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Behavior problems exhibited in institutionalized persons with intellectual disabilities and schizophrenia spectrum disorders

Ryan Thorson
Louisiana State University and Agricultural and Mechanical College

BEHAVIOR PROBLEMS EXHIBITED IN INSTITUTIONALIZED PERSONS WITH INTELLECTUAL DISABILTIES AND SCHIZOPHRENIA SPECTRUM DISORDERS

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Ryan Thorson
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Abstract

Although our understanding of dual diagnosis has improved in recent years, a deficit exists in our knowledge of how schizophrenia spectrum disorders (SSD) manifest themselves in individuals with intellectual disabilities (ID). We also know very little about the behavioral problems present with the ID population based on the existence of psychopathology. The present research attempted to extend the literature by comparing behavior problems of individuals with intellectual disability with SSD, any form of psychopathology, and no psychopathology.

Utilizing the Behavior Problems Inventory (BPI), three areas of problem behaviors were examined (self-injurious behavior, stereotypic behavior, and aggressive/destructive behavior) and a total behavior problem score was also assessed. Correlations between diagnostic criteria from the Diagnostic Assessment for the Severely Handicapped-II (DASH-II) and problem behaviors were also assessed to examine convergence between the diagnostic instrument and the behavior problems related to associated disorders. Results indicated that the SSD group was unique when compared to the control group for frequency and severity of stereotyped behaviors as well as their overall behavior problem scores. Despite these findings, behavior problems assessed were not unique to the SSD population; as the data suggests these behavioral differences were due to any form of psychopathology. These results warrant further exploration.

Introduction

The study of Schizophrenia Spectrum Disorders (SSD) in the Intellectually Disabled (ID) population requires reviewing several key areas, as there has been limited research done specifically on SSD within the ID population. SSD is a term used to identify a group of disorders sharing clinical features with schizophrenia, which include many psychotic disorders. The terminology and grouping of disorders has been utilized by researchers previously (Erkiran, Özünalan, Evren, Aytaclar, Kirisci, & Tarter, in press; Esterberg & Compton, 2005; Lysaker, Davis, & Lightfoot, 2005; Lysaker & Hammersley, in press; Margolese, Malchy, Negrete, Tempier, & Gill, 2006; Matsura, Adachi, Oana, Okubu, Kato, Nakano, & Matsura, 2004; Mizrahi, Kiang, Mamo, Arenovich, Bagby, Zipursky, & Kapur, 2006; Rodríguez-Sánchez, Crespo-Facorro, Iglesias, Bosch, Álvarez, & Llorca, 2005; Roofeh, Cottone, Burdick, Lencz, Gyato, & Cervellione, 2006; Sim, Mahendran, Siris, Heckers, & Chong, 2004; Ueland, Øie, Landrø, & Rund, 2004). The term SSD has been used to identify disorders such as schizophrenia, schizoaffective disorder, and psychotic disorder, NOS in nearly all aforementioned studies. In addition delusional disorder and schizophreniform disorder were included as qualifying disorders in a majority of others. Psychotic mood disorder was also included sparingly as an SSD in the literature. Within the population studied, all but schizophreniform disorder and psychotic mood disorder were included in the SSD population.

This literature review begins with an examination of general psychopathology in the ID population followed by an examination of schizophrenia in the general population. In addition, potential treatments for SSD will be reviewed. A review of schizophrenia in the ID population will follow including a review of dual diagnosis. Finally, behavior problems in the ID population will be discussed.

Prevalence

The rate of psychopathology in persons with ID is generally considered to be higher than for the general population (Nezu, Nezu, & Gill-Weiss, 1992; Reiss, 1990; Rojahn & Tassé, 1996). The majority of the researchers estimate psychopathology rates of the intellectually disabled to be 4 to 5 times higher than those of normal intelligence across all forms of psychopathology (Rutter, Tizard, & Yule, 1976; Singh, Sood, Soneklar, & Ellis, 1991). A review completed by Reid (1989a) reported prevalence rates for psychiatric disorders in patients with ID to vary from 37% to 58.8%, which included all age ranges within hospital, community, and total population samples.

Psychotic disorders have been found to be more prevalent in individuals with ID (Došen & Day, 2001). The psychotic disorders discussed coincide with disorders falling under the definition of SSD within this review. Markedly lower (than generally accepted) prevalence rates of schizophrenia in persons with ID were found in only one study, where an overall prevalence rate of 1.3% was found. However, even in this sample, rates of 2.6% and 3.3% were found in patients with mild to borderline ID (Lund, 1985). However, the Lund study was often criticized for methodological flaws (Blazer, George, Landerman, Pennybacker, Melville, Woodbury, et al., 1986; Robins, Helzer, Weissman, Orvaschel, Gruenberg, Burke, et al., 1984), including lack of interviews for all participants included in the study. Although agreement on actual prevalence rates of psychopathology in the ID population may vary, it is generally accepted that rates are higher than the general population.

Schizophrenia

History

The person most often credited with identifying the disorder we call schizophrenia today is Emil Kraepelin. However, the term Kraepelin used to label this phenomenon was "dementia praecox". After studying a large cohort of severely mentally ill patients over several decades, he was the first to differentiate mood-related psychotic disorders from those with dementia praecox (Kraepelin & Gosline, 1919). This distinction has continued in nearly every classification system since its description (Flaum, 1995).

The term schizophrenia was first proposed by Eugen Bleuler. Bleuler focused on characteristic and fundamental sets of symptoms that were observable during the course of illness. Diagnostically, these symptoms were referred to as the "four A's"; affective flattening, associative loosening, ambivalence, and autism (Flaum, 1995). Affective flattening was considered a marked diminution in emotional expressiveness. Associative loosening consisted of disorganization in thought process. Ambivalence was considered as the inability to initiate and follow through on simple tasks. Autism was involving one's profound degree of social and interpersonal relatedness. Although the terminology has been modified over the years, the symptoms have remained relatively stable.

In Europe, Kurt Schneider was researching the same illness around the same time as Bleuler. His methodology of focusing on cross-sectional observation rather than longitudinal course was otherwise similar to Bleuler. The term *Schneiderian symptoms* of schizophrenia was used to identify many of these positive symptoms of the disorder. However, his work did not enjoy the long-term success of Kraepelin and Bleuler, as subsequent studies did not support his

findings (Andreasen & Akiskal, 1983; Carpenter, Strauss, Muleh, 1973; Flaum & Andreasen, 1991; Silverstein & Harrow, 1981).

Primarily, Schneider focused on what are considered negative symptoms rather than the positive symptoms in today's classification system examined by Bleuler. Among his contributions to the field of schizophrenia, his influence in broadening Kraepelin's concept of dementia praecox to include more mild and nonpsychotic forms of illness were most notable (Flaum, 1995).

Accepted definitions and classifications of schizophrenia have evolved greatly over the years. Our understanding of schizophrenia has developed from specific dimensions of what constitutes schizophrenia and, more specifically, under which dimension specific symptoms are grouped. At one time, a single common process was believed to underlie schizophrenic symptoms and premorbid social adjustment (Andreasen & Olsen, 1982). However, more complicated models have evolved over time.

Generally accepted models have ranged from two to four factors. An early two-factor model was proposed by Lenzenweger, Dworkin, & Wethington (1989). This model will be discussed in greater detail later in this section. An even earlier model of Schizophrenia proposed three factors. This three-factor model proposed by Strauss, Carpenter, & Bartko (1974) was markedly ahead of other researchers; as it was supported by later research (Crow, 1987; Lenzenweger, Dworkin, & Wethington, 1991). This three-factor model described positive symptoms, negative symptoms, and premorbid social adjustment as being independent and distinguishable from one another. However, this research did not get the same attention in the field as did work by other researchers.

Other three-factor models evolved and had more success. One of the larger steps forward in our understanding of schizophrenia came when Liddle (1987) partitioned the positive symptoms into two separate dimensions; 'reality distortions' such as hallucinations and delusions and 'disorganizations' such as tangentiality, derailment, and bizarre behaviors. Similar suggestions regarding the dimensions of schizophrenia were supported by Bilder, Mukherjee, & Rieder (1985), although both samples used were relatively small, limiting generalizability.

The first four-factor model was established by Liddle (1991). This fourth factor was derived essentially by dividing the positive symptoms into reality distortion (e.g., delusions and hallucinations) and disorganizations, (e.g., thought disorder and bizarre behaviors). Further support for a four-factor model came with Lenzenweger & Dworkin, 1996. This study will also be discussed in greater detail later in this section.

One of the more influential studies on schizophrenia was the previously mentioned work by Lenzenweger et al., (1989). Using exploratory factor analysis (EFA), they attempted to determine if they could account for the organization of phenotypic schizophrenic symptomology identified in prior studies. This study first suggested their original two-factor model of schizophrenia consisting of positive symptoms and negative symptoms, with the negative symptoms loading disordered premorbid personal and social relations. Over time, this theory has been revised and the factors of schizophrenia have been adjusted. The two factor model was quickly replaced with a three-factor model (Lenzenweger, et al, 1991). However, a fourth factor began to emerge from some of the same researchers within a few years.

Lenzenweger et al. (1996) examined case histories of 192 individuals, a considerably larger sample size than previously employed. These researchers identified four underlying dimensions of schizophrenia phenomenology instead of the previously accepted three

(Lenzenweger et al., 1991). The four factors the authors identified which best accounted for schizophrenia phenomenology were negative symptoms, disordered premorbid personal-social relations, reality distortion, and disorganization. The 1996 study used a more stringent process of confirmatory factor analysis (CFA) for statistical analysis instead of EFA. Four factors appear relatively independent of one another, lending further support to the four factor model being superior to the three factor model. This model continues to have support in the literature regarding our understanding of schizophrenia.

However, the belief in dimensions/factors of schizophrenia for diagnostic purposes is not universal. Others have considered using categorical criteria instead of dimensions. A study involving 980 participants from the Australian National Survey of Mental Health focused on this issue. Measures of psychopathology using factors explained more of the variance in areas of service demand, dysfunctional behavior, social adaptation, global occupation, and function (Rosenman, Korten, & Medway, 2003). Categorical criteria used in grouping behaviors as opposed to the previously discussed factor structure have also been used. These categorical criteria were only able to better predict the use of support services and course of illness, which may be far more useful in areas of public health administration and budgeting as compared to the area of diagnostic ability Psychologists generally focus their efforts (Rosenman et al., 2003).

