research hypothesis was that the Affective scale of the DASH would discriminate between clients who have a psychiatric diagnosis of bipolar disorder and those who have no psychiatric disorder. The second major research hypothesis was that the Affective scale of the DASH would discriminate between participants with a bipolar disorder and a mixed-psychiatric-disordered group. In addition to these hypotheses, post hoc analyses of the Mania and Depression subscales were conducted.

In this section the results will be interpreted and the implications will be discussed. In addition, suggestions for future research will be offered.

Overview

Data concerning the duration and severity of the scale items was collected as part of the standard administration procedure for the DASH. There were no *a priori* reasons to believe that they would contribute to the diagnostic utility of the instrument. Therefore, this data was not analyzed. Severity may represent a "background noise" factor, that is, that there are a variety of symptoms loaded onto a variety of subscales.

There were no a priori reasons to believe that duration data would add to the discriminability of the instrument. In some diagnoses duration may be a consideration. However, the hypotheses in the present study were too global for duration to be of significance.

Analyses of variance for group differences of the Affective scale of the DASH yielded results supporting one of the research hypotheses. The Affective scale of the DASH was demonstrated to be sensitive to differences in Affective symptomatology in severely and profoundly mentally retarded clients in a residential setting.

The first research hypothesis was that the Affective scale of the DASH would discriminate between clients who have a psychiatric diagnosis of bipolar disorder and those who have no psychiatric disorder. The second major research hypothesis was that the Affective scale of the DASH would discriminate between a bipolar-disordered group and a mixed-psychiatric-disordered group. Results consistently supported

hypothesis one, but provided no support for hypothesis two.

Based on this, it does not appear that the DASH Affective scale is sensitive enough to effectively discriminate between the bipolar-disordered and the mixed-psychiatric-diagnosis groups in this sample.

An alternate way of framing the hypotheses is in terms of sensitivity and specificity. Sensitivity refers to the ability of the DASH to discriminate Type I errors, or false positive results. Specificity refers to the ability of the DASH to discriminate Type II errors, or false negative results.

In the present study, a false positive occurs when the DASH is unable to exclude non-bipolar participants from the bipolar group. That is, the Affective Scale of the DASH fails to screen out members of the bipolar-disodered diagnostic group who have been misdiagnosed (who are not bipolar).

A false negative occurs when the Affective Scale of the DASH excludes a bipolar-disordered participant from the bipolar-disordered group. That is, it was unable to distinguish bipolar disorder from other types

of psychiatric disorders at a statistically significant level.

There was general support for the conclusion that the DASH Affective scale can distinguish between a group with no-psychiatric-diagnosis and groups with some psychiatric disorder. In fact, the Mania subscale was able to discriminate between the no-psychiatric-diagnosis group and both of the other groups.

Implications

The results of this concurrent validation study indicate that the Affective cale of the DASH has merit in identifying the presence of bipolar disorder among severely and profoundly mentally retarded clients in a residential setting. Additionally, the Mania subscale appears usable in not only assessing for the presence of psychiatric difficulties, but also discriminating the presnce of bipolar disorder. This is a hopeful sign for clinicians working with this population because it aids in validating the assignment of this diagnosis.

The validity of the diagnostic criteria in the DSM-IV nosology system is questionable when applied to the severely and profoundly retarded. As discussed in chapter one, the severely and profoundly retarded tend to display psychiatric impairment differently than higher functioning retarded and nonretarded people. For example, mania may take the form of increased agression and property destruction, rather than increased sexual improprieties, or spending sprees.

Added validity of the diagnosis leads to a higher probability of prescribing the proper medication. That is, realizing that the person is experiencing bipolar rather than unipolar depression will lead to prescribing a medication such as lithium which is specific to bipolar disorder .

There are a number of considerations when discussing the usefulness of the DASH in clinical practice. The DASH is probably most useful when used for intake evaluations where the referral question concerns whether or not psychiatric disturbance is present. Similarly, it would be useful when there has been a substantive clinical change. For example, the DASH would useful in a reassessment process when the person is temporarily no longer receiving psychotropic medication. The absence of medication as a confounding variable would allow the DASH greater sensitivity. That is, the DASH would be more able to detect a person with an affective disorder.

In this sample, the DASH appears capable of discriminating the presence of psychiatric disorder in general, but it does not appear able to discriminate

bipolar disorder in particular from other psychiatric disorders. This limits the usefulness of the DASH once an individual is already a part of the system and receiving psychotropic medication.

