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# Monitoring the Effects of Psychotropic Drugs in Students with Emotional Impairments: Home and School Data

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# MONITORING THE EFFECTS OF PSYCHOTROPIC DRUGS IN STUDENTS WITH EMOTIONAL IMPAIRMENTS: HOME AND SCHOOL DATA

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# MONITORING THE EFFECTS OF PSYCHOTROPIC DRUGS IN STUDENTS WITH EMOTIONAL IMPAIRMENTS: HOME AND SCHOOL DATA

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Research has shown that schools do not typically participate in the systematic monitoring of psychotropic medications prescribed to school-aged children with emotional disorders. Conversely, research indicates that the information that is relayed to the prescribing physician from the schools consists, in general, of informal global reports regarding the student's overall behavior. Additionally, research evaluating systematic monitoring systems within schools has lacked input from the prescribing physician regarding relevant data to be collected. These findings provided impetus for the present project, which was an attempt to develop a practical system for schools to monitor possible desired and adverse effects of psychotropic medications.

For this project input from parents/guardians, teachers, and an interested psychiatrist was used to select procedures for measuring these effects. Possible desired effects in several behavioral domains were assessed using the Nisonger Child Behavior Rating Form (CBRF) -Parent and -Teacher scales, whereas side effects were evaluated using the Detection of Side Effect Scale (DOSES). Data intended to reflect the status of students at home and at school were obtained monthly from

parents/guardians and teachers, respectively. Parents/guardians and teachers were surveyed concerning their satisfaction with this monitoring system and the results obtained were conveyed to the participating psychiatrist. Finally, information was obtained regarding the medication monitoring process prior to the onset of the present study.

The results of the parent/guardian and teacher acceptability surveys indicate that both the Nisonger CBRF scales and the DOSES were easy to understand. And at the end of the present study, the School Social Worker was familiar enough with the N-CBRF scales and the DOSES to report these data to the prescribing psychiatrist directly. A key issue in evaluating the effects of psychotropic medications in school settings is developing procedures that yield clinically meaningful data without unduly burdening school personnel. To that end, the monitoring system developed for the present study indicates a positive step in that direction.

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# INTRODUCTION

## Overview of Serious Emotional Disturbance

"Serious emotional disturbance" (SED) is one of the most ambiguous labels that can be assigned to a student with special needs. In the field of child psychiatry, the SED diagnosis originated with studies investigating drug effects in adolescents with emotional impairments during the 1950s and 1960s (Conners, Eisenberg, & Sharpe, 1964; Freed & Peifer, 1956). The term SED referred to heterogeneous groups of children and adolescents who were housed in psychiatric hospitals or residential facilities (Conners et al.) or who were outpatients in a psychiatric or child guidance clinic (Freed & Peifer). Although the children examined often were diagnosed with a specific psychiatric disorder (e.g., primary behavior disorder, psychoneurotic, schizophrenic, reactive behavior disorder with organic brain disease), not everyone agreed as to the disorders SED should comprise (Freed & Peifer). Moreover, some of the participants (subjects) in these early drug studies did not have a psychiatric diagnosis.

In education, the term SED gained popularity with the passage of the Education for All Handicapped Children Act of 1975 (EAHCA), Public Law (PL) 94-142, the justly-famous federal statute which dictates that all students have the right to a free and appropriate public education. Such an education may include special

education services, and the law specified the conditions that make a student eligible for these services. One of these is SED:

> The term seriously emotionally disturbed [SED] means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance: (a) an inability to learn which cannot be explained by intellectual, sensory, or health factors; (b) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; (c) inappropriate types of behavior or feelings under normal circumstances; (d) a general pervasive mood of unhappiness or depression; or (e) a tendency to develop physical symptoms or fears associated with personal or school problems. The term includes children who are schizophrenic or autistic. The term does not include children who are socially maladjusted, unless it is determined that they are seriously emotionally disturbed (Federal Register, 1977, p. 42478)

As defined, SED involves a variety of behaviors that adversely affect the student's educational performance. That is, the PL 94-142 definition of SED is not based on the student having a psychiatric diagnosis, but rather the student's behavior displayed in the school setting. Although students given the educational diagnosis of SED may display behaviors that meet the diagnostic criteria for a psychiatric disorder, such a diagnosis is not a requirement for the special education label.

Since the initial passage of PL 94-142, several amendments to this law have occurred (Yell, 1998). Two significant changes that occurred in the 1990 amendment,

P.L. 101-476, were the changing of the name of the law to the Individuals with Disabilities Education Act (IDEA) and the changing of the language to emphasize the person first, e.g., changing the term "handicapped student" to "child/student/individual with a disability" (Yell, 1998). The federal label referring to a student with SED, however, was not changed until recently. The 1997 reauthorization of IDEA included a provision to drop the term "serious" from the terminology (Fornes & Kavale, 2000). Thus the federal label became a student with an "emotional disturbance" (ED) (34 CFR 300.74). The ED definition itself remains unchanged. Although ED is the federal term, this label is not used by all states. For example, ED is not recognized in Michigan where the present study was conducted. The participants in this study received the educational diagnosis of "emotional impairment," (EI) which is similar to the federal label of ED.

It is estimated that approximately 1% of all school-aged children are identified as ED (U.S. Department of Education, 2002). Most of these students are treated with non-pharmacological interventions. That is, the educational plan to deal with their special needs involves using strategies such as positive reinforcement, response cost, self-monitoring, and a highly structured classroom environment (Miltenberger, 2001; O'Neill et al., 1997; Paine, Radicchi, Rosellini, Deutchman, & Darch, 1983; Shapiro, Durnan, Post, & Levinson, 2002). For example, many of the students labeled as ED could be classified as having social competence deficits (Gresham, 2002). In this case, the interventions utilized would be structured to teach the students necessary skills to cope better with social situations. Because ED comprises students with a

wide range of behavioral problems and a huge range of specific interventions have been used, it is impossible to make meaningful summary statements regarding the general effectiveness of non-pharmacological interventions in this population. It is, however, clear that such interventions have proven useful in treating a wide range of specific problems (Miltenberger; O'Neil et al.; Paine et al.; Shapiro et al.).

## Pharmacological Treatment of Emotional Disturbance

### Rationale for Pharmacological Interventions

Many students labeled as ED also have a DSM-IV Axis I diagnosis (e.g., conduct disorder, oppositional defiant disorder, bipolar disorder, anxiety disorder, depression, schizophrenia) (Gadow, 1986; Mattison, Spitznagel, & Felix, 1998). Depending on the nature and severity of the psychiatric comorbidity, these children may be prime candidates for pharmacotherapy (Epstein & Olinger, 1987; Wilson & Sherrets, 1979). For example, depression is among the most common of psychiatric disorders in adolescents, and drugs are often and effectively used to treat the disorder (e.g., Julien, 2001; Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993).

Drug therapy is the most common medical intervention for behaviors displayed by students with ED (Cullinan, Epstein, & Lloyd, 1983; Mundo, Pumariega, & Vance, 1999). Several studies have examined the kinds of drugs that such students receive and the prevalence of their use (Brown, Dingle, & Landau,

1994; Cullinan, Gadow, & Epstein, 1987; Epstein, Cullinan, & Gadow, 1985; Epstein & Olinger, 1987; Forness, Kavale, Sweeney, & Crenshaw, 1999; Gadow, 1986; Hallfors, Fallon, & Watson, 1998; Mundo et al; Wilson & Sherrets, 1979). Results indicate that 11-30% of students classified as ED receive one or more drugs intended to improve behavior.

Several authors have summarized the kinds of medications typically prescribed for students, including those with ED (Brown et al., 1994; Forness et al., 1999; Gadow, 1986; Mundo et al., 1999; Shreeram & Kruesi, 1999). These authors also summarize for various drug classes (e.g., stimulants, antidepressants, anxiolytics), and some individual drugs: (a) desired effects, (b) adverse effects, (c) behaviors and psychiatric diagnoses for which they are commonly prescribed, and (d) dosage information.

As with nonpharmacological interventions, it is impossible to summarize the effectiveness of drug treatments because of the vast range of drugs used and conditions treated. It is worth noting, however, that some of the psychiatric conditions that commonly accompany an educational label of ED, such as autism and cognitive impairment, generally are not treated effectively with drugs (Matson et al., 2000; Poling, Laraway, Ehrhardt, Jennings, & Turner, in press). No drugs are approved for treating these conditions, therefore pharmacological interventions in such cases are for off-label purposes.

When a medication is used to treat a condition for which it has not been approved, it is said to be an off-label use of the medication. That is, the FDA has not

approved the medication for treatment of the condition in question. For example, a child may be prescribed clonidine (Catapres) to target hyperactive and noncompliant behaviors, however, this medication is only FDA-approved for use in the treatment of hypertension. When physicians prescribe a psychotropic medication for an off-label use they are in essence conducting a mini-experiment. That is, the physician is hypothesizing that administering a specific drug will produce a desired effect without producing a significant adverse reaction (Sprague & Werry, 1971). In such cases, it is essential that sufficient data be collected to confirm or reject this hypothesis. These data should accurately reflect elements of behavior targeted by the prescribing physician and other relevant caregivers for improvement, as well as side effects.

There is nothing wrong with the off-label use of medications, which is common in medicine. In fact, when well-controlled research indicates that off-label applications are generally effective and no on-label alternative medications are available, using drugs for applications not approved by the Food and Drug Administration is consistent with medical best practices (Hardman, Limbird, Molinoff, Ruddon, & Gilman, 1995).

Even in such cases, however, it can never be assumed that any given individual will respond favorably to a particular medication. Therefore, careful monitoring is required to ensure that a) the medication that an individual receives is actually beneficial, and b) the medication is used to benefit that individual to the maximum extent possible (Gadow & Poling, 1988; Poling & Ehrhardt, 1999). The same is true when medications are prescribed for off-label conditions for which there

is no clear evidence of effectiveness. As noted, this is the case with respect to some of the psychiatric conditions for which students with ED receive psychotropic medications. Under these circumstances, an especially compelling case can be made for careful monitoring of drug effects. As Poling et al. (in press) point out with respect to the use of psychotropic drugs to treat behavioral problems in people with developmental disabilities:

> At present, because of the absence of relevant outcome data, it is almost impossible to know *a priori* whether a given medication will positively affect the behavior of a person with a developmental disability. Therefore, drug effects should be carefully monitored in any such person who receives a psychotropic medication. Unfortunately, however, this appears to occur rarely. The result is that many people with developmental disabilities receive medications that affect them in unknown ways. Given that medications are relatively restrictive interventions, this is unfortunate. Enhanced monitoring of drug effects is an essential step in improving the pharmaceutical treatment of behavior disorders in people with developmental disabilities. Despite arguments to the contrary, such drugs are not "bad" or "good." Some people with developmental disabilities derive benefits from drug treatment that cannot be produced by other kinds of interventions. Other people, however, are exposed to unnecessary and even harmful drug regimens. Appropriate drug treatment requires that the right people receive medication, and that their medication regimen is managed to produce optimal benefit. Careful drug

> monitoring helps to achieve both ends. At present, our best advice for anyone concerned with the pharmaceutical treatment of behavior disorders in people with developmental disabilities is simple: Be skeptical and collect data.

Essentially the same argument can be made with respect to the pharmacological treatment of students diagnosed with ED.

Importance of Systematically Monitoring Psychotropic Medication

Judicious monitoring of the efficacy of psychotropic medications prescribed for school-aged children is important for several reasons in addition to those noted previously. First, and foremost, the vast majority of research on the effectiveness of psychotropic medication has focused on adults. The effects of psychotropic medication in children often differ from those reported for adults (Barkley et al., 1990; Taylor, 1994).

Second, there is not a specific psychotropic medication treatment for specific behaviors (e.g., crying, acting out, noncompliance), which are often targeted in students with ED, and few indicators accurately predict children's responses to specific medication or dosages (Taylor). Therefore, careful monitoring of children's responses to the different drugs and different dosage levels is essential for identifying the most effective treatment. Moreover, in many cases, when physicians prescribe medications to deal with behavioral problems in school-aged children, the drugs are prescribed for off-label usage, as discussed previously.

Third, children are constantly changing as they mature, making monitoring of medication effects imperative (Brown & Sawyer, 1998; Zametkin & Yamada, 1993). That is, drug effects may vary with development (Brown & Sawyer; Zametkin & Yamada). Fourth, children are less capable than adults of reporting the presence of adverse effects (Brown & Sawyer; Zametkin & Yamada). Customarily, adults will inform their physician when a medication is causing problems or is not producing the desired effects. Even in adults, however, the approach of asking people about how they have benefited from a medication does not accurately evaluate the degree of change because, "people simply do not remember how they were in the beginning" (Streiner & Norman, 1995, p. 165). Finally, decisions to prescribe psychotropic medications or change dosage levels typically are based on informal global assessments provided by parents or teachers (Brown & Sawyer; Fredericks & Hayes, 1995; Gadow, 1982, 1983; Singh & Winton, 1984). Children's actual behavior may have little influence on these decisions.

The need for monitoring medication effects in school-aged individuals has been emphasized by professionals for many decades. In 1971, the Report of the Conference on Stimulant Drugs stated:

> The decision to use drug treatment depends on the commitment to diagnose and to monitor the response to the treatment in the best traditions of medical practice. When there is informed parental consent, parents, teachers and professionals can collaborate in organizing and monitoring treatment programs. (as cited in Weithorn & Ross, 1975, p. 60).

This report emphasized the need for input from multiple sources for adequate monitoring of the medication. That is, all of the adult individuals who have an impact on the medication process (i.e., parents, teachers, physicians) should systematically work together to provide the child with the best medical treatment. Clearly, adequate monitoring of the effects of psychotropic drugs is necessary to optimize treatment for individual students (Poling, 1994).