Mental health professionals have also focused on the impact of schizophrenia on other aspects of patients' lives. Patients suffering from SSD also abuse drugs and alcohol at higher rates than the general population (Margolese, Malchy, Negrete, Tempier, & Gill, 2004). These associations are more applicable in the realm of those with mild or moderate ID who live in community settings than for the institutionalized, but still warrants mention in terms of treatment outcomes focusing on more independent living. Substance abuse was studied in over 200

outpatients suffering from schizophrenia and related psychoses in a continuing care facility in Canada. The three most commonly abused substances were nicotine, alcohol, and cannabis. Based on their psychiatric diagnoses and substance abuse backgrounds, patients were grouped by those with just a mental disorder or a mental disorder with an additional addictive disorder. For alcohol and cannabis, 44.9% of the sample met criteria for lifetime abuse/dependence and 14.0% met criteria for current abuse/dependence. Current substance abuse/dependence and a psychotic disorder was linked to higher Positive and Negative Symptom Scales positive scores than those with a single diagnosis or a lifetime dual diagnosis. Individuals with SSD and a substance abuse problem also were more likely to be non-compliant with medication than those with a single diagnosis. In addition, Margolese et al. (2004) found those with SSD and substance abuse problems were far more likely to smoke cigarettes than those with a single diagnosis (88.9% compared to 49.6%) and had smoked longer (19.1 compared to 11.5 years).

Social functioning is also affected by SSD. Problems with social functioning have been a noted characteristic of schizophrenia (Bellack, 1986). Further support for the inability of those with schizophrenia to normally function in society was found in Smith, Shah, Wright & Lewis (1995). In an analysis of the costs of psychiatric disorders, schizophrenia was found to account for the second-highest burden on National Health Services (behind learning disability). In addition, schizophrenia accounted for one-third of inpatient bed occupancies. These results highlight the importance of the disorder, even though its prevalence rate is significantly lower than many other disorders. A slight improvement in how we treat and care for individuals with schizophrenia has the potential to incredibly reduce the burden on the mental health system.

Diagnostic Criteria

In *The Diagnostic and Statistical Manual of Mental Disorders, IV-TR* (DSM-IV-TR) (American Psychological Association, APA, 2000) schizophrenia is defined as a disorder that lasts for at least six months and includes at least one month (or less if successfully treated) of active-phase symptoms of two or more of the following active symptoms over a one month period of time: delusions, hallucinations, disorganized speech, grossly disorganized or catatonic behavior, negative symptoms. Only one of these criterion is required if delusions are bizarre or hallucinations consist of a voice keeping running commentary of a person's behavior or thoughts, or two or more voices conversing with one another (pp. 298-302).

Social or occupational dysfunction occurring for a significant portion of the time since the onset of symptoms in one or more of the following major areas of functioning is also required: work, interpersonal relations, or self-care being markedly below where it was prior to the onset of symptoms. During those months the active symptoms are not dominant, individuals may suffer from "primarily negative symptoms or more mild forms" of the earlier mentioned positive symptoms; this is often referred to as the residual period. Next, Schizoaffective Disorder and Mood Disorder with Psychotic Features need to be ruled out based on the absence of Major Depressive, Manic, or Mixed Episodes occurring concurrently with the active-phase symptoms or the mood episodes occurring during active-phase symptoms must have been of brief total duration when compared to the active and residual periods of symptoms. Ruling out the possibility that symptoms are a result of a substance or general medical condition is also important. A special consideration for Pervasive Developmental Disorders also exists. If a diagnosis of Autistic Disorder or Pervasive Developmental Disorder exists, the additional diagnosis of Schizophrenia can be made "only in the presence of prominent delusions or

hallucinations for at least a month, unless symptoms are successfully treated" (p. 299) (American Psychological Association, APA, 2000).

The difficulties which arise in diagnosing schizophrenia within certain populations (individuals with severe and profound ID, for example) are immediately apparent based on this definition; this issue will be more thoroughly reviewed in the Schizophrenia in the Intellectually Disabled section. In addition, mixed mood states with features of mania, depression, schizoaffective psychoses, psychotic responses to acute stress, and rapid-cycling bipolar disorder all have been reported to be more common in the mentally retarded population than the general population (Day, 1990; Glue, 1989; Reid, 1972; Sovner & Pary, 1993).

Beyond the identification of schizophrenia, it is imperative to look at how the mental health system currently handles clients with schizophrenia. This is accomplished by looking at where the mental health system is at, where it needs to move in the future, and finally by examining what treatments are available today.

Treatment and Care for Schizophrenia Spectrum Disorders

Needs

Today's mental health system often operates in a state where funding availability only allows for minimal services to individuals from staff whose number and expertise levels are often limited by these financial constraints. Within the realm of ID, mental health professionals largely agree the availability and adequacy of therapeutic and other support services is poor (Jacobson & Ackerman, 1988). Without adequate assessment, the treatment these individuals receive may be inappropriate and/or ineffective. In order to monitor treatment effectiveness, there must be a link between assessment and treatment in order to ensure therapeutic changes occur. Unfortunately, most of the empirically supported research on SSD has centered on areas

that are not cost effective or easily implemented; often requiring the use of well-trained staff (Clark, 2001). Research ought to focus on assessments and treatments which are efficient and simple enough for staff with limited training to be able to participate in treatment (Matson, Kuhn, & Mayville, 2002). The limited resources available for mental health care today place demands on mental health professionals requiring such efficiency while remaining practical and applicable in the field.

Review of Treatments

In a review of pharmacological treatment studies of those with ID and schizophrenia, Duggan and Brylewski (1999) concluded that many studies could not be included in their review due to lack of randomization or placebo control. Inclusion criteria for this review included both participants with ID, schizophrenia, and both ID and schizophrenia. Many studies also lacked participants with ID and SSD diagnoses, so they could not be used for comparison reasons in this study. Ultimately, only one study fit their inclusion criteria (Foote, 1958). Unfortunately, with only one study meeting their inclusion criteria, the study was unable to contribute as much to the literature as the authors initially hoped. The authors cited the lack of included studies to be "a reflection of a genuine dearth of usable material" (p.102) and not strict inclusion criteria for their study. More research needs to be completed to better understand how this disorder affects individuals with ID.

Recent breakthroughs in psychopharmacology have increased the ability of the mental health profession to improve treatment of psychopathology in both the normal and ID population. However, the limited verbal communication skills often associated with varying levels of ID seriously limit the effectiveness of client-patient dialogue (Sovner, 1986) and self-report data (Reiss, 1994) which are important in treatment planning. Shortcomings in feedback

from patients hamper the ability to tailor treatment plans in a way to improve the quality of life for individuals with ID, such as less restrictive living situations.

Antipsychotic drugs have improved the lives of many with schizophrenia since their introduction in the 1950s (Briggs, 1989; Clarke, 2001; Ereshefsky, Wantabe, & Tran-Johnson, 1989; Liberman, 2005). Chlorpromazine and other neuroleptic drugs have had success in reducing positive symptoms such as delusions and hallucinations, but have little ability to reduce negative symptoms (Clarke, 2001). These drugs may act to improve a person's ability to function outside of an institutional setting, but still leave much to be desired in terms of rehabilitation outcomes. The efficacy of these medications within the ID population appears to be similar to the general population; although fewer studies have been conducted with these individuals.

Maintenance of treatment also appears to affect outcomes. Following the treatment of acute symptoms, it appears that outcomes are better if maintenance doses of antipsychotic treatments are given for one year (Johnson, 1979). With maintenance treatments, approximately 33% of patients remain relapse-free within a 2-year period compared to 20% without. Within 5 years, about 80% of patients relapsed after medication was discontinued (Johnson, Pasterski, & Ludrow, 1983). Problems with adverse effects of medications have led to the best practice of maintaining patients on the minimum number of medications at the minimum effective dosages. Briggs (1989) found the use of monitoring systems such as interdisciplinary teams and behavioral intervention committees have allowed the use and maintenance of psychotropic drug use to drop to 20% of what it was without such committees within institutionalized settings. These results highlight the relative lack of long term treatment effectiveness. Due to the chronic nature of the disorder, lifelong treatment is a realistic expectation; improving our abilities to treat

these disorders would be of great benefit. The following review of available medications will evaluate some of the most commonly prescribed medications for SSD.

Available Medications

A number of pharmacological treatments exist for the treatment of psychotic disorders. Clozapine (Clozaril), has been approved for the treatment of schizophrenia. The benefits of this medication include effectiveness in some of those who have been resistant to treatment with other drugs. It appears to be at least as effective as other drugs while improving both positive and negative symptoms of schizophrenia (Ereshefsky et al., 1989). The main drawbacks include neutropenia, a blood disorder which leaves those afflicted more susceptible to infection (in 3% of patients), requiring stringent hematological monitoring; thereby bringing the cost of medical care up significantly. However, improvements from the remission of severe psychotic symptoms may justify the higher costs of Clozapine treatment. Clozapine was found to improve negative symptoms more than Risperidone (Risperdal) in as little as three weeks (Robinson, Lieberman, Sheitman, Alvir, & Kane, 1997).

Risperidone is among the newer atypical antipsychotic medications available. Some researchers have indicated that it has the potential of reducing both positive and negative symptoms with even fewer adverse effects than many other antipsychotics (Ereshefsky et al., 2003). Its effectiveness has been relatively promising when compared to some other antipsychotic medications (Rémillard, Pourcher, & Cohen, 2005). In addition, Risperidone is available in a long-acting injectable form which also appears to be safe and well tolerated in patients with schizophrenia and schizoaffective disorder (Lindenmayer, Khan, Eerdekens, Hove, & Kushner, in press). Pharmacological studies have also taken note of behavioral problems.

Lithium has been shown to effectively treat problem behaviors such as elevated moods and distractibility (Aman, Collier-Crespin, & Lindsay, 2000).

A large double-blind study of atypical antipsychotic drugs examined the effectiveness of antipsychotic drugs in patients with chronic schizophrenia. Researchers found Olanzapine (Zyprexa) to be the most tolerable of included medications examined, having the fewest patients discontinue because of side effects. Olanzapine was more tolerable than Risperidone, Quitiapine, and Ziprasidone (Lieberman, Stroup, McEvoy, Swartz, Rosenheck, Perkins, et al., 2005). Olanzapine has also been found to be very effective with negative symptoms (Emsley & Oosthuizen, 2003). However, discontinuation rates of medications were extremely high in this study; reportedly due to undesirable side effects including weight gain and metabolism changes. Other studies have found improvement in negative symptoms of schizophrenia from Olanzapine (Tollefson, Sanger, & Beasley, 1997). Olanzapine was also found to improve depressive signs and symptoms in recovering patients with schizophrenia (Tollefson, 1997). These depressive symptoms are noted as the most likely to improve clinical outcomes for these patients (Hogarty, 1995). A study comparing Olanzapine to Haloperidol (Haldol) and placebo found it to be superior for treating negative symptoms (Tollefson et al., 1997)

Quetiapine (Seroquel) has been found to improve attentional, motor, and visuo-motor skills as well as executive functioning without increasing motor side effects across a wide variety of neuropsychological tests through eight weeks of treatment (Arvanitis & Rak, 1997). Quetiapine appears to be an effective and well-tolerated treatment for schizophrenia (Akdede, Alptekin, Kitis, Arkar, & Advardar, 2005).