Given this limitiation, the DASH can still be useful as an adjunct in the annual assessment process to decide on the person's eligibility for continued Medicare funding. As mentioned in the introductory chapter, persons must meet two criteria for continued eligibility for Medicare funding. First a determination of the intellectual functioning level, and second, an overall marked deficit in adaptive functioning. The presence of a psychiatric condition is considered when determining the overall level of adaptive functioning. The generalizability of the results is further limited by the confounding variable of the diagnosis having been made when the client was already receiving psychotropic medication. In this study each participant in the psychiatric-diagnosis and bipolar-disordered groups was receiving psychotropic medication at the time of the evaluation. In addition, while records showed no specific psychiatric diagnosis,

14 of the 23 participants in the no-diagnosis group were receiving anticonvulsant medications such as Depakote and Tegretol which have an established use in managing manic symptoms in this population. A logical inference is that these participants, or at least many of them, have organic brain syndromes which will be diagnosed on Axis 1 in DSM IV. In all, 60 Of 69 (85%) of the participants received psychotropic medications prior to the evaluation.

Most commonly with this population, psychiatric assessments are conducted at least annually as part of the application process for continued Medicare funding. Most often the person is receiving medication as part of the treatment approach.

The confounding effect of medication already being present when the diagnostic assessment is conducted is a two-pronged issue. First, psychiatric symptoms may be suppressed by the presence of the medication, making it more difficult to accurately diagnose. Second, the medication may produce effects that mimic psychiatric symptoms, for example increased akathisia appearing as a manic symptom.

Since the DASH is intended to be used as part of the diagnostic process, the reliability of the diagnoses used as the standard for comparison is also of significant importance. The inter-rater reliability of the two psychiatrists who made the diagnoses used as the standard for comparison was calculated by the use of ratings of information contained in vignettes. Vignettes were developed for 23 of the participants by condensing clinical information down to about 1 page. Each vignette had the same organization. These were presented to the psychiatrists for diagnosis. The percentage of agreement between the two psychiatrists was calculated. The result was .82, which is considered adequate.

It is not clear how valid the diagnoses actually are. Psychiatric diagnosis in this population has inherent difficulties, such as the lack of verbal input from the person. It may be that each psychiatrist erred in nearly the same manner when assesing the vignettes. Therefore the validity of the diagnosis cannot be affirmed with confidence. The DASH may be

more powerful when used to screen before medication is initiated.

The application of DSM-IV criteria to the severely/profoundly retarded has conceptual problems including the interaction of multiple diagnostic categories and axes, the lack of cognitive and linguistic capacities needed for many diagnoses, and the posibility that psychopathology in this population may not correspond to that of other populations.

In addition, the participant sample used in this study may not be representative of other settings, even residential settings. For example, Fairview Training Center may have a higher percentage of bipolar-disordered clients than other residential settings.

Suggestions for Future Research

This concurrent validation of the DASH is a small step in the overall validation process. More research will need to occur prior to the routine use of the DASH for psychiatric diagnosis of the severely and profoundly mentally retarded in residential settings. Each of the clinical scales of the DASH will need concurrent and other types of validation. In addition,

samples other than the one developed for this study will need to be researched.

A number of intriguing clinical questions need further analysis. Most of these questions stem from the fact that psychiatric disorders generally, and affective disorders specifically manifest themselves in different ways in this sample than is typical among the non-retarded population. For example, manic behavior does not take the ususal form of shopping binges, sexual indescretions, running up credit card charges, and writing bad checks. This population lacks the behavioral repertoire, and other necessary means to act out in such ways.

Mania appears to be a more sensitive indicator of the presence of bipolar disorder. This probably involves the greater ease in observing manic behavior. Manic behaivor by definition is overt. Depressive symptoms can easily be undiagnosed due to their more covert nature. Therefore, manic symptoms are more easily noticed, remembered, and reported.

Further studies assessing memory in the severely/profoundly retarded, both encoding and

retrieval, and its role in psychopathology are needed. For example, this population tends to be either non-verbal, or severely limited in verbal expression. This lack of verbal output implies that memory is more likely to be encoded imaginally than verbally. This difference has implications in how psychiatric symptoms are displayed.

Discriminant analysis assessing possible differences between 2 groups only rather than 3 groups may help in deciding whether the DASH can be used to make inividual decisions, rather than the more global decision of whether there is pathology or not. Further analysis of the role of manic symptoms as an indicator of bipolar disorder is needed. The greater sensitivity of the Manic subscale in this study suggests that the presence of manic symptoms is a better indicator of bipolar disrder than the presence of depressive symptoms. However, for this sample it may be that manic symptoms are more easily noticed by staff than depressive symptoms, leading to more common reporting of the manic symptoms.