Systematic Monitoring Procedures

An effective medication monitoring system may involve any of a variety of assessment strategies intended to quantify desired behavioral effects of psychotropic medications. These include unstructured, semistructured, and structured interviews, and symptom checklists (Aman, 1993; Brown & Sawyer, 1998; Kazdin, 1982; Miltenberger, 2001; O'Neill et al., 1997). Even though they appear to be a common tool for indexing drug effects (Brown & Sawyer), there is little research regarding unstructured interviews, although their psychometric characteristics have been questioned (Young, O'Brien, Gutterman, & Cohen, 1987). Structured interviews and instructions for conducting and scoring them have become more readily available in recent years (Brown & Sawyer). Such interviews usually consist of a series of questions, observations, or tests that must be carried out exactly as specified (Aman; Kazdin; Miltenberger; O'Neill et al.).

The structured interview is not an ideal technique for monitoring medications. Problems with structured interviews include their questionable sensitivity and

specificity in identifying individual symptoms of disorders and the substantial time required to master and to administer them (Brown & Sawyer, 1998). Semistructured interviews also require significant training on the part of the interviewer. Moreover, they require the interviewer to make judgment calls and interpret responses of the interviewee, and therefore characteristically are relatively weak in terms of reliability and validity (Aman, 1993; Brown & Sawyer; Herjanic & Reich, 1982). The use of symptom checklists, which provide the interviewer with a list of questions concerning whether or not particular signs and symptoms occurred during the period of interest, may increase the value of semistructured interviews (Aman; Brown & Sawyer).

A behavior rating scale is another means for systematically monitoring medication. In general, rating scales have a number of features that make them attractive for assessing the effects of psychotropic medications. They are economical in that most individuals can complete them in a few minutes (Aman, 1993; Brown & Sawyer, 1998). They enable raters to aggregate behaviors across a wide range of settings and over time (Aman; Brown & Sawyer). Thus, infrequent behaviors can be detected and recorded. They tend to be clinically relevant and consumer-oriented (Aman; Brown & Sawyer). The better ones provide norms by which to determine how "abnormal" the problem behavior is (Aman; Brown & Sawyer). Finally, many of them have been shown to be highly sensitive to pharmacological treatment (Aman; Brown & Sawyer; Campbell, Green, & Deutsch, 1985).

Rating scales do have some general limitations. There is the possibility of rater subjectivity in determining whether a given behavior constitutes a problem

(Aman, 1993; Brown & Sawyer, 1998). There also is a tendency for raters to score children with extreme behavior as less severe over successive ratings (Achenbach & Edelbrock, 1986)). This has been characterized as regression to the mean (Milich, Roberts, Loney, Caputo, 1980) and is most likely to occur from the first to the second rating (Aman). In some cases, there is a tendency for raters to score the child in terms of the rater's overall impression, regardless of the content of various items and their contribution to different domains or subscales (Aman). Finally, although raters are generally acceptably reliable in evaluating acting-out problems and disorders (e.g., aggression, conduct disorder), they are less reliable in evaluating internalizing or emotional problems (e.g., anxiety, depression) (Hodges, 1990).

There are many types of rating scales available to monitor the effects of medications. These scales fall into two categories, general rating scales and scales for a specific diagnosis, symptom, or problem behavior. One of the best-known general rating scales is the Clinical Global Impressions (CGI; "Rating Scales," 1985). The purpose of the CGI is to formalize and quantify the usual way judgments of drug efficacy are made by physicians and others by integrating all information from a multitude of sources (e.g. physician's reports, parent's reports, teacher's reports). The information is recorded onto three subscales: (a) Severity of Illness, which is rated at each assessment; (b) Global Improvement, which is scored only after treatment has begun; and (c) Efficacy Index, which is rated on a two-way scale in which Therapeutic Effect is assessed against Side Effects ("Rating Scales"). A serious limitation of the CGI is that its psychometric characteristics are unknown, and

probably vary across clinical population, physicians, and types of drugs (Aman, 1993). In addition, criteria for rating particular domains are somewhat ambiguous.

Another general rating scale, and one that has been rather carefully studied, is the Child Behavior Checklist (CBCL; Achenbach, 1991a). The CBCL is a 132-item rating form designed as a parent-rating instrument for assessing children. It consists of two sections, Social Competence and Problem Behavior, which are scored on a 3-point scale. The Social Competence section contains 20 items on amount and quality of the child's involvement in sports, hobbies, organizations, jobs, friendships, etc. The Problem Behavior section contains 112 items describing externalizing and internalizing problem behaviors (Achenbach). The research evaluating the CBCL indicates that it has a high test-retest agreement and a high interrater agreement. Additionally, research has shown that the CBCL has good content validity, moderately high convergent validity, and satisfactory-to-good criterion-group validity (Achenbach). The research is limited, however, in that it has not focused on assessing drug effects (Achenbach; Aman, 1993). That is, the CBCL's drug sensitivity is largely unknown.

Rating scales that assess a specific diagnosis, symptom, or problem behavior have been developed to quantify attention deficit hyperactivity disorder (ADHD), conduct, oppositional, and aggressive problems, depression, and anxiety. There are many ADHD rating scales available, including the Childhood Attention Problems (CAP; Edelbrock, 1978), the Conners Abbreviated Symptom Questionnaire (CASQ;

Goyette, Conners, & Ulrich, 1978), and the Attention Deficit Hyperactivity Disorder (ADHD) Rating Scale (DuPaul, 1991).

The CAP was adapted from the Conners Teacher Rating Form (TRF; Achenbach, 1991b) by extracting items that consistently loaded heavily on the Hyperactivity factor of the CTRF and that were consistent with DSM-III-R criteria for ADHD (Edelbrock, 1978). It is a 12-item instrument that is easy to administer. It consists of two subscales, inattention and hyperactivity and there are no age differences for norms. Research suggests that this scale is reliable, valid, and drug sensitive (Edelbrock).

The CASQ uses 10 main items describing inattention and disruptive behaviors common to both Conners Teacher Rating Scale and Conners Parent Rating Scale (Goyette et al., 1978). Research indicates that this scale is not very sensitive to the effects of medications (Aman, 1993). Finally, the ADHD Rating Scale is a 14-item instrument based on the symptoms specified in the DSM-III-R (DuPaul, 1991). Research suggests that this scale has excellent internal consistency, good test-retest reliability, acceptable interrater reliability, and that validity is generally supported (DuPaul).

Several rating scales also are available for evaluating conduct, oppositional, and aggressive problems (O'Leary & Johnson, 1986). Research from drug studies indicates that the TRS (Conners, 1990) and Conners Parent Rating Scale (CPRS; Conners, 1970) are the most sensitive to treatment effects (Aman, 1993). The TRS is a 39-item instrument with four subscales (a) Conduct Problem, (b) Inattention, (c)

Tension/Anxiety, and (d) Hyperactivity. An abbreviated version of this scale, the Abbreviated Symptom Questionnaire, may be used when assessing drug effects (Connors, 1990).

There are two versions of the CPRS, a long version and a short version. The long version is a 93-item instrument with eight subscales (a) Conduct Disorder, (b) Anxious-Shy, (c) Restless/Disorganized, (d) Learning Problem, (e) Psychosomatic, (f) Obsessive Compulsive, (g) Antisocial, and (h) Hyperactive-Immature. The short version is a 48-item instrument with five subscales (a) Conduct Problem, (b) Learning Problem, (c) Psychosomatic, (d) Impulsive-Hyperactive, and (e) Anxiety. Of the two versions, the longer version has been shown to be more sensitive to drug effects (Conners, 1970).

Rating scales assessing depression and anxiety are available, but have not been shown to be sufficiently sensitive to drug effects. That is, while there are a multitude of instruments for assessing childhood depression and anxiety, there have been few well-controlled psychotropic drug trials conducted with anxiety disorders and depression in children and adolescents (Aman, 1993; Brown & Sawyer, 1998). Thus the validity of depression rating scales and anxiety rating scales in assessment of drug efficacy is uncertain. Additionally, the value of depression rating scales in drug trials is complicated by the fact that changes in depression ratings may occur independent of treatment efficacy because ratings tend to improve with repeated administrations (Brown & Sawyer). With regard to anxiety scales, Klein (1988) recommended that any assessment of drug effects include an evaluation of both state

and trait anxiety. State anxiety is described as being a relatively transitory characteristic of a child's personality and in response to a given stressor. Trait anxiety, in contrast, is presumed to reflect a stable characteristic of a child's personality (Aman).

Direct observations of behavior also can be used to monitor the effects of psychotropic medication, and studies show that such measures can be sensitive, valid, and reliable (Gadow & Poling, 1988). A problem, however, is that such measures are too resource-intensive to be used in the practical everyday evaluation of psychotropic medications.

Systematic Assessment of Adverse (Side) Effects

Adequate monitoring of the physical side effects of psychotropic medication is imperative. As noted previously, children frequently do not complain overtly about physical problems and, at times, find it difficult to describe physical symptoms (Brown & Sawyer, 1998). Additionally, children and adolescents develop rapidly. Particular attention needs to be directed toward drug effects on physical development, especially where a medication is given for long periods (Zametkin & Yamada, 1993).

Ideally, prior to the initiation of medication, an initial baseline should be obtained to index behavioral and physical status prior to medication therapy (Kalachnik et al., 1998; Zametkin & Yamada, 1993). Then, occasional monitoring of relevant signs and symptoms can detect possible drug-induced side effects.

There are several approaches available for systematic assessment of adverse medication effects. These include rating scales, checklists, physical and neurological examinations, and electrophysiological studies (Brown & Sawyer, 1998; Kalachnik et al., 1998; Zametkin & Yamada, 1993). The use of a rating scale, though not common, is encouraged since it may detect medication-induced symptoms that the patient or family might not otherwise notice (Brown & Sawyer; Zametkin & Yamada). That is, these measures may call attention to signs and symptoms that a parent or child may not spontaneously report. Some possible rating scales include the Dosage Record and Treatment Emergent Symptom Scale (DOTES; Guy, 1976a), the Subjective Treatment Emergent Symptom Scale (STESS; Guy, 1976b), and the Abnormal Involuntary Movement Scale (AIMS; Guy, 1976c).

The DOTES assesses many central nervous system (CNS) side effects as well as some behavioral side effects. It involves a systematic review of all body systems through both inquiry and simple physical exam (Guy, 1976a). It also requires judgments on intensity, relationship of symptoms to the medication, and action taken for each symptom occurrence. The STESS is a 32-item, five-point scale suitable for children up to 15 years of age (Guy, 1976b; Zametkin & Yamada, 1993). This scale may be completed by the child, parent, or other rater and was designed to acquire information on the existence of physical complaints. The AIMS is the most widely used standardized rating instrument in the assessment of tardive dyskinesia (Zametkin & Yamada). It is a global 12-item, five-point severity scale consisting of dyskinetic ratings of the face, lips, tongue, upper and lower extremities, and trunk (Guy, 1976c).

As mentioned previously, a baseline of symptomology should be attained before the initiation of drug treatment. This could be accomplished by completing a rating scale prior to medication treatment.

Researchers also recommend that physical and neurological examinations be a routine part of monitoring for adverse side effects in children and adolescents. However, numerous methodological difficulties and psychometric problems characterize neurological assessments, and future research efforts need to focus on developing a standardized neurological examination to quantify many of the adverse neurological effects associated with some psychotropic medications (Brown & Sawyer, 1998). Additionally, it is recommended that assessment of the heart's electrical condition via electrocardiogram (EKG) and a complete electroencephalography (EEG) be conducted when certain drugs are prescribed. Most psychotropic drugs, however, do not produce cardiac toxicity.

## Research on School-Aged Children and Systematic Monitoring of Medication

Almost nothing is known concerning how the effects of psychotropic medications typically are monitored in students with ED (Singh, Epstein, Leubke, & Singh, 1990). There is, however, a sizable literature concerning students with a diagnosis of ADHD. With the rise in the use of methylphenidate in the early 1970s for the treatment of ADHD, much attention was given to the fact that the monitoring of drug effects was less than adequate (Bosco & Robin, 1976; Loney & Ordona,

1975; Robin & Bosco, 1973; Sandoval, Lambert, & Yandell, 1976; Solomons, 1973; Weithorn & Ross, 1975).

Researchers found that diagnostic practices were idiosyncratic and rarely based on operational definitions of symptoms or normative data. Dosage adjustments were indiscriminate. There was no direct contact between the physicians and classroom teachers, and systematic instruments for evaluating drug effects were rarely used. Anecdotal reports from parents were the standard means for obtaining information about drug effects. Furthermore, many parents adjusted dosage on their own.

Recent research has shown that the passage of time has not significantly changed these conditions. Parents usually depend on their physician to diagnose ADHD and prescribe a medication for it without fully understanding the consequences of administering such medication (Brown & Sawyer, 1998; Gadow, 1982, 1983; Gadow, Nolan, Paolicelli, & Sprafkin, 1991; Werry, 1993). Gadow et al. found that contacts between physicians and classroom teachers and the use of well-validated assessment instruments are rare. Teachers are often uninformed about the medication being used and physicians generally have limited knowledge about a child's behavior at school. Furthermore, the decision to medicate and to continue medication use typically is made by a pediatrician based on informal information provided by parents.

Other research has suggested that children's actual behavior may have little influence on these decisions (Bruelle, Barton, & Foskett, 1983). In this study,

physicians were surveyed to obtain perceptions of the information relayed between them and parents and school personnel regarding the effects of medications used with handicapped children. Results indicated that the physicians reported that little information was actually exchanged. While the majority of physicians received some information from school personnel prior to initiating therapy, only 33% considered that information to be objective. Furthermore, 43% of the physicians indicated that they provided information to the schools, and 62% said that they received some information from the schools concerning the effectiveness of the medications, but only 10% felt that this information was objective.