Aripiprazole (Abilify), a recently approved second-generation antipsychotic, has also been found to be effective and well-tolerated when combined with typical antipsychotic batteries

used within the SSD population (DeLeon, Patel, & Crismon, 2004). Given the high rate of polypharmacology within SSD, this is promising. However, control for additional psychotropic drugs within this sample was not thoroughly discussed. Caution should be noted with these results as they appear to be sponsored in part by a pharmaceutical company. Much more research is necessary on this treatment, but it does show promise.

Researchers who have evaluated the side effects of antipsychotic drugs have increased the quality of the literature in recent years. Atypical antipsychotics have shown promise by having more favorable side effect profiles than those of typical antipsychotics. Fifty-one institutionalized adults with ID participated in a study examining side effect profiles of three groups were studied. One group had no psychotropic medication, one group was taking atypical antipsychotics (risperidone or olanzapine), and one group took typical antipsychotic drugs (thioridazine, chlorpromazine, or haloperidol). Utilizing the Matson Evaluation of Drug Side Effects (MEDS) scale, the groups taking no psychotropic medications and the atypical antipsychotics did not differ from one another on side effect measures. Both groups had significantly fewer side effects than participants who were taking typical antipsychotics (Advokat, Mayville, & Matson, 2000).

The focus on investigating pharmacological treatments for schizophrenia is important and appears to have done much to improve the lives of individuals with schizophrenia. However, one should also not ignore the behavioral and cognitive treatments for delusions and other symptoms of schizophrenia. Related to these behavioral and cognitive treatment options are social and adaptive variables. The importance of considering social and adaptive variables during both the diagnostic and treatment planning process can not be overlooked (Matson, Mayville, Lott, Bielecki, & Logan, 2003).

Although side effect profiles have improved with the emergence of atypical antipsychotics, adverse side effects are still an undesirable byproduct of common medications (Lieberman et al., 2005). Cognitive and behavioral treatments do not carry the same side effects and thus offer distinct advantages over medication. Behavioral treatments are also more likely to be successful in treating individuals with severe ID based on their cognitive limitations. Specifically, an increase in the frequency of verbal expressions of delusions in response to attention, approval, and reinforcement has been documented. Making social and other reinforcers contingent on the non-expression of delusions decreased the occurrence of delusions (Ayllon & Haughton, 1964). A cognitive-behavioral model supported by Watts, Powell, & Austin (1973) and Johnson, Ross, & Mastria (1977) described strategies based on modifying attitudes, or the "ownership" of experiences individuals believe themselves to be living. However, when dealing with clients who have limited communication skills, the utility of these approaches are significantly reduced.

Other Considerations

One contested treatment for schizophrenia is psychotherapy – specifically psychodynamic psychotherapy (Stone, 1986). Freud, who normally argued in favor of psychotherapy, believed it was not suitable for individuals with schizophrenia. This view is even more likely to be shared with severe or profound ID based on their cognitive levels (Clark, 2001). Some guidelines recommended by those who advocate for psychotherapy in the treatment of schizophrenia would be that it should be offered only if one is capable of responding, essentially requiring a level of verbal ability to receive a diagnosis of schizophrenia (Kendell, 1988).

In spite of these reservations, psychotherapy does have some support. Combination treatments which include psychotherapy have been successfully used for those patients with adequate communication skills successfully (Fromm-Reichmann, 1948; Normand & Bluestone, 1986). Opponents of psychotherapy point out several shortcomings of its clinical utility. The first disadvantage has been mentioned; the requirement of communication abilities, especially verbal, is above the level of some patients. This can be specifically due to ID, other concurrent mental or physical illnesses, or a combination of any of these items. Also, opponents are quick to point out that in some studies, psychodynamically orientated psychotherapy has not been shown to have any proven value in the treatment of schizophrenia in people of normal intelligence (Mueser & Berenbaum, 1990). Another identified shortcoming of psychotherapy is the reported adverse effects in managing schizophrenia.

A number of treatments have been outlined and their effectiveness discussed. Within the realm of ID, schizophrenia must be examined. There are many similarities between the general and ID population when discussing SSD. Both will be reviewed and discussed.

Schizophrenia in the Intellectually Disabled

Background

Formal descriptions of what appears to be schizophrenia emerged starting in the late 1800's. W. W. Ireland described a 17-year-old female in his monograph *On Idiocy and Imbecility* (1877) who 'had some delusions, especially that a man in the neighbourhood used to throttle little children and throw them down dead by the roadside. This, she assured me, was quite true, in an entirely convinced voice' (249-253). A study in 1934 also cited "much overlapping of the respective syndromes" and further pointed out a presumed co-existence of schizophrenia and ID in the same patient (Rosanoff, 1934). Difficulties in diagnosis were apparent long ago and unfortunately may not be much easier today. Clinicians still struggle to properly identify schizophrenia in the mentally retarded population.

Over the years, making the diagnosis of schizophrenia in persons with ID has been a source of controversy and debate in the clinical literature (Turner, 1989). The controversy is surprising, considering the DSM-IV (American Psychological Association, APA, 2000) states "that there is no evidence that the nature of a given mental disorder is different in individuals who have mental retardation" (p. 42).

At one time, some believed mental deficiency to be genetically linked to schizophrenia. Kallman, Barrera, Hoch, & Kelly (1941) was among the first to disprove this notion. As a result of this, the DSM-IV does acknowledge the difficulty involved in differential diagnosis within this population. The positive features of schizophrenia for individuals with severe and profound ID, at least in terms of frequency, resemble the clinical picture of schizophrenia without ID (Johnstone & Frith, 1996). Specifically, those symptoms seem to be hallucinations, delusions, and disorganized speech (Cherry, Penn, Matson, & Bamburg, 1999). Negative symptoms seem

to be markedly under-represented in this group. Bamburg et al. (1999) suggested diagnostic overshadowing as one possibility to explain the differences found in negative symptoms between groups. Further, Reiss, Levitan, & Szyszko (1982) discussed how the presence of ID decreases the significance of behaviors associated with psychopathology, touching on why diagnostic overshadowing exists in the mentally retarded population. Communication deficits complicate nearly all diagnostic criteria, including both positive and negative symptoms of schizophrenia. This needs to be considered when discussing difficulties found in diagnosing SSD in the ID population.

Research involving diagnostic overshadowing has been mixed; overall there was relatively little support in clinical research. One main concern in this area of research continues to be methodological; although alternative approaches are suggested, oftentimes none are specified (Mason & Scior, 2004). Studies have found that 10-59% of individuals with ID meet diagnostic criteria for mental illness (Didomenico, 1994). Furthermore, Didomenico (1994) found diagnostic overshadowing tends to occur in areas of personality disorders, while behavior disorders are often attributed to ID. One meta-analysis found effect sizes across experiments involving diagnostic overshadowing to be small to moderate (White, Nichols, Cook, & Spengler, 1995). Most research does not support diagnostic overshadowing. Another study found many disorders believed to be commonly overlooked to be readily and commonly diagnosed (Lennox, 1996). Hunter (1995) also failed to find evidence of diagnostic overshadowing. Professional experience was not found to have an effect on diagnostic overshadowing, but was found to improve diagnostic accuracy; which concluded that diagnostic overshadowing is unrelated to professional experience with individuals with ID (Reiss, 1983).

Diagnosing schizophrenia in persons with ID is quite difficult. This issue has been discussed as early as 1936; Duncan et al. (1936) found 38% of hospitalized individuals with schizophrenia to be "dull or defective". This was criticized by Slater (1936), who stressed difficulties in carrying out psychological tests on "retarded schizophrenics", arguing the tests on such people were worthless. From a genetic standpoint, Slater pointed out that prevalence rates of schizophrenia were similar (given his information) in the normal and "defective" populations. Further support for the lack of a genetic link between schizophrenia and ID was published by Kallman, Barrera, Hoch, & Kelly (1940). This study did find high rates of schizophrenia in monozygotic twins (up to 81.7%). Bleuler (1950) stated "in idiocy a number of other diseases are involved which must not be confused with schizophrenia" (p. 287). He did not object to, or claim, that schizophrenia is a cause of "idiocy". However, he stated none of his patients with schizophrenia were "idiots" (Bleuler, 1950).

Prior to the general use of operational definitions and pharmacological treatments beginning in the 1950s, psychiatric theories were rapidly changing. Fundamentals relating to presentation of psychosis were similar, including the belief that all forms of psychosis could exist, that symptoms were fairly typical, and that combined conditions were a relatively likely occurrence (Beier, 1919; Berkley, 1915; Gordon, 1918). Unfortunately, without operational definitions, one cannot be sure the researchers were describing the same symptoms in the same populations. James (1939) found that 11% of the ID population he sampled had definite signs of psychosis based on signs of dissociation and mannerisms. Pollock (1945) found higher incidence of mental illness among those with subnormal intelligence. Interestingly, the rate declined as intelligence increased. Others found that forms of insanity were similar in "mental defectives" and "non-defectives" (Rohan, 1946). O'Gorman (1954) found a psychosis

prevalence rate of 29% in a mental hospital using objective criteria (e.g. seclusiveness, mannerisms and attitudes, delusions, violence, and classical verbigeration). MacGillivray (1956) found a 5.5% prevalence rate of psychosis in a review of 209 "idiots". Again, one must keep in mind the lack of operational definitions and diagnostic criteria during this time.

Due to the difficulties associated with diagnosing schizophrenia in this population, special considerations should be taken. One commonly accepted belief is that it is important for clinicians with special expertise in the area be involved in the diagnostic process as well as when antipsychotic medications are used in treatment (Došen & Day, 2001).

Sturmey (1998) wrote a historical overview of psychiatric diagnoses in the ID population, which included a review of the relationship between dual diagnosis and applied behavior analysis. Sturmey's review focused on the difficulty of diagnosing psychiatric disorders in severe and profound ID patients is discussed, along with problems of making such diagnoses in the borderline to mild ID populations. Between 1976 and 1993, the diagnosis of mild ID has decreased greatly in the United States. However, at this same time, the label of "learning disabilities" increased by over 200% (U.S. Department of Education, 1995). The mean IQ of children diagnosed with learning disabilities has steadily decreased over this same time period (Gottlieb, Alter, Gottlieb, & Wisher, 1994). Other labels listed by Sturmey are deemed to be more socially acceptable, and the author lists such labels as; Emotionally Disturbed, Autistic Disorder, Pervasive Developmental Disabilities, or Learning Disabled. Because of this information, one must be wary when figures such as prevalence rates of SSD are cited across time periods.

