Depression in Children with Mental Retardation and Developmental Disabilities

A Dissertation

Presented in Partial Fulfillment of the Requirements for the Doctor of Philosophy Degree

by

Frank H. Kobe III, M.A.
The Ohio State University

***

1991

Approved by:

[Signature]
Advisor
Department of Psychology

Dissertation Committee:

Dr. David Hammer
Dr. Henry Leland
Dr. Michael Aman
Dr. James Mulick
ACKNOWLEDGEMENTS

I wish to thank Dr. David Hammer for his encouragement on this project. Through his calm guidance and support, he allowed me to pursue my own path in the field of MR/DD. This helped me understand that true scholastic inquiry is essentially a solo journey, fashioned by an attempt to answer one's own questions rather than following the pack.

Also, thanks go out to my other committee members, Dr. Henry Leland, Dr. James Mulick, and Dr. Michael Aman. Over the years, Dr. Leland has offered the perfect blend of philosophy and practical knowledge in understanding developmental disabilities. This will leave a lasting imprint on my development. Thanks also to Drs. Aman and Mulick who helped to expand my perspective of psychopathology among persons with MR/DD.

Special thanks is extended to those individuals and families that allowed me to come into their lives for a brief period of time, along with the clinic staff at Nisonger Center who contributed daily support during data collection.

Special appreciation goes to my family, Amy, Mark, and Paige for their tolerance and patience during the completion of this project. Without them, I would have never had the courage to strive for my dreams.
VITA

June 18, 1953.................. Born ~ Newark, Ohio

1975 .......................... B.S. Miami University,
Oxford, Ohio

1975-77 ....................... Counselor, Licking
County Juvenile Court
Newark, Ohio

1977-1982 ..................... Office Manager, Frank
H. Kobe Insurance,
Newark, Ohio

1982-1984 ..................... Counselor, Spencer
Halfway House and the
Licking County Alcoholism
Prevention Program,
Newark, Ohio

1984-1987 ..................... Behavior Management
Specialist, Licking County
Board of MR/DD, Newark, Ohio

1987-1988 ..................... Graduate Teaching Assistant,
Department of Psychology,
Ohio State University

1990-present .................. Psychology Intern, Franklin
County Board of MR/DD,
Columbus, Ohio

Major Field: Psychology

Specialization: Mental Retardation and Developmental Disabilities
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>VITA</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vii</td>
</tr>
<tr>
<td>CHAPTER I INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Issues in Diagnosis and Treatment</td>
<td>3</td>
</tr>
<tr>
<td>Basic Research Problem and Assumptions</td>
<td>6</td>
</tr>
<tr>
<td>Depression and Children with MR/DD</td>
<td>8</td>
</tr>
<tr>
<td>Childhood Depression</td>
<td>10</td>
</tr>
<tr>
<td>A Biosocial Model of Psychopathology</td>
<td>13</td>
</tr>
<tr>
<td>Behavioral Models of Depression</td>
<td>15</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>20</td>
</tr>
<tr>
<td>Research Hypotheses</td>
<td>22</td>
</tr>
<tr>
<td>Definitions</td>
<td>25</td>
</tr>
<tr>
<td>CHAPTER II LITERATURE REVIEW</td>
<td>27</td>
</tr>
<tr>
<td>Epidemiology of Emotional Disorders</td>
<td>28</td>
</tr>
<tr>
<td>Prevalence of Affective Disorders in Children</td>
<td>31</td>
</tr>
<tr>
<td>Diagnostic Criteria for Depression</td>
<td>33</td>
</tr>
<tr>
<td>Assessment of Depression in Children</td>
<td>37</td>
</tr>
<tr>
<td>Depression in Children with MR/DD</td>
<td>40</td>
</tr>
<tr>
<td>Behavioral Characteristics of Depression in Persons with MR/DD</td>
<td>44</td>
</tr>
<tr>
<td>Risk Factors for Childhood Depression</td>
<td>47</td>
</tr>
<tr>
<td>CHAPTER III METHODOLOGY</td>
<td>58</td>
</tr>
<tr>
<td>Subjects</td>
<td>58</td>
</tr>
<tr>
<td>Design</td>
<td>59</td>
</tr>
<tr>
<td>Measures Employed</td>
<td>62</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>70</td>
</tr>
<tr>
<td>CHAPTER IV RESULTS</td>
<td>73</td>
</tr>
<tr>
<td>CHAPTER V DISCUSSION</td>
<td>92</td>
</tr>
</tbody>
</table>
APPENDICES

A. Solicitation letters and consent............. 102
B. Data collection measures and raw data........ 106

REFERENCES.......................................................... 118
LIST OF TABLES

TABLE 1. Characteristics of the Sample..................... 75
TABLE 2. Children's Depression Inventory Means by Total Sample and High versus Low Depressive Symptom Groups......................... 77
TABLE 3. Parenting Stress Index Means by Total Sample and High versus Low Depressive Symptom Groups.... 79
TABLE 4. Pearson Correlations between the PSI Parent Domain and CDI Scores................................. 84
TABLE 5. Pearson Correlations between the PSI Child Domain and CDI Scores................................. 85
TABLE 6. Pearson Correlations between the Nisonger Child Behavior Rating Form and CDI Scores.... 86
TABLE 7. Relationships between Various Measures of Depression and Affect................................. 88
LIST OF FIGURES

Figure 1. High and Low Symptom Group Means Compared to Parenting Stress Index Norms................. 81

Figure 2. An Interactive Model of Depression in Children with Developmental Delays.............. 95
Chapter I

Introduction

Persons with mental retardation and developmental disabilities are generally recognized as having an increased risk for developing an emotional disturbance or psychiatric impairment (Chess, 1970; Matson & Barrett, 1982; Reiss, Levitan, & McNally, 1982; Menolascino & Stark, 1984). Further, conventional textbooks in psychiatry recognize the co-existence of MR/DD with all known psychiatric categories (Reid, 1981; Bernstein, 1988; Szymanski & Crocker, 1989).

While epidemiological studies of child psychopathology have indicated that children with developmental disabilities have a 4 to 5 times higher prevalence of emotional disorders than groups of normal children (Rutter, Graham, & Rule, 1970; Rutter, Tizard, Yule, Graham, & Whitmore, 1976), the primary focus of research has focused on the needs of adults with developmental delays (Sigman, 1985).

Diagnostic and treatment services directed toward children with a "dual diagnosis" is slowly beginning to emerge (Varley & Furukawa, 1991). This trend is likely to continue as researchers and clinicians gain new insights into the emotional and social development of children with developmental delays.
Given the increasing trend toward early intervention with developmentally delayed children, it is imperative that early detection and treatment of emotional disorders in this group be a priority. Since approximately 3% of all children may evidence some type of developmental delay, these children may comprise 12-15% of the total population of children with significant emotional disorders if one accepts the risk factor data reported in the work of Rutter et al. (1976).

These children are often subjected to a host of environmental risk factors related to the development of emotional disorders such as family dysfunction, repeated learning failure, social isolation, social deprivation, and, in some cases, institutionalization. Philips (1971) aptly summarized these issues when he remarked that "emotional problems (in children with developmental delays) are the same as those occurring in children with normal intelligence. Symptoms may be influenced by retardation, but understood in relation to life experiences" (p.39).

Although these children are substantially at-risk, their needs have traditionally been overlooked by mental health systems at-large. In most cases, this has resulted in poor access to specialized psychiatric and related support services (Matson, 1987). As such, mental health consultation is often non-existent or very limited for this group of children. Too few clinicians at the community level,
including those working primarily with persons with MR/DD, have the necessary training or experience to adequately diagnose emotional impairments or provide treatment that meets the needs of these children (Tanguay & Szymanski, 1980).

Since the major goal of program planning for children with MR/DD is to identify and intervene upon obstacles which may impede development, assessment must include both child and family considerations, particularly those which could lead to the development of an emotional disorder. A child experiencing an unidentified emotional disorder may develop a further lag affecting both cognition and social awareness. This may also reduce the positive impact of specialized educational and habilitation services provided to them.

Given the interactive effects of a child's emotional problems and family functioning and the increasing emphasis on family support services, professionals must devote particular attention to early diagnosis and treatment of this problem.

**Issues in Diagnosis and Treatment**

The diagnosis of emotional disorders among persons with MR/DD is a complex task. Often, the challenge is to identify specific symptoms which might be overlooked as a consequence of the person's cognitive or adaptive behavior deficits. Since accurate self-reporting of symptoms may be very limited, the clinician must be able to disassociate
features of developmentally appropriate behavior, resulting from the person's functioning level or characteristics of the environment, from behavior which may reflect common symptoms of an emotional disorder (Sovner, 1988).

Studies confirm that the presence of MR/DD does adversely influence the ability of the clinician to identify conventional psychiatric symptoms (Reiss, Levitan, & Szyszko, 1982; Reiss & Szyszko, 1983; Spengler, Strohmer, & Prout, 1990).

Reiss et al. (1982) introduced the term "diagnostic overshadowing" to describe instances when common symptoms of emotional disorders are mistakenly viewed as part of the clinical manifestations of MR/DD, rather than being indicative of a concurrent emotional disorder. They demonstrated, from presentations of case studies to clinicians, that common symptoms of an emotional disorder are frequently overlooked when the person is described as mentally retarded. As a result, the debilitating influence of an existing mental illness becomes overshadowed by the clinician's perception of these symptoms as salient features of a person's mental retardation (Spengler et al. 1990). Reiss and Szyszko (1983) demonstrated that professionals, regardless of experience level, often do not make the diagnosis of a co-existing emotional disorder despite the presence of overt symptoms from diagnostic criteria.
From a clinical perspective, the overshadowing phenomena is not surprising. For example, Pawlarczyk and Beckwith (1987) indicated that criteria for depression from the Diagnostic and Statistical Manual (DSM-III), (American Psychiatric Association, 1980) appeared to be applicable for persons with mild and moderate mental retardation. However, Jacobson and Ackerman (1989) reported that clinicians practicing with persons with MR/DD used DSM-III criteria to diagnosis psychiatric disorders primarily for persons functioning in the borderline range of mental retardation.

In many respects, the source of this problem may revolve around issues of comorbidity. This refers to the presence of several concurrent disorders which in combination make both diagnosis and treatment more difficult. It is likely that as measured intelligence and adaptive behavior decrease, there is a greater frequency of "mixed disorders" of emotion and conduct. As each of these conditions interact over the course of time, a change in one will involve a corresponding change in the other.

There is an increasing awareness among professionals that the mental health of children with MR/DD is an important issue. While the term "dual diagnosis" attempts to broadly categorize and delineate their needs, it does not capture the essence or range of emotional problems likely to emerge in these children.
This may stem from a limited understanding of specific categories of emotional problems among children presenting patterns of atypical growth and development such as those with MR/DD. Hence, research which can further our understanding of emotional disorders in children with MR/DD will likely contribute to better access to diagnostic and treatment services in the future for all atypically developing children.

**Basic Research Problem and Assumptions**

While most categories of emotional disturbance can be found among populations of persons with MR/DD, most individuals referred for assessment are those displaying problem behavior such as aggression, unacceptable social behavior, or resistance to programming (Borthwick-Duffy & Eyman, 1990). In children experiencing similar problems, the issue of emotional disorders may be overlooked despite the fact that disorders of emotion and conduct frequently exist in children.

A need exists to better understand and identify the clinical presentation of various types of emotional disorders in children with MR/DD. Even common disorders such as depression or anxiety, if left untreated, will likely present continuing problems over the course of the child’s development and create substantial problems for the families raising these children. A reasonable starting point would be
with those about which the least is known, such as childhood depression.

This study will focus upon depression among children with MR/DD. While the clinical manifestations of depression have been identified among children in general (Kovacs, 1989), only recently has depression been addressed among children with MR/DD.

In a sample of children from an inpatient child psychiatric unit, Matson, Barrett, and Helsel (1988) found depression to be prevalent among children with MR/DD. Interestingly, their data indicated that clinically significant ratings from instruments normed with non-delayed children were associated with diagnoses of depression in children with MR/DD. This work suggested that children with MR/DD may have a similar symptom presentation of depression as children without cognitive impairments.

This study builds upon the work of Matson et al. (1988) by using a multi-modal approach to the assessment of depressive symptomology among children with MR/DD. In addition, the issues of the comorbidity and risk factors for affective disorders among this group are explored.

The following theoretical models provided a basic framework and general guide for the study: 1) the social learning model of depression which underscores the role of social learning in the onset and maintenance of depressive symptomology (Lewinsohn, 1975), and 2) the biosocial model
of psychopathology developed by Matson (1985) which emphasizes the interaction of biological, psychological, and social variables in producing psychopathology among persons with MR/DD.

This research rests upon the assumption that the behavioral manifestations of depression for children with MR/DD will create extremely serious effects upon developmental processes involving both the child’s personal adjustment and social competence. Further, it is assumed that the effects of depression for this group of children is likely to be more devastating due to pre-existing deficits in learning, language, and social abilities.

Early detection and treatment of depression among this group of children is important to alleviate further adverse effects on development. Since an episode of major depression in normal children can last 7-9 months and an episode of dysthymia as much as 3 years (Kovacs, 1989), the developmental consequences of depression in the child with MR/DD may be especially severe.

Depression and Children with MR/DD

The majority of studies of depression among persons with MR/DD has been directed toward general diagnosis and treatment issues in adults (Matson & Barrett, 1982; Menolascino & Stark, 1984; Stark, Menolascino, Albarelli, & Gray, 1988). The literature regarding disorders of mood and affect, either as a primary diagnostic entity or in
association with other disorders is extremely sparse (Matson & Barrett, 1982). While several studies have examined depression among adolescents with MR/DD (Reynolds & Miller, 1985; Beck, Carlson, Russell, & Brownfield, 1987), only two (Dosen, 1984; Matson et al., 1988) have focused upon depression among children.

This general absence of depression data on children with MR/DD is a consequence of the current approach to most applied research on affective disorders. Protocols commonly exclude persons with mental retardation and developmental delays from studies of depression (e.g. measured I.Q. of 70 or below). This is presumably due to the increased possibility of an organic pathology of unknown origin which might confound results, as well as communication handicaps which make it difficult to obtain self-report data commonly used in assessment and diagnosis.

This state of affairs has resulted in a serious absence of knowledge regarding depression manifested by children with MR/DD. In light of this, it is interesting to note that Brumback, Jackoway, and Weinberg (1980) reported no relationship between measured intelligence and depression among 100 children referred to a university-based educational diagnostic center.

Assessment of depression using traditional diagnostic interviews and DSM-III-R criteria makes diagnosis difficult since children with MR/DD are unlikely to accurately report
symptoms. This creates a formidable challenge in the identifying depressive symptoms as well as in designing effective intervention and treatment strategies. Further complicating the assessment of depression is that children often present with a combination of affective and behavioral symptoms (Dosen, 1984; Matson et al., 1988; Brumback & Weinberg, 1977; Marriage et al., 1986. Woolston et al., 1989).

As noted previously, Matson et al. (1988) found that frequently used measures of child psychopathology were useful in the assessment of depression in children with MR/DD. These measures included the Child Depression Inventory (Kovacs & Beck, 1977) and the Child Behavior Checklist (Achenbach & Edelbrock, 1983). Both appeared to be effective in the assessment of depression in children with MR/DD. In addition, they reported both measures to be valid and useful in describing the relationships between various aspects of depressive symptomatology across all ranges of MR/DD. This is an interesting finding since children with depression have shown similarities in cognitive processes, symptom expression, and behavioral correlates (Kazdin, 1988).

**Childhood Depression**

Perhaps it is not surprising that the topic of childhood depression has been understudied among children with MR/DD, since only in the last decade has agreement been
reached about the existence of childhood depression as a diagnostic entity (Kovacs, 1989). Historically, a great deal of controversy has been generated by the topic.

Lefkowitz and Burton (1978) initially questioned the existence of childhood depression since behaviors thought to constitute depression were prevalent in children. They argued that if such behaviors remit over the course of development they cannot be considered to be pathological. This overly conservative view was contrasted by the work of Cytryn and McKnew (1974) who presented the concept of "masked depression". They believed that children might mask overt characteristics of depression by exhibiting behaviors characteristic of aggression, anxiety, or phobias.

While most researchers in childhood depression have currently abandoned the concept of masked symptoms (Kovacs, 1989), comorbidity of affective and behavior disorders in children remains an important issue in both diagnosis and treatment. For example, Woolston et al. (1989) found that in consecutive admissions to a child psychiatric inpatient facility, the prevalence of comorbid behavior plus affective/anxiety disorders exceeded 50% of the sample.