## School Involvement in Systematic Monitoring of Psychotropic Medication

The high rate of pharmacological interventions for students with ED should be of interest to school personnel, as they are in a position to provide the prescribing physicians with key information relevant to the effectiveness of the medications. The school setting is in a sense a microcosm of society and represents a place where students and adults work, play, eat and live together for six hours per day, five days per week, at least 180 days per year. In fact, by the end of 5$^{th}$ grade, children will have spent a minimum total of 5,400 hours in school (Gresham, 1997). In light of the fact that children spend a significant portion of their lives in school, the involvement of school personnel in monitoring drug effects appears to be essential to determine the efficacy of prescribed medications (Brown et al., 1994). That is, school personnel are in contact with children for prolonged periods within a structured setting and have

opportunities to observe children in situations to which the parents may not have access (Gadow & Nolan, 1993). Thus, input from school personnel is invaluable for making decisions regarding the effects of medications (Brown et al.; Gadow, 1982, 1983; Weithorn & Ross, 1975). Additionally, the school setting offers a unique opportunity to evaluate the effectiveness of medications and to monitor changes over time (Brown & Sawyer, 1998). For example, behaviors such as motor movement, off-task behavior, disturbing others, and noncompliance can be observed in students performing academic tasks and interacting with peers in classroom settings, whereas physical aggression and other inappropriate social behaviors can be observed on the playground (Gadow & Nolan).

In view of the obvious potential importance of data collected at school in determining the effectiveness of drug treatments for students with ED, it is interesting that research examining teacher perceptions of medication usage with this population suggests that teachers perceive school personnel as having little influence on the decision-making process for prescribing or discontinuing medications for their students (Singh et al., 1990). Singh et al. surveyed teachers to explore their perceptions, knowledge, and opinions regarding medication used with their students. Their results indicated teachers believed that the student's doctor was the principal decision-maker in having the student put on or taken off medication for behavior disorders and that the parents, the school psychologist, and the student's case committee had some influence as well. Additionally, the results indicated that global

impressions were perceived as the major index for drug evaluations, although, in an ideal situation, informal teachers' diaries would be the assessment method of choice.

## Rationale for the Present Study

Because so little is known about the topic, although it is obviously important, the present study examined how medication effects typically are monitored in students with ED. The current project was intended to examine parent's/teacher's knowledge regarding the reason for which psychotropic medication(s) are prescribed to their children/students, the potential side effects for this medication(s), and the desired effects of the medication(s). It also is intended to develop and evaluate a monitoring system that is deemed useful by physicians and practical by parents and/or school staff. This strategy involved the use of two instruments, the Nisonger Child Behavior Rating Form (CBRF) and the Detection of Side Effects Scale (DOSES).

The project was a sequel to a previous study, which examined if and how parents and teachers of students with mental retardation, autism and/or other developmental disabilities monitored the effects of psychotropic medication(s) prescribed to their children or students (Turner, 2002). The study also developed and evaluated what was hoped to be a practical and sustainable method for systematically monitoring the effects of psychotropic drugs in school and home settings. Results suggest that both parents and teachers knew relatively little about the behaviors the medications were supposed to improve and that drug effects were almost never systematically monitored at school or at home. Interestingly, a high percentage of

parents/guardians indicated that they were satisfied with the current method of evaluating their child's medications, even though none of them employed a systematic monitoring system.

When given the opportunity to use a monitoring system based on a modified version of the Aberrant Behavior Checklist, an instrument developed to assess the effects of psychotropic drugs in people with mental retardation (Aman, Singh, Stewart, & Field, 1985), most parents and teachers indicated that the system was time efficient and beneficial to the student. However, input from physicians was not obtained in this study, which is a significant limitation. Unless psychiatrists and other physicians who prescribe psychotropic medication find the results of a monitoring system useful in making data-based treatment decisions, those results are of no practical benefit to the children who receive medication.

The present project was initiated at the request of personnel from the Van Buren Behavioral Education Center School (VBBECS), which primarily serves students with EI and serious behavioral problems. School personnel related that many of those students receive psychotropic medication, but their involvement in assessing the effects of the medication was unsystematic, at best.

School personnel also indicated that a psychiatrist who prescribed psychotropic medication for several students was interested in participating in a project designed to improve monitoring of the effects of those drugs. Medication monitoring affects the treatment of students only if physicians are actively involved; therefore the psychiatrist's willingness to participate in the project was invaluable.

# METHODS

## Participants and Setting

The target population for this study was school-aged children who had received a special education label of EI and were prescribed psychotropic medication(s). These students attend the VBBECS and were identified by the School Social Worker (SSW). Thirty-six students attended this school at the time of the study and each of them qualified for special education services under the category of EI. Appendix A provides the definition of EI currently used by the Michigan Department of Education (R 340.1706).

Written notification was sent home with all of these students requesting parent/guardian permission for the investigator to contact them (See Appendix B). Interested parents/guardians returned the permission form to the School Social Worker, who provided the investigator with the parent's/guardian's identifying information. The investigator contacted these parents/guardians via phone and an interview was conducted. Sixteen parents/guardians consented to an interview.

The parent/guardian interviews were conducted in a semi-structured format and took approximately 15 minutes. Verbal consent was obtained at the onset of the interview, a written copy of which was later mailed to the parent/guardian for a signature (See Appendix C). Consent also was obtained for the investigator to contact the student's primary teacher and to contact the student's prescribing physician.

signature (See Appendix C). Consent also was obtained for the investigator to contact the student's primary teacher and to contact the student's prescribing physician.

Letters describing the study were then sent to the two main prescribing physicians for the 16 students (See Appendix D). One physician, who prescribed medication for five students, consented to an interview. This interview was held after all of the written consents from the parents/guardians were received. It was conducted in the physician's office in a semi-structured format and took approximately 70 minutes. The five students served by this physician participated in the study, in the sense that information was obtained about them. Each of the students was a Caucasian boy. Students 1, 2, 3, 4, and 5 were 14-, 13-, 16-, 11-, and 16-years old, respectively.

## Procedure

Information was gathered from the parents/guardians and teachers of these students regarding medication usage. Additionally, the Nisonger CBRF-Parent and CBRF-Teacher scales were completed monthly by the student's parent/guardian and teacher. Of the parent/guardian informants, four were the biological mothers and one was the grandmother of the students. Of the teacher informants, three indicated that they had known the student they were evaluating for at least three months and one indicated that she had known the student she was evaluating for less than three months. Additional information was collected from the prescribing physician

regarding the rationale for the medication prescription. The physician had known all of the students more than 12 months.

After completion of the parent/guardian interview and the physician interview, the student's primary teacher was contacted via phone and an interview time was arranged. Similar interviews were conducted with the primary teachers at the VBBECS and took approximately 30 minutes. Consent for participation was received at the onset of the interview (See Appendix E). Following the interview, and once a month for the next two months, the teachers completed the Nisonger CBRF-Teacher scale and the DOSES.

Following the interview and once a month for the next three months the parents/guardians were mailed the Nisonger CBRF-Parent scale and the DOSES to be completed. The forms were sent home with the student with a return envelope to be returned to the SSW. If forms were not returned within a week, a second set of forms was sent home with the student. All of the parents/guardians except for one completed the scales every month. The parent/guardian who failed to return all of the scales only returned scales for two of the four months.

When all of the initial Nisonger CBRF-Parent and –Teacher scales were received, individual data collection forms for the student's behaviors were developed (See Appendices F, G, H, I, J, and K). These forms were used daily by the teachers to monitor each student's behavior at school. The lists of specific behaviors for which data were collected were based on the initial scales completed by parents/guardians and teachers and from the information gleaned from the physician. If a behavior was

rated as a "3" on either the parent or teacher scale and it was an observable and measurable behavior, then it was monitored. Additional behaviors were added per the physician's request during the physician interview. Each data collection sheet was developed with input from the teacher regarding the specific format. Thus each sheet is different from each other, and the contents of individual's sheets depended on teacher preference regarding format and the number and kinds of behaviors that were monitored.

Following two months of filling out both the Nisonger CBRF and DOSES scales the teachers and parents/guardians completed an acceptability survey. This survey was designed to provide the examiner with feedback evaluating the practicality and acceptability of both scales.

## Instruments

### Parent/Guardian and Teacher Interview Forms

The instrument used in the semi-structured interview was comprised of two sections (See Appendices L and M). The first section requested a) information about the student's prescribed medication, b) information regarding knowledge about the intended effects of the medication, c) information regarding medication administration, d) information regarding psychiatric diagnosis, and e) information about the degree of satisfaction with the results produced by the medication that the student currently is receiving.

The second section included questions ascertaining a) parent/guardian knowledge about whether the medication was prescribed to treat behaviors in each of the six categories summarized on the Nisonger CBRF, b) if these behaviors were being monitored in any manner, c) the current status of those behaviors, and d) satisfaction regarding the results produced by the medication on those behaviors. The behavioral categories of interest were a) Conduct Problem, b) Insecure/Anxious, c) Hyperactive, d) Self-Injury/Stereotypic, e) Self-Isolated/Ritualistic, and f) Irritable.

Physician Interview Form

The instrument used in the semi-structured interview included questions ascertaining information regarding a) the student's psychiatric diagnosis, b) the student's current medications, c) if and how information is received regarding the severity of the psychiatric diagnosis, d) if any medications were prescribed to deal with behaviors not indicative of a psychiatric condition, and e) if there is any additional information the physician would like to receive relevant to the effects of the psychotropic medication(s) prescribed for each student (See Appendix N).

The Nisonger Child Behavior Rating Form

The Nisonger CBRF is a 76-item rating form that was adapted from Edelbrocks Child Behavior Rating Form (Edlebrock, 1985) (See Appendix O). The Nisonger CBRF consists of two versions, parent and teacher, and contains two sections, Social Competence and Problem Behaviors. The Social Competence section

contains 10 items describing adaptive/prosocial types of behavior which are rated on a 4-point Likert scale. The Problem Behavior section contains 66 items describing externalizing and internalizing problem behaviors that are rated on a 4-point Likert scale taking into account a combination of rate of occurrence and degree to which the behavior presents a problem (Aman, Tasse, Rojahn, & Hammer, 1996; Tasse, Aman, Hammer, & Rojahn, 1996).

Detection of Side Effects Scale

The DOSES is a 37-item rating form that lists behaviors and physiological symptoms that are characteristic of side effects associated with psychotropic and antiepileptic medication (See Appendix P). All of the items are rated on a 4-point Likert scale indicating severity, i.e., "not at all", "a little", "pretty much", and "very much". The rating additionally indicates if the item is "New" or if it is "More Severe" relative to the previous rating (Kalachnik, 1988).

Acceptability Survey Form

The instrument used for the acceptability survey included questions ascertaining a) behaviors or physiological side effects listed that were unclear, b) satisfaction with both scales, c) difficulty in understanding directions, and d) feasibility of completing the survey on a monthly basis (See Appendices Q and R).

# RESULTS

## Medication Report

The medications students were prescribed are displayed in Table 1. Students received anywhere from two to four prescribed psychotropic medications. It should be noted that over the course of the study Student 3 underwent a medication changed. The citalopram and the bupropion were discontinued and a new medication, escitalopram oxalate (Lexipro), was started.

## Side Effects

Data relevant to parent's/guardian's knowledge of side effects are displayed in Table 2. One of the parents/guardians was familiar with the potential side effects of at least one of the prescribed medications. Four of the parents/guardians were not familiar with any of the potential side effects of the prescribed medications.

Table 1

Student's Prescribed Medications

| Student | Med I | Med II | Med III | Med IV |
|---|---|---|---|---|
| 1 | risperidone (Risperdal) | gabapentin (Neurotin) | | |
| 2 | sertraline (Zoloft) | olazapine (Zyprexa) | valproic acid (Depakote) | buspiron (Buspar) |
| 3 | citalopram (Celexa) | bupropion (Wellbutrin) | | |
| 4 | valproic acid (Depakote) | catapres (Clonidine) | methylphenidate (Concerta) | |
| 5 | sertraline (Zoloft) | nefazodone (Serzone) | | |

Table 2

Parent/Guardian Knowledge of Psychotropic Medication Potential Side Effects

| Student | No. of prescribed medications | No. of medications with known side effects |
|---|---|---|
| 1 | 2 | 0 |
| 2 | 4 | 0 |
| 3 | 2 | 1 |
| 4 | 3 | 0 |
| 5 | 2 | 0 |

## Medication Administration

Four of the five parents/guardians reported that medication administration was not a concern. All of them reported that an adult administered the medication and two reported using a weekly pill container that was given to them by the prescribing physician. One parent/guardian reported that her child's medications were administered at school and that sometimes on the weekend her child does not take any medication.

## Psychiatric Diagnosis

The parent's/guardian's reports of psychiatric diagnoses are displayed in Table 3 and the psychiatric diagnoses provided by the physician are displayed in Table 4. The results displayed in these two tables indicate that parent's/guardian's impression of their child's diagnosis differed significantly from the actual psychiatric diagnosis provided by the physician.