Prevalence of Schizophrenia in the ID Population

Within the mild range of intellectual disability, schizophrenia occurs approximately three times more frequently than in the general population (Heaton-Ward, 1977; Turner, 1989). As a whole, researchers report prevalence rates twice to three times as high as the general population. The generally accepted prevalence rate of schizophrenia in the general population is 1% (Murray, 1986). However, as IQ level decreases, prevalence rates tend to decrease. This is best explained as resulting from the increased difficulty involved in diagnosing schizophrenia in patients as their IQ levels decrease (e.g., Lund, 1985; Reid, 1994).

As previously discussed, there is considerable difficulty in diagnosing schizophrenia in the ID population (Reiss et al., 1982). A large number of cases end up being diagnosed as Psychotic Disorder, NOS; this is often presumed to be because of the difficulties in communication as levels of ID increase (O'Brien, 2002). Rates of psychiatric disorders (including schizophrenia) in the ID population have been found to be higher than the general population (Došen & Day, 2001). In fact, diagnostic rates of psychopathology in the ID population are markedly greater than the general population (Nezu et al., 1992; Reiss, 1995; Rojahn & Tassé, 1996). Diagnoses of Psychotic Disorder, NOS and other similar diagnoses are more accepted as well as applicable in cases where the ability to communicate is hampered by intellectual ability (O'Brien, 2002). This is often a result of the inability for clinicians to identify positive symptoms as diagnostic criteria for schizophrenia, leading to diagnoses of related psychotic disorders.

Additional reasons for the decline in prevalence rates for schizophrenia exist. Multiple reasons exist for the transition of diagnoses of schizophrenia to those of psychotic disorders within individuals with ID. Some believe schizophrenia manifests initially with cognitive

impairment and is followed by psychosis. These cognitive impairments, and the associated deficits of ID, may enhance one's susceptibility to developing the symptoms characteristic of schizophrenia. A third suggestion is that a common cause may give rise to both conditions, and lastly the co-occurrence of both conditions is coincidental, although highly unlikely (Sanderson, Doody, Best, Owens, & Johnstone, 2001) Research into biological links, such as changes in brain volume between ID, patients with schizophrenia, or both, has been inconclusive in determining cause/effect relationships. However, there is limited support from researchers showing a common cause for the conditions could exist, such as meningitis or obstetric complications, pointing out the importance of family history and genetic links (Sanderson et al., 2001).

Deb, Thomas, & Bright (2001) found prevalence rates of schizophrenia to be 4.4% and delusional disorder to be 1.0% within a community-based population between the ages of 16 and 64 with varying levels of intellectual disability. The overall rate of psychiatric illness was similar to that of the general population, but schizophrenia was significantly higher than the general population. Other studies found prevalence rates of schizophrenia to be near 3.0% (Reid, 1989a). These results all support prior prevalence rates cited by Turner (1989), Heaton-Ward (1977), and Eaton & Menolascino (1982). Earlier studies looking at prevalence rates in hospital settings found prevalence rates to be between 2 and 10% (Forrest & Ogunremi, 1974; Forrest, Hay, & Kushner, 1968; Russel & Tanguay, 1981; Wright, 1982). Community samples from this era found rates between 3 and 5% for current psychosis and 8% for lifetime prevalence (Corbett, 1979; Göstason, 1985).

The question of how SSD presents itself in persons with ID is a complex question that appears best broken down into distinct areas. There are difficulties in how to assess for SSD and

inherent difficulties with differential diagnosis due to significant diagnostic criteria overlap among psychotic disorders. Within the ID population, diagnosis becomes even more difficult due to deficits within the population.

Presentation of Schizophrenia

Overview

One area which has been relatively well researched is the age of onset of schizophrenia within the ID population. The mean age of onset of schizophrenia within the ID population has not been found to be different than the general population (Heaton-Ward, 1977; Hucker, Day, George, & Roth, 1979; Reid, 1972). Disorders of thought and speech are often unexceptional in the ID populations, although phenomenon such as echolalia can be easily determined and are not as indicative of mental illness in ID as they are in adults of normal intelligence. Within the severe and profound ID populations, a significant level of verbal fluency is usually required to communicate and identify many of the major clinical symptomology associated with Schizophrenia (Reid, 1989a) and other related disorders. Early studies have suggested that catatonic phenomena were more prominent in individuals with ID (Heaton-Ward, 1977). Other researchers describe alternating states of excitement and stupor, which are described as bordering on affective psychoses and periodic catatonia (Reid & Naylor, 1976).

Assessment Schizophrenia in the ID Population

The *Diagnostic Assessment for the Severely Handicapped – II* (DASH-II) is an 84-item informant based psychopathology screening instrument for persons with severe and profound ID. Each item is scored on a 3 point scale based on frequency of behavior, duration of time the behavior has occurred, and the severity of the behavior. This rating method includes 13 subscales representing major psychiatric disorders; 1) Anxiety, 2) Depression, 3) Mania, 4)

PDD/Autism, 5) Schizophrenia, 6) Stereotypies, 7) Self-injury, 8) Elimination, 9) Eating, 10) Sleep, 11) Sexual, 12) Organic, and 13) Impulse. The DASH-II has good psychometric properties, inter-rater reliability is .86 and test-retest reliability is .84 (Matson, 1995). Norming was originally conducted on 506 severely and profoundly mentally retarded persons from four institutions in Louisiana and Wisconsin. Data from 658 severely and profoundly retarded Texas residents were later added to this data.

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

Test-retest reliability for items in the Schizophrenia subscale were found to be 100% agreement for the Frequency, Duration, and Severity portions. The kappa values were .58, .56, and 1.0 respectively (Matson, 1995). Intraclass interrater reliability correlations for the seven Schizophrenia subscale items has been found to be .46. The Frequency portion has a 93% interrater agreement with a kappa coefficient of .22. The Duration portion has 92% interrater agreement with a kappa coefficient of .32. The Severity potion has 97% agreement with a kappa coefficient of .13 (Matson, 1995).

Items are scored on three dimensions; frequency, duration, and severity. Cut-off scores of 1 *SD* above the mean were determined based on prevalence rates of psychopathology previously identified in the mentally retarded population (Borthwick-Duffy, 1994a; Hamilton, 1995). Since the DASH-II is a screening instrument, it is considered better to overestimate the

number of individuals with disorders. Initial screens may produce some false-positives, but will keep false negatives to a minimum. Those individuals identified with clinical elevations can be more closely examined by clinicians in order to accurately determine whether or not a psychiatric disorder exists. This approach also helps emphasize the importance of clinician's judgment when determining diagnoses (Matson & Smiroldo, 1997).

Bamburg et al. (1999) found that 80% of individuals with elevated levels on the schizophrenia subscale of the DASH-II met criteria for psychiatric disorders shared either clinical features with schizophrenia (i.e., Psychotic Disorder NOS) or psychomotor features consistent with neuroleptic side-effects often seen among persons with schizophrenia (i.e., Stereotypic Movement Disorder). Bamburg et al. (1999) concluded that the DASH-II appears to be adequate for identifying behaviors and symptoms that are consistent with schizophrenia and is therefore a reasonable screening tool for this disorder (Bamburg et al., 1999; Cherry, Penn, Matson, & Bamburg, 1999). However, due to its relative lack of specificity for schizophrenia, the DASH-II should not be used as a sole diagnostic instrument. The vital role of clinical judgment should never be overlooked; screening instruments such as the DASH-II are useful for identifying individuals requiring additional scrutiny regarding diagnoses. Cherry et al. (1999) found positive symptoms including hallucinations, delusions, disorganized speech, paranoia, and disorganized thinking. They reported negative symptoms occurring at a lower rate, and specified flat affect, withdrawal, and anxiety-related problems as those falling under Lenzenweger and Dworkin's (1996) four factors of schizophrenia phenomenology.

Symptoms identified by the DASH-II which have associated scores on the *Questions About Behavior Function* (QABF) can help predict whether behavioral or pharmacological treatments will be more effective. Frequency ratings for the QABF have been found to be

similar across age groups for four of the DASH subscales, with older adults showed longer duration and/or greater severity ratings than younger adults (Applegate, 1999).

Dual Diagnosis

Within the mild range of intellectual disability, Reid (1989b) reported a diagnosis of schizophrenia in a mentally retarded person can be established with reasonable certainty on the basis of the clinical features and the natural history of the disorder. Since the early 1970s, the literature has seen a switch from primarily diagnostic focuses in the literature to causality and behavioral management.

Schizophrenia, as well as major mood disorders, often presents in a similar fashion to the classic clinical presentation in the normal population (Hucker, Day, George, & Roth, 1979; Meadows, Turner, Campbell, & Lewis, 1991; Reid 1972; Sovner and Hurley, 1983), although the majority of this research focused on individuals with mild or moderate ID. Meadows et al. (1991) found the age of onset tends to be earlier in individuals with mild ID. Interestingly, the Schedule for Affective Disorders and Schizophrenia (SADS) was found to be effective for individuals down to IQs of 50 (Meadows et al., 1991). This is preliminary evidence for attempting to use widely accepted mainstream clinical interview in individuals with mild ID. Empirical research is needed to justify the use of such measures in individuals with ID. Limited research on other scales for diagnosing mental illness in the ID population exists. A study by Hatton et al. (2005) used the Positive and Negative Syndrome Scales (PANSS) and the Psychotic Symptom Rating Scales (PSYRATS) on a population with mild ID and psychiatric diagnoses based on ICD-10 diagnostic criteria. Both scales were able to differentiate between a psychotic population and a non-psychotic population based on auditory hallucination subscales. However, the PANSS negative symptoms subscale and the PSYRATS delusions subscales did not

differentiate between groups. The authors felt the assessments were promising for positive symptoms, but caution is needed regarding negative symptoms. A better tool for negative symptoms may be the Scale for Assessment of Negative Symptoms (SANS; Andreasen, 1989a; Andreasen 1989b). This measure is based on ICD-10 criteria, indexing affective blunting, alogia, avolition/apathy, anhedonia/asociality, and disturbances of attention. Items are ranked on a six-point scale, have good reliability, and correlates well with the PANSS (Bouras, Martin, Leese, Vanstraelen, Holt, Thomas, et al., 2004).