While the "masked depression" position has lost support, Carlson and Cantwell (1983) postulated that two or more childhood disorders could co-exist and often one of these may be depression. Their work establishes a framework for a conceptual understanding of comorbidity of emotional
disorders in children with MR/DD. Also, it is consistent with the current "dual diagnosis" concept which represents the most prevalent approach in discussing emotional disorders among persons with MR/DD. Given the high prevalence of behavior disorders among children with MR/DD, perhaps both issues of comorbidity and masking are relevant for this population of children.

Studies have shown that an overlap between various problems of children do exist (Jacobsen, Lahey, & Strauss, 1983). This is especially relevant with respect to conduct disorders, anxiety disorders, and depression (Woolston et al., 1989; Marriage et al., 1986) as well as depression coupled with anxiety disorders (Strauss, Last, Hersen, & Kazdin, 1988).

Certainly, the measurement of comorbid psychopathology is a challenge. However, several measures have been useful in describing these relationships among children. For example, Norvell and Towle (1986) reported that the Children's Depression Inventory and Child Behavior Checklist were useful in specifically examining comorbid relationships in childhood depression. Matson et al. (1989) also reported similar success using these measures in children with MR/DD.

Types of Depression

Depressive disorders have been traditionally conceptualized using a bipolar-unipolar classification.
The bipolar disorder is considered to be depression with or without mania, tends to have a higher genetic loading, and often includes the presence of major mood swings. Persons with unipolar depression tend not to exhibit the familial history of bipolar depressives and often symptoms can be traced to environmental events such as personal or life stressors.

The criteria employed by the *Diagnostic and Statistical Manual of the American Psychiatric Association-Third Edition-Revised* (DSM-III-R), (American Psychiatric Association, 1987) includes symptoms for major depression as well as other disorders with depressive features. These include dysthymia, adjustment disorder with depressed mood, and separation anxiety disorder.

In children, it appears that unipolar depression may be more prevalent in clinical settings since researchers have given most attention to this area (Matson, 1989). However, a diagnosis may include mania (characteristic of bipolar disorder), although it is rare and difficult to identify in children (Rappoport & Ismond, 1984).

For persons with MR/DD, unipolar depression has been observed in both clinic and community settings while bipolar disorder has been more recognizable in clinical settings (Chandler, Gualtieri, & Fahs, 1988). Perhaps, in persons with MR/DD, the drastic variability in mood allows for easier identification of bipolar states.
A Biosocial Model of Psychopathology

The search for causal factors to explain various categories of emotional disorders corresponds to the historical conceptualizations of mental illness. Issues of etiology are uniquely intertwined with controversies such as "nature versus nurture". However, there is general agreement that both a biological pre-disposition and stressful environmental conditions interact to precipitate the onset of emotional disorders.

Matson (1985) has adapted the biopsychosocial approach to psychopathology and related it to persons with mental retardation by outlining the contributions of biological, psychological, and social components to the development of emotional disturbance. It provides a comprehensive, yet flexible, theoretical base from which to understand emotional disorders among persons with mental retardation.

Examining the inter-relationships between classes of variables is likely to be the most appropriate approach to studying psychopathology among children with mental retardation. For instance, stress emanating from differing child expectations and treatment may be an ongoing issue for both the child and his/her family. If this stress is coupled with a positive family history, an emotional disorder might be more likely to develop.

Depression in particular is a disorder fostered by environmental stress, and stress occurring in the parent-
child system can precipitate depression in children (Dosen, 1984). Thus, a conceptual understanding of depression among children with MR/DD is most useful by considering variables from the child’s psychological/developmental characteristics and social environment.

Behavioral Models of Depression

A variety of etiological models have attempted to account for depression in children and adults. These range from biochemical models which explain depression as a result of abnormalities in brain neurotransmitters, such as norepinephrine and serotonin, to cognitive models involving the role of self-attribution in interpreting various events occurring in the person’s environment (Rehm, 1977).

In particular, parent psychopathology and environmental circumstances are frequently offered as a behaviorally-based etiology for depression. For example, depression in parents has been associated with both the early onset of depression (Orvaschel, Walsh-Allis, & Yee, 1988) and diagnosis of major depression in children (Kashani, Burk, & Reid, 1985).

Moreover, mothers of depressed children are less likely to express a positive affect toward their child (Cole & Rehm, 1986), and are more likely to have impaired attachment relationships with their child (Armsden, McCauley, Greenberg, Burk, & Mitchell, 1990).

Two behavioral models of depression are relevant to this investigation of depression in children with MR/DD.
These include: 1) the learned helplessness model of Seligman, and 2) the social learning model of Lewinsohn. Both attempt to explain the etiology of depressive behavior by examining the individual's response to environmental events.

Seligman (1981) argues that depressive behavior is maintained by an individual's expectation that his/her behavior will result in a high probability of an aversive outcome. As a consequence, the individual expects that no response in his/her behavioral repertoire will impact the likelihood of events.

Seligman describes that failure becomes attributed to internal events while success is viewed as a function of external events. Thus, in negotiating the demands of his/her environment, the depressed individual is likely to give up easily and is unlikely to put forth effort to change future events (see Weisz, 1979 for a general discussion of the learned helplessness concept in children with MR/DD).

An alternative model by Lewinsohn (1975) states that depressive behavior can result from and be maintained by the individual's social environment. Specifically, he hypothesizes that persons with depression receive insufficient levels of positive reinforcement for prosocial behavior from others in their environment. This results in changes in the person's environment which serve to both elicit and maintain depressive behavior.
Since both the origin and maintenance of depressed behavior is attributed to the social environment, the depressed person will be less likely to receive positive reinforcement for prosocial behavior when it is displayed. As a result, the person emits fewer prosocial behaviors. Those which are repeated are unlikely to be reinforced and "depressed" behavior begins to occur in greater frequency.

The low rate of response-contingent positive reinforcement serves as an antecedent or eliciting stimulus for depressive behaviors, and these behaviors are subsequently reinforced. In essence, the person begins to obtain positive reinforcement for depressed behavior in the form of sympathy and attention from others. While this cycle of sympathy and attention serve initially as social reinforcers, depressive behavior begins to create a pattern of withdrawal from positive social interactions with others resulting in significant changes in the person's family environment. These environmental changes then serve to maintain and precipitate worsening depression.

Lewinsohn hypothesizes that the low rate of reinforcement is dependent upon three components of the social environment: 1) the instrumental behavior of the person (e.g. social skills, adaptive behavior); 2) the decreased potential reinforcing events to occur, wherein contingent positive reinforcement can be obtained; and 3)
the availability of reinforcement in the environment, which is regulated by the presence of environmental stressors.

Of the two behavioral models, the social learning framework of Lewinsohn may be more applicable to the study of depression among children with MR/DD. This is due to Lewinsohn's emphasis on observable behavior rather than the attributional processes inherent in Seligman's model.

Features of the social environment are especially critical to developmental progress in children with MR/DD. Parent-child stressors may serve a key role in the development of depressive symptoms in these children. Since the ability to develop adequate social relationships is crucial to mental health, this area may be uniquely important in both parents and children with developmental delays. Thus, elements of the social learning model of depression could be hypothesized as key elements in the onset of depression in children with MR/DD.

Summary

It has been acknowledged that persons with mental retardation can evidence the full range of emotional disorders present within the population at large (Matson & Barrett, 1982; Menolascino & Stark, 1984; Szymanski & Crocker, 1989). Moreover, the presence of developmental delays in children, parent psychopathology, and elements of the family environment can create additional risk factors toward the development of an emotional disorder (Rutter,

Despite this, psychopathology which occurs in persons with MR/DD is likely to be overlooked (Reiss & Szyszko, 1983). This is attributable to problems in disassociating the behavioral features of an individual's cognitive impairment or mental retardation (e.g. deficits in communication, problem-solving, and social skills) from those which reflect the presence of an emotional disorder (Reiss et al., 1982; Sovner, 1982).

Among the various categories of emotional disorders in persons with MR/DD, depression in children has received little attention. In general, little is known about affective symptomatology in these children (Matson & Barrett, 1982; Feinstein et al., 1988).

Matson et al. (1988) reported that depression could be successfully identified in children with MR/DD using instruments developed primarily for non-delayed children. These included the Child Behavior Checklist and Children's Depression Inventory.

It appears that these measures may be a useful starting point in identifying features of depression in children with MR/DD. However, given the importance of the social environment in developing and maintaining both adaptive behavior and emotional disorders, it is also important to identify additional influences contributing to the
development of depressive symptoms in children with MR/DD.

Since learning problems and emotional disorders can be potentiated by environmental influences (Rutter, 1970; Orvaschei, Walsh-Allis, & Ye, 1988; Cole & Rehm, 1986), a logical step is to identify the inter-relationships between symptoms of depression and factors associated with the psychological and social domains of children with MR/DD. Such data may help to better conceptualize the phenomena of depression among this group of children and point to realistic assessment and intervention strategies.

Purpose of the Study

The purpose of this study was to examine depression and correlates of depressive symptomatology among children with MR/DD. The theoretical framework of a biopsychosocial model of psychopathology which was adapted to mental retardation by Matson (1985) provided a general guide to the investigation. This model emphasizes three basic factors important to the etiology, diagnosis, and treatment of psychopathology: biological factors, social factors, and psychological/developmental factors. From this model, this study focused upon the social and psychological factors as they relate to depression in children with MR/DD.

In order to address the social component of psychopathology, measures relating to parent-child stressors were examined. The social learning model of depression of
Lewinsohn (1975) was used to formulate specific hypotheses regarding depression in children with MR/DD.

To focus upon the psychological/developmental component of psychopathology, the relationships between age, sex, intellectual level, adaptive behavior, and problem behaviors were explored, as they relate to depressive behavior.

Using this framework, the following general research questions about depression in children with MR/DD were developed:

1. How are the symptoms of depression manifested in children with mental retardation and developmental disabilities?
2. What types of psychological and social factors contribute to the onset and maintenance of depressive symptoms in children with mental retardation and developmental disabilities?
   
   A. What are the inter-relationships between levels of cognitive functioning, adaptive functioning, problem behavior, and depressive symptoms in children with MR/DD?
   
   B. What are the inter-relationships between parent stressors, parent-child relationships, social skills, and depressive symptoms in children with MR/DD?
3. Are there specific behavioral characteristics which distinguish depressed from non-depressed children with mental retardation and developmental disabilities?
Specific Research Hypotheses

The hypotheses presented in this section guided this examination of depression among children with MR/DD. The first three hypotheses represented the three components of the social learning model of depression presented by Lewinsohn (1975). Of these, the third hypothesis addressed the issue of "comorbid" symptoms which is likely to be an important element of depression in children having significant learning, adaptive behavior, or communication deficits. The fourth hypothesis addressed the effectiveness and inter-relationships between the measures employed in assessing depressive symptoms among children with MR/DD.

To review briefly, the Lewinsohn model states that depressive behavior is elicited by a low rate of response-contingent positive reinforcement maintained by various elements of the individual's environment. In other words, prosocial behavior emitted by the person is less likely to result in positive reinforcement.

Therefore, "depressed" behavior (e.g. withdrawal, irritability, loss of interest/pleasure in activities, psychomotor retardation) is elicited by ongoing disturbances in the person's family environment. The low rate of positive reinforcement is a function of three elements: the possibility that reinforcing events will occur, the availability of reinforcement in the environment, and the instrumental behavior of the individual.
Within this study, multiple measures encompassing parenting stress, social competence, child behavior, and child depression were used to represent these aspects of the Lewinsohn model of depression.

It was assumed that high levels of parenting stress would: 1) reduce the potential for reinforcing events to occur, 2) decrease the availability of reinforcement to the child, and 3) impact upon the instrumental behavior of the child resulting in an increased possibility that depressive behavior might occur.

The specific hypotheses are as follows:
1. Children with MR/DD displaying high levels of depressive symptoms, as indicated their score on the Children’s Depression Inventory, will reside in families reporting high levels of parent stress, as measured by the Parenting Stress Index (Abidin, 1986).
   A. The mothers of children with high levels of depressive symptoms will report greater problems in the PSI Parent Subdomains of depression, attachment to the child, social isolation, and parenting competence. Together, these parent stressors will represent the first element of the Lewinsohn model (i.e. a reduced or lack of availability for reinforcement in the home).
   B. Children with high levels of depressive symptoms will be less adaptable to the family routine, place
more demands upon the parent, have fewer acceptable characteristics, and not be viewed as a source of positive reinforcement to the parent, as measured by the PSI Child Subdomains.

Together, these child stressors will represent the second element of the Lewinsohn model (i.e. the child's prosocial behavior receives little reinforcement as a result of the low potential for reinforcing events to occur).

2. Children with MR/DD showing high levels of depressive symptoms, as indicated their score on the Children's Depression Inventory, will show a greater frequency of problem behaviors (i.e. conduct) and be less socially competent, as measured by the Nisonger Child Behavior Rating Form (NBRF).

The areas of problem behaviors and poor social competence will represent the third element of the Lewinsohn model (i.e. poor instrumental behavior).

3. There will be a significant relationship between the various measures of depression, demonstrating that children with MR/DD showing high levels of depressive symptoms can be similarly identified by scores from the Children's Depression Inventory, an index of DSM-III-R depression criteria, the Child Mood subdomain of the Parenting Stress Index, and the withdrawal/depression scale of the Nisonger Child Behavior Rating Form (NBRF).
Applied Goals of the Study

Any study of depression in children with MR/DD must have an applied focus given the serious lack of attention to this subject in the literature. Thus, the four applied goals are to: 1. corroborate the effectiveness of the Children’s Depression Inventory identified by Matson, et. al. (1988) in assessing depression among children with MR/DD; 2. describe the association between parent stress and depression among children with MR/DD, using data from the Parenting Stress Index (Abidin, 1986); 3) determine the applicability of DSM-III-R depression criteria for children with MR/DD using symptom severity index combining items from the CDI and Nisonger Child Behavior Rating Form; and 4) assess the usefulness of the Nisonger Child Behavior Rating Form for use in screening for depression in children with MR/DD.

Definitions

Depression: A psychiatric disorder described by a collection of symptoms such as depressed mood, loss of interest/pleasure in most daily activities, significant weight loss or weight gain or decrease/increase in appetite nearly every day, insomnia or hypersomnia, psychomotor agitation or retardation, marked fatigue/loss of energy, feelings of worthlessness, diminished ability to think/concentrate, suicidal thoughts or ideation.
**Dual Diagnosis:** A label used to describe persons with mental retardation having a concurrent psychiatric diagnosis.

**Mental Retardation:** Significant subaverage general intellectual functioning and with deficits in adaptive behavior manifested during the developmental period (Grossman, 1977).

**Psychopathology:** A clinically significant behavioral or psychological syndrome or pattern that occurs in an individual that is typically associated with a painful symptom or impairment in one or more important areas of functioning. In addition, there is an inference that there is a behavioral, psychological, or biological dysfunction, and that the disturbance is not only in the relationship between the individual and society (DSM-III-R, American Psychiatric Association, 1987).
Chapter II

Literature Review

This chapter reviews the important research relevant to the study of depression among children with MR/DD. This includes epidemiological studies of emotional disorders among persons with MR/DD, research on the prevalence and diagnostic criteria for childhood depression, and a review of important issues relating to the diagnosis and assessment of emotional disorders in persons with MR/DD.

Relevant research surrounding the behavioral characteristics of depression, assessment methods, and previous studies of depressive disorders among children with MR/DD is also presented. Finally, data regarding the role of familial risk factors applicable to emotional disorders in children are reviewed. This review consists of three primary topic areas: 1) parent stress among families of children with MR/DD, 2) the relationships between parenting stress and child psychopathology, and 3) the relationship between emotional disorders in parents and child psychopathology.

The reader is cautioned that, to date, few studies on depression among children with MR/DD have occurred. Thus, for purposes of this review, it is necessary to draw upon applicable studies of depression among adult MR/DD
populations and research focused upon depression among non-disabled child populations.

Epidemiology of Emotional Disorders

A variety of data have confirmed the high prevalence of emotional disorders in persons with mental retardation and developmental disabilities (Rutter, Graham, & Yule, 1970; Rutter, Tizard, Graham, Yule, & Whitmore, 1976; Hill & Bruininks, 1981; Sovner & Hurley, 1983; Jacobson & Janicki, 1985; Varley & Furukawa, 1991). It is estimated that 15% to 25% of persons with mental retardation may have a psychiatric impairment (Jacobson, 1982; Menolascino & Stark, 1984; Menolascino, 1989). While such estimates may provide important information about the scope of the problem, prevalence data do vary considerably, based upon the diagnostic criteria employed and the population under study.

In applying the term "emotional disturbance" to children with MR/DD, one must define the parameters to be included within such a category. Reiss et al., (1982) noted that emotional disturbance refers to:

"neurotic, psychotic, and personality disturbances. This includes anxiety problems and phobias, self-concept problems, interpersonal and social adjustment problems, depression, non-assertiveness, problems dealing with anger, sexual dysfunctions, social withdrawal, and schizophrenia. It excludes certain behavioral and neurological problems, such as stereotypy, hyperactivity, and speech deficiencies. Although the latter may be related to emotional problems, their presence alone is assumed insufficient to diagnose an emotional disturbance" (p. 361).
In determining an individual's status, differential diagnosis is necessary in most cases. It is the discrepancies between observations, tests, and case history material which may provide the best evidence for diagnosing emotional disturbance among this population.