Table 3

Parent's/Guardian's Reports of Psychiatric Diagnosis

| Student | Diagnosis I | Diagnosis II | Diagnosis III |
|---|---|---|---|
| Student 1 | Oppositional Defiant Disorder | Bipolar | |
| Student 2 | Bi polar | | |
| Student 3 | Emotional Impairment | Compulsive Disorder | |
| Student 4 | Attention Deficit Hyperactivity Disorder | Impulsive Disorder | Bipolar Manic |
| Student 5 | Attention Deficit Hyperactivity Disorder | | |

Table 4

Physician's Description of Student's Psychiatric Diagnoses

| Student | Diagnosis I | Diagnosis II |
|---|---|---|
| Student 1 | Bi polar with psychotic features | |
| Student 2 | Depression with psychotic features | Bi polar |
| Student 3 | Depression | |
| Student 4 | Attention Deficit Hyperactivity Disorder | Seizure Disorder |
| Student 5 | None | |

## Satisfaction

Overall, four of the five parents/guardians were "somewhat satisfied" with the results produced by the medication. One parent/guardian was "very satisfied" with the results.

## Behavioral Category Knowledge

Findings relevant to parent/guardian knowledge about the behavioral categories for which their child's medications were prescribed are displayed in Table 5. The results indicate that medication was most often prescribed for conduct problems. Three of the parents/guardians indicated that a medication was prescribed

for this category. One parent/guardian indicated that a medication was prescribed for hyperactive behaviors and one parent/guardian indicated that a medication was prescribed for self-injury/stereotypic behaviors. Parent/guardian responses indicate that in most cases either a medication was not prescribed to deal with a behavioral category or it was unknown if a medication was prescribed to deal with a behavioral category.

Table 5

Parent/Guardian Knowledge of Behavioral Categories for Which the Medication was Prescribed

| Behavioral Category | Yes | No | Don't Know |
|---|---|---|---|
| Conduct Problems | 3 | 1 | 1 |
| Insecure/Anxious | 0 | 2 | 3 |
| Hyperactive | 1 | 2 | 2 |
| Self-Injury/ Stereotypic | 1 | 2 | 2 |
| Self-Isolated/ Ritualistic | 0 | 3 | 2 |
| Irritable | 0 | 3 | 2 |

The Nisonger CBRF-Parent, -Teacher Scales

Based on the results of interviews with parents/guardians and the physician, the primary Nisonger CBRF problem behavior categories for which students were prescribed medication were determined. Table 6 lists those categories.

Table 6

Nisonger-CBRF Problem Behavior Category or Categories for Which Medication was Prescribed

| Student | Nisonger CBRF Category or Categories |
|---|---|
| 1 | Conduct Problems |
| 2 | Insecure/Anxious, Self-Injury/Stereotypic |
| 3 | Insecure/Anxious |
| 4 | Conduct Problems, Hyperactive |
| 5 | Conduct Problems, Self-Injury/Stereotypic |

Parent/guardian- and teacher-reported evaluations of students using the Nisonger CBRF-Parent and –Teacher scales, respectively, are presented in Tables 7-16. Tables 17 and 18 provide normative data for these instruments.

Table 7

Nisonger CBRF – Parent Version: Totals for Subject 1

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure/ Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Overly Sensitive |
|---|---|---|---|---|---|---|---|---|
| February | 6 | 5 | 16 | 8 | 5 | 2 | 2 | 1 |
| March | 12 | 7 | 8 | 6 | 5 | 1 | 2 | 3 |
| April | 9 | 7 | 7 | 7 | 4 | 0 | 2 | 2 |
| May | 7 | 7 | 8 | 3 | 3 | 0 | 0 | 1 |

Table 8

Nisonger CBRF – Parent Version: Totals for Subject 2

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure/ Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Overly Sensitive |
|---|---|---|---|---|---|---|---|---|
| February | 11 | 8 | 23 | 31 | 14 | 14 | 8 | 14 |
| March | 5 | 4 | 22 | 18 | 11 | 7 | 5 | 13 |
| April | 6 | 4 | 22 | 21 | 9 | 6 | 7 | 10 |
| May | 4 | 3 | 29 | 19 | 12 | 7 | 8 | 9 |

Table 9

Nisonger CBRF – Parent Version: Totals for Subject 3

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure/ Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Overly Sensitive |
|---|---|---|---|---|---|---|---|---|
| February | 5 | 5 | 28 | 23 | 5 | 6 | 11 | 5 |
| April | 1 | 3 | 39 | 26 | 8 | 7 | 18 | 12 |

Table 10

Nisonger CBRF – Parent Version: Totals for Subject 4

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure/ Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Overly Sensitive |
|---|---|---|---|---|---|---|---|---|
| February | 3 | 4 | 28 | 19 | 20 | 5 | 7 | 11 |
| March | 2 | 3 | 27 | 18 | 17 | 6 | 7 | 6 |
| April | 6 | 4 | 25 | 19 | 18 | 6 | 8 | 5 |
| May | 6 | 4 | 35 | 23 | 14 | 6 | 8 | 6 |

Table 11

Nisonger CBRF – Parent Version: Totals for Subject 5

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure/ Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Overly Sensitive |
|---|---|---|---|---|---|---|---|---|
| February | 6 | 4 | 13 | 7 | 4 | 0 | 3 | 3 |
| March | 6 | 4 | 14 | 8 | 5 | 1 | 3 | 5 |
| April | 6 | 4 | 12 | 2 | 1 | 0 | 2 | 2 |
| May | 6 | 4 | 14 | 6 | 4 | 0 | 3 | 3 |

Table 12

Nisonger CBRF – Teacher Version: Totals for Subject 1

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure/ Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Irritable |
|---|---|---|---|---|---|---|---|---|
| February | 4 | 8 | 20 | 21 | 9 | 0 | 21 | 14 |
| March | 7 | 10 | 9 | 8 | 9 | 1 | 12 | 8 |
| April | 7 | 8 | 8 | 5 | 8 | 0 | 8 | 8 |

Table 13

Nisonger CBRF – Teacher Version : Totals for Subject 2

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Irritable |
|---|---|---|---|---|---|---|---|---|
| February | 5 | 9 | 16 | 22 | 11 | 7 | 13 | 13 |
| March | 7 | 9 | 20 | 15 | 16 | 23 | 13 | 17 |
| April | 5 | 5 | 26 | 14 | 13 | 22 | 11 | 14 |

Table 14

Nisonger CBRF – Teacher Version for Subject 3

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Irritable |
|---|---|---|---|---|---|---|---|---|
| February | 8 | 6 | 9 | 13 | 5 | 1 | 8 | 4 |
| March | 8 | 7 | 9 | 13 | 6 | 0 | 8 | 3 |
| April | 8 | 9 | 8 | 14 | 7 | 0 | 16 | 3 |

Table 15

Nisonger CBRF – Teacher Version for Subject 4

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Irritable |
|---|---|---|---|---|---|---|---|---|
| February | 4 | 2 | 18 | 11 | 9 | 3 | 13 | 6 |
| March | 4 | 2 | 13 | 8 | 11 | 3 | 18 | 6 |
| April | 5 | 5 | 7 | 8 | 13 | 7 | 14 | 3 |

Table 16

Nisonger CBRF – Teacher Version for Subject 5

| Month | Compliant/ Calm | Adaptive Social | Conduct Problem | Insecure Anxious | Hyperactive | Self-Injury/ Stereotypic | Self-Isolated/ Ritualistic | Irritable |
|---|---|---|---|---|---|---|---|---|
| February | 8 | 6 | 10 | 8 | 6 | 0 | 10 | 3 |
| March | 9 | 7 | 9 | 2 | 6 | 0 | 3 | 2 |
| April | 8 | 6 | 9 | 3 | 6 | 0 | 4 | 2 |

Table 17

Norm Data for the Nisonger CBRF-Parent Version, Means, and Standard Deviation

| Age (Years) | n | Compliant/ Calm | | Adaptive Social | | Conduct Problem | | Insecure/ Anxious | | Hyperactive | | Self-Injury/ Stereotypic | | Self-Isolated/ Ritualistic | | Overly Sensitive | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD |
| 7-9 | 65 | 7.25 | 3.63 | 4.63 | 2.88 | 18.06 | 13.48 | 7.66 | 7.89 | 13.20 | 7.91 | 2.63 | 4.19 | 5.00 | 4.51 | 5.82 | 3.94 |
| 10-16 | 68 | 6.72 | 3.50 | 4.49 | 2.47 | 19.93 | 14.03 | 10.88 | 9.65 | 15.00 | 7.38 | 3.38 | 4.62 | 6.66 | 5.58 | 5.87 | 3.81 |

n = number of participants; M = mean; SD = standard deviation

Table 18

Norm Data for the Nisonger CBRF-Teacher Version, Means, and Standard Deviation

| Age (Years) | n | Compliant/ Calm | | Adaptive Social | | Conduct Problem | | Insecure/ Anxious | | Hyperactive | | Self-Injury/ Stereotypic | | Self-Isolated/ Ritualistic | | Overly Sensitive | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD |
| 7-9 | 61 | 6.25 | 3.70 | 5.51 | 3.35 | 12.60 | 10.20 | 7.16 | 6.84 | 12.50 | 6.40 | 4.30 | 5.71 | 7.72 | 6.86 | 6.79 | 5.48 |
| 10-16 | 67 | 5.96 | 3.78 | 5.36 | 3.44 | 13.20 | 11.00 | 10.70 | 10.40 | 11.10 | 6.60 | 5.10 | 5.73 | 9.06 | 6.95 | 7.25 | 5.37 |

n = number of participants; M = mean; SD = standard deviation

In all cases, scores for all behavioral categories for each participant were within one standard deviation of the norm mean. This finding suggests that, although variability was evident across and within students, behavior in the rated categories did not differ markedly from that of the norm group at any time in the study. Moreover, it suggests that ratings by parents/guardians and teachers were similar. To quantify inter-rater agreement, a Pearson product-moment correlation was calculated between the monthly scores reported by parents/guardians and teachers. The resultant value was $r = 0.49$, $p < .001$.

In most cases, the ratings were relatively consistent across months. In a few cases, there were substantial changes in the ratings on particular categories across time. When this happened, the score usually changed substantially from one rating to the next, then remained fairly constant. Such a pattern is evident for Subject 1 on the parent/guardian category scores for Conduct Problem. The first score for this category was significantly higher than the following months scores. These scores decreased from the first month and then remained fairly constant. Likewise, for Subject 1 on the teacher category scores for Conduct Problem and Insecure/Anxious, the first score for both of these categories was significantly higher than the following months' scores, which were similar.

### Detection of Side Effects Scale

The DOSES items rated as new/more severe may be clues of emerging side effects. The same is true of items rated as two or three, unless these ratings can be

attributed with confidence to causes other than psychotropic medication (e.g. seizures/convulsions, item 16, might occur due to uncontrollable epilepsy). Tables 19 – 23 list for each student items listed as new/more severe and those scored as two or three.

## Acceptability Survey

The results of this survey indicate that both the Nisonger CBRF and DOSES scales were easy to understand and were rated as satisfactory instruments for assessing troublesome behavior and medication side effects in children with EI (See Appendices S and T).

Table 19

Student 1 – Summary of Parent DOSES

| Month | Item | Score | New/More Severe |
|---|---|---|---|
| February | Trouble concentrating | 3 | More Severe |
| | Rash | 3 | New |
| | Tired | 3 | New |
| | Sleeping – less | 2 | New |
| | Urination – more | 1 | New |
| | Speech – Mumbling | 3 | No |
| | Trouble getting along with staff | 3 | No |
| | Irritable | 3 | No |
| | Sad | 3 | No |
| | Trouble seeing | 2 | No |
| | Withdrawn/Talks less | 2 | No |
| | Trouble performing usual activities or playing sports | 2 | No |
| Comments – Subject 1 has complained that he can't sleep at night. On the other hand he has been known to take street drugs. He seems very sleepy, unmotivated, sad, moody and the next day be happy and laughing all day. | | | |
| March | Excessive Energy | 2 | No |
| | Irritable | 2 | No |
| | Sleeping – trouble getting to sleep | 2 | No |
| | Trouble concentrating | 2 | No |
| | Unusual skin temperature | 2 | No |
| April | Sleeping | 2 | No |
| Comments – Subject 1 has been doing better, trying harder and working harder. | | | |

Table 20

Student 2 – Summary of Parent DOSES

| Month | Item | Score | New/More Severe |
|---|---|---|---|
| February | Urination – delayed | 2 | New |
| | Irritable | 2 | No |
| | Trouble getting along with other clients | 2 | No |
| | Crying | 2 | No |
| Comments – Subject 1 has been complaining that he has been having trouble urinating. He has had a severe cold and has been on a strong antibiotic. He has been improving over the past year except when someone blames him for something he did not do. He gets very defensive. I am very happy with Dr. Bui and the way she takes care of him. | | | |
| March | Sleeping – more | 3 | New |
| | Stuffy Nose/Runny Nose/ Congestion | 3 | New |
| | Irritable/Gets Angry Easily | 3 | New |
| | Sad/Not Happy/Seems More Serious | 3 | New |
| | Headache | 1 | New |
| | Trouble Getting Along with Other Clients | 1 | New |
| | Urination – painful | 1 | New |
| | Bowel Movements – more diarrhea | 1 | New |
| | Trouble Getting Along with Staff/Hard to Please | 3 | No |
| | Crying | 3 | No |
| | Tired/Feeling Sleepy/Decreased Energy | 3 | No |
| | Trouble Concentrating/Difficulty Paying Attention | 2 | No |
| | Eating – more | 2 | No |
| Comments – Can't seem to control his temper when people push him to his limits. He is great around family, but when he gets around new people or kids his own age or a lot of people (as a group) he regresses. If someone says the wrong thing or "gets setup" he does not know how to handle it. | | | |
| April | Itchy/Scratchy Skin – head | 2 | New |
| | Saliva | 1 | New |
| | Crying | 3 | No |
| | Sleeping - more | 3 | No |
| | Irritable/Gets Angry Easily | 3 | No |
| | Trouble Getting Along with Staff/Hard to Please | 3 | No |
| | Trouble Getting Along with Other Clients | 3 | No |
| | Tired/Feeling Sleepy/Decreased Energy | 2 | No |
| | Trouble Concentrating/Difficulty Paying Attention | 2 | No |
| | Sad/Not Happy/Seems More Serious | 2 | No |
| | Eating – more | 2 | No |
| Comments – Can't seem to control his temper when told what to do and when is pushed to his limits. Seems to be having a problem getting along with adults at school and kids on the bus at this time. He is good at home but does not like to be told what to do by anyone besides me for some reason. When he gets in trouble at home and I correct him he is very sorry for what he does (right away). | | | |