Summary and Conclusions

In summary, three groups of 23 severely or profoundly retarded persons were selected based on previous psychiatric diagnosis. They were also matched for social age. They were evaluated using the informant-based Diagnostic Assessment for the Severely Handicapped (DASH) Scale. The first group contained persons with a diagnosis of bipolar disorder. The second group contained a mix of non-affective psychiatric diagnoses. The third group had no previous psychiatric diagnosis served as the control.

Significant findings were that the DASH Affective Scale and the Mania and Depression subscales effectively discriminated bipolar-disordered participants from those with no psychiatric diagnosis, but did not distinguish those with affective disorders from those with other types of psychiatric disorders, or between mixed psychiatric disorders and no disorder. One exception was that the Mania subscale for data occurring during the year prior to the evaluation discriminated between the no-psychiatric-diagnosis group and both of the other groups.

The DASH appears useful as an adjunct to other diagnostic techniques, especially prior to the introduction of psychotropic medication. Future studies are needed to determine the ability of the DASH to differentially diagnose among specific psychiatric disorders.

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Appendix A

Sample Vignette

Developmental information:

Client was born after a normal pregnancy, labor, and delivery. Reports indicate that client experienced something like a "polio" condition at about three or four months old, followed by chicken pox at about thirteen months and measles at about 2 1/2 years. Client was able to walk at two years old, but appeared to have infantile paralysis. At about 10 years old, it was noted that client was functioning at a four year old developmental level.

Health:

Client experiences chronic abdominal discomfort and hypothyroidism. There is a tendency to be underweight. There are no known allergies and no past or present seizure difficulties. Client is ambulatory and vision and hearing are within normal limits.

Onset of disequilibrium:

Client began experiencing difficulties behaviorally at about twenty years old. These difficulties included temper tantrums, pocket stuffing, and fecal smearing. Client appeared to be less oriented to the surroundings at this point also.

Within the next two years self-injurious behavior, screaming, and increased combativeness became significant features.

Course while at Fairview Taining Center:

Client has had a history of aggression and SIB while at FTC. Various forms of physical restraint have been used including a helmet with a faceguard. Fecal smearing continued along with stripping, property abuse, aggression, and clothes seeking behavior. Several psychotropic medications have been administered over the years. Client is currently receiving Lithium with good results.

Mental status:

Client is nonverbal, but appeared to be aware of the importance of the interview, /client is alert and responsive with a normal appearing affect. Staff report indicates affective lability has been significantly decreased over the past several years. There was no apparent hallucinatory behavior during the interview, and there are no reports of any otherwise.