Based on the existing research, it is easy to conclude that little research has been done in the area of schizophrenia within the severe and profound ID population. Research reiterates the problem of language deficits hampering or precluding self-reports of delusions, hallucinations, and other expressions of disordered thought that are the hallmark diagnostic criteria of schizophrenia (Cherry et al., 1999). Their work followed the Lenzenweger and Dworkin (1996) four-factor structure of schizophrenia phenomenology, comparing symptoms within the severe and profound range of ID to those with normal intelligence. The researchers hypothesized that evidence showing similarity of symptoms may help identify common signs of schizophrenia and assist in developing empirically-based criteria for diagnosing schizophrenia within this population.

Differential Diagnosis

Notable facts regarding schizophrenia presentation in the severe and profound range of ID emerged from result of Cherry et al., (1999). Negative symptoms were reported to have occurred, but they were reported at a lower level than those involving reality distortion or disorganizations. The most prevalent negative symptoms reported included flat affect, withdrawal, and anxiety-related problems. A range of positive symptoms emerged, primarily

hallucinations, delusions, and disorganized speech. In terms of frequency, the positive features of schizophrenia resemble the clinical picture of schizophrenia without ID (Cherry et al., 1999). However, negative symptoms were reported to be considerably under-reported when compared to adults of normal intelligence. Diagnostic overshadowing was discussed as it may influence the identification of negative symptoms such as flat affect and withdrawal. The problem of how these lower reported rates of negative symptoms may be explained by how the information is obtained. An alternative hypothesis to explain the difference in symptom presentation was offered by Cherry et al. (1999). Symptom information is often obtained from psychiatric reports, which often have a bias favoring overt behaviors. These behaviors are often the positive symptoms, which staff find disturbing and do not focus on the negative symptoms less troublesome to caretakers. Ultimately, the difference in presentation may be an artifact of positive symptoms causing excess work and problems compared to negative symptoms, which generally require less attention and effort from caregivers.

Direct observations by properly trained and neutral third parties may be useful in obtaining a more accurate estimate of the presentation of both positive and negative symptoms of schizophrenia. An interesting theory discussed included a shift of the diagnosis of schizophrenia to concentrating on specific symptoms presented by patients. Even though there is a relative lack of specificity for the DASH-II on schizophrenia and its ability to identify specific symptoms presented in both schizophrenia and psychosis, it may have excellent clinical utility to identify symptoms to target for treatment (Cherry et al., 1999).

A study involving assessment of schizophrenia in the profound ID population using the DASH-II contributed a few major findings to the literature. Using the DASH-II, it is possible to differentiate between those who are diagnosed and have an elevation on the schizophrenia

subscale and those who either have an elevation on the schizophrenia subscale without a diagnosis, as well as those with only profound ID, on the endorsement of items related to verbal behavior. It also seems to be sensitive to symptoms consistent with psychotic disorders (Bamburg et al., 2001).

Matson et al. (2003) found that schizophrenic adults had significantly higher scores in Independent Living Skills of the *Vineland Adaptive Behavior Scales* (VABS) (Sparrow et al., 1984) than the general ID population. Other research supports these results, finding that social skills are often adequate or strengths of those diagnosed with schizophrenia (Mueser & Bellack, 1998).

Schizophrenia has been found to have significant impacts on the adaptive functioning of those with the disorder. Instruments such as the VABS look specifically at the areas of communication, daily living skills, and socialization. Other deficits with significant effects on individuals' lives exist. Behavior problems, one such area that affects many areas of individuals' lives, is the focus of this research.

Behavior Problems with Intellectually Disabled

Overview

Individuals with ID often present with a multitude of behavioral problems. These maladaptive behaviors are often defined as behaviors which interfere with how a person executes tasks expected of them (Morreau, 1985). Among individuals with ID there is a significantly higher risk for displaying problem behaviors. These problem behaviors include, but are not limited to, self-injurious behavior, aggression, disruption, and stereotypic behaviors (Borthwick-Duffy, 1994b; Borthwick-Duffy & Eyman, 1990; Rojahn, Borthwick-Duffy, & Jacobson, 1993) and maladaptive behaviors (Eyman & Borthwick, 1980).

Problem behaviors can be classified in multiple ways, which further complicates research as different assessment scales often break behaviors into different subscales. Some ways in which behavior problems are commonly grouped include: hurtful to self, hurtful to others, destructive to property, disruptive behavior, unusual or repetitive habits, socially offensive behavior, withdrawal or inattentive behavior, and uncooperative behavior (McGrew et al., 1991; McGrew & Bruininks, 1989; Meyers, Nihira, & Zetlin, 1979; Morreau, 1985).

Problem behaviors have also been found to increase in severity and frequency as ID levels increase (Jacobson, 1988). Aberrant behavior disorders (e.g., stereotypies, SIB, elimination disorders, eating disorders, sleep disorders, sexual disorders, impulse control, and organic syndromes) are commonly diagnosed within the severe and profound ID groups (Cherry, Matson & Paclawskyj, 1997). Interestingly, impulse control disorders were identified in over half the sample in this study.

Past studies have shown some of these previously mentioned problem behaviors (self-injury and aggression) as well as less frequently cited behavior problems (pica) may be

maintained by a number of variables. These variables include variables in the environment (e.g., attention, escape, tangibles) as well as non-social factors (e.g. sensory stimulation) (Durand & Crimmins, 1988; Iwata, Dorsey, & Slifer, 1982).

Additional problem behaviors have been identified utilizing the *Questions About Behavior Function* (QABF; Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2000). The QABF is another assessment tool aimed at identifying the function of behaviors. In this study, numerous behavior problems were reviewed and their functions were examined. Within the severely and profound ID populations, this study identified behavior problems less often cited in the literature. These behaviors included pica, rumination, food stealing, and food refusal in addition to those commonly cited such as aggression and self-injurious behavior (Applegate, Matson, & Cherry, 1999).

Prevalence Rates

Prevalence rates of behavior problems have been documented for individuals with ID. A sample of over 400 institutionalized adults found prevalence rates of at least one problem behavior to be approximately 73%. Similar prevalence rates were found in a study examining a special care district in Finland using the Behavior Problems Inventory. Over 250 adults were studied and a prevalence rate of 70% was found for behaviors considered to be "more than a mild problem". Roughly 10% of these behaviors were deemed to be potentially dangerous (Saloviita, 2002).

Behavior problems are more common in the ID population than the general population; furthermore these behavior problems are often quite serious (Borthwick-Duffy & Jacobson, 1993; Matson, Hamilton, & Duncan, 1997; Rojahn, 1986; Schroeder, Rojahn, & Oldenquist, 1991) and are oftentimes among the predominant reasons for institutionalization (Harrow, 1987;

Clark, 2001). Deeper understanding of what problems are present in this population is likely to aid in treatment and increase quality of care for patients suffering from SSD (Emerson, 2001).

The factor structure of problem behaviors in persons with ID has been examined by many researchers. However, determining what areas problem behaviors should be categorized in proves to be difficult. Some researchers have categorized these problem behaviors into only a few areas (Rojahn, Matson, Lott, Esbensen, & Smalls, 2001). In this study, three factors of problem behaviors were identified. Stereotyped behaviors were found at a prevalence rate of 54%, self-injury at a rate of 43%, and aggressive/destructive behaviors at a rate of 38% (Rojahn et al., 2001). However, not all researchers believe problem behaviors should be categorized so simply. Other classifications include: hurtful to self, hurtful to others, destructive to property, disruptive behaviors, uncooperative behaviors, unusual or repetitive habits, socially offensive behavior, withdrawn or inattentive behavior, and uncooperative behavior (McGrew, Ittenbach, Bruininks, & Hill, 1991; McGrew & Bruininks, 1989; Meyers et al., 1979, Morreau, 1985).

Global prevalence rates for specific behaviors have been identified in previous studies. Within the intellectually disabled population, aggression rates have been found to be 2.1%; self-injurious behavior to be 9.3%, and property destruction to be 7.1%. Within institutional settings, prevalence rates appear to be even higher. Aggression rates are reported to be 12.8%, self-injurious behavior to be 31.2%, and property destruction to be 29.6%, (Borthwick-Duffy, 1994). These rates tend to be consistent with those reported in the literature. One additional behavior problem noted was making loud noises and swearing, but prevalence rates were not reported for this behavior (Joyce, Ditchfield, & Harris, 2001). In day program settings, the most commonly experienced problem behaviors are found to be agitation, irritability, stereotypic behaviors, hyperactivity, and noncompliance (Galli, Fabienne, & Nadine, 2005).

Three possible ways problem behaviors have been associated with general psychiatric disorders have been proposed. One suggestion reason is that they represent the atypical presentation of the disorder's core symptoms. The second possibility is that these problem behaviors are occurring as a secondary feature of psychiatric disorders. The third possibility that the psychiatric disorders act as establishing operators for operant-maintained problem behaviors (Emerson, 2001). Certainly the third item warrants consideration given the earlier discussed links between problem behaviors and living situations. Once problem behaviors are properly identified, functional analysis can help identify items maintaining problem behaviors. The link to treatment planning is clear.

It has been established that individuals with ID are more prone to developing mental illness (Borthwick-Duffy, 1994a; Galli et al., 2005); they are also prone to develop serious maladaptive behaviors including self-injurious behavior, stereotypies, and aggression (Rojahn et al., 1993; Schroeder, Rojahn, & Oldenquiest, 1991). Higher psychopathology scores on the DASH-II have been linked with higher rates of maladaptive behaviors such as self-injurious, stereotyped, or aggressive/destructive behaviors (Matson et al., 1997). Samples with ID and schizophrenia spectrum disorders would be expected to have higher scores on the *Behavior Problems Inventory* (BPI) than control groups without psychopathology.

Assessment Instrument

The current version of the BPI, the BPI-01, was originally designed as a survey instrument in the 1980s (Rojahn, 1984; 1986). To reduce confusion, the BPI-01 will be referred to as the BPI for the remainder of the manuscript. The scale has been refined multiple times over the years. The current three-subscale structure with a total of 49 items was validated by confirmatory factor analysis (Rojahn et al., 2001). The BPI focuses on three areas of

maladaptive behaviors: self-injurious behaviors, aggressive/destructive behaviors, and stereotyped behaviors. Identification of these problems is the first step in reducing them in order to improve the quality of life for these individuals. Schizophrenia has previously been moderately linked to the stereotyped behavior subscale of the BPI (Rojahn, Matson, Naglieri, & Mayville, 2004); although SSD have not been specifically sampled against other groups for comparison purposes. The author heartily agrees with the statement by Rojahn et al. (2004) that "behavior problems among individuals with predominantly severe to profound ID are significantly, positively, and clinically meaningfully related to certain psychiatric conditions." (p. 34). This topic warrants much more attention by researchers.