Of particular importance to this issue are the group of studies by Rutter et al. coming from a British cohort of children ages 9, 10, and 11 (N=2,199). They found that emotional disturbance was significantly more common in children with low measured intelligence.

These studies, known as the Isle of Wight studies, included the entire cohort of 9 through 11 year old children within that area of Great Britain. Groups were assembled which allowed for comparison between children with handicaps and their non-handicapped peers. Through extensive interviews, clinical assessments, and parent/teacher report measures, the prevalence of psychiatric disorders in the total population of 9 to 11 year olds was 7%. However, the rate of psychiatric disorders in children with an IQ below 70 was 30%, based on parent report, and 42% based on teacher report. From these data, they estimated that the presence of mental retardation is likely to create a 4 to 5 times risk factor toward the development of a psychiatric disorder in childhood.

Specific to persons with mental retardation, Jacobson (1982a) and Hill and Bruininks (1981) have provided data
covering the prevalence of psychiatric disorders in large samples of individuals with mental retardation. Jacobson (1982a) reported that 11.6% of 30,578 persons served by mental retardation organizations in the State of New York were formally classified as having a psychiatric disturbance. In contrast, Hill and Bruininks (1981) examined persons living in 236 residential facilities and found that 13% of private facility residents (N=964) and 7.8% of public facility residents (N=997) had file records which noted mental illness. Unfortunately, these data may not be representative of current community-based child populations with MR/DD and may tend to over-represent persons living in 24-hour residential or institutional settings.

Menolascino (1988) presented descriptive data on 543 persons in need of acute psychiatric care who were admitted to the Nebraska Psychiatric Institute from July, 1979 through June, 1985. This group varied by level of mental retardation (25% mild, 55% moderate, 20% severe/profound) and consisted of both children and adults. Using DSM-III criteria, a wide range of psychiatric disorders was noted including: schizophrenia, 25%, organic brain disorders, 19%, adjustment disorders, 19%, personality disorders, 13%, affective disorders, 8%, psychosexual disorders, 6%, anxiety disorders, 4%, and other mental disorders, 6%.

Varley and Furukawa (1991) reported the prevalence of psychopathology among 524 young children with developmental
disabilities (age 6 and under) and found that 122 (23%) had a psychiatric diagnosis based upon review of file data. From this group of 122 children, a psychiatrist evaluated 97 children and found that 97% had evidence of a psychiatric disorder (excluding specific developmental disorders).

Although epidemiological data is weak regarding specific categories of emotional disorders among children with MR/DD, it is clear that cognitive delays provide an increased risk factor toward the development of a psychiatric impairment, and that the entire range of psychopathology is manifested among persons with MR/DD regardless of their level of measured intelligence.

**Prevalence of Affective Disorders in Children**

The data regarding prevalence rates for affective disorders among children with MR/DD is extremely limited. A prevalence estimate of 8% is offered by Menolascino (1988), although this includes both adults and children.

Dosen (1984) indicated that 31 of 194 (16%) children with developmental delays admitted to a child psychiatric unit had significant depressive symptoms. Szymanski (1988) reports that of children referred to the Developmental Evaluation Clinic at Boston Children's Hospital, depressive disorders were diagnosed among 14% of children with mild/moderate retardation, and 6% with severe/profound retardation. Matson, et.al. (1989) found that among children with mental retardation who were consecutive admissions to a
university-based inpatient unit for emotional disturbance, 7 of 31 (22.6%) were depressed based upon both DSM-III and Research Diagnostic Criteria (Spitzer, Endicott, & Robbins, 1978). Finally, Jacobson (1982b) summarized data from over 30,000 persons served by mental retardation programs in New York State and reported depression in 4% in the 0-21 age group of persons classified as having a psychiatric diagnosis in addition to mental retardation.

The reported data for childhood depression in non-handicapped populations allows a comparison of the prevalence rates reported for children with developmental delay. A early survey by Carlson and Cantwell (1980) found that 16% of child outpatients at a university-based psychiatric clinic met DSM-III criteria for affective disorder. However, they cautioned that prevalence rates will largely be dependent upon how depression is defined and in what population it is being studied.

Estimates of major depression among clinical populations typically vary between 10 to 20% (Puig-Antich & Gittleman, 1982). Kashani et al. (1983) and Kashani and Simonds (1979) reported than in random samples of children aged 7 to 12, major depression was found in approximately 2% using DSM-III criteria. Lefkowitz and Tesiny (1985) found that 5.2% of a sample of 3,000 schoolchildren had severe depression based upon a peer nomination measure.
Diagnostic Criteria for Depression

The evolution of diagnostic criteria for depression in children has largely resulted from a downward extension of similar work among adults beginning in the early 1970s (Kazdin, 1988). Various criteria have been employed since that time to diagnose depression in children.

Poznanski, Mokros, Grossman, and Freeman (1985) reviewed the most frequently used groups of criteria for childhood depression at that time. These included: Research Diagnostic Criteria, DSM-III, Poznanski criteria, and Weinberg criteria. All could be similarly arranged into two broad categories, essential symptoms and qualifying symptoms. Agreement across all four sets was limited to only three symptoms: sleep disturbance, excessive fatigue, and cognitive impairment (diminished thinking or concentration).

Since then, general agreement among both research and clinical findings of childhood depression now form the basis for criteria incorporated in the DSM-III-R (American Psychiatric Association, 1987). As a result of this recent change, it is critically important to note the criteria employed in evaluating the published research in childhood depression.

Several important distinctions emerge between DSM-III and DSM-III-R criteria. Overall, DSM-III criteria give the clinician greater latitude in assigning the diagnosis of major depression. The DSM-III is more liberal with regard to
both the relative importance and number of symptoms necessary to make the diagnosis of depression.

DSM-III criteria note that "the mood disturbance must be prominent and relatively persistent, but not necessarily the most dominant symptom" (p. 120). Additionally, DSM-III places a primary focus upon the physiological indicators of depression by requiring that three of the four qualifying symptoms be: 1) poor appetite or significant weight loss, 2) insomnia or hypersomnia, and 3) psychomotor agitation or retardation.

In contrast, the DSM-III-R employs two essential symptoms, 1) depressed mood or 2) loss of interest or pleasure, either of which must be present in combination with four additional symptoms in order to make the diagnosis.

Since DSM-III-R requires a greater number of symptoms as well as greater specificity in the essential symptoms of depressed mood and loss of pleasure or interest in activities, it is likely that fewer children would be assigned a diagnosis of major depression using DSM-III-R criteria.

The DSM-III-R places depression among the larger category of Mood Disorders. Criteria are provided for Bipolar Disorder and Major Depression followed by diagnostic categories which include Depressive Symptoms other than Major Depressive Disorder. These include Dysthymia,
Separation Anxiety Disorder, Adjustment Disorder with Depressed Mood, Adjustment Disorder with Depressed Mood, and Uncomplicated Bereavement.

Using the DSM-III-R, inclusion criteria for Major Depression must consist of at least five symptoms which have been present during the same 2-week period. As previously noted, one of the symptoms must be: 1) depressed mood most of the day, nearly every day (either by subjective account or observed by others), or 2) loss of interest or pleasure in all or almost all activities nearly every day. Additional qualifying symptoms include: significant weight loss or weight gain or decrease/increase in appetite nearly every day, insomnia or hypersomnia, psychomotor agitation or retardation, marked fatigue/loss of energy, feelings of worthlessness or inappropriate guilt, diminished ability to think/concentrate, and suicidal thoughts or ideation.

The major issue in diagnosis relates to defining the specific features of depression. Depression can be viewed as a symptom (negative mood), a syndrome (negative mood combined with associated features such as lethargy and feelings of worthlessness), or a disorder (characteristic symptom pattern and duration which impairs functioning). Thus, a careful assessment is required to evaluate the severity and duration of symptoms, and to make judgments about specific events which may have precipitated the depression (Kazdin, 1988).
In children, the role of developmental factors must be considered in diagnosis. Age-dependent constraints in language and cognitive abilities can limit the accuracy of diagnosis. While the manifestation of some depressive symptoms may vary according to the age and maturity of the child, age-specific syndromes have not been verified (Kovacs, 1989). Symptoms of depression appear to have greater similarities than differences across age groups.

Kazdin (1988) designates four characteristics which are helpful in distinguishing between significant and non-significant features of depressive symptomology:

1. The symptom(s) should reflect a change in (ordinary) behavior.
2. There should be a consistency in duration or continuation of depressed affect over a period of time (e.g. weeks, months).
3. There should be an absence of a clear precipitant or specific event that accounts for the change in mood or other symptoms.
4. The symptom(s) should create an impact upon the daily functioning that might be reflected in changes in school performance or participation in activities.

While the DSM-III-R criteria still require a great deal of clinical judgement, they have proved to be a valid and reliable indicator of depression across a variety of populations and age groups. However, in diagnosing
depression among children with MR/DD, DSM-III-R criteria may be difficult to apply due to variability in an individual's cognitive abilities, combined with the high prevalence of language delays and associated behavior disorders. As Aman (1990) noted in a recent review of instruments to assess psychopathology in persons with MR/DD, "the application of existing diagnostic schemes is increasingly suspect as the severity of the patient's mental retardation increases" (p. 11).

Typical diagnostic procedures rely upon the clinical interview and emphasize patient self-report in identifying specific symptoms of depression. This can create substantial difficulty in making a valid and reliable diagnosis of depression in children with MR/DD. This is especially important when there is a limited ability to verbalize and sequence critical information regarding possible symptoms. In this case, assessment must rely primarily upon behavioral observations, informant report, and data from clinical records.

Assessment of Depression in Children

The assessment of depression optimally should include multiple forms of measurement and information collection. For instance, direct observation and report from the child, interviews with parents and teachers, symptom checklists, and biochemical measures have all been reported (Kaslow & Rehm, 1983; Kazdin, 1988; Matson, 1989).
While a variety of structured interview and assessment measures have been developed, checklists have been the most extensively studied and employed to assist the clinician in making a diagnosis of depression among children (Matson, 1989). This may be attributed to the relative ease of administration and ability to provide a measure of symptom severity. In many instances, checklists also can be completed by multiple informants to provide an additional perspective on symptom severity.

One of the most frequently used measures is the Children's Depression Inventory (Kovacs & Beck, 1977; Kovacs, 1981). The most common use of the CDI is as an informant measure completed by parents or teachers, since children may often have difficulty in providing responses appropriate to the information needed. The CDI has demonstrated significant relationships with global ratings of depression (Kovacs & Beck, 1977), diagnoses of depression (Carlson & Cantwell, 1980), and has been shown to differentiate general populations of emotionally disturbed children from normal school populations (Saylor, Finch, Spirito, & Bennett, 1984). As noted previously, Matson et al. (1988) found the CDI to be useful in diagnosing depression among children with mental retardation and developmental disabilities.

Additional measures which target the associated symptoms of depression have also been useful in evaluating
depression among children. These include general behavioral measures such as the Child Behavior Checklist (Achenbach & Edelbrock, 1983), along with measures addressing associated dimensions of depression such as social skills and hopelessness.

Matson (1989) offers guidelines for a multi-modal assessment model to diagnose depression in children. He suggests a process approach in which the assessment essentially moves from general to more specific issues. First, a general measure of psychopathology such as the Child Behavior Checklist (Achenbach & Edelbrock, 1983) can be obtained. Since a depression subscale is present on this measure, the clinician can examine the presence of depressive symptoms and their relationship to other behavioral characteristics of the child.

Next, data from a related dimension of depression such as social skills, self-esteem, or hopelessness can be obtained to assess commonly related features of depressive disorders. Finally, symptom severity can be evaluated by administering the Children's Depression Inventory (or similar measure based upon client age and characteristics) to the parent and, if appropriate, child.

Together, these allow the clinician to pinpoint areas of concern, while at the same time evaluating the inter-relationships between symptoms. This may allow the clinician to rule out false positives, based upon the individual's
characteristics, as well as design appropriate treatment strategies.

**Depression in Children with MR/DD**

While the topic of depression has frequently been studied among intellectually normal child populations, few data exist on behaviors that constitute depression among children with MR/DD. In general, the literature on disorders of affect and mood, either as a diagnostic entity or in association with other disorders, is sparse (Matson & Barrett, 1982).

Matson (1983) summarizes two alternative viewpoints regarding affective disorders in children with MR/DD as follows: 1) the behavioral symptoms of depression are the same as in children with normal cognitive ability; or 2) depression is expressed differently, thus, it must be inferred from behavior that may indirectly indicate underlying depression.

Unfortunately, both viewpoints suffer from circular reasoning based upon the particular definition of depression employed. Applying either view to children with MR/DD does not address issues regarding the extreme variability in the behavioral repertoire and cognitive deficits of this population, as well as the potential organic base for depressive symptomology in this group. Both are of particular concern as one evaluates the validity of existing

The first viewpoint has received some support among children with MR/DD (Matson et al., 1988), and in various work with mentally retarded adults (Matson, 1982; Kazdin et al., 1983; Laman & Reiss, 1987). This position represents the views of researchers who define depression and its symptomatology as behaviorally similar, irrespective of measured cognitive ability.

The alternative viewpoint attempts to broaden or expand the traditionally employed diagnostic criteria for depression in children with MR/DD. Within psychiatry, this issue is essentially portrayed as either a comorbidity of disorders or perhaps more accurately a "mixed disorder" of conduct and emotion. This acknowledges that depression may manifest as a unique pattern of symptomology among children with MR/DD where depression must be identified by examining the individual's behavior in relationship to both environmental and developmental perspectives. Using this framework, aggressive behavior, conduct disorders, stereotypies, somatic complaints, self-injury, phobias, and other unknown symptoms might be associated with depression among these children.

An associated issue with regard to these views is the issue of an organic basis for affective disorders. This has largely been ignored by MR/DD researchers. For example,
exclusion criteria for subjects is infrequently employed (e.g. Matson et al., 1988; Feinstein et al., 1988) making it difficult to distinguish between subjects having a possible organic basis for affective symptomology (i.e. pervasive developmental disorders, central nervous system dysfunction, neurobiological disorders).

Sovner and Hurley (1982) noted that diagnostic criteria for major depression could be transformed into applicable behavioral equivalents in persons with MR/DD. For example, evidence of a depressed mood could include apathetic facial expression with a lack of emotional reactivity, and a general decrease in interest or pleasure might involve withdrawal from others or lack of response to normal reinforcers.

Although no data exist to confirm the masked depression hypothesis among children with MR/DD, Menolascino (1988) noted the difficulty in diagnosing depression in persons with mental retardation because of "masked" depressive features and delayed language development. Recently, Chandler, Gualtieri, and Fahs (1988) referred to the "indirect" signs of depression which may occur in persons with mental retardation. These present "as if the patient were acting out a dysphoric mood state: agitation, anxiety, irritability, destructiveness, and aggression." (p.123).

Given the high frequency of behavior disorders among children with MR/DD, depression certainly may co-exist with
other disorders. Both Matson et al. (1988) and Dosen (1984) found evidence of comorbid behavioral disorders among separate samples of depressed children with developmental delays. Thus, the primary issues are most likely the comorbidity of depression with other disorders and possible organic linkages to affective symptoms rather than "masked" features.

Comorbidity Issues in Child Depression

Brumback and Weinberg (1977) noted depression to be an important cause of behavioral disturbance in children. They found that an accurate diagnosis of behavioral symptoms, including those characteristic of depression, resulted in the most appropriate course of treatment.

Many studies report a mixed pattern of emotional and conduct related symptoms among children. For example, Woolston et al. (1989) reported that comorbid behavior and affective/anxiety disorders exceeded 50% in a sample of 35 consecutive admissions to a psychiatric inpatient facility for children. They found that children with a mixed symptomology tended to have better adaptive functioning than children with only behavior disorders. In addition, maladaptive behavior in the mixed group tended to be of a more "internalizing" as opposed to the externalizing nature of the behavior-disorder-only group.

The relationship between depression and conduct disorder was explored by Marriage et al. (1986) in a study
of 60 consecutive referrals to a child psychiatry outpatient and inpatient unit. They found that cases of conduct disorder with depression could not be distinguished from cases with major depression on the basis of symptom severity, except that the former group tended to show less psychomotor retardation (fatigue). The conduct plus affective disorder children were distinguishable from other psychiatric categories by increased dysphoric mood, sleep disturbance, anger, crying, and greater overall severity of depressive symptoms.