Appendix B

Raw Data Tables

Explanation of Raw Data

Columns 1-3: Identification Number

Column 5: Race

Column 6: Gender

Column 7: Level of Retardation

Column 8: Physical Disabilities

Column 9: Living Situation

Column 10: Informant's Relationship to Client

Column 11: Length of Time Informant Known Client

Column 12: Amount of Contact on Daily Basis

Column 13: Setting Contact Takes Place in

Column 14: Staffing Ratio

Column 15: How Long Informant has Known Client

Columns 17-437: The 86 DASH items in 4 digit blocks

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0000 0001 0000 0000 0000 0001 0000 0000
050 11213342235 1220 0000 0000 0000 2210 0000 2210 1010
2210 0000 0000 2210 0000 2010 0000 0001 0000 0000
2200 0000 2210 2200 2200 0000 0000 0000 2210 0000
0000 0000 1210 2210 2210 2220 0000 2210 0000 2210
2210 0000 0000 2210 0000 0000 0000 0000 0000 2200
2200 2210 2210 0000 2220 0000 0000 2210 0001 0000
0000 0000 0000 0000 2210 0000 2210 0000 0000 2210
0000 2210 0000 2210 2210 1210 0000 0000 2210 0000
0001 0000 0000 0000 0000 2010 2201 0000
051 22162342235 1120 0000 0000 0000 2210 0000 2120 0000
2120 0000 0000 2220 0000 2200 1210 2110 0000 0000
2120 0000 1120 0000 1200 2220 0000 0000 0000 2120
2120 2120 1210 2200 0000 0000 0000 0000 2210 2210
0000 0000 0000 2210 2220 0000 0000 0000 0000 1100
2200 1200 2110 0000 0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 2100 0000 0000 0000 0000
0000 1200 0000 0000 0000 0000 0000 0000 2120 0000
0000 0000 0000 1120 0000 2110 0000 0000
052 11163323235 2220 0000 2210 0000 2210 0000 2210 0000
2210 0000 0000 2200 2210 0000 2200 0000 0000 0000
0000 0000 2210 0000 1200 2210 0000 0000 2200 0000
2210 2210 2210 0000 1010 1210 0000 0000 0000 2210
2210 0000 0000 0000 0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 1210 2210 0000 0000 0000 0000
0000 0000 2200 0000 0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 1210 0000 0000 2200 0000
0001 0000 0000 0000 1200 0000 2200 0000

```
053 12163343235 0001 2210 0000 0000 0000 0000 1210 0001
    2220 0000 0000 2210 0000 1210 0000 1110 0000 1200
    1210 0000 0000 0000 2210 0000 0000 0000 0001 0000
    0000 0000 2210 0000 0001 0001 2200 0000 2200 2210
    0000 0000 0000 0000 0000 0000 0001 0000 0000 1200
    1200 0000 0000 0002 0000 0000 0000 0000 0000 0000
    0001 2200 0000 0000 0000 0000 0000 1200 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 1000 0000
    0001 0000 0000 0000 0000 1210 0000 2220
054 12163342235 1210 0002 0000 2210 2100 0000 0000 0000
    0000 0000 0000 2220 1220 2200 0000 0000 0000 0000
    0000 0002 0000 0000 0000 0000 2220 0000 0000 2220
    0000 0000 2210 0000 0002 0000 0000 0000 0000 0000
    2210 0000 0000 0000 2220 0000 0000 0000 0000 0000
    0000 2210 0000 0000 0002 0000 1210 1210 1110 0000
    0000 0000 0000 0000 2210 0000 0000 0000 0000 0000
    0000 0000 1210 0000 0000 0002 0000 0000 2220 0000
    0000 0000 0000 0000 2210 1200 2210 0002
055 12163342245 0001 0000 2210 1200 0000 0000 0000 0000
    1110 0000 0000 1210 0000 0000 1210 0000 0000 0002
    0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
    0000 0000 1210 0000 1110 0001 0000 0000 0000 0000
    2210 0000 0000 0000 0000 0000 0000 1010 0000 1200
    0000 0000 1210 0000 0000 0000 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0001 0000 0000 0000 0000
    2010 0000 0000 0000 0000 0000 0000 0000
056 12163313215 2220 0000 0000 0000 0000 0000 2200 0000
    2220 1200 0000 0000 2220 0000 2210 0000 0000 0000
    0000 2220 2220 0000 0000 0000 0000 0000 2220 0000
    0000 1210 0000 0000 0000 0000 0000 0000 0000 0000
    2200 0000 0000 0000 0000 0000 0000 0000 0000 2220
    0000 2200 2220 0000 0000 0000 0000 2220 0000 0000
    0000 0000 1200 0000 0000 0000 1200 0000 0000 1200
    1200 0000 0000 0000 0000 2220 0000 0000 2220 0000
    0000 0000 2210 0000 2210 0000 0000 0000
```

```
057 11233343235 0001 0000 0000 0001 0000 0000 0000 0000
    2210 0000 0000 0000 0000 2110 0000 0000 0000 1110
    1100 1210 0000 0000 0000 0000 0000 0000 0001 0000
    0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
    0000 0000 0001 0000 1110 0000 0000 2210 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
    0000 0000 0000 2100 0000 0000 0000 0000 0000 0000
    2210 0000 0000 0000 0002 2110 0001 0000
058 11163342245 2212 0000 0000 0000 1111 0000 0002 0000
    2212 0000 0000 0001 0002 0000 2000 0000 0000 0000
    0000 0000 1211 0000 0002 2000 0000 0000 2212 0000
    0000 0000 0000 0000 0000 0000 0000 0000 2212 0000
    2212 0000 0000 0000 0000 0000 0000 0000 0000 1211
    0000 0000 1212 0000 0000 0000 0000 2212 0000 0000
    0000 0000 0000 0000 1001 0000 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 1212 0000
    2012 0000 0001 0001 2212 0000 0000 0000
059 12163342245 0001 0000 0000 0000 1200 0000 0000 0000
    0002 0000 0000 1200 0000 2210 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 0000 2220
    2210 0000 0000 0000 0000 0000 2200 2210 0000 0000