According to accepted definitions, self-injurious behaviors are those behaviors which can cause damage to one's own body and occur repeatedly in unvarying presentation (Rojahn et al., 2001). Stereotyped behaviors are peculiar or inappropriate voluntary acts, which occur habitually and repetitively. Aggressive or destructive behaviors are abusive, deliberate attacks against other individuals or objects. Reliability and validity for the BPI has been found to be reasonable (e.g. Rojahn et al.; 2001, Sturmey, Fink, & Sevin, 1993; Sturmey, Sevin, & Williams, 1995). The BPI also has very high inter-interviewer agreement as well as test-retest reliability in the "good" to "excellent" range (Rojahn et al., 2001).

Characteristics

As previously noted, there is a lack of research investigating how behavior problems affect adults with ID and SSD (Bleuler, 1950; Heaton-Ward, 1977; Turner, 1989). Problems within the research exist; inclusion criteria have been vague and operational definitions lacking (Heaton-Ward, 1977). Bleuler was one of the skeptics of diagnosing schizophrenia in the ID population; cautioning clinicians of the differences between catatonia and stereotyped behavior.

He insisted great care be taken in the process of differential diagnosis. His insight into the difficulties involved in differential diagnosis is still relevant today.

Some headway has been made in our ability to diagnose and understand schizophrenia; we are now better able to diagnose schizophrenia in individuals with severe and profound ID, which was not believed possible two decades ago (Reid, 1989b). Behavior problems are among the most easily identifiable factors restricting living environments and have major influences over daily living situations, quality of life, ability to maintain employment, and placement in more restrictive living environments (Harrow, 1987; Clark, 2001). Higher rates of behavior problems have been linked to higher rates of reinstitutionalization of individuals with ID (Intagliata & Willer, 1982). Research focusing on identifying what the common behavior problems are for individuals with SSD and ID compared to other individuals within institutionalized settings is needed.

Because of the issues arising from instituting behavioral treatment plans in institutional settings, there is a need to discuss acceptability of treatments. Hastings, Boulston, Monzani, & Tombs (2004) claim reinforcement based interventions (DRO, DRA, etc.) as well as less intrusive interventions are rated as more acceptable to staff. These staff are key to the effectiveness of treatment plans, so their acceptance is likely to lead to better plan follow-through. Interestingly, the acceptable level of intrusiveness was found to increase with the severity of the problem behavior (Hastings et al., 2004).

Purpose

Identification of behavior problems are among the most important impediments involved in the placement of individuals with ID into the community (Intagliata, 1982). Proper identification of behavior problems should therefore help treatment planning (Harrow, 1987; Clark, 2001) as well as placement in less restrictive living environments. Further, comorbid psychopathology may prove to be a factor that further exacerbates these behaviors. Certainly, better understanding the relationship between ID, comorbid psychopathology, and behavior problms is a high stakes proposition given the implications of challenging behavior for these individuals' quality of life. One particularly serious group of comorbid disorders, likely to receive highly invasive medication and psychological interventions are SSD. Therefore, the principle goal of this study was to evaluate the implications of SSD on ID adults with challenging behaviors when compared to persons with other forms of psychopathology and ID and behavior problems alone. If differences were found across groups, then an analysis of specific behaviors that differentiate these groups would be valuable. Knowing the specific challenging behavior difference might further illuminate factors that could prove fruitful in better understanding etiology, assessment, and treatment.

Methodology

Participants

Participants in this study were residents at Pinecrest Developmental Center (PDC) in Pineville, Louisiana and Columbia Developmental Center (CDC) in Columbia, Louisiana. PDC is a state-run facility that provides 24-hour supervision to nearly 575 individuals with varying levels of ID and adaptive functioning and CDC provides the same services to nearly 60 individuals. Individuals residing at PDC and CDC also represent a variety of ages, races, and backgrounds. Participants in this study included both males and females. All diagnoses were provided by licensed clinical psychologists and/or board certified psychiatrists and were based on DSM-IV-TR criteria.

The disorders included in this study as "SSD" include Schizophrenia, Schizoaffective Disorder, Schizophreniform Disorder, Brief Psychotic Disorder, Shared Psychotic Disorder, Psychotic Disorder Due to a General Medical Condition, Psychotic Disorder Not Otherwise Specified, and Substance-Induced Psychotic Disorder. A power analysis was conducted using G-Power, a software package designed to assist in estimating required sample sizes for proper experiments. Using an alpha level of .05 with a medium effect size (.50) and the recommended power of .80 (four times 1-alpha), the sample size required for this level of power would be 128. Achieving this level of power was not possible for this experiment, as this is a relatively uncommon group of disorders. Because of the limits in SSD group participants, the other psychopathology group and no psychopathology group each consisted of as many participants as could be included in the SSD group. The sample size originally consisted of approximately 22 participants per group. The total sample size originally was 66 participants, but after inclusion criteria were considered, the final sample included 42 participants.

Three groups of individuals with ID participated in this study. These groups included individuals with both ID and SSD, ID and psychopathology not included in the SSD group, and individuals with ID with no psychopathology or elevations on any of the DASH-II subscales to serve as a control. All subjects met criteria for a DSM-IV-TR diagnosis as determined by a licensed Psychologist or a board certified Psychiatrist. The SSD group required further inclusion criteria of an elevation on the DASH-II Schizophrenia subscale to insure proper group placement. The other psychopathology group was added to insure that behavior problems measured are due to the SSD and not linked to general psychopathology within individuals with ID.

A total of 22 subjects per group were included in the initial data pool. Analysis of current signs of psychopathology via the DASH-II left 14 participants per group meeting inclusion criteria for this study, totaling 42 subjects in the final subject pool. Demographic characteristics of the final sample population are presented in Table 1. Participants were matched on demographic variables including age, level of ID, gender, presence or absence of psychotropic medications, visual impairments, and auditory impairments. Chi-square analysis was conducted to assess whether there was a difference in psychotropic mediations between groups. The results of the test were significant, $X^2(3, N = 42) = 10.27, p<.01$. Results of chi-square analyses found no significant differences on any remaining matched variables.

Table 1

Demographic Characteristics of Groups (N=42)

		SSD (n=14)	Psychopathology (n=14)	Control (n=14)
Age				
	0-20	0 (0%)	0 (0%)	0 (0%)
	21-40	4 (28.6%)	0 (0%)	2 (14.2%)

(Table 1 cont.)

41-60	7 (50.0%)	10 (42.9%)	7 (50.0%)
61+	3 (21.4%)	4 (28.6%)	2 (14.2%)
Gender			
Female	9 (64.3%)	9 (64.3%)	9 (64.3%)
Male	5 (35.7%)	5 (35.7%)	5 (35.7%)
Level of ID			
Mild	3 (21.4%)	2 (14.2%)	2 (14.2%)
Moderate	5(35.7%)	5(35.7%)	5(35.7%)
Severe	4 (28.6%)	4 (28.6%)	4 (28.6%)
Profound	2 (14.2%)	3 (21.4%)	3 (21.4%)
Visual Impairment			
Yes	0 (0%)	1 (7.1%)	0 (0%)
No	14 (100%)	13 (92.9%)	14 (100%)
Auditory Impairment			
Yes	0 (0%)	0 (0%)	0 (0%)
No	14 (100%)	14 (100%)	14 (100%)
Psychotropic Medications			
Yes	13 (92.9%)	11 (78.6%)	1 (7.1%)
No	1 (7.1%)	3 (21.4%)	13 (92.9%)

Many participants had multiple axis I diagnoses. Only one of the SSD participants had more than one axis I diagnosis, while the psychopathology group had five participants with multiple axis I diagnoses. Within the SSD group, five participants were diagnosed with schizophrenia, five with psychotic disorder, NOS, two with schizoaffective disorder, and two with delusional disorder. One participant within the SSD group had a comorbid anxiety disorder.

Two participants the psychopathology group were diagnosed with anxiety disorders. One participant in the psychopathology group was diagnosed with attention-deficit/hyperactivity disorder and another had a diagnosis of conduct disorder. Two participants were diagnosed with autistic disorder and two more with pervasive developmental disorder, NOS. Five participants in the psychopathology group were diagnosed with bipolar disorder. Two participants in the

psychopathology group were diagnosed with depressive disorders and two more with mood disorders. Two participants in the psychopathology group were diagnosed with stereotypic movement disorder. The control group had no axis one diagnoses, by definition.

Measures

The *Diagnostic Assessment for the Severely Handicapped – II* (DASH-II). The DASH-II was used for participant selection and group assignment. The DASH-II is a psychopathology screening instrument for use in the ID population (Matson, 1995). The DASH-II contains 13 subscales: (1) autism and other pervasive developmental disorders, (2) organic syndromes, (3) anxiety, (4) mood disorders, (5) mania, (6) schizophrenia, (7) stereotypies and tics, (8) self-injurious behavior, (9) elimination, (10) eating disorders, (11) sleep disorders, (12) sexual disorders, (13) impulse control and other miscellaneous behaviors. Each item is scored on its frequency in the prior two weeks (not at all = 0, between 1 & 10 times = 1, more than 10 times = 2) as well as the length of time the behavior has occurred (less than one month = 0, between 1 and 12 months = 1, over 12 months = 2) and its severity (caused no disruptions or damages = 0, caused no damages but interrupted the activities of peers, family, or staff members at least once = 1, caused injury or property damage at least once = 2).

Behavior Problems Inventory (Rojahn, 2001). The BPI is an informant-based behavior rating scale for observable behavior problems in individuals with ID. This measure consists of three subscales: self-injurious behavior, stereotyped behavior, and aggressive/destructive behaviors. The Self-Injurious Behavior subscale contains 14 items, the Stereotyped Behavior subscale contains 24 items, and the Aggressive/Destructive Behavior subscale contains 11 items (Rojahn et al., 2004). Observed behaviors must have occurred one or more times within the previous two months. Each item is scored on two scales, a five point frequency scale (never = 0,

monthly = 1, weekly = 2, daily = 3, hourly = 4) and a four-point severity scale (no problem = 0, a slight problem = 1, a moderate problem =2, a severe problem = 3). In order to shorten item definitions, each of the three subscales is precluded by generic definitions applying to all items within the subscale.

Procedure

The investigator was trained on the administration of the DASH-II and BPI in accordance with the procedures outlined in their respective administrative manuals. Data was collected with these measures from direct-care staff at the Pinecrest Developmental Center and Columbia Developmental Center. Informants used in this study were familiar with and worked with the participant for at least six months prior to data collection. Both measures were administered to the same informant to decrease the likelihood of inter-rater error occurring. Both the DASH-II and BPI were administered for the same participant within the same week.