Behavioral Characteristics of Depression in Persons with MR/DD

Sovner and Hurley (1983) suggested that the presence of mental retardation may distinguish the expression of affective disorders and that behavioral equivalents of depression can be identified. As such, the behavioral characteristics of depression have been the focus of several studies in adults with mental retardation (Matson, 1982; Schloss, 1982; Laman & Reiss, 1987). These indicate that various social skills (e.g. engagement in social activities, affect-related expression) are an important component of depression in persons with MR/DD. Social skill deficits are probably one of the most obvious features of a "similar symptom" view since deficient social skills in depressed children has a consistent relationship with depressive symptoms (Kovacs, 1989).
Laman and Reiss (1987) found significant social skill deficits among adults with mental retardation having a depressed mood. These included features of irritability, psychomotor agitation/retardation, flat affect, and loss of energy. Other deficient social behaviors included reacting with more anger than called for in situations, threatening or blaming others, showing less enthusiasm or helpfulness, and complaining.

Schloss (1982) examined verbal interaction patterns of depressed and non-depressed institutionalized adults. He found that: 1) other individuals were more likely to request action from depressed persons rather than make declarative statements, 2) depressed adults were more likely to exhibit a negative affect in response to requests from others, 3) other individuals were more likely to exhibit a negative affect when interacting with the depressed adults, and 4) peers interacted less frequently with the depressed persons than staff members.

Matson (1982) treated four adults displaying a variety of behaviors associated with depression such as flat affect, number of words spoken, speech latency, poor eye contact, and irritability. Using token reinforcement, instructions, performance feedback, modeling, and role-playing, all subjects maintained treatment effect at a 4-6 month follow-up.
Dosen (1984) in a study of 31 children with "depressive conditions" reported the following characteristics: 1) aggressive, destructive, restlessness or hyperactivity, 2) a marked affective "hunger" toward adults, 3) a lack of confidence when performing tasks, and 4) a highly labile and variable mood. Associated features of depression included sleep and eating disturbances (35%), and general somatic complaints (16%).

Matson et al. (1988) have conducted the only available clinical study of depression among children with MR/DD. Thirty-one mentally retarded children from an inpatient child psychiatric unit were matched by age and sex with 31 children from a normal school population. Comparisons were made on measures of depression and child problem behavior. Of the subpopulation of children with mental retardation, 7 of 31 (23%) scored one standard deviation above the mean on the Children's Depression Inventory (CDI) and the Child Behavior Checklist Depression subscale. Diagnoses of depression were corroborated by a child psychiatrist and symptoms conformed to both DSM-III and Research Diagnostic Criteria (Spitzer, 1977). Seven depressed versus seven non-depressed mentally retarded children were compared using t-tests. This indicated significant differences across all four factors of the CDI (I: affective behavior, II: image/ideation, III: interpersonal relations, and IV: guilt/irritability).
The limited amount of research in depression among children with MR/DD demands caution in applying these results to the population of children with developmental delays at large. However, it is clear that the important aspect of depression among persons with MR/DD lies in the complex interactions between the characteristics of the child, their parents, and the environments in which they develop. From these relationships, risk factors emerge which may have an adverse impact the development of social skills, coping skills, and problem-solving strategies so crucial to individual mental health among all children.

Risk Factors for Childhood Depression

Risk factors are an important component of the study of childhood depression. A biopsychosocial perspective on the etiology of depressive symptoms is likely to be the best portrayal of a complex disorder such as depression. While risk factors may emanate from a variety of domains, those relating to family dysfunction and a familial history of psychopathology appear to be of particular concern.

From a theoretical perspective of depression, the Lewinsohn (1975) model, as detailed in Chapter 1, does focus upon the interactive character of emotional disorders as it relates to social and environmental factors. He maintains that the critical antecedent for the occurrence of depression is the extent to which behavior is reinforced in the environment. Depression is predicted when the
probability that the individual's behavior will be followed
by reinforcement is low. Also, the probability is high that
the individual will not be reinforced when he/she displays
socially appropriate behavior. However, Lewinsohn stops
short of attributing this relationship to family and/or
parental dysfunction. It is clear that such a relationship
exists.

Rutter (1989), principal investigator of the Isle of
Wight studies, recently reflected on 25 years of child
epidemiological research into child psychopathology. He
noted that in the search for specific (particularly causal)
risk factors, family dysfunction emerges as one of the most
significant risk factors toward the development of
psychiatric disorders in children.

Viewing the dysfunctional family environment from a
clinical perspective, parent stressors and parent
psychopathology emerge as the most important factors in the
genesis of emotional disorders of children. Both can
adversely impact the parent-child relationship to the extent
that parent's response to the child's needs is impaired. For
example, factors such as a stressful life events, lack of
attachment to the child, low parenting competence, and
parent depression (or other disorder) interfere with the
parent's ability to address the child's developmental needs.

It appears that specific categories of family problems
may be associated with depression in children. Fleming and
Offord (1990) reviewed 14 recent epidemiological studies of childhood and adolescent depressive disorders. They found a significant and consistent association among children with respect to depression and family dysfunction, stressful life events, and low self-esteem.

Parent psychopathology, by itself, appears to influence child psychopathology selectively (Williams, Anderson, McGee, & Silva, 1990; Orvaschel, Walsh-Ellis, & Ye, 1988; Weissman, Leckman, Merikangas, Gammon, & Prusoff, 1984). Canino, Bird, Rubio-Stipec, Bravo, and Alegria (1990) found that children of parents with a history of psychiatric disorders had a significantly higher level of problem behaviors even after controlling for an adverse family environment. Also, parents with a diagnosis of affective disorders tended to have children with emotional disorders (Kashani, Burk, & Reid, 1985).

Parental depression, in particular, appears to have a direct effect upon child psychopathology. Orvaschel et al. (1988) reported on a group of parents with recurrent major depression (n=61) and found that parent depression was significantly associated with psychopathology in their offspring. In addition, parent depression was specifically associated with child disorders of depression and attention deficit disorder.

Kashani et al. (1985) and Weissman et al. (1984) both found that children of depressed parents were at increased
risk for major depression and had a significantly higher frequency of DSM-III diagnoses. Kashani et al. (1985) found that 14% of the children had a diagnosis of major depression and had significantly greater symptoms of attention deficit, oppositional, and anxiety disorders. Weissman et al. (1984) noted that 26.3% of the children having a depressed parent (n=38) had received treatment for an emotional problem. Brumbach (1977) found that a positive family history of affective disorder was present in 89% of the depressed children he studied (n=42).

From these studies, it is often the presence of maternal depression which emerges as the most critical risk factor in both child psychopathology (Orvaschel et al., 1988; Williams et al., 1989) and child depression (Weissman et al., 1984).

Among families of children with developmental delays, one could assume that family dysfunction, parent stressors, and maternal depression are more prevalent. Thus, it is important to provide additional data to clarify these relationships prior to examining their role as possible risk factors in the development of psychopathology in children with developmental delays.

Perhaps, the important point is that parental response to these children is likely to be different from that of normally developing children. For example, by virtue of their developmental delay the child may display
characteristics which are unacceptable to the parent, be overly demanding on the parent, or provide little reinforcement to the parent in his/her role. All of these could act to influence the emotional development of the child.

Research examining child and parent problems in families having a child with delays has tended to dwell on the general impact of the child upon parental adjustment (Trad, 1987). Specifically, the characteristics and behavior of the child may create unique clinical manifestations of parent stress. Parents of children with emotional disorders may display particular types of stressors. Thus, an examination of parent stress, maternal depression, and child behavior problems among families with a child with developmental delays is warranted.

**Parent Stress in Families of Children with MR/DD**

The role of stress can be simply delineated as a balance between the demands impinging upon an individual and the resources available to them. Stress (both psychological and physical) emerges when demands exceed an individual's capacity to meet them.

A number of studies have observed differing stress levels between parents of children with and without developmental disabilities (McKinney & Peterson, 1987; Wilton & Renau, 1986). Using the Questionnaire on Resources and Stress (Holroyd, 1974), Wilton and Renau (1986) examined
parent stress levels between non-handicapped and intellectually-handicapped children. Parents of intellectually-handicapped children had significantly higher stress scores across parent, family, and child problem scales of the 285 item questionnaire.

McKinney and Peterson (1987) noted that mothers of developmentally delayed children obtained significantly higher stress scores resulting from the child's characteristics, and fewer situational or other life stressors when compared to Parenting Stress Index (Abidin, 1983) standardization sample. They noted that the mean score of the developmentally delayed group fell at the 70th percentile of the PSI total stress score norms, indicating that child characteristics present as a greater stressor to mothers of handicapped children. Also using the PSI, Cameron and Orr (1989) found that one-half of their sample of families with delayed children also had moderate levels of stress.

Based on these data, one might expect significantly higher levels of stress in families having a child with an emotional disorder. Thus, as a risk factor for child psychopathology, family dysfunction would likely be represented by very high stress scores from a measure such as the PSI (i.e. 90th percentile or higher on parent stress).
Since parent stress is likely to be significantly elevated among families having a child with MR/DD, it is important to acknowledge specific categories where differences in stress emerge and may indicate some relationship to child psychopathology.

Harris and McHale (1989) found no group differences in depression or self-esteem among mothers with or without retarded children. This is consistent with longitudinal data showing no differences between mothers of handicapped and non-handicapped infants on measures of maternal depression and parenting competence (Gowen, Johnson-Martin, Goldman, & Appelbaum, 1989). McKinney and Peterson (1987) also reported no difference with respect to maternal depression or the mother's sense of parenting competence. However, of the mothers with depression, they found that child characteristics domain of the PSI (Abidin, 1983) was the second most important predictor of depression behind perceived control and spouse support. Gowen et al. (1989) studied mothers of handicapped and non-handicapped children and found that caregiving difficulty predicted maternal depression in the former, while child irritability and family relationships predicted depression in the latter.

These data suggest that mothers of developmentally delayed children have many problems related to caregiving of their child which carry a greater likelihood of depression. However, since maternal depression and general psychological
well-being does not appear to differ significantly from 
mothers of non-delayed children, it must be considered as an 
important risk factor for child psychopathology and child 
 depression, irrespective of the presence of a developmental 
delay.

Models of Family Stress

Orr, Cameron, and Day (1991) evaluated a model of 
family stress and coping, the Double ABCX model (McCubbin & 
Patterson, 1983) in 86 families raising a child with MR/DD. 
They used a path analysis methodology to illustrate this 
model using the following categories: the stressor event 
(A), the use of resources (B), perception of the stressor 
event (C), and resulting family stress (X).

Using the total stress score of the Parenting Stress 
Index (Abidin, 1986) to represent the X factor and a 
Behavior Problems Inventory to represent the stressor event 
(A), they found that the causal link could be optimally 
viewed as a linear chain following an ACBX path. That is, 
family stress will primarily be dependent upon how the 
parent defines and interprets (factor C) the stressor event 
(factor A). This perception will then determine their use of 
resources (factor C) in coping with the stressors.

With respect to child psychopathology, it may be 
reasonable to assume that if the child's characteristics 
emerge as a significant stressor for the parent and the 
child's characteristics are perceived as a source of stress,
the day-to-day interactions between the parent and child may be negative. From this situation one might infer a pattern of caregiving which is characterized by parental rejection and a resulting depression or other psychopathology in the child.

Together, both parent stress and parent psychopathology establish conditions where the child is unlikely to receive the emotional nurturing necessary to prevent the occurrence of depressive symptoms or child psychopathology.

Summary

Most known categories of psychopathology have been reported among persons with mental retardation and developmental disabilities (Matson & Barrett, 1982; Sovner & Hurley, 1983; Reiss et al., 1982). With respect to children with MR/DD, combined rates of psychopathology have ranged from 23% (Varley & Furukawa, 1990) to over 30% (Rutter et al., 1970).

Among the various categories of disorders, probably the least is known about affective disorders among children with MR/DD (Matson & Barrett, 1982; Feinstein et al., 1988), despite the fact they are significantly at risk for child depression (Trads, 1987).

It has been reported that standard diagnostic criteria and frequently used measures for child depression are effective in identifying depression in this group (Matson et
al., 1988), although caution should be employed in applying traditional diagnostic schemes, especially as the severity of a child's cognitive delay increases (Aman, 1991).

Compounding the difficulty in diagnosis is the fact that persons with MR/DD often display high rates of problem behavior (Jacobson, 1982) which may influence the clinical presentation and potentially overshadow significant depressive symptoms (Menolascino, 1988; Chandler et al., 1988; Reiss et al., 1982; Spengler et al., 1990).

Among non-delayed children depression is often associated with conduct and anxiety disorders (Woolston et al., 1989; Strauss et al., 1988; Marriage et al., 1986) as well as parent history of depression (Orvasheleal., 1984; Kashani, 1985). However, no studies are available which might point to similar relationships among children with MR/DD.

Research relating to risk factors for childhood depression indicate that both parent psychopathology and parent stressors are associated with child depression (Orvasheleal., 1984; Kashani, 1985; Fleming & Offord, 1990). Given the high levels of stress reported by parents of children with MR/DD (Holroyd, 1974; McKinney & Peterson, 1987; Cameron & Orr, 1989) child depression or significant depressive symptomology resulting from impairments in parent-child relationships may be likely.
If children with MR/DD evidence a similar pattern of depressive symptomology to that of non-delayed children (Matson, 1983) these relationships should emerge using instruments normed with non-delayed populations. However, it is reasonable to assume that the presence of learning, communication, and social skill deficits may create differences in how depression is expressed (Menolascino, 1988). By examining the relationships between measures of depressive symptoms, problem behaviors, and parent stress, a conceptual understanding of depressive disorders among children with MR/DD may be strengthened.
CHAPTER III

Methodology and Procedure

The following section will describe the research design, measures employed, and procedures used in this study of depression among children with mental retardation and developmental disabilities.

Subjects

The subjects of the study consisted of children with mental retardation and developmental disabilities ranging from ages 3 through 12. They were selected from children who received services from the outpatient clinic at the OSU Nisonger Center and from the Early Childhood and School-Age educational programs operated by the Franklin County Board of Mental Retardation and Developmental Disabilities.

Each subject met the criteria for mental retardation as defined by the American Association of Mental Retardation (Grossman, 1983), or exhibited a substantial developmental delay. This included sub-average general intellectual functioning and/or deficits in adaptive behavior as indicated by the American Association on Mental Retardation Adaptive Behavior Scale (ABS) or other applicable measure. Potential subjects having lethargy or withdrawal known to be related to the profound level of mental retardation or
children with diagnoses of autism or pervasive developmental disorders were excluded from the study. In addition, subjects were excluded who did not reside in a family home with at least one biological parent.

**Design**

Initially, potential subjects were identified as having depressive symptoms based upon parent and/or teacher reported scores from the Nisonger Behavior Rating Form (NBRF), or were nominated by Franklin County Board of MR/DD psychology staff and classroom teachers based upon reported symptoms of depression (see exhibit A; FCBMR/DD solicitation letter).

Scores from the Nisonger Child Behavior Rating Form (NBRF) were available for many subjects solicited from clinic files at the Nisonger Center. These provided a screening measure for depressive symptoms. Potential subjects were identified from parent reported scores from the withdrawal/depression, negative self-image, and anxiety subscales. The NRBF is an adaptation of a measure by Kolko (1988) based upon the Child Behavior Checklist (Achenbach and Edelbrock, 1983). This measure is routinely completed by most parents as part of the intake protocol for children receiving services from the Nisonger Clinic. From these data, children meeting basic subject criteria were identified. For subjects without available NBRF scores, file information noted the presence of depressive-like (e.g.
withdrawal, lethargy, sleep problems) symptoms or problems relating to emotional adjustment. Additional subjects were nominated for the study by FCBMR/DD psychology and teaching staff. For these subjects the NRBF was available, but not required, to assist in the nomination process. They were provided with a list of depressive symptoms from DSM-III-R criteria for major depression and asked to use them as a guide to making appropriate nominations.

Procedure

Recruitment of Parents

Parents of children meeting study criteria identified through screening at Nisonger Center and nominations from the Franklin County MR/DD Program were solicited by mail to participate in the study. Included in each letter was a self-addressed stamped postcard which the parent returned to indicate their interest in participating. Parents who agreed to participate were sent a packet of materials containing a personal data sheet, along with measures of problem behavior, social skills, child depression, and parent stress. These are fully described in subsequent sections of this chapter.

During the solicitation phase, parents were asked to take part in a study of the "social behavior of children and stress among parents of children with MR/DD". This was necessary as it was felt that informing parents during the
solicitation phase of the precise focus of the study (i.e. child depression) might negatively affect response rates.

Parents who agreed to participate were informed of the exact focus of the study upon receipt of the survey materials. As an incentive to participate, parents received a payment of $10 for completion of all measures. This incentive was deemed to be necessary to motivate participation among parents who might be experiencing high levels of parent stress. In addition, each child received an appropriate referral if the study data suggested the presence of a clinically significant depressive episode.