    0000 0000 0000 2200 0000 2200 0000 0000 1220 0000
    2220 0000 0000 0000 0000 2200 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
    2220 0000 0000 0000 0000 2200 0000 0000
060 12163342235 2220 0000 1210 0000 0000 0000 0000 1210
    2210 0000 1000 2220 0000 0000 2200 0000 0000 0000
    2210 2210 0000 0000 2210 2200 0000 0000 2200 0000
    0000 0000 2200 2210 1210 0000 0000 0000 2210 2210
    2210 2200 0000 2200 2220 0000 0000 2210 0000 2200
    0000 0000 2210 0000 2210 0000 0000 0000 2210 0000 2210
    0000 0000 0000 0000 2210 0000 0000 2210 0000 2200
    0000 0000 0000 0000 0000 2200 0000 2210 0000 0000
    1200 0000 0000 0000 0000 0000 0000 0000
```

```
061 12163341235 0002 0000 1210 0000 0000 0000 0000 1200
    2210 0000 0000 1210 0000 1200 0001 0000 0000 0000
    0000 0000 1210 0000 2210 1210 0000 0000 1200 0000
    0002 0002 1210 0000 2210 1210 0000 0000 0000 2210
    2210 0000 0000 2200 0000 0000 0000 0000 1210 0000
    2210 0001 0000 0000 0000 0000 0000 1210 0000 0000
    0001 0001 1200 0000 0002 0000 0000 0000 0000 0000
    0000 1200 0000 0000 0000 0000 0000 0000 1210 0000
    1210 0000 0000 0000 2210 1210 0000 0001
062 12163341235 0000 0001 0000 0000 0000 0000 2100 1210
    2210 0000 0000 0000 0000 2210 0000 0000 0000 0000
    1210 2210 0000 0000 2210 0000 0000 0000 1210 0000
    0000 2210 2210 0000 0001 1210 0000 0000 0000 2210
    2210 0000 0000 2210 0000 0000 0000 0000 0000 2200
    0000 0000 0000 2200 2210 0000 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0001 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 2210 0000
    2210 0000  0000 0000 0000 2210 0000 0001
063 11133353235 2222 1221 0000 0000 2202 0000 2221 0000
    2212 0000 0000 1211 1121 2202 0000 0000 0000 0000
    0001 0000 1221 2202 0000 0000 0000 0000 2222 0000
    0000 2212 1211 0000 1212 0000 0000 0000 0000 0000
    1201 0000 0000 2202 1221 0000 0000 0000 0000 2202
    0000 0000 1201 0000 0000 1201 0000 0000 0001 0000
    2212 0000 2212 1222 2202 1201 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 2222 0000
    1211 0001 1201 0000 0000 0000 2202 2222
064 12163342232 2220 0001 0000 0000 2210 1200 2210 1210
    2210 0000 0000 2210 1220 1210 0000 0000 0000 0000
    1210 0000 2220 0000 1200 0000 0000 0000 2220 2210
    2210 2210 2210 0000 1210 0000 0000 0001 0000 2210
    0000 0000 0000 0000 2220 0000 0000 0000 0000 1210
    1200 2200 0000 0000 0000 0000 0000 1210 1220 0000
    1210 0000 0000 0000 2210 0000 0000 0000 0000 0000
    0000 1210 0000 0000 1210 1200 0000 1210 2220 0000
    0000 0000 0000 0000 1210 1100 1210 1210
```

```
065 11163322235 1010 0000 0000 0000 0000 0000 2010 0000
    1010 2010 0000 0000 0000 0000 0000 0000 0000 0000
    0000 0000 2010 0000 0000 0000 0000 0000 2010 0000
    0000 0000 0000 0000 0000 0000 2000 0000 1010 0000
    0000 0000 0000 0000 0000 0000 1000 1000 0000 1000
    0000 0000 2010 0000 0000 2000 0000 2010 0000 0000
    0000 0000 1000 0000 2000 0000 0000 0000 0000 0000
    1010 1000 0000 0000 0000 0000 0000 0000 2010 0000
    1000 0000 0000 0000 2010 0000 1000 0000
066 12163341235 0000 1200 0000 0000 0000 0000 2110 1000
    1210 0000 0000 2210 0000 0000 2210 0000 0000 0000
    0000 1110 2210 2210 2210 2210 0000 0000 2210 0000
    2210 2210 2210 0000 2210 0001 0000 0000 0000 2210
    0000 1210 0000 1210 0000 0000 0000 0000 1210 1200
    2200 0000 1210 0000 1220 2210 0000 0000 0000 0000
    1210 0000 0000 1210 0000 2210 0000 0000 0000 0000
    0000 0000 0000 2210 0000 1210 0000 0000 2210 2210
    2220 0000 2210 0000 0000 0000 0000 1210
067 12163342265 0000 0000 0000 0000 2200 0000 2220 2210
    1220 0000 0000 2210 0001 0000 0000 0000 1200 0000
    0000 0000 0001 0000 0000 0001 0000 0000 1210 0000
    2220 1220 1210 0000 0002 1210 0000 2210 0000 2210
    2210 1220 0000 2210 2220 0000 0000 0000 0000 0000
    2210 0000 1210 0000 0000 0000 0000 0000 0000 0000
    0001 0000 0000 0001 1210 0000 0000 0000 0000 0000
    0000 0000 0000 0000 1210 1210 0000 0000 0001 0000
    1210 0000 0000 0000 0000 0000 2220 0000
068 12163353235 0001 0000 0000 0000 2210 0000 2210 1220
    1220 0000 1200 2220 0000 1210 0000 1210 0000 0000
    0000 1220 1220 0000 1210 0000 1210 0000 1220 1220
    0000 1210 2220 2200 1220 1210 1200 0000 0000 2220
    2210 1210 0000 0000 1220 0000 0000 0000 1220 1200
    2210 2210 0000 0000 2220 1210 2220 1210 0000 0000
    1220 1220 0000 0000 1210 0001 0000 0000 0000 1200
    0000 0000 0000 1200 0000 0000 0000 0000 2200 0000
    1200 0000 0000 0000 1210 1200 1210 0000
```

```
069 12162323135 0000 0000 0000 0000 0000 0000 0000 0000
    2220 0000 0000 1210 0000 0000 0000 0000 0000 0000
    0000 0000 0000 0000 1100 0000 0000 0000 2200 0000
    0000 0000 0000 2200 0000 0000 0000 0000 0000 1210
    2210 0000 0000 0000 0000 0000 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
    0000 0000 0000 0000 0000 0000 0000 0000 0000 1200
    0000 0000 0000 0000 0000 1100 0000 0000 1200 0000
    0000 0000 0000 0000 0000 0000 0000 0000
```