Table 20 – Continued

| Month | Item | Score | New/More Severe |
|---|---|---|---|
| May | Itchy/Scratchy Skin | 3 | More Severe |
| | Crying | 3 | No |
| | Sleeping - more | 3 | No |
| | Irritable/Gets Angry Easily | 2 | No |
| | Sad/Not Happy/Seems More Serious | 2 | No |
| | Trouble Getting Along with Other Clients | 2 | No |
| Comments – Seems to have outbursts of anger more frequently since school had been out. It doesn't take him long to get over it, and is always sorry that he lost it, but in the mean time he says some really bad things. | | | |

Table 21

Student 3 – Summary of Parent DOSES

| Month | Item | Score | New/More Severe |
|---|---|---|---|
| February | Drinking | 2 | No |
| | Trouble Performing usual Activities or Playing Sports | 2 | No |
| | Sweating | 3 | More Severe |
| | Irritable/Gets Angry Easily | 3 | More Severe |
| | Eating | 3 | New |
| | Tired/Feeling Sleepy/Decreased Energy | 3 | New |
| | Headache | 2 | New |
| | Sad/Not Happy/Seems More Serious | 2 | New |
| | Withdrawn/Talks Less | 2 | New |
| | Sick to Stomach | 1 | New |
| | Sleeping | 1 | New |
| | Stomach: Aches/Discomfort/Heartburn | 1 | New |
| | Trouble Getting Along with Staff/Hard to Please | 1 | New |

Table 21 – Continued

| Month | Item | Score | New/More Severe |
|---|---|---|---|
| April | Eating | 3 | More Severe |
| | Headache | 3 | More Severe |
| | Irritable/Gets Angry Easily | 3 | More Severe |
| | Sad/Not Happy/Seems More Serious | 3 | More Severe |
| | Tired/Feeling Sleepy/Decreased Energy | 3 | More Severe |
| | Withdrawn/Talks Less | 3 | More Severe |
| | Trouble Concentrating | 2 | More Severe |
| | Trouble Doing Things with Hands/Less Steady Using Hands | 2 | More Severe |
| | Muscles – pain and stiff | 1 | New |
| | Drinking – more | 1 | New |
| | Unusual Skin Temperature – cold sweats | 1 | New |
| | Sweating | 1 | New |
| | Sleeping – more | 3 | No |
| | Bowel Movements | 2 | No |
| | Clumsy/Poor Balance/Stumbling | 2 | No |
| | Trouble Getting Along with Other Clients | 2 | No |
| Comments – He has had very low motivation doing things around house or caring for self. Very argumentative when trying to keep him on task, compulsive lying or excuses why he is not doing things expected. Seem svery hateful. | | | |

Table 22

Student 4 – Summary of Parent DOSES

| Month | Item | Score | New/More Severe |
|---|---|---|---|
| February | Excessive Energy/Constantly On The Go | 2 | More Severe |
| | Headache | 2 | More Severe |
| | Irritable/Gets Angry Easily | 2 | More Severe |
| | Bowel Movements – less | 2 | New |
| | Crying | 1 | More Severe |
| | Urination – more | 1 | New |
| | Withdrawn/Talks Less | 1 | New |
| | Dizziness | 1 | New |
| | Drinking – more | 1 | New |
| | Eating – more | 1 | New |
| | Itchy /Scratchy Skin | 1 | New |
| | Muscle – pain | 1 | New |
| | Sad/Not Happy/Seems More Serious | 1 | New |
| | Sleeping – more | 1 | New |
| | Trouble Doing Things with Hands/Less Steady Using Hands | 1 | New |
| | Saliva - less | 2 | No |
| | Shakiness/Tremor – hands | 2 | No |
| | Sweating – more | 2 | No |
| | Trouble Concentrating/Difficulty Paying Attention | 2 | No |
| | Trouble Sitting Still/Jittery | 2 | No |
| Comments – He has had a couple of incidents of bedwetting, but is not a constant problem. His stomachaches are usually due to his taking his medication but not taking time to eat. | | | |
| March | Sleeping – Trouble Getting to Sleep | 3 | More Severe |
| | Shakiness/Tremor – hands | 2 | More Severe |
| | Trouble Doing Things with Hands/Less Steady Using Hands | 2 | More Severe |
| | Stomach: Aches/Discomfort/Heartburn | 2 | More Severe |
| | Urination – bedwetting | 1 | New |
| | Trouble Seeing – blurred | 1 | New |
| | Saliva - more | 1 | New |
| | Irritable/Gets Angry Easily | 3 | No |
| | Excessive Energy/Constantly On The Go | 2 | No |
| | Bowel Movements – less | 2 | No |
| | Trouble Concentrating/Difficulty Paying Attention | 2 | No |
| | Trouble Getting Along with Staff/Hard to Please | 2 | No |
| | Trouble Sitting | 2 | No |
| Comments – He seems more difficult to control. He is also more impulsive: (example, on Tuesday April 8th, he got off the bus at a peer's house). He is also more destructive, more moods and at times mean and uncooperative in every aspect. | | | |

Table 22 – Continued

| Month | Item | Score | New/More Severe |
|---|---|---|---|
| April | Bowel Movements – more | 1 | New |
| | Excessive energy/Constantly On The Go | 2 | No |
| | Irritable/Gets Angry Easily | 2 | No |
| | Trouble Sitting Still/Jittery | 2 | No |
| Comments – He tells me "No" more often. Has more of an "I don't care" attitude and expresses it freely. He does as he wants and don't care about the consequences until confronted with such consequences and then blames the adult that's carrying out the punishment. | | | |
| May | Bowel Movements – more | 3 | More Severe |
| | Stomach: Aches/Discomfort | 3 | More Severe |
| | Trouble Getting Along with Staff/Hard to Please | 2 | More Severe |
| | Trouble Getting Along with Other Clients | 2 | More Severe |
| | Irritable/Gets Angry Easily | 2 | More Severe |
| | Trouble Sitting Still/Jittery | 2 | More Severe |
| | Urination - painful | 3 | New |
| | Muscles – cramps, stiff | 3 | New |
| | Eating – more | 2 | No |

Table 23

Student 5 – Summary of Parent DOSES

| Month | Item | Score | New/More Severe |
|---|---|---|---|
| February | Itchy/Scratchy Skin | 2 | More Severe |
| | Sleeping – less | 2 | More Severe |
| | Trouble Performing Usual Activities or Playing Sports | 2 | More Severe |
| | Stuffy Nose/Runny Nose/Congestion | 2 | More Severe |
| March | Headache | 1 | More Severe |
| | Excessive Energy/Constantly on the Go | 1 | More Severe |
| | Sleeping – Staying Asleep | 1 | More Severe |
| April | Trouble Getting Along with Staff/Hard to Please | 1 | More Severe |
| | Trouble Getting Along with Other Clients | 1 | More Severe |
| | Tired/Feeling Sleepy/Decreased Energy | 1 | New |
| | Stuffy Nose/Runny Nose/Congestion | 2 | No |
| | Sunburns Easily | 2 | No |
| | Trouble Performing Usual Activities or Playing Sports | 2 | No |

# DISCUSSION

## Discussion

Research has shown that schools do not typically participate in the systematic monitoring of psychotropic medications prescribed to school-aged children with emotional disorders. Conversely, research indicates that the information that is relayed to the prescribing physician from the schools consists, in general, of informal global reports regarding the student's overall behavior. Additionally, research evaluating systematic monitoring systems within schools has lacked input from the prescribing physician regarding relevant data to be collected. These findings provided impetus for the present project, which was an attempt to develop a practical system to monitor possible desired and adverse effects of psychotropic medications.

For this project, input from parents/guardians, teachers, and an interested psychiatrist was used to select procedures for measuring these effects. Possible desired effects in several behavioral domains were assessed using the Nisonger CBRF-Parent and -Teacher scales, whereas side effects were evaluated using the DOSES. Data intended to reflect the status of students at home and at school were obtained once a month from parents/guardians and teachers, respectively. Parents/guardians and teachers were surveyed concerning their satisfaction with the monitoring system and the results obtained were conveyed to the participating

psychiatrist. Finally, information was obtained regarding the medication monitoring process prior to the onset of the present.

Data relevant to the status of five students with an educational diagnosis of EI were obtained. According to parents/guardians, each of the five students had received a psychiatric diagnosis. According to the prescribing psychiatrist, four of the students had received a psychiatric diagnosis. The diagnoses described by the parents/guardians and the psychiatrist agreed in only one of five cases, which is interesting and distressing. It was not clear whether the discrepancies resulted from a lack of communication between parents/guardians and the physician, misunderstanding or forgetting on the part of parents/guardians, or some other reason.

Each of the students received at least two psychotropic medications. Regardless of whether the psychiatric diagnoses provided by the psychiatrist or the parent/guardian are accepted, none of the drug combinations are known to be effective, although some of the individual medications are known to be generally effective for the indicated condition. For instance, methylphenidate is appropriate for ADHD (Brown and Sawyer, 1998) and was prescribed for Student 4, diagnosed with ADHD. With respect to the general kinds of problem behaviors for which drugs were prescribed, "conduct problems" as defined by the Nisonger CBRF scales were targeted for change in three students; hyperactivity and self-injury/stereotypy were targeted in two.

Given that research findings provided no basis for the use of the drug combinations received by these students, the need for careful drug monitoring is obvious. Nonetheless, no systematic monitoring was taking place prior to the current study. During the present study, Nisonger CBRF ratings by parents/guardians and teachers in each of the six behavioral categories were relatively consistent across time and were within one standard deviation of the norm mean. This indicates that the student's behavior was not a cause for significant concern. How, or if, medication affected their behavior was not determined in the present study, because no drug-absent data were collected. Given that this is the case, the present findings provide only weak support for the continued use of medication, and a "drug holiday" should be arranged to evaluate effectiveness. Had there been significant problems in behavior domains that medications had been prescribed to treat, however, there would have been justification for ending or adjusting drug treatment. Here, the medications clearly are not doing what they are intended to do, and treatment should be changed. Collecting data only in the presence of drugs can provide fairly strong evidence of the *absence* of effectiveness, but not of its *presence*. Nonetheless, four of five parent/guardians were "somewhat satisfied" with the results of medication, and one was "very satisfied."

Although ratings typically were relatively consistent across time, there were a few cases in which a category rating substantially changed. However, these changes usually occurred from the first to the second completion of the scale. This pattern is characterized as regression to the mean (Aman, 1993) and is a documented limitation

of rating scales. To minimize this phenomenon it is suggested that children be assessed at least twice during baseline, before instituting any form of therapy (Aman). The comparisons would be between the second rating and subsequent ratings obtained. Thus the first scale completed, which in all probability will have higher category scores, is not regarded as the baseline score.

Although there was a statistically significant correlation between the ratings of parents/guardians and those of teachers, its value was not especially high ($r = .49$). That this is so is no reason for particular concern, given that home and school environments differ in ways that are likely to foster different behaviors. It is, however, possible that parents/guardians and teachers also rated similar behaviors somewhat differently, and this possibility should be explored in future studies.

The results of the parent/guardian and teacher acceptability surveys indicate that both the Nisonger CBRF scales and the DOSES were easy to understand. Moreover, they were considered to be satisfactory instruments for assessing troublesome behavior and medication side effects in children with emotional impairments.

Results of the present study suggest that the parents/guardians and teachers of students with EI had a general lack of knowledge regarding the possible side effects of the medications prescribed. Only one parent/guardian was familiar with some of the side effects for one of the two medications prescribed. These results are similar to those of previous studies involving parents/guardians and teachers of students with developmental disabilities (Christian, Snycerski, Singh, & Poling, 1999; Turner,

2002). Parents/guardians in these studies, as in the present one, had little knowledge of possible adverse effects of the psychotropic medications that students received. Research involving students with ADHD indicates that parents depend on their physicians to prescribe a medication without understanding the possible adverse consequences of administering such medications (Brown & Sawyer, 1998; Gadow, 1982, 1983; Gadow et al., 1991; Werry, 1993), and the present finding suggests that this also is the case with respect to parents of students with EI.

On the positive side, the present results suggest that medication noncompliance was not a major problem with four of the five students. Medication noncompliance is a significant issue in pediatric noncompliance (e.g., Baldessarini, 1996; Brown & Sawyer, 1998). Therefore, it is heartening that all of the parents/guardians reported that an adult supervised the medication administration and that four of the five parents/guardians reported that the medications were administered per the physician's orders. One parent/guardian reported that sometimes on the weekend her child did not take any medication. The investigator suggested that she should consult with the prescribing psychiatrist regarding this practice, and it appears that she did so although it is not clear if the practice changed.