Data Collection

Parents who agreed to participate were sent a package of materials containing the following: 1) a consent form for study participation; 2) the Nisonger Behavior Rating Form; 3) the Children’s Depression Inventory (CDI); 4) the Parenting Stress Index (PSI); and 5) Personal Data Sheet which encompassed parent and child background information on educational placement, physiological disorders, sensory disorders, and history of treatment for emotional disorders of both the child and parent.

Each parent was asked to complete the material within 5 days and return to the author in a self-addressed stamped envelope. Parents were given the option to complete the measures during an in-person session with the author, if appropriate to their individual needs.
The time required to complete all measures ranged from 45-60 minutes for a parent with average reading ability.

Confidentiality and Consent

To assure the anonymity of responses, an identifying number was assigned to each participant and placed upon all questionnaires provided to the parent. This number was used to reference all data records. The names of the participants were accessible only to the author and placed in a location separate from the raw data. Cross referencing of the name and identifying number was used only for purposes of necessary follow up in cases of incomplete data.

Measures

Measure for Depressive Symptoms, Social Competence, and Child Problem Behavior

The Nisonger Child Behavior Rating Form was used to gather data on child problem behaviors and social competence. The NBRF is an 81 item adaptation of the Child Behavior Rating Form (Kolko, 1989) created for use with inpatient child psychiatric populations. It is modeled after the Child Behavior Checklist (Achenbach & Edelbrock, 1983), a widely used measure of child psychopathology. The Nisonger Child Behavior Rating Form is an adaptation of Kolko's measure intended for use with Nisonger Center outpatients. Ratings can be completed by either a teacher or parent informant to assess a variety of behavioral and emotional
symptoms in children. For purposes of this study only parent ratings were obtained.

Items are grouped into two domains which reflect characteristics of the child's problem behavior (71 items) and social competence (10 items). Each item of the problem behavior domain is ranked by the informant according to a 0, 1, 2, 3 criteria indicating whether the behavior does not occur (or is not a problem), if it occurs occasionally (mild problem), quite often (moderate problem), or a lot (severe problem).

Kolko (1988) reported a 5 factor solution for the behavior problems domain. This includes subscales of antisocial behavior, hyperactivity/inattention, withdrawal/depression, negative self-image/self-injury, and anxiety. The social competence domain results in a two factor solution consisting of compliance/self-control and positive/adaptive social.

The internal consistency of each subscale, using Cronbach's Alpha, was high (.88 or greater) with the exception of the anxiety (.56) and negative self-image/self-injury (.50) subscales. Inter-observer agreement was high for all factors with the exception of antisocial behavior. Of relative importance to this study was that the correlation between observers on the withdrawal/depression factor was .84 p < .001.
Divergent validity with the Child Behavior Checklist was evident from a significant negative correlation between the CBC externalizing score and the withdrawal/depression, negative self-image/self-injury, and anxiety factors of the CBRF. Items generally associated with depression were split between the withdrawal/depression and negative self-image/self-injury factors of the CBRF. A highly significant negative correlation between the withdrawal/depression and positive/adaptive social factors ($r = -.36 \ p < .001$) was also present. This indicated the usefulness of measuring social skills as an additional feature of possible depression.

Discriminant validity was obtained by examining the child's DSM-III diagnosis and their CBRF factor scores. There was a consistent relationship between scores which correctly grouped the behavioral disorders based upon an externalizing (e.g. aggression, hyperactivity) versus internalizing (e.g. withdrawal, anxiety) framework.

**Measure of Depression**

Depression was assessed from scores on the Children's Depression Inventory (Kazdin, 1981), one of the most widely used measures of depression in children. The CDI was originally adapted from the Beck Depression Inventory (Kovacs & Beck, 1977) for use with children. It is a 27-item measure that assesses the cognitive, affective, and behavioral signs of depression. Each of the 27 items presents three statements which characterize symptoms of
depression. The best alternative is chosen and items are scored 0, 1, or 2. More extreme scores endorse higher levels of depression.

Validity of the CDI has been established with a variety of child populations, and the measure has adequate internal consistency and test-retest reliability (Kovacs, 1980; Kaslow & Rehm, 1983).

With regard to the sensitivity of the CDI, it has been shown to correlate with global ratings of depression (Kovacs & Beck, 1977), diagnoses of depression (Carlson & Cantwell, 1980; Kazdin, French, Unis, Eveldt-Dawson, 1983; Matson, Barrett, & Helsel, 1988), and is able to differentiate general populations of emotionally disturbed children from normal school populations (Saylor, Finch, Spirito, & Bennett, 1984).

With regard to the specificity of the measure, CDI scores have been successfully used to confirm the diagnosis of depression among children with mental retardation. Matson et al. (1988), using the informant report version of the CDI completed by the child's parent, found that children with mental retardation having CDI scores at or above one standard deviation from the mean (x=7.79, SD=7.04) met both DSM-III and Research Diagnostic Criteria (Spitzer, Endicott, & Robbins, 1978) for major depression. Additionally, they found that it could effectively distinguish normal
schoolchildren from emotionally disordered inpatients with mental retardation matched for age and sex.

The use of the CDI as an informant measure has been the subject of several studies. For example, Lobovitz and Handal (1985) reported a 70% agreement between parent and child reported CDI scores and noted that the CDI was best viewed as a conservative estimate of childhood depression. Kazdin et al. (1983) noted that mother's reports on measures of child depression were significantly related to DSM-III diagnoses of depression, and suggested that children may tend to underreport symptom severity.

**Measure of Parenting Stress**

The contribution of environmental factors toward the development of depression was measured by scores on the **Parenting Stress Index** (Abidin, 1986). The PSI is a 101 item parent-report measure of stress that identifies specific features of the parent-child system under stress. It has been particularly useful with families at-risk for the development of emotional disorders in children as well as identifying issues related to dysfunctional parenting. It provides scores relating to stressors associated with child and parent characteristics and 19 additional items related to life event stressors.

The PSI yields two primary scales, the Child Domain and the Parent Domain. The Child Domain measures a variety of temperament related constructs and ratings assess the degree
of stress each characteristic creates for the parent. Subscales of the Child Domain include data on the child's mood (depression/sad), distractibility, adaptation to change, level of demand placed upon the parent, and the perceived level of reinforcement provided by the child to the parent.

The Parent Domain evaluates the personal characteristics of the parent as they relate to the tasks and demands of parenting. It yields data on parent depression, attachment to the child, sense of competence in the parenting role, social isolation, restriction imposed by the parent role, relationship with spouse, and parental health.

The PSI yields a Total Stress score, separate scores for the Parent and Child Domains, and scores for each of the subscales within the parent and child domains. Normative data and an extensive body of literature has accumulated to support both research and clinical use with varied at-risk populations (Abidin, 1986).

Internal consistency using Cronbach's alpha was determined for the norm group of 534. They range in magnitude from .62 to .70 for subscales of the Child Domain and .55 to .80 for subscales of the Parent Domain. The coefficients for the Child Domain, Parent Domain, and Total Stress score were .89, .93, and .95 respectively. Good test-retest reliability is supported by four studies with time
intervals of three weeks, one month, three months, and one year (Abidin, 1986).

Several studies using the PSI have included children with MR/DD. These have demonstrated discriminant validity of the PSI relevant to both parenting stress as well as child psychopathology among families having a child with MR/DD.

For example, McKinney and Peterson (1986) reported that the PSI child characteristics domain score revealed significant differences in the level of stress experienced by parents of developmentally delayed children versus the PSI standardization sample. The mean PSI Total Stress score of their sample fell at the 70th percentile.

Jenkins (1982) conducted a study of stress in mothers of regular (n=28) and special (n=32) children (learning disabled, emotionally disturbed, mentally retarded). Results indicated no significant difference between the PSI Total Stress Scores of parents in her matched sample. However, significant differences were found for the Child Domain and on certain subscales: Acceptability, Demandingness, Distractibility/Hyperactivity. When the sample was examined more closely, all subtests of the Child Domain significantly discriminated between the groups, with the emotionally disturbed group producing the highest relative scores and the mentally retarded sample earning the lowest scores relative to the other clinical groups.
Further studies have indicated significant differences between a sample of clinic versus control mothers on all major scales of the PSI. Webster-Stratton (1988) found that PSI Total and Parent Domain scores were significantly higher for mothers who were rated as depressed versus non-depressed controls in study of children from 3-8 years old with child conduct problems. The Parent Domain scores, not including the Depression Subscale, combined with the Negative Life Experiences scale were the best predictors in discriminating between depressed and non-depressed mothers.

DSM-III-R Symptom Index

A measure of DSM-III-R criteria for major depression along with symptom severity data was constructed by the author by combining individual items from the Nisonger Child Behavior Rating Form (NBRF) and the Children’s Depression Inventory (CDI). Each item represented symptom criteria from the DSM-III-R and allowed for symptom severity based on a 0, 1, 2, 3 rating for the NBRF and a 0, 1, 2 for the CDI. A total index score was obtained which provided a contrast to the CDI with respect to total depressive symptomatology. Both individual items and the total index score were used in the analysis.

Data Analysis

The raw data were scored and entered onto data sheets for entry into the Statistical Analysis System (SAS). Errors
in data were checked by running basic descriptive data and a tabulated raw data printout following data entry.

Data analysis began with a series of one-way ANOVAs performed on the total scale score of Children's Depression Inventory to examine the effects of age, sex, and level of MR/DD and adaptive behavior upon reported depression scores.

Next, correlation matrices were obtained to identify specific relationships among the domains and sub-domains of the PSI, the total score and four factors of CDI, the social competence subscales from the Nisonger Child Behavior Rating Form, problem behavior subscales of the NBRF, and the DSM-III-R index.

Then, the sample was sorted into two groups, high versus low depressive symptoms, based upon the group mean score from the CDI (x=8.33). This allowed between-group contrasts on each measured variable using t-tests. Correlation matrices were obtained for the high depressive symptoms group in order to further identify within-group relationships among CDI, PSI, and NBRF scores.

Finally, six subjects with significant levels of depressive symptoms, based upon a CDI Total score of 14 or greater, were matched by age, sex, and level of developmental delay with another member of the group. A series of t-tests were completed to examine individual differences in greater detail.
Analysis of Power

Various research pertaining to the relationships between depression, social skills, and parent stress were used to establish a general estimate of the number of subjects needed to create sufficient power to evaluate the study hypotheses.

Matson et al. (1988) found a correlation of .50 p < .01 between the total score on Children's Depression Inventory (CDI) and Depression factor of the Child Behavior Checklist (CBCL) among children with mental retardation. Using the Child Behavior Rating Form, the measure similar to the screening instrument to be used in this study, Kolk (1988) found a significant negative relationship (-.31 p < .001) between his depression factor and the Externalizing score of the CBC using 200 children. These data provide some support for the face validity of the screening instrument and establish a reference point of the potential effect size for subjects with depressive symptoms.

With regard to social skills, the data from Kolk (1988) on the CBRF (from which the NBRF is derived) showed a significant negative relationship (-.36 p < .001) between the depression factor and positive/adaptive social skill factor. Pertinent, although in a study of mentally retarded adults, Laman and Reiss (1987) reported a significant negative relationship (-.456 p < .01) between social skills and depressed mood.
With regard to parenting stress and affective behavior, specific subdomains of stress measured by the Parent Stress Index (Abidin, 1986) report that the parent depression subscale correlates significantly with stress resulting from the child's depressive mood \( r = .35 \). Parent depression also correlates with the parent report that the child provides little reinforcement to the parent \( r = .36 \). Problems relating to the lack of the parent's attachment to the child correlates with the child's depressive mood \( r = .40 \). Poor attachment is also associated with the parent receiving little reinforcement from the child \( r = .52 \).

Together, these data suggest that effects ranging from .31 to .50 may be an appropriate representation of the various relationships between depression, social skill, and parent stress.

To obtain adequate power for testing the null hypothesis and providing adequate statistical inference, a power analysis was calculated. Using an alpha level of \( \alpha < .05 \) and an estimate of .50 for the population \( r \), a power of .80 (power = 1 - \( \beta \) = .80) required a sample of 28 subjects. This level of power falls within the range suggested by Cohen and Cohen (1983).
CHAPTER IV

Results

This chapter comprises the results from the study of depression in children with MR/DD. Presented are the descriptive characteristics of the sample along with analyses of within-group and between-group data. Also, the interrelationships between the various measures of depression are presented to evaluate their usefulness with respect to this population of children. Finally, t-tests from a matched sub-sample of children with significantly high levels of depression are presented to understand potential symptom differences more clearly among this group of children.

Characteristics of the Sample

The sample consisted of 29 (n=29) children with developmental delays, all of whom lived with at least one biological parent. The majority of children (n=21) had recently received or were waiting to receive services from the Nisonger Clinic. A lesser number (n=8) were receiving school-based programming for children with developmental delays. All met screening criteria as outlined in Chapter III.
This group of subjects resulted from a mail solicitation of 72 parents. Of these, 34 parents initially agreed to participate. Five parents chose to withdraw from the study after receiving the complete study description and survey material. All data reported on these subjects were based upon ratings of each child by their natural mother.

Descriptive data are presented in Table 1. The total sample of children had a mean age of 6.8 (SD: 2.6) ranging from ages 3 through 12. The majority of children were male (75.9%) and fell in the mild to moderate range of mental retardation (82.7%).

The most frequently occurring developmental problem among the children was in the area of communication ability (91.3%). This ranged from moderate articulation deficits to more severe expressive/receptive language deficits. Several children (n=7) had motor deficits ranging from mild fine motor delays (4) to Cerebral Palsy (1). Two subjects had genetic-based disorders (Down Syndrome-1, early stage Duchenne Muscular Dystrophy-1).

Twenty-three percent (n=7) had received previous treatment for behavioral or emotional disorders prior to participating in the study. Of these, four children were receiving psychotropic medications (methylphenidate-2, carbamazapine-1, lithium-1). While this medication was not prescribed for a diagnosed affective disorder, the children
Table 1

**Characteristics of the Sample (n=29)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Mean/SD</th>
<th>Percent</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child age</td>
<td>29</td>
<td>6.8 (2.6)</td>
<td>-</td>
<td>3-12</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22</td>
<td>-</td>
<td>75.9%</td>
<td>-</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>-</td>
<td>24.1%</td>
<td>-</td>
</tr>
<tr>
<td>Level of Dev. Delay</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD</td>
<td>3</td>
<td>-</td>
<td>10.3%</td>
<td>-</td>
</tr>
<tr>
<td>Mild</td>
<td>15</td>
<td>-</td>
<td>51.7%</td>
<td>-</td>
</tr>
<tr>
<td>Moderate</td>
<td>9</td>
<td>-</td>
<td>32.1%</td>
<td>-</td>
</tr>
<tr>
<td>Severe</td>
<td>2</td>
<td>-</td>
<td>6.9%</td>
<td>-</td>
</tr>
<tr>
<td>Mother's age</td>
<td>29</td>
<td>33.3 (4.9)</td>
<td>-</td>
<td>22-42</td>
</tr>
<tr>
<td>Father's age</td>
<td>19</td>
<td>36.6 (7.1)</td>
<td>-</td>
<td>27-58</td>
</tr>
<tr>
<td>Two parent families</td>
<td>24</td>
<td>-</td>
<td>82.8%</td>
<td>-</td>
</tr>
<tr>
<td>Siblings (1 or more)</td>
<td>22</td>
<td>-</td>
<td>77.3%</td>
<td>-</td>
</tr>
<tr>
<td>Parent Hx-Depression</td>
<td>10</td>
<td>-</td>
<td>34.5%</td>
<td>-</td>
</tr>
</tbody>
</table>
receiving lithium and stimulants was reported to address aggressive behavior and attention deficits, respectively.

Characteristics of the family indicated that 82.8% of the children resided in two-parent homes, with one or more siblings present in 73.3% of the families. The mother’s mean age was 33.3 and the father’s mean age was 36.6.

A history of depression was reported by 10 of the families (34.5%). This consisted of six mothers, three fathers, and one uncle. Families with a positive history were equally spread across both the high versus low symptom groups. Four family members (2 mothers, 1 father, 1 uncle) fell in the high symptom group and five (4 mothers, 2 fathers) in the low symptom group. Among these, no two came from the same family group.

Primary Analyses

Several univariate F-tests revealed no significant differences in the Children’s Depression Inventory Total Scores based upon either age [F(1, 28)=0.12, n.s.], sex [F(1, 28)=0.19 n.s.], level of MR/DD [F(3,28)=1.65 p > .20, n.s.], level of adaptive behavior [F(2, 28)=0.42, n.s.], or clinic versus school referral groups [F(1, 28)=1.20, p < .28, n.s.].