VITA

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Age: 44
Marital Status: Married
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EDUCATION

Doctor of Psychology: (Anticipated) (1995); George Fox College, Newberg, Oregon.

Master of Arts in Clinical Psychology: (1980-1983); Western Baptist Seminary, Portland, Oregon.

Bachelor of Arts in Psychology: (1969-1973); University of Minnesota, Minneapolis, Minnesota.

Graduate Studies in Clinical Psychology: (1973-1974); Mankato State University, Mankato, Minnesota. No degree awarded.

William Mitchell College of Law: (1975-1977); St. Paul, Minnesota. No degree awarded.

INTERNSHIP

1991-93: Counseling Center of Vancouver, Vancouver, WA
Supervisor: Dennis Olson, Ph.D.

PRACTICUM EXPERIENCE IN PSYCHOLOGY

1982-84: Experiences included didactic sessions, group supervision, and individual supervision. Psychotherapy with geriatric clients, adults, adolescents, and children was supervised by various psychologists. Experience was gained in psychotherapy, psychological testing, and report writing.

DISSERTATION

"Concurrent Validation of the Affective Scale of the Diagnostic Assessment for the Severely Handicapped (DASH) Scale".

PUBLICATIONS

Ostrom, R.M., Larzelere, R.E., and Reed, S.K. (1982) The Views of Selected Evangelical Christians on Sex Education. Journal of Psychology and Christianity, 1(4), Winter, 1982, 17-22.

Propst, L., Ostrom, R., Watkins, P., Dean, T., & Mashburn, D. (1992) Comparative Efficacy of Religious and Nonreligious Cognitive-Behavioral Therapy for the Treatment of Clinical Depression in Religious Indivivuals. Journal of Counseling and Clinical Psychology, 60(1), 94-103.

REFERENCES

Available upon request.

WORK EXPERIENCE

Clinical Psychologist I: (1985-present) I have been employed at Fairview Training Center providing psychological services to developmentally disabled adults. I have served as the chairman of the Psychotropic Review Committee, and as a member of the Behavior Modification Review Committee.

Phone Duty Counselor: (1983-84) Clackamas County Mental Health Center employed me as the first line of contact for potential clients. I was responsible for diagnostic triage using DSM-III criteria for admission into the system. I also conducted counseling sessions with walk-in clients.