Results

Data were included for all experimental subjects meeting inclusion criteria of clinical elevations on the DASH-II Schizophrenia subscale and their matched triads. A multivariate analysis of variance (MANOVA) was performed on the data obtained from the BPI in order to determine whether the three diagnostic groups differed on the frequency or severity any of the three dependent factors as well as the total frequency and severity scores of the BPI. The 3 x 8 MANOVA was conducted with three subject groups and three subscale groups of the BPI as well as an overall score on the BPI as dependent variables. Both frequency and severity of endorsements were evaluated for these items.

The results of Wilks' Lambda test on the BPI suggest a significant main effect of diagnostic group, Wilks' $\Lambda = .38$, $F(7,33) = 2.92$, $p < .05$. Thus, the null hypothesis which states that no differences in behavior problems would be found across groups does not hold. Significant main effects were found for the frequency $F(2,39) = 5.43$, $p < .05$ and severity $F(2,39) = 5.15$, $p < .05$ of the Stereotyped Behavior subscale of the BPI. Significant main effects were found for the overall frequency $F(2,39) = 4.28$, $p < .05$ and overall severity $F(2,39) = 4.79$, $p < .05$ of BPI scores. In addition, the severity of Aggressive/Destructive Behaviors approached, but did not reach, statistical significance $F(2,39) = 2.98$, $p = .068$. Results of the MANOVA are summarized in Table 2 below.

Table 2
Significance of BPI values across groups

BPI Behavior		F Value	p-value
SIB			
	Frequency	1.96	.16
	Severity	2.01	.15

(Table 2 cont.)

Stereotypies		
Frequency	5.43	.01[a]
Severity	5.15	.01[a]
Aggressive/Destructive Behavior		
Frequency	0.95	.40
Severity	2.88	.07
Total Frequency	4.28	.02[a]
Total Severity	4.79	.01[a]

Note. [a] Significant omnibus tests

In order to more closely examine observed differences from the MANOVA, post-hoc pair-wise comparisons were conducted with the group means on each significant subscale. The Student Newman-Kuels (SNK) test was chosen because of its greater power than the Tukey HSD test (Hinkle, Wiersma, & Jurs, 2003). The increase in power comes at the cost of a minimal increase over the a priori alpha level set in the original MANOVA.

Significant mean differences were found on the frequency and severity scores of the Stereotypy Subscale The SSD and psychopathology groups had significantly higher mean endorsements on Stereotypy frequency subscales than the control group, $p<.05$. The psychopathology group did not differ significantly from control group ($p=.15$) or the SSD group ($p=.09$) on severity on the Stereotypy subscale. The difference between the SSD and psychopathology groups were non-significant for frequency of stereotypies ($p=.36$) and severity of stereotypies ($p=.09$). The SSD group differed significantly from the control group ($p<.05$) but not the psychopathology group ($p=.34$) on overall frequency of stereotypies and severity of stereotypies ($p=.15$). These results are summarized in Table 3.

Table 3
BPI scores.

BPI Group	SSD	Psychopathology	Control
SIB			
Frequency	2.93	2.71	0.71
Severity	1.86	2.50	0.57
Stereotyped Behavior			
Frequency	13.0[a]	9.71[b]	1.71[a,b]
Severity	7.79[a]	4.14[b]	1.07[a,b]
Aggressive/Destructive Behaviors			
Frequency	5.78	3.71	2.86
Severity	5.79	2.86	1.36
Overall BPI Scores			
Frequency	21.71[a]	16.14[b]	5.29[a,b]
Severity	15.43[a]	9.50[b]	3.00[a,b]

Note. Scores in a row sharing superscripts are significantly different at $p < .05$. For all subscales, higher means indicate higher symptom endorsements.

Specific items were analyzed with pair-wise comparisons on group means in order to determine if behaviors differed across groups for each behavior in either frequency or severity. There were no differences between groups within the Self-injurious Behavior subscale for frequency or severity. Within the Stereotyped Behaviors subscale, differences were found between groups. The SSD group scored higher on frequency of waving or shaking arms than the control group, $p<.05$. The psychopathology group approached, but did not meet significance for differences from the SSD group ($p=.06$), but was different from the control group ($p=.49$). The SSD group scored higher on frequency of having repetitive body movements than the control group ($p<.05$). The psychopathology group did not differ from the SSD group ($p=.54$) or the control group ($p=.06$). The SSD group and psychopathology group scored higher than the

control group on frequency of repetitive hand movements ($p<.05$) but not each other ($p=.81$). The SSD group scored higher than psychopathology and control groups in frequency and severity of grimacing ($p<.05$), whereas the psychopathology and control groups did not differ in terms of frequency ($p=.68$) or severity ($p=.77$).

Within the Aggressive/Destructive Behavior subscale, only one item had significant differences between groups. The SSD group differed significantly from the psychopathology and control groups on frequency and severity of being verbally abusive with others ($p<.05$). The psychopathology and control groups did not differ on frequency ($p=.77$) or severity ($p=.46$) of being verbally abusive with others. Post-hoc scores are summarized in Table 4 for specific items found to differ based on group membership.

Table 4
Mean scores for specific BPI items.

BPI Group	SSD	Psychopathology	Control
Waving or shaking arms			
Frequency	1.07[a]	0.29	0.00[a]
Severity	0.50	0.21	0.00
Engaging in repetitive body movements			
Frequency	1.50[a]	1.14	0.00[a]
Severity	0.71	0.50	0.00
Having repetitive hand movements			
Frequency	1.50[a]	1.36[b]	0.00[a,b]
Severity	0.57	0.57	0.00
Grimacing			
Frequency	0.86[a,b]	0.14[a]	0.00[b]
Severity	0.64[a,b]	0.07[a]	0.00[b]
Being verbally abusive with others			
Frequency	1.71[a,b]	0.57[a]	0.43[b]
Severity	1.64[a,b]	0.50[a]	0.21[b]

Note. Scores in a row sharing superscripts are significantly different at $p < .05$. For all subscales, higher means indicate higher symptom endorsements.

Convergent validity between the stereotypy-related of both measures was examined. Results of chi-square analysis found significant correlations between items of both scales. Significant positive correlations were found for the DASH-II item involving repetitive body movements (item 31 in Table 5) with BPI items involving specific repetitive movements, such as rolling one's head ($r(41) = .42$, $p<.05$), repetitive hand movements ($r(41) = .63$, $p<.05$), complex hand/finger movements ($r(41) = .73$, $p<.05$), repeatedly manipulating objects ($r(41) = .39$, $p<.05$), and sustained finger movements ($r(41) = .75$, $p<.05$). In addition, correlation with a nearly identical item, having repetitive body movements, was extremely high ($r(41) = .67$, $p<.05$).

The DASH-II item involving sustained motor activities (item 36) also showed good convergent validity. From the BPI, pacing was highly correlated with this item ($r(41) = .65$, $p<.05$), as was yelling/screaming ($r(41) = .66$, $p<.05$), bursts of running around ($r(41) = .67$, $p<.05$), manipulating objects repeatedly ($r(41) = .34$, $p<.05$), sustained finger movements ($r(41) = .32$, $p<.05$), grimacing ($r(41) = .53$, $p<.05$), and waving/shaking hands ($r(41) = .54$, $p<.05$).

The DASH-II items involving repeating words and sounds (item 41) and talking about the same subject/concern repeatedly (item 49) also showed convergent validity with the single verbal related BPI item, yelling/screaming, ($r(41) = .32$, $p<.05$), ($r(41) = .65$, $p<.05$) respectively.

Two items on the DASH-II did not correlate well with the BPI stereotypy items. Items involving collecting/hoarding objects and sucking/mouthing parts of one's body correlated with 1 and 0 items on the BPI stereotypy subscale respectively. Hoarding items correlated highly with repeatedly manipulating objects on the BPI ($r(41) = .40$, $p<.05$). Thus, these measures seem to have good divergent validity as well. Complete correlations for all stereotypy items can be found in Table 5 below.

Table 5
Pearson correlation coefficients between frequencies of BPI Stereotyped Behavior and DASH-II Stereotypies subscales

	DASH 21	DASH 28	DASH 31	DASH 36	DASH 41	DASH 49	DASH 77
BPI 16	.22	-.15	.30	.10	-.24	-.06	-.06
BPI 17	-.06	-.10	-.08	-.11	.12	-.17	-.04
BPI 18	-.06	.21	.21	.17	.08	.04	-.04
BPI 19	.17	-.17	.11	.11	.27[a]	.31[a]	-.06
BPI 20	-.04	-.07	.42[a]	-.08	-.11	-.12	-.03
BPI 21	-.06	-.10	-.08	-.11	-.15	-.17	-.04
BPI 22	-.15	-.05	.76[a]	.25	.20	.32[a]	.30
BPI 23	.23	.07	.32[a]	.65[a]	.31[a]	.34[a]	-.07
BPI 24	-.04	-.07	-.06	-.08	.08	-.12	-.03
BPI 25	.10	-.07	.63[a]	.31	.33[a]	.27[a]	.29
BPI 26	.19	.06	.31	.66[a]	.32[a]	.65[a]	.17
BPI 27	-.04	-.07	-.06	.31	.28	-.12	-.03
BPI 28	.57[a]	.14	-.08	.20	.20	.16	-.03
BPI 29	-.04	-.07	-.06	-.08	.08	-.12	-.03
BPI 30	.38[a]	.10	.11	.67[a]	.48[a]	.41[a]	-.04
BPI 31	-.07	-.12	.73[a]	.04	-.18	-.07	-.04
BPI 32	-.05	.40[a]	.39[a]	.34[a]	.29	.18	-.03
BPI 33	-11	.08	.75[a]	.32[a]	.23	.18	-.06
BPI 34	.40[a]	-.14	.13	.28	.34[a]	.18	-.05
BPI 35	.23	.01	.59[a]	.47[a]	.29	.22	-.08

(Table 5 cont.)

BPI 36	-.06	-.10	-.08	.08	.08	-.03	-.04
BPI 37	-.04	-.07	-.06	-.08	.04	-.12	-.03
BPI 38	.36[a]	-.15	.26	.53[a]	.22	.36[a]	-.06
BPI 39	.51[a]	.21	.21	.54[a]	.39[a]	.33[a]	-.04

[a] Significant correlations at p<.05

In order to examine whether the severity of symptoms on the schizophrenia subscale of the DASH-II and the severity of challenging behaviors on the BPI covary, two analyses of covariance (ANCOVA) were conducted. The first ANCOVA was conducted with group membership as the independent variable, the total severity score on the Schizophrenia subscale of the DASH-II as the covariate, and the total frequency score from the BPI as the dependent variable. Results of the ANCOVA indicated that total frequency scores from the BPI did covary with frequency scores from the Schizophrenia subscale of the DASH-II, $F(2,38) = 5.90$, $p<.05$.