The mean CDI scores are presented in Table 2. The total sample CDI mean was 8.33 with a range from 0 to 22. This group mean was comparable to the mean score of 7.79 reported

The sample was initially divided into a high versus low depressive symptoms group based upon their CDI mean score to examine general between-group differences. This resulted in seventeen (17) subjects falling within the low depressive symptoms group (CDI mean of 9 or less), and twelve (12) subjects in the high symptom group (CDI mean of 10 or greater).

The scores presented in Table 2 utilizes the CDI Factor structure (Helsel & Matson, 1984) with the following accompanying designations: Factor I-Affective Behavior, II-Negative Self-image/ideation, III-Interpersonal Relations, IV-Guilt/irritability. Scores indicated that the CDI was effective in identifying the presentation of depressive symptoms in this group of children with differences emerging across all CDI factors.

Table 2

<table>
<thead>
<tr>
<th></th>
<th>High Symptoms</th>
<th>Low Symptoms</th>
<th>Total</th>
<th>T Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDI Total</td>
<td>13.8 (4.0)</td>
<td>4.4 (3.3)</td>
<td>8.3 (5.9)</td>
<td>-6.94***</td>
</tr>
<tr>
<td>Factor I</td>
<td>6.3 (2.2)</td>
<td>2.0 (1.6)</td>
<td>3.7 (2.8)</td>
<td>-6.15***</td>
</tr>
<tr>
<td>Factor II</td>
<td>1.5 (1.6)</td>
<td>.2 (0.4)</td>
<td>0.7 (1.2)</td>
<td>-3.36**</td>
</tr>
<tr>
<td>Factor III</td>
<td>4.1 (1.1)</td>
<td>1.7 (1.7)</td>
<td>2.7 (1.9)</td>
<td>-4.21***</td>
</tr>
<tr>
<td>Factor IV</td>
<td>2.0 (1.3)</td>
<td>.6 (0.9)</td>
<td>1.2 (1.3)</td>
<td>-3.33**</td>
</tr>
</tbody>
</table>

Depressive Symptoms and Parent-Child Stressors

To examine characteristics of the family environment of these children in detail, scores were obtained from the Parenting Stress Index (Abidin, 1986). These scores reflect the mother’s response to 120 statements representing parent, child, and life event stressors. Responses were obtained using a five-point Likert scale (strongly agree to strongly disagree).

With regard to family stressors, it was hypothesized that children with high levels of depressive symptoms would reside in families with significantly high levels of stress. In particular, it was hypothesized that mothers of depressed children would report greater PSI Parent Domain stressors pertaining to Depression, Attachment, Sense of Parenting Competence, and Social Isolation. This was only partially confirmed as there were significant differences in maternal depression and sense of parenting competence.

In relation to Child Domain stressors, it was hypothesized that children with high levels of depressive symptoms would be less adaptable to the family routine, have less acceptable characteristics, and provide little reinforcement to the parent. From these, only the subdomain of Adaptability emerged as significant.

Table 3 portrays these between-group differences across the PSI Total Stress, Parent Domain, and Child Domain mean scores. Within the PSI Parent Domain, mothers of children
<table>
<thead>
<tr>
<th>Table 3: Parenting Stress Index Means by Total Sample and High versus Low Depressive Symptom Groups (n=29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Symptoms</td>
</tr>
<tr>
<td>PSI Total Stress</td>
</tr>
<tr>
<td><strong>Parent Domain</strong></td>
</tr>
<tr>
<td>Depression</td>
</tr>
<tr>
<td>Attachment</td>
</tr>
<tr>
<td>Restriction of Role</td>
</tr>
<tr>
<td>Sense of Competence</td>
</tr>
<tr>
<td>Social Isolation</td>
</tr>
<tr>
<td>Relationship/Spouse</td>
</tr>
<tr>
<td>Parent Health</td>
</tr>
<tr>
<td><strong>Child Domain</strong></td>
</tr>
<tr>
<td>Adaptability</td>
</tr>
<tr>
<td>Acceptability</td>
</tr>
<tr>
<td>Demandingness</td>
</tr>
<tr>
<td>Mood</td>
</tr>
<tr>
<td>Distract./Hyper.</td>
</tr>
<tr>
<td>Reinforces Parent</td>
</tr>
</tbody>
</table>

Note: Higher scores indicate greater problems.
with high levels of depressive symptoms reported greater
concerns relative to the PSI Subdomains of Depression, Sense
of Competence, Relationship with Spouse, and Parent Health.

No subdomain differences emerged with respect to
Attachment, Restriction of Role, Social Isolation, or Life
Event Stressors. This indicated that these mothers were more
depressed, felt less competent in their ability to parent,
and had greater problems engaging their spouse, both
interpersonally and with regard to sharing child
responsibilities. In addition, they cited concerns relative
to their own personal health.

Within the PSI Child Domain, children with high levels
of depressive symptoms were reported to have greater
problems among the PSI Child Domains of Mood, Adaptability,
Demandingness, and Distractibility. There were no
differences in the subdomains of Acceptability of the
child's characteristics, or in Reinforcement to Parent.

This indicated that while the high depressive symptom
children had attributes which allowed mothers to receive
some level of satisfaction from their role as parent, these
children presented particular problems in their ability to
sustain positive reciprocal interactions with the parent.

The sample scores for the high and low groups plotted
against the PSI norms are presented in Figure 1. This allows
sample comparisons with the PSI norm group. Noteably, the
low depressive symptom group is generally consistent with
### High Symptom Group

### Low Symptom Group

#### TOTAL STRESS SCORE

<table>
<thead>
<tr>
<th>Raw Score</th>
<th>Percentile Ranks</th>
<th>Norms N=600</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>x: 98.4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>S.D.: 19.2</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>24.5</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>5.7</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>99</td>
<td></td>
</tr>
</tbody>
</table>

#### CHILD DOMAIN SCORE

- **Adaptability**
  - Raw Score: 66
  - Percentile Ranks: 22, 23

- **Acceptability**
  - Raw Score: 67
  - Percentile Ranks: 24, 25

- **Demandingness**
  - Raw Score: 89
  - Percentile Ranks: 17, 18

- **Mood**
  - Raw Score: 88
  - Percentile Ranks: 9, 10

- **Distract./hyper.**
  - Raw Score: 12
  - Percentile Ranks: 8

- **Reinforces Parent**
  - Raw Score: 5
  - Percentile Ranks: 8

#### PARENT DOMAIN SCORE

- **Depression**
  - Raw Score: 88
  - Percentile Ranks: 17

- **Attachment**
  - Raw Score: 88
  - Percentile Ranks: 17

- **Restr. of Role**
  - Raw Score: 88
  - Percentile Ranks: 17

- **Sense of Competence**
  - Raw Score: 88
  - Percentile Ranks: 17

- **Social Isolation**
  - Raw Score: 88
  - Percentile Ranks: 17

- **Relat. Spouse**
  - Raw Score: 88
  - Percentile Ranks: 17

- **Parent Health**
  - Raw Score: 88
  - Percentile Ranks: 17

#### LIFE STRESS (Optional Scale)

<table>
<thead>
<tr>
<th>Raw Score</th>
<th>Percentile Ranks</th>
<th>Norms N=600</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>79</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>66</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>99</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 1**

High and Low Symptom Group Means

Compared to Parenting Stress Index Norms
the norms for developmentally disabled children reported by McKinney and Peterson (1987) [i.e. PSI Total: 263 (50), Child Domain: 130 (24), Parent Domain 134 (30)].

Interestingly, the differences obtained between the high versus low depressive symptom groups are consistent with PSI reports of scores in the 90th percentile for children with emotional disturbances (Abidin, 1986). In comparison to the PSI norm group, children with high levels of depressive symptoms fell at the 99th percentile in the Child Domain, and fell at or above the 95th percentile across all subdomains. The low symptom group mean scores were at or above the 80th percentile in most instances, but differed from the high symptom group across most PSI domain and subdomain scores.

**Depressive Symptoms and Child Behavior Ratings**

Studies of child depression, among both delayed and non-delayed children frequently noted comorbid relationships between depression, child problem behaviors, and deficits in social competence. In particular, behaviors representing conduct and anxiety disturbances emerge as significantly related to depression in children.

The hypothesis that children with high levels of depressive symptoms would exhibit a greater frequency of problem behavior (i.e. conduct, anti-social behaviors) and be less socially competent was only partially confirmed.
The mean behavior rating scores of the sample on the Nisonger Child Behavior Rating Form revealed that children with high levels of depressive symptoms displayed significantly greater problems on the NBRF subscales of Anti-Social behavior \([t(27)= 2.84 \ p < .008]\) and Negative Self-image \([t(27)= 2.01 \ p < .05]\). No differences emerged between the high versus low sub-groups on the Withdrawal/Depression \([t(27)= 0.92 \ p < .37]\) or the Social Competence subscales of the NBRF [Adaptive Social: \(t(27)= 0.42 \ p < .67\); Compliance/self-control: \(t(27)= 0.80 \ p < .42\)]. This was surprising in view of the significant differences noted on the CDI Factors I-Affective Behavior and III-Interpersonal Relationships.

While problem behavior is not unusual among children with MR/DD, it is particularly interesting that significant differences related to anxiety and conduct problems emerged among children with high levels of depressive symptoms as these are frequently associated with depression among non-delayed samples of children. Since children did not differ with respect to their general social skills, it is reasonable to assume that the association between social skills and depressive symptoms may not be as clearly evident among developmentally delayed children.
Correlations between the CDI, Parenting Stress Index, and Nisonger Child Behavior Rating Form

Within-group correlations across the measures of depression, parent-child stress, and problem behaviors are presented in this section.

Tables 4 and 5 present Pearson Product Moment correlations between the PSI Parent Domain and CDI Scores, and the PSI Child Domain and CDI Scores, respectively. With regard to parent-child stressors, the CDI Total Score was significantly associated the PSI Total Stress (r = .704 p < .0001), Parent Domain (r = .595 p < .001), and Child Domain (r = .714 p < .0001) scores. The CDI Total Score was also associated with elevations in many PSI subdomains as shown in Table 4.

Table 4

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CDI Total Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Depression—mother</td>
<td>.558***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Attachment</td>
<td>.436*</td>
<td>.167</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Restriction of Role</td>
<td>.290</td>
<td>.522***</td>
<td>.143</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sense of Competence</td>
<td>.546***</td>
<td>.490***</td>
<td>.319***</td>
<td>.130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Relationship—spouse</td>
<td>.412*</td>
<td>.551***</td>
<td>.028</td>
<td>.633***</td>
<td>.361</td>
<td>.692***</td>
<td></td>
</tr>
<tr>
<td>8. Parent Health</td>
<td>.507**</td>
<td>.543***</td>
<td>.098</td>
<td>.399**</td>
<td>.446**</td>
<td>.604***</td>
<td>.432**</td>
</tr>
</tbody>
</table>

Note: * p < .05, ** p < .01, *** p < .001, **** p < .0001.

The PSI Subdomains showing the strongest association with the CDI Total Score were maternal Depression, Sense of Parenting Competence, and Parent Health. Ratings in the
subdomains of Attachment to the child as well in Relationship with Spouse also emerged as having a significant association with child depression ratings.

Generally, these data provide support for a behavioral explanation of depressive symptomology in the child. That is, mothers under high levels of stress have difficulty meeting the emotional needs of their child due to their own negative life circumstances. As a result, these stressors may combine to elicit and maintain depressive behavior in the child.

Table 5 presents the associations between the PSI Child Domains and CDI scores. These subdomain scores relate specifically to characteristics of the child and the degree to which parents perceive them as stressors. It further

Table 5

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CDI Total Score</td>
<td>.9991</td>
<td>.5993</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Adaptability</td>
<td></td>
<td>.342</td>
<td></td>
<td>.5081</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Acceptability</td>
<td>.5993</td>
<td>.328</td>
<td></td>
<td>.5311</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Demandingness</td>
<td></td>
<td>.7531</td>
<td>.4756</td>
<td>.4102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Mood</td>
<td>.5311</td>
<td>.328</td>
<td>.4756</td>
<td>.328</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Distract./Hyper.</td>
<td>.4756</td>
<td>.5920</td>
<td>.4610</td>
<td>.5311</td>
<td>.328</td>
<td></td>
</tr>
<tr>
<td>7. Reinforces Parent</td>
<td>.4756</td>
<td>.4610</td>
<td>.5311</td>
<td>.4021</td>
<td>.328</td>
<td>.225</td>
</tr>
</tbody>
</table>

Note: * p < .05, ** p < .01, *** p < .001, **** p < .0001.

portrays the problems in the parent-child relationship as it relates to depressive symptoms. As mother's ratings of child depressive symptoms increased, the child's difficulty
adapting to the family structure and perceived demands placed upon the parent increased. Further, as depression ratings increased, children were viewed as providing less reinforcement to the parent. Thus, among children with high depressive symptoms, mothers viewed the parenting role as providing little reinforcement or satisfaction to them.

The correlations between CDI scores, and child problem behavior and social competence subscales of the Nisonger Child Behavior Rating Form are presented in Table 6.

Table 6

| Pearson Correlations between Nisonger Child Behavior Rating Form and CDI Scores (n=29) |
|---------------------------------------------|-------------------------------------|
| 1. CDI Total Score                         | 1        |
| 2. Anti-social                             | .504***  |
| 3. Hyperactivity                           | .359     |
| 4. Withdraw/depression                     | .320     |
| 5. Neg.Self-image                          | .479***  |
| 6. Anxiety                                 | .430***  |
| 7. Compliance                              | -.233    |
| 8. Adapt social                            | -.199    |

Note: * p < .05, ** p < .01, *** p < .001, **** p < .0001.

These indicated significant relationships between CDI scores and the NBRF's Anti-social, Negative Self-image, and Anxiety subscales. There was no relationship between the CDI Total Score and the Social Competence subscales of the NBRF. This provides further support that the social skill deficiencies may be more difficult to detect among children with developmental delays.
Of additional interest was that among CDI factor scores, there was a relationship between Factor III (Interpersonal Relationships) and the NBRF Withdrawal/Depression subscale \((r=.444 \ p < .02)\), and between Factor IV (Guilt/irritability), Hyperactivity \((r=.552 \ p < .002)\) and Compliance \((r=-.501 \ p < .006)\) subscales. This suggests that NBRF subscales may be measuring more general constructs of problem behavior rather than primarily depression for hyperactivity per se.

**Relationships between Measures of Depression**

Table 7 presents the relationships between the various measures of depression and affect within the sample. Overall, the CDI Total Score had no relationship to age \((r=.027 \ p < .89)\) which was consistent with the Matson et al. (1988) study.

Significant relationships emerged between the CDI total score and all CDI Factors: I-Affective Behavior \((r=.916 \ p < .0001)\), II-Negative self-image \((r=.713 \ p < .0001)\), Factor III-Interpersonal relationships \((r=.80 \ p < .0001)\), and Factor IV-Guilt/irritability \((r=.75 \ p < .0001)\).

A significant relationship between the CDI and DSM-III-R symptom index \((r=.55 \ p < .003)\) indicated that the application of behaviorally-based items from the NBRF and CDI representing DSM-III-R qualifying criteria were similarly useful in identifying high levels of depressive symptomatology in children with MR/DD.
in addition, a composite of NBRF subscales using an External (Anti-social, Hyperactivity) versus Internal behaviors (Withdrawal/Depression, Negative Self-image, & Anxiety) both showed a significant relationship with the CDI Total Score and DSM-III-R Index. Again, this was consistent with the relationships reported by Matson et al. (1989) in 31 child psychiatric inpatients with MR/DD.

Overall, there was consistency between multiple measures of depressive symptoms for the sample. All three primary measures (CDI, DSM-III-R Index, and PSI Child Mood subdomain) were significantly related to the others. This may provide some support for the usefulness of these measures of depressive symptoms with children having developmental delays.

Table 7

Relationship between Various Measures of Depression and Affect (n=29)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CDI Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. CDI Factor 1</td>
<td>.916****</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. CDI Factor 2</td>
<td>.721****</td>
<td>.494**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. CDI Factor 3</td>
<td>.796****</td>
<td>.598***</td>
<td>.595***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. CDI Factor 4</td>
<td>.704****</td>
<td>.640***</td>
<td>.397*</td>
<td>.295</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. DSM-III-R Index</td>
<td>.558**</td>
<td>.507**</td>
<td>.256</td>
<td>.489**</td>
<td>.313</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. NBRF External</td>
<td>.499**</td>
<td>.518**</td>
<td>.030</td>
<td>.126</td>
<td>.694****</td>
<td>.554**</td>
<td></td>
</tr>
<tr>
<td>8. NBRF Internal</td>
<td>.473**</td>
<td>.470**</td>
<td>.248</td>
<td>.421**</td>
<td>.259</td>
<td>.978****</td>
<td>.431**</td>
</tr>
<tr>
<td>9. PSI Child Mood</td>
<td>.531**</td>
<td>.551**</td>
<td>.390*</td>
<td>.419*</td>
<td>.233</td>
<td>.180</td>
<td>.006</td>
</tr>
</tbody>
</table>

Note: CDI Factors: 1-Affective Behavior, 2-Negative Self-image/ideation, 3-Interpersonal Relations, 4-Guilt/Irritability. (from Helsel & Matson, 1984). * p < .05, ** p < .01, *** p < .001, **** p < .0001.
T-tests from a Matched Sub-sample of Children with Significant Depressive Symptoms

Six children with a CDI Total Score of 14 or greater, and six falling below this criterion were matched by age, sex, and level of developmental delay. A series of T-tests were completed to identify differences between children with and without significant levels of depressive symptoms.