As noted previously, results of the teacher knowledge survey suggest that teachers lacked knowledge regarding the side effects of the prescribed medications. Interestingly, and unfortunately, they also lacked knowledge regarding student's psychiatric diagnosis and the reasons for which the students were prescribed medications. None of the teachers was familiar with any of the prescribed

medications and none of them were aware of the student's psychiatric diagnosis. Additionally, none of the teachers was aware of the reasons for which the students were prescribed medications. Teachers informally reported to the investigator that the SSW was "in charge" of the medications. That is, the SSW was the individual who was responsible for knowing about the medications prescribed, and for acting as a liaison between the school and the psychiatrist. It appeared as though the teachers did not view themselves as having an important role to play in ensuring that medications were used appropriately with their students, although they were quite willing to be involved in collecting data. Previous research indicates that teachers of students with EI view themselves as having little influence on issues pertaining to students' medications (Singh et al., 1990), and the present findings support this conclusion.

Parents/guardians and teachers reported that the DOSES was relatively easy to complete, and the DOSES data in some cases revealed changes in student's physical or behavioral status that may have been indicative of an emerging side effect. DOSES data were shared with the prescribing physicians, but over the course of the study no medication adjustments were made based on those data.

There were some general limitations of the current study. First, even though the parent/guardian and teacher Nisonger CBRF scales were significantly correlated with one another, it is not clear that either rating was accurate. For example, rater subjectivity may have influenced what was deemed as a problem or not a problem. Moreover, an inappropriate behavior displayed at school may have been construed as

a problem; conversely the same behavior displayed at home may not have been seen as a problem.

Second, while all Nisonger CBRF category scores for each student were close to the standardized norm, as discussed previously, this does not necessarily mean that the medication was effective. That is, a baseline prior to the medication implementation was not attained, thus a comparison of behavior prior to drug therapy was not possible. Moreover, a baseline of the physical and behavioral indices relevant to side effects was not established prior to medication implementation, which complicates the interpretation of obtained data.

Third, the students for which data were collected in this study constitute a small and nonrandom sample of the population of students who have a special education label of EI and are currently receiving one or more psychotropic medications. Therefore, the generality of the present results is limited.

Nonetheless, those results do suggest that monthly administration of Nisonger CBRF scales combined with the DOSES may provide a rough-and-ready strategy for indexing the effects of psychotropic medication in students with an EI. Parents/guardians, teachers, and the prescribing psychiatrist generally found this system to be manageable and useful, and the results provide some evidence that the medications were producing benefits without producing serious side effects.

A final limitation is that the participants selected for this study are a small and nonrandom sample of the population of parents/guardians whose school-aged children

have a special education label of EI and currently receiving one or more psychotropic medications. Thus, a generality of the present results is limited.

Although all relevant parties reported that the monitoring system was easy to use, the investigator's role in the project was such that she performed some of the time-consuming and potentially difficult tasks. For example, while the data entry process was not difficult, it did require considerable time on the part of the investigator. Another example of time consumption was the distribution of the scales. Again, this was not a difficult task, but its completion did require some time. In addition, the investigator sometimes had to send copies of the scales home with the student multiple times to receive the parent/guardian monthly response. She also made phone calls to parents/guardians reminding them to complete and return the monthly scales sent to them. School personnel have many daily responsibilities that are mandated and time is at a premium. Although the monitoring system examined in the present study was designed to be quick and easy to use, it is not foregone that school personnel alone would have the time to implement the system.

In addition, some training is required to familiarize school personnel with the system and to provide the expertise necessary to interpret results. That is, the individual who will interpret the results to the family and to the prescribing physician must be trained. Her or his task is not simply reporting category numbers. There must be fundamental understanding of the purpose of the rating scale and of how results should be interpreted, and most school personnel will have to be trained to develop the

required expertise. Such training requires both time and money, which may be in short supply in some school systems.

Power, Atkins, Osborne, and Blum (1994) suggest that school psychologists may have an especially important role to play in developing and implementing medication-monitoring systems in schools. School psychologists specialize in evaluating child behavior and collaborating with others to bring about positive changes in behavior. Consequently, Power et al. maintain that school psychologists may be the best candidates for sharing data with physicians, thereby reducing the likelihood of haphazard, or nonexistent, assessment.

Prior to the present study's implementation, the SSW was the individual responsible for relaying all information to the prescribing physician. The SSW would accompany parents/guardians and students on appointments with the psychiatrist and discuss the student's behavior. The SSW's procedure for attaining relevant information involved asking the teachers to write a brief summary of the student's behavior during the past several months. That is, the information relayed by the SSW reflected the teacher's global impressions of the student's general status in the school setting. At the end of the present study, the SSW was familiar with the Nisonger CBRF scales and the DOSES, and was ready to report these data to the prescribing psychiatrist. Although this system of medication monitoring is by no means ideal, and falls well short of the elaborate systems proposed to evaluate the effects of stimulant medications in students with ADHD (e.g., Gadow, Pomoroy, & Nolan, 1993; Hale, Hoeppner, DeWitt, Coury, Ritacco, & Trommer, 1998). These systems, which make

use of double-blind conditions and placebo controls, use cognitive performance tasks and direct observation measures as primary indicators of drug effects.

While such models have much to recommend them from an assessment perspective, practical limitations prevent their being used in most school systems (Hyman et al., 1998; Swanson, Wigal, & Greenhill, 1998). A key issue in evaluating the effects of psychotropic medications in school settings is developing procedures that yield clinically meaningful data without unduly burdening school personnel. The monitoring system used in the present study was intended to be a step in that direction.

## Future Directions

Because of the high number of psychotropic medications prescribed to school-aged children with EI, systematic monitoring of the effects of these medications could be very valuable. In this regard, teachers need to be better informed of who in their class is taking medications. Currently, parents are not required to inform the school personnel if their child is prescribed a medication. This information is only required if a dosage administration is necessary during the school day. Also, parents are not required to inform school staff if there is a decrease or increase in medication dosage. Again, this information is only required if it pertains to the dosage administered at the school.

Second, school personnel (e.g., teachers, school psychologists, social workers) need to be provided with general information regarding the effects of commonly

prescribed medications. For example, a handout could be distributed to school personnel as a reference guide. Thus the information would always be accessible to them. This general information should include the rationale for using particular drugs, their effects on academic and social behavior, and their common side effects.

Third, school personnel should be trained on how to monitor the behaviors that medications are prescribed to target. Monitoring should occur before, during, and after the use of drug therapies. For example, teachers will often inform parents when a student is having difficulty and suggest that the student be taken to the doctor for an evaluation. If teachers were familiar with simple monitoring procedures, data could be collected regarding the behaviors in question. This information could then be relayed to the physician as evidence of the student's behavior.

Finally, school personnel should take the initiative in establishing policies for ensuring that the data they collect are communicated to parents and physicians. Monitoring of the effects of all psychotropic medication is likely to be needed if substantial progress is to occur in the pharmacological treatment of students with EI. It would seem that if school personnel and physicians were required by law to systematically monitor the effects of psychotropic medications prescribed for school-aged children, this would be a major step in the right direction.

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# Appendix A

## Definition of Emotional Impairment

**Definition of Emotional Impairment**

The Michigan Department of Education (R 340.1706) defines Emotional Impairment as follows:

(1) Emotional impairment shall be determined through manifestation of behavioral problems primarily in the affective domain, over an extended period of time, which adversely affect the student's education to the extent that the student cannot profit from learning experiences without special education support. The problems result in behaviors manifested by 1 or more of the following characteristics:

(a) Inability to build or maintain satisfactory interpersonal relationships within the school environment.

(b) Inappropriate types of behavior or feelings under normal circumstances.

(c) General pervasive mood of unhappiness or depression.

(d) Tendency to develop physical symptoms or fears associated with personal or school problems.

(2) Emotional impairment also includes students who, in addition to the characteristics specified in subrule (1) of this rule, exhibit maladaptive behaviors related to schizophrenia or similar disorders. The term "emotional impairment" does not include persons who are socially maladjusted, unless it is determined that the persons have an emotional impairment.

(3) Emotional impairment does not include students whose behaviors are primarily the result of intellectual, sensory, or health factors.

(4) When evaluating a student suspected of having an emotional impairment, the multidisciplinary evaluation team report shall include documentation of all of the following:

(a) The student's performance in the educational setting and in other settings, such as adaptive behavior within the broader community.

(b) The systematic observation of the behaviors of primary concern which interfere with educational and social needs.

(c) The intervention strategies used to improve the behaviors and the length of time the strategies were utilized.

(d) Relevant medical information, if any.

(5) A determination of impairment shall be based on data provided by a multidisciplinary evaluation team, which shall include a comprehensive evaluation by both of the following:

(a) A psychologist or psychiatrist.

(b) A school social worker.

# Appendix B

## Flier

Dear Parent,

We are working with faculty and students from Western Michigan University to improve procedures for determining the effects of medications prescribed to improve the behavior of children with emotional impairments. The goal of the project is to help school staff to develop an effective and practical medication monitoring system that will provide information that parents and physicians can use in determining whether the medications are working.

We are seeking approval for Lynne Turner, Graduate Research Associate, to contact you by phone or in person, at your choice, to provide further details. If you would like to speak with someone immediately, please call Lynne Turner at 269-387-4478, Al Poling, Professor, at 269-387-4483 or Kristal Ehrhardt, Associate Professor, at 269-387-4478.

Gene Vodgs
BEC Supervisor of Special Education
427-7961

Diane Mosley
BEC Social Worker
427-7921

❒ Yes, I agree to be contacted.

❒ No, I do not wish to be contacted.

_____

Parent Signature

# Appendix C

## Parent/Guardian Consent Form

Western Michigan University
Department of Psychology
Principal Investigator: Alan Poling & Kristal Ehrhardt
Research Associate: Lynne Turner

Parent Permission

I have been invited to participate in a research project entitled "Monitoring the Effects of Psychotropic Drugs in Students with Emotional Impairments: Home and School Data". The purpose of the study is to evaluate how medication is monitored in the schools and at home and to establish an ongoing monitoring system if one is not currently in place. This project is being conducted to fulfill Lynne Turner's dissertation requirements.

This project will be conducted in two phases. I agree in the first phase to be interviewed to complete a brief questionnaire. The questionnaire includes questions about my child's current medication and my satisfaction with this medication. The interview will take no more than 20 minutes to complete. I also agree in the second phase to monitor my child's behaviors.

My permission also means that my child's teacher may be contacted for an interview to complete a similar questionnaire about my child's medication and behavior in the classroom and that my child's prescribing physician may be contacted about the reason for my child's medication prescription. In addition, my permission serves as a release allowing the researchers to access confidential medical information from the school social worker and my child's physician regarding my child.

The interview responses will be confidential. This means that my child's name will be omitted from all forms and a code number will be attached. The principal investigator will keep a separate master list with the names of the children and the corresponding code numbers. Once the data are collected and analyzed, the master list will be destroyed. All other forms will be retained for three years in a locked file in the principal investigator's office. No names will be used if the results are published or reported at a professional meeting.

If I chose to participate, I may gain knowledge about the effects of the medication that my child is taking. Additionally, I may find that my child's medication is being used appropriately.

If I choose to participate, I may find that I am dissatisfied with the medication my child is prescribed. However, it is not the researchers' purpose to bring about

changes in medication, but to monitor the effects of prescribed medication. If I am unhappy with my child's medication at any time, I should consult with my child's physician to share my concerns before making any changes to my child's treatment. As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, not compensation or additional treatment will be made available to the subjects except as otherwise stated in this consent.

I am free to terminate my involvement in the project at any time during either phase one or phase two. If I choose to terminate my involvement, there will be no negative consequences or penalties and my choice will not affect my child's enrollment in the Van Buren School. If I have any questions, I may contact Lynne Turner at 387-4498, Kristal Ehrhardt at 387-4478 or Alan Poling 387-4483. I may also contact the chair of the Human Subject Institutional Review Board at 387-8293 or the Vice President for Research at 387-8298 with any concerns that I have.

This permission document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair in the upper right corner. Subjects should not sign this document if the corner does not have a stamped date and signature

_____

Date Time

You are making a decision whether or not to participate. Your signature indicates that you have decided to participate having read the information provided above.

_____ _____

Signature of Parent/Guardian Signature of Investigator

Appendix D

Physician Letter

Dear Dr. _____ :

We invite you to participate in a project intended to determine how the effects of psychotropic medications are monitored in students with emotional impairments and, if necessary, to develop procedures for collecting information useful in making decisions about the effectiveness of such medications. The project will involve examining for selected students the current system for collecting and reporting information, then if necessary to modify or arrange procedures in light of input from prescribing physicians, parents/guardians, and Van Buren Behavioral Education Center staff.

Your input will play a major role in determining the kind of data that are collected and how these data are summarized and reported. We ask to meet briefly with you to determine: a) the rationale for selected students' current medication(s), b) the information currently used to determine the effects of the medication(s), and c) the kind of additional information that would be useful in making treatment decisions. Based on your responses, coupled with similar input from parents/guardians and Van Buren staff, we will arrange to collect and to report to you data relevant to the effects of psychotropic medication.

Informed consent will be secured from the parent/guardian of each student involved in the project. The results of the project will be reported in the Doctoral dissertation of Lynne Turner and may be reported at conferences or in journals. The Human Subjects Institutional Review Board at Western Michigan University has approved the project. Should you have questions concerning it, any of the following individuals would be happy to answer them.

Sincerely,

Lynne Turner, M.A.
Research Associate
387-4498

Diane Mosley, MSW
Social Worker
427-4961

Alan Poling, Ph.D.
Professor
387-4483

Kristal Ehrhardt, Ph.D.
Associate Professor
387-4478

# Appendix E

## Teacher Consent Form

Western Michigan University
Department of Psychology
Principal Investigators: Alan Poling and Kristal Ehrhardt
Research Associates: Lynne Turner

Teacher Permission

I have been invited to participate in a research project entitled "Monitoring the Effects of Psychotropic Drugs in Students with Emotional Impairments: Home and School Data". The purpose of the study is to evaluate how medication is monitored in the schools and at home and to establish an ongoing monitoring system if one is not currently in place. This project is being conducted to fulfill Lynne Turner's dissertation requirements.