The second ANCOVA was conducted with group membership as the independent variable, the total severity score on the Schizophrenia subscale of the DASH-II as the covariate, and the total severity score on the BPI as the dependent variable. Results of the ANCOVA indicated that the scores total severity scores from the BPI did not covary with severity scores from the DASH-II, $F(2,38) = 1.74$, $p=.19$.

Discussion

Behavior problems specific to individuals with ID and comorbid psychopathology were the primary purpose of this study. Specific behavior problems in the SSD population and general psychopathology differed from controls, a new and significant finding within the population studied. Previous research mostly focused on comorbid Axis I disorders, but not behavior problems associated with these disorders (Borthwick-Duffy, 1994a). Despite the SSD group not having a unique behavior problem profile; these data suggest that targeting behaviors for individuals with psychopathology and ID could be effective for successful transitions into less restrictive placements (Harrow, 1987; Clark, 2001). Specifically, both the SSD and psychopathology groups evinced higher scores than the control group on both frequency and severity of items on the Stereotyped Behavior subscale of the BPI. Furthermore, when total behavior problems endorsed on the BPI were examined, the SSD and psychopathology groups were found to be higher than for controls on frequency and severity. These differences were not found on the Self-injurious Behavior subscale, although differences in the Aggressive/Destructive subscale did approach significance. These results highlight one area found to differentiate behavior problems based on the presence of psychopathology, while identifying another area which may warrant further investigation. Studies utilizing greater sample size would be useful to further investigate the Aggressive/Destructive behavior subscale, as it approached significance even with this small sample.

Analysis of correlational data suggested good convergent validity between subscales of the BPI and DASH-II examining stereotypies within the ID population. Questions on the DASH-II Stereotypies subscale generally encompassed multiple BPI questions. Therefore, the high but not perfect correlations on more specific BPI questions might be expected given more

specific data. High correlations were found between expected items on the measures. For some DASH-II items, significant correlations with BPI items were not found. Examination of these DASH-II items revealed them to be independent of items from the BPI, showing good divergent validity as the BPI does not closely address behaviors such as hoarding or hand-mouthing.

Many potential explanations exist for differences found between groups. Much existing research compared only a specific disorder to a control group, and not against a group with other Axis I diagnoses (Emerson, 2001; Forrest et al., 1974). These groups are often medicated and have a host of behaviors which may or may not be related to their diagnoses (Singh, Matson, Cooper, Dixon, & Sturmey, 2005). One interesting finding is that the SSD and psychopathology were medicated, often to help control challenging behaviors. Despite medication, behavior problems were still significantly higher than for controls. These findings are significant for a number of reasons. This could mean that very serious problem behaviors are only partially controlled with these medications. How serious would these behaviors would be if patients were without medication? Considering the difficulties with medication compliance in this population (Lieberman et al., 2005), investigating the differences if behaviors between a group of medicated individuals with SSD, a group that is not prescribed medication for SSD, and a previously but not currently medicated group could provide insight into the role of medication on behavior problems within the ID population.

Another possibility to consider is that these medications are less effective than generally believed. Although the sample size is small, evidence of significantly higher rates and severities of problem behaviors were found in a group with a specific disorder as well as a group with general psychopathology. Both groups were medicated significantly more often than the control group, yet behavioral differences remained. The question of whether resources may be better

spent on other aspects of patient care as opposed to the heavy reliance on medication certainly warrants attention. The effectiveness of antipsychotic medications treating specific symptoms of SSD are consistently upheld in studies, despite findings of studies of behavior problems in the ID population (Akdede et al., 2005; Arvanitis, 1997; DeLeon et al., 2004; Duggan et al., 1999; Emsley et al., 2003; Ereshefsky et al., 1989; Foote, 1958; Lindenmayer et al., in press; Rémillard et al., 2005; Robinson et al., 1997; Tollefson et al., 1997). These findings suggest medication may be effective in reducing many of these troublesome behaviors, but not alleviating these symptoms. Behavioral approaches to treatment in conjunction with this pharmacological approach seem appropriate, including skill building and social skills training (Matson & Andrasik, 1982).

As previously discussed, there was a difference between groups in their use of psychotropic medications. This was expected, as individuals without an Axis I diagnosis should not be expected to be on psychotropic mediations without reason. The most likely explanation for the use of psychotropic medications within this control group would be to control behavior problems, which would have created a less-than-representative control population for this study. Based on this rationale, the control group is believed to be an accurate representation of institutionalized adults with ID. The SSD and psychopathology groups did not differ on their use of psychotropic medications. The commonality of treatment with psychotropic medication across many Axis I disorders is well documented for both the ID population (Holden et al., 2004; Lund, 1985; Singh et al., 2005) including guidance for treatment decision-making (Sturmey, 1995) and use in the general population (Lakey et al., 2005)

Pair-wise comparisons on specific items yielded mixed results. Table 4 presented results of noteworthy post-hoc comparisons. Only two of fifty-two items were able to significantly

distinguish the SSD group from the psychopathology and control groups. However, five items were able to successfully distinguish the control group from at least one other group. Grimacing was the one behavior within the Stereotyped Behaviors subscale that was able to differentiate the SSD group from the psychopathology and control groups. The second item in which scores were significantly higher for the SSD group than both comparison groups was being verbally abusive to others. This item falls within the Aggressive/Destructive Behavior subscale on the BPI. Verbal aggression has been linked with disorders included within the SSD group in previous literature (Foley, Kelly, Clarke, McTigue, Gervin, Kamali et al., 2005; Milton, Amin, Singh, Harrison, Jones, Croudace et al., 2001).

Results of one ANCOVA revealed that overall frequency of behavior problems on the BPI significantly covaried with frequency of endorsements on the Schizophrenia subscale of the DASH-II. This result was expected, as behavior problems rarely present as a single problem behavior (Saloviita, 2002). However, the ANCOVA examining severity of these same scales found no differences. One potential explanation for these results could be different operational definitions regarding severity between the two scales. The BPI asks how serious behaviors are when they occur, whereas the DASH-II orients the severity of behaviors based on their effect on others (interrupting others, causing harm or damage to property, etc). Furthermore, many of the behaviors in the Schizophrenia subscale of the BPI are not expected to cause significant troubles for others. Items including talking to oneself, talking to inanimate objects, hearing voices, or mood being totally unrelated to what is going on around a person may certainly be odd, but are not often going to cause significant disruption in the lives of others around them within this population.

Although significant differences between the SSD and psychopathology groups were not always found, many items were able to be differentiated from the control group. These data suggest Axis I diagnoses in general may significantly contribute to behavioral problems leading to restrictive placement. The inability to create a target plan to improve behavior specifically within the SSD population does not keep one from targeting those behaviors identified which are significant based on psychopathology in general. The effectiveness of behavior checklists within this population has been well documented (Rojahn, 1984; Rojahn et al., 2001; 2003; Singh et al., 1991). One can still utilize behavioral instruments to identify these target behaviors which potentially restrict placement and address them accordingly.

A number of strengths and weaknesses exist in this study. The inclusion of only participants currently clinically elevated on the Schizophrenia subscale of the DASH-II was a strength of the study. Another particular strength of this study was the inclusion of participants from multiple sites, which is uncommon to find in the literature within the ID population. Participants were screened to be sure that there were signs of active psychosis at the time of rating in addition to being diagnosed with a SSD. Furthermore, results of correlations between stereotypy related subscales of both measures suggested accurate and consistent responses to questions between the two measures.

Sample size was likely the most significant weakness of this study. The power of the final sample was less than ideal, potentially leading to Type II errors. The original sample included 22 participants per group. Over one-third of the gathered sample was excluded due to inclusion criteria to insure participants experiencing forms of active psychosis due to the DASH-II Schizophrenia subscale. This does not insure diagnostic accuracy, but does lend support to correct diagnoses and proper placement within this study. A larger sample size would have been

preferred, but the stringent inclusion criteria and low prevalence rates of the studied disorders made this impossible. The trade off of power for quality of the sample seemed appropriate. However, this did highlight one problem with research in this area. The inherent difficulties of recruiting a large SSD sample is one of the likely reasons large-scale studies are rare within this population. Another potential weakness of this study may be the grouping of disorders rather than studying one specific disorder. However, within the study of these disorders, grouping these disorders is common (Erkiron et al., in press; Esterberg & Compton, 2005; Lysaker et al., 2005; Lysaker & Hammersley, in press; Margolese et al., 2006; Matsura et al., 2004; Mizrahi et al., 2006; Rodríguez-Sánchez et al., 2005; Roofeh et al.; 2006, Sim et al., 2004; Ueland et al, 2004). Regardless, the study of one disorder independent of related disorders would remove a potential source of variation and improve future studies.

Future research should focus on utilizing larger samples than what is often found in the literature. The current study, along with many studies in the literature today, may have lacked the power to adequately identify differences within groups. Larger samples may be able to identify whether or not behavioral differences exist across varying levels of intellect within the SSD population. Behavioral checklists such as the BPI could be extended to individuals with borderline intellectual functioning as well as normal intellectual functioning with SSD. Furthermore, controlling for specific medications would be beneficial as a means of reducing error within the study of challenging behavior in the SSD population. In addition, particular areas of behavior problems not specifically identified with the BPI may also be worthy of study when considering factors affecting potentially restrictive living situations. A study involving additional behaviors may be beneficial. One would suspect behaviors such as medication incompliance (Petrakis, Nich, & Ralevski, 2006), general opposition to authority, and defiance

may have significant implications regarding one's ability to maintain more independent living situations.

In summary, the results of this study showed few specific items of the BPI endorsed differently between the SSD group and the psychopathology group. However, more significant differences were found between groups with psychopathology versus controls on BPI items. Results suggest these behavior problems may be associated with psychopathology rather than being specific to SSD. Although not enough differences were found between groups to support the creation of any behavioral profile of the SSD group, results did show good convergent and divergent validity of expected items between the BPI and DASH-II for the Stereotypic Behavior subscales of each item.

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Vita

Ryan Thorson is a third year doctoral student in clinical psychology at Louisiana State University in Baton Rouge, Louisiana. He received his Bachelor of Science degree in psychology and management from Minnesota State University, Mankato, in 2003. He graduated *magna cum laude*. He currently pursues a doctoral degree in clinical psychology under the direction of Dr. Johnny Lee Matson. His interests include clinical work and research with individuals with intellectual disabilities and mental health disorders in addition to administrative polices and procedures related to care and treatment for individuals with disabilities.