This analysis allowed a closer look at potential manifestations of depressive symptomology among children with MR/DD. In addition, it provided a contrast with respect to the previously presented between and within-group relationships.

There were no differences according to either child age, parent age, or number of adults in the home (married versus single family homes).

There were significant differences between the "depressed" and "non-depressed" children on the CDI Total Score \(t(10)=4.36 \ p < .001\), Factor I (Affective Behavior) \(t(10)=4.84 \ p < .0007\), and Factor IV (Guilt/irritability) \(t(10)=2.89 \ p < .016\). No differences across Factors II (Negative Self-image) or III (Interpersonal Relationships) emerged. This contrasts to the Matson et al. (1988) study which found significant differences across all four factors of the CDI in a matched subsample of their group.

They also differed on the DSM-III-R Symptom Index score \(t(10)=2.39 \ p < .027\). This provides support for the
usefulness of NBRF and CDI behaviorally-based items in screening for significant depressive symptoms in this group of children. Since the majority of children in this study fell in the mild to moderate ranges of MR/DD, it appears that DSM-III-R criteria are appropriate in identifying significant depressive symptoms in children with MR/DD.

Among the t-tests centering upon the PSI and NRBF scores, the Anxiety subscale differed between the groups \[ t(10)=2.43 \ p < .035 \] as well as the Internal composite score \[ t(10)=2.59 \ p < .026 \]. On the PSI, differences were evident across both the PSI Total Score \[ t(10)=2.23 \ p < .049 \] and Child Domain \[ t(10)=3.00 \ p < .013 \]. There were significant differences among the PSI Child Subdomain of Adaptability \[ t(10)=2.64 \ p < .025 \] and Reinforcement to Parent \[ t(10)=3.02 \ p < .013 \].

Surprisingly, there were no differences on either the Parent Domain \[ t(10)=1.28 \ p < .025 \] or Parent Subdomains, although Parent Health was nearly reached significance \( p < .052 \). Together these data suggest that significant depressive symptoms in children with MR/DD occur independent of parent stressors.

Analysis of Variance for Parent and Child Stressors

The t-tests from the matched sample raised the possibility that perhaps parent stressors and child characteristics operate independently in influencing child depression ratings. The absence of an interaction would show
that high parent stress alone was not a sufficient explanation for high levels of depressive symptoms in children with MR/DD. Main effects would indicate that high levels of depressive symptoms could occur independently of parent stressors. If this was the case, it would provide support for child depression as a clinical entity that is both present and identifiable in children with MR/DD.

To test this hypothesis, scores from the PSI Parent and Child Domains were transformed into high and low stress groups. To be placed in the high group, scores were at or above the 70th percentile in comparison to the PSI norms.

This model, consisting of PSI Parent and Child Domain scores, accounted for 42.3% of the variance in CDI Total Scores for the sample. The interaction between parent and child stressors was not significant \[ F(1, 28) = 1.37, p < .25 \] indicating that child depressive symptoms were not a result of the overall stress level of the family.

Main effects were obtained for both the Parent \[ F(1, 28) = 11.02, p < .003 \] and Child \[ F(1, 28) = 5.97, p < .025 \] Domains. This suggests that while parent stressors have a relatively significant influence upon depressive symptoms in the children, child characteristics by themselves are sufficient to account for depression ratings.
CHAPTER V
Discussion

Within the field of developmental disabilities an extensive literature has developed surrounding child psychopathology. However, in most instances it has stopped short of examining the relationship between parental adjustment and affective development of the child. In addition, theoretical models to guide the study of specific psychopathologies among this group are generally not available. This study attempted to examine the phenomenology of depression in children with developmental delays and provide a model for future study.

Both parents and their children with MR/DD are highly vulnerable to problems emanating from life stressors. For example, family stress resulting from a parent's ability to adjust to their child with developmental delays represents a critical source of risk for child depressive disorders. Given that epidemiological studies of child psychopathology point to the role of family dysfunction and environmental stressors in the development of affective disorders among normal individuals, children with MR/DD are particularly at risk.
These children may have extreme difficulty in verbalizing problems relating to their affective state. As a result, problem behaviors emerge as a primary means to achieve this communication function and is likely to represent the child’s expression of a dysphoric mood state.

This is not to imply that depressive symptoms are "masked" in these children. Rather, the mood disturbance is overshadowed as a consequence of the child’s developmental delay. What may have begun as an inability to adequately communicate affective states evolves into a significant change in the child’s expression of mood and in the child’s ongoing social relationships. In some instances, as parents observe the child and clinicians become involved, problems outwardly appear to cluster around conduct-related behavior. This becomes the primary focus of assessment and treatment in lieu of examining the child’s behavior within the broader context of family stressors and social environments.

While clinical assessment may encompass these areas, a lack of knowledge regarding affective disorders among children with MR/DD makes this area easy to overlook. As an example, clinicians rarely ask for a family history of emotional disorders when assessing children with MR/DD though the relationship between maternal depression and child psychopathology is well established.
An Interactive Model of Depression in Children with MR/DD

This study points to the role of the parent stressors as a significant risk factor for affective disturbances among children with MR/DD. The findings are consistent with data showing strong relationships between family environment, parent stressors, and child psychopathology. While it is not surprising that children with high levels of depressive symptomatology reside in stressed family environments, specific types of stressors influencing depressive symptoms did emerge from both PSI Parent and Child Domains.

From the PSI Parent Domain, as depression ratings increased, mothers of children reported more depression, greater problems in their marital relationship, felt less competent in their role as parent, were less attached to the child, and cited their own health as a concern. These are certainly consistent with psychosocial or behavioral explanations of depression which emphasize the role of dysfunctional environments in the onset and maintenance of depression.

Consistent with behavioral explanations of depression, parent problems may reduce the potential for reinforcing events to occur. As a result, the child develops a repertoire of behaviors which meet their instrumental needs, but relies heavily upon problem behavior. This compounds family distress leaving the parent unequipped to provide
the level of nurturance and support necessary to facilitate adequate emotional adjustment in the child.

Within the PSI Child Domain, a number of problems were reported. Children with high levels of depressive symptoms were less adaptable to the family routine, more demanding of parents, and provided low levels of reinforcement to the parent. Generally, these children experienced great difficulty incorporating themselves into the family structure which likely results in significant changes in how the family interacts with the child on a day to day basis. These changes may reduce the potential for reinforcement which understandably impacts upon the emotional development of the child.

Figure 2 presents an interactive model of depression in children with MR/DD by portraying the relationships observed in this study.

Interactive Model of Depression in Children with Developmental Delays
This model indicates that both child characteristics and parent stressors may independently influence the expression of depressive symptomatology. Specifically, with regard to parent stressors, one should note that maternal depression is not a risk factor for depression operating in isolation from other influences. Instead, maternal depression appears as part of an inter-related group of stressors which influenced depression ratings in this sample of children.

Ratings were not obtained from the fathers of these children. Thus, it is likely that fathers may have reported a completely different constellation of influences. Most importantly, one should not make the assumption that stressors reported by mothers are those which independently influence child depression. The nature of family interactions is too dynamic for such an assumption.

Depression in Children with MR/DD: Primary Findings and Clinical Implications

This study provides support for the usefulness of the CDI with children with MR/DD initially described by Matson et al. (1988). The mean scores were similar, despite the fact that subjects were from different settings (psychiatric versus clinic). These similarities held for both CDI factors and behavioral ratings. This study found significant relationships between CDI scores and both the NBRF External and Internal behavior composite scores.
Interestingly, both Dosen (1984) and Matson et al. (1988) reported similar relationships with respect to depression and child problem behavior among samples of children with MR/DD.

The results also support the effectiveness of ratings from the NRBF as a screening measure with children having high levels of depressive symptomology. It appears that a composite score of the internal behavior subscales of the NRBF may be more useful than examining the Withdrawal and Depression subscale alone.

The DSM-III-R Symptom Index created for this study was associated with the CDI Total score and CDI Factors I (Affective Behavior) and Factor III (Interpersonal Relationships), but not Factor II (Image/Ideation) or Factor IV (Guilt/Irritability). While this could be due to differences in applying DSM-III-R versus DSM-III criteria, it may indicate that clinicians can identify depression using a greater reliance upon behavioral criteria instead of attempting to operationalize highly subjective indicators of depression such as self-image or guilt in children with developmental delays. In addition,

Notably, the major evolution of the CDI took place under DSM-III criteria for depression. While the CDI may still be strong in symptom specificity, the DSM-III-R uses more stringent criteria for a diagnosis of depression. These
differences in criteria and their relationship to the CDI has not been reported.

The differences observed in this study may give tentative support to examining the more obvious signs of depression such as vegetative disturbances (sleep and eating patterns) and psychomotor activity (lethargy or agitation) when assessing for depression in children with MR/DD. While it appears that behaviors such as depressed mood, apathy, or loss of pleasure can be accurately assessed, these behaviors are particularly subject to the overshadowing phenomena.

Also of interest were the results of the matched subsample. These data indicated no differences in child social skills or self-image. It suggests that these associated indicators of depression found in intellectually normal children may not be present in depressed children with developmental delays. This would indicate qualitative differences in the expression of depression in children with developmental delays.

The parent report method of identifying depressive symptoms among children with MR/DD needs to be briefly addressed since readers may have unanswered questions regarding the validity of using the CDI among populations of children with MR/DD. While Matson et al. (1988) used a combination of self and parent report for the CDI, they failed to specify or comment upon the inherent difficulties of using the CDI with children with MR/DD.
Within this study the use of parent report was generally adequate. Parents appeared to complete the CDI appropriately and noted few problems. Several parents wrote that some items relating to self-image or self-concept were not applicable due to communication delays in their children. Others parents had no problems rating these areas. While this may have affected factor scores, particularly CDI Factors II (Negative Self-image) and IV (Guilt/irritability), it did not appear to interfere with the ability of parents to identify the more obvious symptoms of depression or obtain ratings of their child.

The ratings from CDI Factor I (Affective Behavior), which focuses exclusively upon affective and somatic symptoms, were significantly correlated with all other ratings of affect employed in the study. Thus, measuring depressive symptoms in children with MR/DD using measures developed for non-delayed children appears to be valid. However, multiple measures are necessary to assure that both false positives and negatives do not occur.

In clinical settings, one might optimally view the CDI Total score as a slightly conservative rating of the child's level of depressive symptoms, particularly if substantial communication deficits are present. Some CDI items attempt to measure introspective concepts such as guilt and self-image. Evaluating these features of depression may be particularly difficult in children with developmental
delays, given the extreme variability in cognitive deficits. Thus, using a slight more conservative cutoff score (i.e. 14) on the CDI may be appropriate. It may also be helpful to employ an index similar to that constructed for this study (see Appendix B: DSM-III-R Symptom Index) to gain both a severity rating and symptom pattern.

The levels of associated problem behaviors in this sample were consistent with relationships found among normal child populations. High levels of conduct problems, reports of poor self-image, and anxiety symptoms were evident.

However, depressive symptoms of children in the severe to profound ranges may not be as clearly identifiable. In these children, clinicians might optimally focus upon vegetative signs, behavioral ratings, and observations together with biochemical tests such as Dexamethasone Suppression Test to confirm a diagnosis of depression. Among persons with MR/DD, the DST has shown promise in identifying biochemical indicators of affective disorders (Wolkowitz, 1990). In addition, it is critical to probe for a family history of emotional disturbance as well as parent stressors which might elicit or maintain child symptoms.

Limitations of the Study and Future Directions

All data obtained on this sample of children was based upon report of the child's mother. Thus, one must acknowledge that all ratings were essentially a function of maternal perception. In addition, independent objective
ratings of depression for the children in this sample were not obtained making it impossible to make a clinical diagnosis of depression. While this limits the generalizability of the data, the important interplay between relationships and usefulness of the measures was confirmed. The intent was to understand the phenomena of depression in children with MR/DD and its relationship to child behaviors and parent stress.

Further study into affective disorders among children with MR/DD is needed to substantiate the relationships observed in this study. In addition, efforts to design effective diagnostic tools for this population remains an important need.

Future research might focus upon further delineating the link between maternal and child depression in this population of children. In addition, examining the issue of depressive symptoms in children with specific organic involvement would be helpful to understand variations in affective symptomatology among populations of children with developmental delays.
Appendix A

Solicitation Letters and Consent Form
Dear Parent:

The Psychology Department of Ohio State University in affiliation with the Nisonger Center for Mental Retardation and Developmental Disabilities is currently conducting a research project to study the relationship between the social behavior of children with disabilities and parenting stress. Our goal is to more clearly understand the relationships between child problem behaviors, their social skills, and stress experienced by parents. The knowledge gained from this research may help to improve prevention and treatment services for children with disabilities and their families.

We are contacting parents whose children have received or are currently waiting to receive services from the Nisonger Clinic. While we understand how busy you must be, we would like to enlist your cooperation to participate in the study.

Participation would simply involve the completion of a short personal data sheet and three scales which measure various aspects of child behavior and stressors experienced by many parents. In addition, we would ask your permission to allow us to review your child’s records at Nisonger.

Completion of the materials would take approximately 30-45 minutes and may be done in the privacy of your home. If you prefer, a research assistant is available to come to your home or other place of your choice to assist you in completing the information. As an incentive to participate and in recognition of your time, a $10 award will be mailed to you as soon as we receive the information and can confirm that it is complete.

All information from the completed scales would be strictly confidential. Both you and your child’s confidentiality is assured. No names will appear on any of the materials. Instead, each will contain only an identifying number. All information which you provide will be combined with that of many families. Thus, the results will encompass a large number of families and will not focus upon the data of any one family. We would be happy to share the final results with you, if you so desire.

You may choose to withdraw from the study at any time. Since participation is completely voluntary, if you choose not to participate, the services that your child receives or will receive from the Nisonger Center will not be affected in any way.

Since the study cannot begin without your cooperation, we would appreciate if you would return the enclosed, stamped postcard indicating your willingness to participate. If you desire additional information, please contact Lyna Smith, Clinic Coordinator at (614) 292-9844 or David Hammer, Ph.D. at the Nisonger Center (614) 292-9780. We look forward to hearing from you.

Yours Truly,

David Hammer, Ph.D.
Chip Kobe, M.A.
Dear Parent:

The Psychology Department of the Ohio State University in affiliation with the Nisonger Center for Mental Retardation and Developmental Disabilities is currently conducting a research project to study the relationships between the social behavior of children with disabilities and parenting stress. Our goal is to more clearly understand the relationships between child problem behaviors, their social skills, and stress experienced by parents. The knowledge gained from this research may help to improve prevention and treatment services for children with disabilities and their families.

The Franklin County Board of Mental Retardation and Developmental Disabilities has permitted us to contact parents served by the Early Childhood Education and School Programs for possible participation. While we understand how busy you must be, we would like to enlist your cooperation to participate in the study.

Participation would simply involve the completion of a short personal data sheet and three scales which measure various aspects of your child's behavior and stressors experienced by many parents. In addition, we would ask your permission to access information from your child's educational records.

Completion of the survey materials takes approximately 30-45 minutes and may be done in the privacy of your home. If you prefer, a research assistant is available to come to your home or another place of your choosing to assist you to complete the scales. As an incentive to participate and in recognition of your time, a $10 award will be mailed to you upon receipt of the completed information.

All information from the scales would be considered to be strictly confidential. Both you and your child's confidentiality is assured. No names will be used on any of the materials. Instead, each will contain only an identifying number. All information which you provide will be combined with that of many families. Thus, the results of the study will represent a large number of families rather than focusing upon the data of any single family. We would happy to share the final results with you, if you so desire.

You may choose to withdraw from the study at any time. Also, if you do not wish to participate, the services that your child receives from the Franklin County MR/DD Program will not be jeopardized in any way.

Since the study cannot begin without your cooperation, we would appreciate if you would return the enclosed, stamped postcard indicating you willingness to participate.

If you desire additional information, please contact David Hammer, Ph.D. at Nisonger Center (614) 292-9780 or Chip Kobe at the FCBMR/DD (614) 577-6440. Thank you for your time and consideration.