This project will be conducted in two phases. I agree in the first phase to be interviewed to complete a brief questionnaire that includes questions about (name of child)'s current medication and behavior. The interview will take no more than 20 minutes to complete. I also agree in the second phase to monitor student behaviors.

The interview responses will be confidential. This means that your name and the student's name will be omitted from all forms and a code number will be attached. The principal investigator will keep a separate master list with the names of the children and the corresponding code numbers. Once the data are collected and analyzed, the master list will be destroyed. All other forms will be retained for three years in a locked file in the principal investigator's office. No names will be used if the results are published or reported at a professional meeting.

If I chose to participate, I may gain knowledge about the intended effects of the medication that my student is taking. I will also have the opportunity to provide critical feedback to the investigators about monitoring medication in school settings. My feedback may facilitate changes that would make such a monitoring system more feasible for teachers like myself to implement.

If I choose to participate, I may find that I am dissatisfied with the medication my student is prescribed. However, it is not the researchers' purpose to bring about changes in medication, but to monitor the effects of prescribed medication.

I am free to terminate my involvement in the project at any time during either phase one or phase two. Doing so will have no negative consequences or penalties, although, there is a possibility that the student's parents may be upset with my decision.

If I have any questions, I may contact Lynne Turner at 387-4498, Kristal Ehrhardt at 387-4478 or Alan Poling at 387-4483. I may also contact the chair of the Human Subject Institutional Review Board at 387-8293 or the Vice President for Research at 387-8298 with any concerns that I have.

This permission document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair in the upper right corner. Subjects should not sign this document if the corner does not have a stamped date and signature

_____

Date Time

You are making a decision whether or not to participate. Your signature indicates that you have decided to participate having read the information provided above.

_____ _____

Signature of Parent/Guardian Signature of Investigator

Appendix F

Student 1 Data Collection Form

# Student 1 Data Collection Form

Time of Day: _____ Sent to time-out booth? Y / N Calmed by self? Y / N

Activity Occurring at Time of Request
- ❑ Math
- ❑ English
- ❑ Reading
- ❑ Spelling
- ❑ History
- ❑ Other _____

Type of Instruction
- ❑ Independent Seatwork
- ❑ Lecture
- ❑ Group Work
- ❑ Other _____

Type of Behavior
- ❑ Aggression
- ❑ Other _____

Appendix G

Student 2 Data Collection Form I

| Student 2 Data Collection Form I | | | | |
|---|---|---|---|---|
| Date | Time | Behavior | Activity | Type of Instruction |
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Coding Key:

Behavior
**IL** = Inappropriate Language
**IC** = Inappropriate Crying
**TS** = Talking about suicide
**SIB** = Harming self by hitting self, scratching skin or pulling hair
**O** = Other behavior (please specify)

Activity
**M** = Math
**S** = Spelling
**R** = Reading
**SS** = Social Studies
**L** = Language
**PE** = Physical Ed
**AE** = Affective Ed
**O** = Other (please specify)

Type of Instruction
**IS** = Independent Seatwork
**L** = Lecture
**GW** = Group Work
**O** = Other

## Appendix H

## Student 2 Data Collection Form II

## Student 2 Data Collection Form II
## Requesting to leave class

Time of Day: _____ Permitted to leave class? Y / N Time returned: _____

Activity Occurring at Time of Request
- ❑ Math
- ❑ Language
- ❑ Reading
- ❑ Spelling
- ❑ Social Studies
- ❑ PE
- ❑ Affective Ed.
- ❑ Other: _____

Type of Instruction
- ❑ Independent Seatwork
- ❑ Lecture
- ❑ Group Work
- ❑ Other _____

Type of Request
- ❑ To see SSW
- ❑ Other _____

# Appendix I

## Student 3 Data Collection Form

| Student 3 Data Collection Form | | | | |
|---|---|---|---|---|
| Date | Time | Behavior | Activity | Type of Instruction |
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Coding Key:

Behavior
**ST** = Stealing
**L** = Lying
**TB** = Talking back to teacher
**O** = Other Behavior (please specify)

Activity
**M** = Math
**S** = Spelling
**R** = Reading
**SS** = Social Studies
**L** = Language
**PE** = Physical Ed
**AE** = Affective Ed
**O** = Other (please specify)

Type of Instruction
**IS** = Independent Seatwork
**GW** = Group Work
**O** = Other

Appendix J

Student 4 Data Collection Form

| Student 4 Data Collection Form | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | Check one | | | | Activity | INSTRUCTION | |
| | R | W | FS | SS | | IS | GW |
| 8:00 - 8:15 | | | | | | | |
| 8:15 - 8:30 | | | | | | | |
| 8:30 - 8:45 | | | | | | | |
| 8:45 - 9:00 | | | | | | | |
| 9:00 - 9:15 | | | | | | | |
| 9:15 - 9:30 | | | | | | | |
| 9:30 - 9:45 | | | | | | | |
| 9:45 - 10:00 | | | | | | | |
| 10:00 - 10:15 | | | | | | | |
| 10:15 - 10:30 | | | | | | | |
| 10:30 - 10:45 | | | | | | | |
| 10:45 - 11:00 | | | | | | | |
| 11:00 - 11:15 | | | | | | | |
| 11:15 - 11:30 | | | | | | | |
| 11:30 - 11:45 | | | | | | | |
| 11:45 - 12:00 | | | | | | | |
| 12:00 - 12:15 | | | | | | | |
| 12:15 - 12:30 | | | | | | | |
| 12:30 - 12:45 | | | | | | | |
| 12:45 - 1:00 | | | | | | | |
| 1:00 - 1:15 | | | | | | | |
| 1:15 - 1:30 | | | | | | | |
| 1:30 - 1:45 | | | | | | | |
| 1:45 - 2:00 | | | | | | | |
| 2:00 - 2:15 | | | | | | | |
| 2:15 - 2:30 | | | | | | | |

Coding Key:

Behavior
**R** = Rocking Self
**W** = Wringing hands
**FS** = Failure to start a task when given a prompt
**SS** = Sitting at desk playing with an object or self entertainment

Activity
**M** = Math
**R** = Reading
**PE** = Phys. Ed.
**LU** = Lunch
**L** = Language
**SS** = Social Studies
**AM** = Morn Routine
**PM** = Afternoon Routine
**ED** = End of day Routine
**E** = Level Eval.

Instruction
**IS** = Independent Seatwork
**GW** = Groupwork

Appendix K

Student 5 Data Collection Form

# Student 5 Data Collection Form

Time of Day: _____ Sent to time-out booth? Y / N Calmed by self? Y / N

Behavior
- ❑ Property Destruction
- ❑ Requesting to leave class to sleep
- ❑ Amount of time asleep:_____
- ❑ Refusal to follow directions
- ❑ Talking back to teacher (swearing)
- ❑ Other _____

Activity Occurring
- ❑ Math
- ❑ English
- ❑ Reading
- ❑ Spelling
- ❑ History
- ❑ Other _____

Type of Instruction
- ❑ Independent Seatwork
- ❑ Lecture
- ❑ Group Work
- ❑ Other _____

Appendix L

Parent/Guardian Interview Form

Child's Name:_____ Parent/Guardian:_____

| | Med I | Med II | Med III | Med IV | Med V |
|---|---|---|---|---|---|
| Is your child currently taking medication to improve his/her behavior? | | | | | |
| How much of this medication does your child take each day and when? | | | | | |
| Do you know the potential side effects for this medication? YES or NO If yes, please indicate. | | | | | |
| It is not unusual for children to miss a dosage of med. Is this ever a problem for your family. | | | | | |
| Do you ever give your child the med. different from how it is stated on the bottle? | | | | | |

Does your child have a psychiatric diagnosis? YES NO

Is a medication prescribed to deal with this condition? YES NO If yes, please indicate: _____

If yes, please indicate if the medication is prescribed to deal with the following: (Go to page 2)

Overall, how satisfied are you with the results produced by the medication(s) listed above?

☐ I am very satisfied
☐ I am somewhat satisfied
☐ I am not at all satisfied

| Kind of Behavior | Was a medication prescribed to deal with this kind of behavior? | Is this kind of behavior a problem at the present time? | Are you keeping track of this behavior? | How satisfied are you with the results produced by the medication? |
|---|---|---|---|---|
| **I. Conduct Problem**<br>Examples of such behavior include, but are not limited to:<br>Agruing with parents, teachers or other adults<br>Threatening people<br>Being defiant or challenging adult authority<br>Knowingly destroys property<br>Getting into physical fights | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |
| **II. Insecure/Anxious**<br>Examples of such behavior include, but are not limited to:<br>Overly sensitive or feelings easily hurt<br>Exaggerating abilities or acheivements<br>Feelings easily hurt<br>Overly anxious to please others<br>Feeling worthless or inferior | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |
| **III. Hyperactive**<br>Examples of such behavior include, but are not limited to:<br>Failing to finish things s/he starts<br>Fidgetting, wiggling, or squirmming<br>Being overactive or not sitting still<br>Being overly excited or exuberant | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |

| Kind of Behavior | Was a medication prescribed to deal with this kind of behavior? | Is this kind of behavior a problem at the present time? | Are you keeping track of this behavior? | How satisfied are you with the results produced by the medication? |
|---|---|---|---|---|
| **IV. Sef-Injury/Sterotypic**<br>Examples of such behavior include, but are not limited to:<br>Physically hurting self on purpose<br>Hitting or slapping self<br>Harming self by scratching skin or pulling hair<br>Gouging self, putting things in ears, nose, etc or eating inedible items<br>Rocking body or head back and forth repetitively | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |
| **V. Self-Isolated/Ritualistic**<br>Examples of such behavior include, but are not limited to:<br>Isolating self from others<br>Being secretive or keeping things to self<br>Refusing to talk<br>Having rituals such as head rolling or floor pacing<br>Having odd repetitive behaviors (staring, grimacing) | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |
| **VI. Overly Sensitive**<br>Crying or tearful episodes<br>Feelings easily hurt | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |

Appendix M

Teacher Interview Form

Student's Name:_____ Teacher:_____

| | Med I | Med II | Med III | Med IV | Med V |
|---|---|---|---|---|---|
| Is this student currently taking medication to improve his/her behavior? | | | | | |
| Do you know the potential side effects for this medication? YES or NO<br>If yes, what are they? | | | | | |
| Are you systematically monitoring potential side effects? | | | | | |

Does this student have a psychiatric diagnosis? YES NO

Is a medication prescribed to deal with this condition? YES NO If yes, please indicate: _____

If yes, please indicate if the medication is prescribed to deal with the following: (Go to Child Behavior Interview Form)

Overall, how satisfied are you with the results produced by the medication(s) listed above?

☐ I am very satisfied
☐ I am somewhat satisfied
☐ I am not at all satisfied

| Kind of Behavior | Was a medication prescribed to deal with this kind of behavior? | Is this kind of behavior a problem at the present time? | Are you keeping track of this behavior? | How satisfied are you with the results produced by the medication? |
|---|---|---|---|---|
| **I. Conduct Problem**<br>Examples of such behavior include, but are not limited to:<br>Agruing with parents, teachers or other adults<br>Threatening people<br>Being defiant or challenging adult authority<br>Knowingly destroys property<br>Getting into physical fights | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |
| **II. Insecure/Anxious**<br>Examples of such behavior include, but are not limited to:<br>Overly sensitive or feelings easily hurt<br>Exaggerating abilities or acheivements<br>Feelings easily hurt<br>Overly anxious to please others<br>Feeling worthless or inferior | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |
| **III. Hyperactive**<br>Examples of such behavior include, but are not limited to:<br>Failing to finish things s/he starts<br>Fidgetting, wiggling, or squirmming<br>Being overactive or not sitting still<br>Being overly excited or exuberant | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |

| Kind of Behavior | Was a medication prescribed to deal with this kind of behavior? | Is this kind of behavior a problem at the present time? | Are you keeping track of this behavior? | How satisfied are you with the results produced by the medication? |
|---|---|---|---|---|
| **IV. Sef-Injury/Sterotypic**<br>Examples of such behavior include, but are not limited to:<br>Physically hurting self on purpose<br>Hitting or slapping self<br>Harming self by scratching skin or pulling hair<br>Gouging self, putting things in ears, nose, etc or eating inedible items<br>Rocking body or head back and forth repetitively | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |
| **V. Self-Isolated/Ritualistic**<br>Examples of such behavior include, but are not limited to:<br>Isolating self from others<br>Being secretive or keeping things to self<br>Refusing to talk<br>Having rituals such as head rolling or floor pacing<br>Having odd repetitive behaviors (staring, grimacing) | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |
| **VI. Irritable**<br>Examples of such behavior include, but are not limited to:<br>Crying or tearful episodes<br>Easily frustrated<br>Being explosive or easily angered<br>Having a sudden change in mood | YES NO DK | YES NO DK | YES NO | ☐ I am very satisfied<br>☐ I am somewhat satisfied<br>☐ I am not at all satisfied |

Appendix N

Physician Interview Form

Date: _____

Child's Name: _____
Physician:_____

1. Does this child have a psychiatric diagnosis? YES or NO
   If yes, please indicate: _____

2. Is medication prescribed to treat the psychiatric condition? YES or NO
   If so, what medication(s)? _____

3. Are you receiving information about the severity of the psychiatric condition? YES or NO
   If so, how?
   _____

4. Is medication prescribed to deal with behaviors not indicative of a psychiatric condition? YES or NO
   If so, what are the problematic behaviors?
   _____
   _____
   If so, what medications?
   _____
   _____