Yours Truly,

David Hammer, Ph.D.
Chip Kobe, M.A.
THE OHIO STATE UNIVERSITY

CONSENT FOR PARTICIPATION IN
SOCIAL AND BEHAVIORAL RESEARCH

I consent to participating in (or my child's participation in) research entitled:

Depression in children with mental retardation and developmental disabilities

________________________________________
David Hammer, Ph.D. or his/her authorized representative has
(Principal Investigator)

explained the purpose of the study, the procedures to be followed, and the
expected duration of my (my child's) participation. Possible benefits of the
study have been described as have alternative procedures, if such procedures
are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information
regarding the study and that any questions I have raised have been answered to
my full satisfaction. Further, I understand that I am (my child is) free to
withdraw consent at any time and to discontinue participation in the study
without prejudice to me (my child).

Finally, I acknowledge that I have read and fully understand the consent form.
I sign it freely and voluntarily. A copy has been given to me.

Date: 1/4/90

Signed: ____________________________
(Participant)

__________________________
(Signed: ____________________________
(Principal investigator or his/
her Authorized Representative)

(Person Authorized to Consent
for Participant - If Required)

Witness: ____________________________

HS-027 (Rev. 3/87) —(To be used only in connection with social and behavioral
research.)
Appendix B

Data Collection Measures and Raw Data
Personal Data Sheet

Identifying Number
Person completing survey materials: ___ mother ___ father
Parent age ___

Child’s Date of Birth: ___ month ___ day ___ year
Age ___ (in years)
Sex ___

1. Briefly describe your child’s current educational placement:

2. List persons living in the home (relationship and age):

3. Does your child have any type of speech/language or sensory disorder? (e.g. hearing, vision)? ___ (1) yes ___ (0) no If yes, please specify:

4. Does your child have any neurological or physical problems (e.g. CP, seizures, motor deficits, physiological disorders)? ___ (1) yes ___ (0) no If yes, please specify:

5. Does your child receive regular prescribed or over-the-counter medication? ___ (1) yes ___ (0) no If yes, please specify, type of medication, dosage, and reason:

6. Has your child ever received treatment for behavioral or emotional problems? ___ (1) yes ___ (0) no If yes, please specify:

7. Has any parent or family member ever received treatment for an emotional disorder? ___ (1) yes ___ (0) no If yes, please specify:

8. Has any parent or family member ever received medication or treatment for depression? ___ (1) yes ___ (0) no If yes, please specify:

9. Would you like to receive a copy of the results of the study when completed? ___ yes ___ no
### THE NISONGER CHILD BEHAVIOR RATING FORM

<table>
<thead>
<tr>
<th>Identifying #</th>
<th>Date: Mo.____ Day_______ Yr._______</th>
</tr>
</thead>
</table>

Relation of rater to child:  
- [ ] parent  
- [ ] teacher  
- [ ] other  

Child’s Age (in years): ____________ (please specify)

If a teacher, please fill in the following:

**Type of class? (check one)**
- [ ] Regular or:  
  - [ ] DH  
  - [ ] MH  
  - [ ] SBH  
  - [ ] HI  
  - [ ] LD  
  - [ ] OH  
  - [ ] VI  

**How long have you had this child in your class?**
- [ ] less than 3 months  
- [ ] 3 to 6 months  
- [ ] more than 6 months.

---

1. Please describe any special circumstances or mediating factors that may have affected the child’s behavior in the recent past (the last month or two) or prevented you from making complete ratings.

---

II. Please describe the child’s behavior as it was at home or in the classroom over the last month.

<table>
<thead>
<tr>
<th>In the last month, this child had:</th>
<th>Not True</th>
<th>Somewhat or Sometimes True</th>
<th>Very or Often True</th>
<th>Completely or Always True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accepted redirection</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>2. Expressed ideas clearly</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>3. Followed rules</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>4. Initiated positive interactions</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>5. Participated in group activities</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>6. Resisted provocation, was tolerant</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>7. Shared with or helped others</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>8. Stayed on task</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>9. Was cheerful or happy</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>10. Was patient, able to delay</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
III. For each item that describes the child's behavior as it was over the last month, circle the:

0.... if the behavior did not occur or was not a problem
1.... if the behavior occurred occasionally or was a mild problem
2.... if the behavior occurred quite often or was a moderate problem
3.... if the behavior occurred a lot or was a severe problem

For each problem that occurred, circle only the score that best describes the behavior.

Please do not skip any questions. If you do not know the answer or haven't had a chance to observe the child for a given item, circle the zero.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Apathetic or unmotivated</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Argues with parents, teachers, or other adults</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Clingy or adult, too dependent</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Cruelty or meanness to others</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Difficulty in making choices: can't make up mind</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Crying, tearful episodes</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>Hit or slaps own head, neck, hands, or other body parts</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>Defiant, challenges adult authority</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>Knowingly destroys property</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10.</td>
<td>Difficulty concentrating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11.</td>
<td>Disobedience</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12.</td>
<td>Rocks body or head back and forth repetitively</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13.</td>
<td>Doesn't feel guilty after misbehaving</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14.</td>
<td>Easily distracted</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15.</td>
<td>Easily frustrated</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16.</td>
<td>Overly sensitive; feelings easily hurt</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17.</td>
<td>Exaggerates abilities or achievements</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18.</td>
<td>Explosive, easily angered</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>19.</td>
<td>Has rituals such as head rolling or floor pacing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20.</td>
<td>Fails to finish things he/she starts</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>21.</td>
<td>Feelings easily hurt</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>22.</td>
<td>Feeds others or against him/her</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>23.</td>
<td>Harms self by scratching skin or pulling hair</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24.</td>
<td>Feels worthless or inferior</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>25.</td>
<td>Fidgets, wiggles, or squirms</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>26.</td>
<td>Shy around others; bashful</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>27.</td>
<td>Gags in physical fights</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>28.</td>
<td>Impulsive, acts without thinking</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>29.</td>
<td>Inflexible</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>30.</td>
<td>Repeatably flaps or waves hands, fingers, or objects (such as pieces of string)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>31.</td>
<td>Involuntary self from others</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>32.</td>
<td>Lying or cheating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>33.</td>
<td>Nervous movements or twitches</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>34.</td>
<td>Nervous or tense</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>35.</td>
<td>Gouges self, puts things into ears, nose, etc., or eats inedible things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>36.</td>
<td>Overactive, doesn't sit still</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>37.</td>
<td>Overly anxious to please others</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>38.</td>
<td>Overly excitable, exuberant</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>39.</td>
<td>Physically attacks people</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>40.</td>
<td>Refuses to talk</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>41.</td>
<td>Repeats the same sound, word, or phrase over and over</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>42.</td>
<td>Resists, high energy level</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>43.</td>
<td>Runs away from adults, teachers, or other authority figures</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>44.</td>
<td>Says no one likes him/her</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>45.</td>
<td>Secretive, keeps things to self</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>46.</td>
<td>Repeatedly bends self hurt enough to leave tooth marks or break skin</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>47.</td>
<td>Self-conscious or easily embarrassed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>48.</td>
<td>Shifts rapidly from topic to topic when talking</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>49.</td>
<td>Short attention span</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>50.</td>
<td>Shy or timid behavior</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>51.</td>
<td>Sleeps</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>52.</td>
<td>Odd repetitive behaviors (e.g., scratches, gnaws, rapid postures)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>53.</td>
<td>Stubborn, has to do things own way</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>54.</td>
<td>Sudden changes in mood</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>55.</td>
<td>Sulk, is silent and moody</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>56.</td>
<td>Talks about suicide</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>57.</td>
<td>Physically harms or hurts self on purpose</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>58.</td>
<td>Talks back at teacher, parents, or other adults</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>59.</td>
<td>Talks too much or too loud</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>60.</td>
<td>Tempest tantrums</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>61.</td>
<td>Threatens people</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>62.</td>
<td>Threatens to harm self</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>63.</td>
<td>Engages in meaningless, repetitive body movements</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>64.</td>
<td>Too fearful or anxious</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>65.</td>
<td>Underactive, slow</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>66.</td>
<td>Unhappy or sad</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>67.</td>
<td>Violates rules</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>68.</td>
<td>Repeatedly grinds teeth while awake</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>69.</td>
<td>Withdrawn, uninvolved with others</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>70.</td>
<td>Worrying</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>71.</td>
<td>Argues with other children or peers</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
CD INVENTORY FOR PARENTS

IDENTIFYING @ ____________________
DATE FORM COMPLETED ____________________
AGE OF CHILD______________

KIDS SOMETIMES HAVE DIFFERENT FEELINGS AND IDEAS.
THIS FORM Lists THE FEELINGS AND IDEAS IN GROUPS. FROM EACH GROUP, PICK ONE
SENTENCE THAT DESCRIBES YOUR CHILD BEST FOR THE PAST TWO WEEKS. AFTER YOU
PICK A SENTENCE FROM THE FIRST GROUP, Go ON TO THE NEXT GROUP.

THERE IS NO RIGHT OR WRONG ANSWER. JUST PICK THE SENTENCE THAT BEST
DESCRIBES THE WAY YOUR CHILD HAS BEEN RECENTLY. PUT A MARK LIKE THIS ‘X’
NEXT TO YOUR ANSWER. PUT THE MARK IN THE BOX NEXT TO THE SENTENCE YOU PICK.

HERE IS AN EXAMPLE OF HOW THIS FORM WORKS. TRY IT. PUT A MARK NEXT TO THE
SENTENCE THAT DESCRIBES YOUR CHILD BEST.

EXAMPLE:
☐ MY CHILD READS BOOKS ALL THE TIME
☐ MY CHILD READS BOOKS ONCE IN A WHILE
☐ MY CHILD NEVER READS BOOKS
REMEMBER, PICK OUT THE SENTENCES THAT DESCRIBE YOUR CHILD'S FEELINGS AND IDEAS IN THE PAST TWO WEEKS.

1. ◯ MY CHILD FEELS BAD ONCE IN A WHILE.
   ◯ MY CHILD FEELS BAD MANY TIMES.
   ◯ MY CHILD FEELS BAD ALL THE TIME.

2. ◯ MY CHILD THINKS THAT NOTHING WILL EVER WORK OUT FOR HIM/HER.
   ◯ MY CHILD IS NOT SURE IF THINGS WILL WORK OUT FOR HIM/HER.
   ◯ MY CHILD THINKS THAT THINGS WILL WORK OUT FOR HIM/HER.

3. ◯ MY CHILD DOES MOST THINGS O.K.
   ◯ MY CHILD DOES MANY THINGS WRONG.
   ◯ MY CHILD DOES EVERYTHING WRONG.

4. ◯ MY CHILD HAS FUN IN MANY THINGS.
   ◯ MY CHILD HAS FUN IN SOME THINGS.
   ◯ NOTHING IS FUN AT ALL FOR MY CHILD.

5. ◯ MY CHILD IS BAD ALL THE TIME.
   ◯ MY CHILD IS BAD MANY TIMES.
   ◯ MY CHILD IS BAD ONCE IN A WHILE.

6. ◯ MY CHILD THINKS ABOUT BAD THINGS HAPPENING TO HIM/HER ONCE IN A WHILE.
   ◯ MY CHILD WORRIES THAT BAD THINGS WILL HAPPEN TO HIM/HER.
   ◯ MY CHILD IS SURE THAT TERRIBLE THINGS WILL HAPPEN TO HIM/HER.

7. ◯ MY CHILD HATES HIMSELF/HERSELF.
   ◯ MY CHILD DOES NOT LIKE HIMSELF/HERSELF.
   ◯ MY CHILD LIKES HIMSELF/HERSELF.

2
8.  □ My child thinks that all bad things are his/her fault.
    □ My child thinks that many bad things are his/her fault.
    □ My child does not think that bad things are usually his/her fault.

9.  □ My child does not think about killing himself/herself.
    □ My child thinks about killing himself/herself but would not do it.
    □ My child wants to kill himself/herself.

10. □ My child feels like crying everyday.
    □ My child feels like crying many days.
    □ My child feels like crying once in a while.

11. □ Things bother my child all the time.
    □ Things bother my child many times.
    □ Things bother my child once a week.

12. □ My child likes being with people.
    □ My child does not like being with people many times.
    □ My child does not want to be with people at all.

13. □ My child cannot make up his/her mind about things.
    □ It is hard for my child to make up his/her mind about things.
    □ My child makes up his/her mind about things easily.

14. □ My child feels like he/she looks O.K.
    □ My child thinks that there are some bad things about his/her looks.
    □ My child thinks he/she looks ugly.
Remember, describe how your child has been in the past two weeks.

15. ☐ My child has to push himself/herself to do his/her schoolwork.
    ☐ My child has to push himself/herself many times to do his/her schoolwork.
    ☐ Doing schoolwork is not a big problem for my child.

16. ☐ My child has trouble sleeping every night.
    ☐ My child has trouble sleeping many nights.
    ☐ My child sleeps pretty well.

17. ☐ My child is tired once in a while.
    ☐ My child is tired on many days.
    ☐ My child is tired all the time.

18. ☐ Most days my child does not like eating.
    ☐ Many days my child does not feel like eating.
    ☐ My child eats pretty well.

19. ☐ My child does not worry about aches and pains.
    ☐ My child worries about aches and pains many times.
    ☐ My child worries about aches and pains all the time.

20. ☐ My child does not feel alone.
    ☐ My child feels alone many times.
    ☐ My child feels alone all the time.

21. ☐ My child never has fun at school.
    ☐ My child has fun at school only once in a while.
    ☐ My child has fun at school many times.
22. □ My child has plenty of friends.
□ My child has some friends but wishes he/she had more.
□ My child does not have many friends.

23. □ My child's schoolwork is alright.
□ My child's schoolwork is not as good as before.
□ My child does very badly in subjects that he/she used to be good in.

24. □ My child thinks he/she can never be as good as other kids.
□ My child thinks he/she can be as good as other kids if he/she wants to.
□ My child thinks he/she is just as good as other kids.

25. □ My child thinks that nobody really loves him/her.
□ My child is not sure if anybody loves him/her.
□ My child is sure that somebody loves him/her.

26. □ My child usually does what he/she is told to do.
□ My child does not do what he/she is told most times.
□ My child never does what he/she is told to do.

27. □ My child gets along with people.
□ My child gets into fights many times.
□ My child gets into fights all the time.

THE END

Thank you for filling out this form

TOTAL SCORE
F-1 _____
F-2 _____
F-3 _____
F-4 _____
<table>
<thead>
<tr>
<th>DSM-III-R Qualifying Criteria</th>
<th>NBRF &amp; CDI Items</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Depressed mood</td>
<td>Unhappy, sad</td>
<td>#66</td>
</tr>
<tr>
<td>Irritable mood</td>
<td>Irritable</td>
<td>#29</td>
</tr>
<tr>
<td></td>
<td>Sulks</td>
<td>#55</td>
</tr>
<tr>
<td>2. Decreased Interest,</td>
<td>Apathetic</td>
<td>#1</td>
</tr>
<tr>
<td>Pleasure, or Apathy</td>
<td>Withdrawn</td>
<td>#69</td>
</tr>
<tr>
<td></td>
<td>Isolates Self</td>
<td>#31</td>
</tr>
<tr>
<td>3. Decreased appetite, weight</td>
<td>Eating Problems #18</td>
<td></td>
</tr>
<tr>
<td>loss or weight gain</td>
<td>(CDI)</td>
<td></td>
</tr>
<tr>
<td>4. Insomnia, hypersomnia</td>
<td>Sleep Problems #16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(CDI)</td>
<td></td>
</tr>
<tr>
<td>5. Psychomotor agitation or</td>
<td>Restless</td>
<td>#42</td>
</tr>
<tr>
<td>retardation</td>
<td>(score 0 if age 6 or less)</td>
<td></td>
</tr>
<tr>
<td>6. Fatigue or loss of energy</td>
<td>Underactive</td>
<td>#65</td>
</tr>
<tr>
<td></td>
<td>Tired (CDI)</td>
<td>#18</td>
</tr>
<tr>
<td>7. Feelings of worthlessness</td>
<td>Feels worthless,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>inferior</td>
<td>#24</td>
</tr>
<tr>
<td></td>
<td>Says 'no one likes'</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>#44</td>
</tr>
<tr>
<td>8. Decreased concentration,</td>
<td>Difficulty making</td>
<td></td>
</tr>
<tr>
<td>indecisiveness, diminished</td>
<td>choices</td>
<td>#5</td>
</tr>
<tr>
<td>ability to think</td>
<td>Difficulty concentrating</td>
<td>#10</td>
</tr>
<tr>
<td>9. Recurrent thoughts of death</td>
<td>Talks about suicide #56</td>
<td></td>
</tr>
<tr>
<td>and/or suicide</td>
<td>Threatens to harm self #62</td>
<td></td>
</tr>
</tbody>
</table>

**Total Index Score**
References


with Youngsters (MESSY). Behavior Research and Therapy, 23, 289-298.


health: Classification, diagnosis, treatment, services (pp.197-202). New York: Springer-Verlag.