5. Are you receiving information about the severity of the problematic behaviors? YES or NO
   If so, how? _____

6. Would you like to receive additional information relevant to the effects of the psychotropic medication(s) prescribed for this student? YES or NO
   If so, what kind of information?
   _____
   _____

Appendix O

The Nisonger Child Behavior Rating Form-Parent Version

# The Nisonger Child Behavior Rating Form

## PARENT VERSION

Child's Name: _____ Child's Date of Birth: ____/____/____
month day year

Rater's Name: _____ Date of Rating: ____/____/____
month day year

Relation of Rater to Child: ❍ parent [1] ❍ other [9]: _____
(please specify)

I. 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. **POSITIVE SOCIAL.** Please describe the child's behavior as it was at home over the last month.

| IN THE LAST MONTH, THIS CHILD HAS: | Not True [0] | Somewhat or Sometimes True [1] | Very or Often True [2] | Completely or Always True [3] |
|---|---|---|---|---|
| 1. Accepted redirection | ❑ | ❑ | ❑ | ❑ |
| 2. Expressed ideas clearly | ❑ | ❑ | ❑ | ❑ |
| 3. Followed rules | ❑ | ❑ | ❑ | ❑ |
| 4. Initiated positive interactions | ❑ | ❑ | ❑ | ❑ |
| 5. Participated in group activities | ❑ | ❑ | ❑ | ❑ |
| 6. Resisted provocation, was tolerant | ❑ | ❑ | ❑ | ❑ |
| 7. Shared with or helped others | ❑ | ❑ | ❑ | ❑ |
| 8. Stayed on task | ❑ | ❑ | ❑ | ❑ |
| 9. Was cheerful or happy | ❑ | ❑ | ❑ | ❑ |
| 10. Was patient, able to delay | ❑ | ❑ | ❑ | ❑ |

III. **PROBLEM BEHAVIOR.** 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 HAVE NOT HAD A CHANCE TO OBSERVE THE CHILD FOR A GIVEN TIME, CIRCLE THE ZERO.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1. | Apathetic or unmotivated | 1 | 2 | 3 | 34. | Overly anxious to please others | 1 | 2 | 33 |
| 2. | Argues with parents, teachers, or other adults | 1 | 2 | 3 | 35. | Overly excited, exuberant | 1 | 2 | 3 |
| 3. | Clings to adults, too dependent | 1 | 2 | 3 | 36. | Physically attacks people | 1 | 2 | 3 |
| 4. | Cruelty or meanness to others | 1 | 2 | 3 | 37. | Refuses to talk | 1 | 2 | |
| 5. | Crying, tearful episodes | 1 | 2 | 3 | 38. | Repeats the same sound, word, or phrase over and over | 1 | 2 | 3 3 |
| 6. | Hits or slaps own head, neck, hands, or other body parts | 1 | 2 | 3 | 39. | Restless, high energy level | 1 | 2 | |
| 7. | Defiant, challenges adult authority | 1 | 2 | 3 | 40. | Runs away from adults, teachers, or other authority figures | 1 | 2 | 3 3 |
| 8. | Knowingly destroys property | 1 | 2 | 3 | 41. | Says no one likes him/her | 1 | 2 | 3 |
| 9. | Difficulty concentrating | 1 | 2 | 3 | 42. | Secretive, keeps things to self | 1 | 2 | |
| 10. | Disobedient | 1 | 2 | 3 | 43. | Repeatedly bites self hard enough to leave tooth marks or break skin | 1 | 2 | 3 3 |
| 11. | Rocks body or head back and forth repetitively | 1 | 2 | 3 | 44. | Self-conscious or easily embarrassed | 1 | 2 | |
| 12. | Doesn't feel guilty after misbehaving | 1 | 2 | 3 | 45. | Shifts rapidly from topic to topic when talking | 1 | 2 | 3 3 |
| 13. | Easily distracted | 1 | 2 | 3 | 46. | Short attention span | 1 | 2 | 3 |
| 14. | Easily frustrated | 1 | 2 | 3 | 47. | Shy or timid behavior | 1 | 2 | 3 |
| 15. | Overly sensitive; feelings easily hurt | 1 | 2 | 3 | 48. | Steals | 1 | 2 | |
| 16. | Exaggerates abilities or achievements | 1 | 2 | 3 | 49. | Odd repetitive behaviors (e.g., stares, grimaces, rigid postures) | 1 | 2 | 3 3 |
| 17. | Explosive, easily angered | 1 | 2 | 3 | 50. | Stubborn, has to do things own way | 1 | 2 | 33 |
| 18. | Has rituals such as head rolling or floor pacing | 1 | 2 | 3 | 51. | Sudden changes in mood | 1 | 2 | |
| 19. | Fails to finish things he/she starts | 1 | 2 | 3 | 52. | Sulks, is silent and moody | 1 | 2 | 3 |
| 20. | Feelings easily hurt | 1 | 2 | 3 | 53. | Physically harms or hurts self on purpose | 1 | 2 | 3 |
| 21. | Feels others are against him/her | 1 | 2 | 3 | 54. | Talks back to teacher, parents, or other adults | 1 | 2 | 3 3 |
| 22. | Harms self by scratching skin or pulling hair | 1 | 2 | 3 | 55. | Talks too much or too loud | 1 | 2 | 3 |
| 23. | Feels worthless or inferior | 1 | 2 | 3 | 56. | Temper tantrums | 1 | 2 | 3 |
| 24. | Fidgets, wiggles, or squirms | 1 | 2 | 3 | 57. | Threatens people | 1 | 2 | |
| 25. | Shy around others; bashful | 1 | 2 | 3 | 58. | Threatens to harm self | 1 | 2 | 3 |
| 26. | Gets in physical fights | 1 | 2 | 3 | 59. | Engages in meaningless, repetitive body movements | 1 | 2 | 3 3 |
| 27. | Irritable | 1 | 2 | 3 | 60. | Too fearful or anxious | 1 | 2 | 3 |
| 28. | Repeatedly flaps or waves hands, fingers or objects (such as pieces of string) | 1 | 2 | 3 | 61. | Underactive, slow | 1 | 2 | 3 |
| 29. | Isolates self from others | 1 | 2 | 3 | 62. | Unhappy or sad | 1 | 2 | 3 |
| 30. | Lying or cheating | 1 | 2 | 3 | 63. | Violates rules | 1 | 2 | 3 |
| 31. | Nervous or tense | 1 | 2 | 3 | 64. | Withdrawn, uninvolved with others | 1 | 2 | 3 |
| 32. | Gouges self, puts things in ears, nose, etc., or eats inedible things | 1 | 2 | 3 | 65. | Worrying | 1 | 2 | |
| 33. | Overactive, doesn't sit still | 1 | 2 | 3 | 66. | Argues with other children or peers | 1 | 2 | |



**Developed by M. G. Aman, M. J. Tassé, J. Rojahn, and D. Hammer, 1995.**

# Appendix P

## Detection of Side Effects Scale

# Detection Of Side Effects Scale (DOSES) – Family

| Date | Individual's Name |
|---|---|
| Person Completing Scale | 120 |

***Instructions:*** **See other side for details.**

1. Circle score for each item.
2. Base score upon last 7 days.
3. Indicate if item is new, different, or more severe for the individual.

**Scoring**

0: Not at All
1: A Little
2: Pretty Much
3: Very Much
NA: Not Assessable

**Rating Type** (Check o

- ☐ Requested by Health Professional
- ☐ Family Initiated

**Item and Score**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. Bad Dreams/Nightmares | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 2. Bowel Movements: ☐ more (diarrhea) ☐ less (constipation) | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 3. Clumsy/Poor Balance/Stumbling | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 4. Crying | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 5. Dizziness/Fainting (upon standing? ☐ yes ☐ no) | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 6. Drinking: ☐ more ☐ less | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 7. Eating: ☐more ☐ less | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 8. Excessive Energy/Constantly On The Go | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 9. Headache | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 10. Itchy/Scratchy Skin | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 11. Irritable/Gets Angry Easily | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 12. Muscles: ☐ cramps ☐ pain ☐ stiff ☐ tics/jerky | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 13. Rash/Hives | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 14. Sad/Not Happy/Seems More Serious | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 15. Saliva: ☐ more (pooling/drooling) ☐ less (dry mouth/lips) | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 16. Seizures/Convulsions | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 17. Shakiness/Tremor: ☐ hands ☐ other (describe in Other) | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 18. Sick to Stomach: ☐ nausea ☐ vomiting | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 19. Sleeping: ☐ more ☐ less ☐ trouble getting to sleep | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 20. Speech: Slurred/Harder to Understand | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 21. Stomach: Aches/Discomfort/Heartburn | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 22. Stuffy Nose/Runny Nose/Congestion | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 23. Sunburns Easily | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 24. Sweating: ☐ more ☐ less | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 25. Tired/Feeling Sleepy/Decreased Energy | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 26. Trouble Concentrating/Difficulty Paying Attention | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 27. Trouble Doing Things with Hands/Less Steady Using Hands | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 28. Trouble Getting Along with Staff/Hard to Please | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 29. Trouble Getting Along with Other Clients | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 30. Trouble Performing Usual Activities or Playing Sports | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 31. Trouble Seeing: ☐ blurred ☐ double ☐ spots ☐ colors | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 32. Trouble Sitting Still/Jittery | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 33. Unusual Skin Color: ☐ blue ☐ flush/red ☐ pallor ☐ yellow | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 34. Unusual Skin Temperature: ☐ cold ☐ hot/fever | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 35. Urination: ☐ more ☐ less ☐ delayed ☐ painful | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 36. Urination: Bedwetting | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |
| 37. Withdrawn/Talks Less | 0 | 1 | 2 | 3 | NA | *New/More Severe: Yes* |

**Other Unusual Signs/Symptoms (specify):**

**Comments:**

**Instructions:**

1. It is critical to detect side effects associated with psychotropic and antiepileptic medication. One important step is for the people wh live with or work with the person to report anything unusual to the health care professional.
2. Complete the scale on the date requested by the health care professional. If you wish, you may also complete the scale on your ow or if you notice something unusual. Please remember this is not a replacement for immediately contacting the health care professio when a serious, pronounced, or emergency situation occurs.
3. Determine the score for each item based upon the past week (7 days). Over the past week, did you observe or notice any of the items? If the person is verbal, did he or she complain about any of the items?
4. Select the score for each item based upon what you actually see or what the person tells you. Do not ignore the item because you "know the person". For example, the person may constantly drool due to a jaw deformity. Because it occurs frequently, it would be scored "very much". Whether the drooling is different from what the person typically does is determined in the next step (in this cas is no).
5. Determine as best as you can if the sign or symptom is different from what the person normally does, is usually like, has always do or has always had a problem with. The following considerations may help. Quantitatively: Is it something not seen before? Is it mor frequent than usual? Did he/she do it this much before? Is it more severe than before? Is it more intense than usual? Are we noticir it more lately? Are we paying a lot more attention to it? Are we spending a lot more time with it? Qualitatively: It never looked like t before. It looks different. There's something unusual about it. Something's not right. He/she is not himself/herself. It kind of worries m
6. Provide the scale to the health care professional.
7. Please note many items are listed because many different kinds of medication are used with many different people. Not all of the items are caused by the medication the person is taking. Also remember just because an item is scored does not necessarily mean is a side effect. Some other factor may be involved. The goal at this point is to systematically report anything unusual to the health care professional so it can be checked and, if necessary, reviewed with the prescriber and pharmacist.

*Adapted from and based upon: 1) Subjective treatment emergent symptoms scale (STESS) (1985). Psychopharmacology Bulletin, 21, 1073-1075; 2) Gotman, H. (1972-1973). Interval and fr sheets on side effects. Parent's interval rating sheet—side effects. Psychopharmacology Bulletin, 8-9 (special issue), 182-187; and 3) Glassman, R. (unknown date). Weekly side effects form. York, NY: Columbia University Medical Center. Not every sign or symptom is included, some items have been combined, and some items have been expanded.*

*This scale is not a complete listing of all possible adverse drug reactions or effects and is not a substitute for other appropriate professional health care responsibilities, assessments, or testi*

Appendix Q

Parent Acceptability Survey Form

Acceptability Survey – Parent

Purpose:

- Because the medication monitoring system is a "work in progress," we will ask you to evaluate it several times. Your feedback will enable us to improve the monitoring procedures. These improvements will not only ensure better monitoring of the student's behaviors, but they will also guarantee a more practical and acceptable system for teachers and parents who already have substantial workloads.

Directions:

- Below are a few short questions about the Child Behavior Rating Form (CBRF) and the Detection of Side Effect Scale (DOSES). Please fill in the blanks or check the item that best matches your opinion.

1. Are any of the behaviors listed (items 1 – 66) on the CBRF unclear or difficult to understand?
   - ☐ YES (if yes, please list items below)
   - ☐ NO

_____

_____

2. In your opinion, how satisfactory is the CBRF as an instrument for assessing troublesome behavior for children with emotional impairments?
   - ☐ Very satisfactory (skip to question # 4)
   - ☐ Somewhat satisfactory (see question # 3)
   - ☐ Not very satisfactory (see question # 3)
   - ☐ Not at all satisfactory (see question # 3)

3. Why do you feel that the CBRF is in some way unsatisfactory?

_____

_____

4. Are the directions for the DOSES easy to understand?
   - ☐ YES
   - ☐ NO (if no, please explain in the space below)

_____

_____

5. Are any of the side effects (items 1 – 37) on the DOSES unclear or difficult to understand?
   - ❒ YES (if yes, please list items below)
   - ❒ NO

_____

_____

6. In your opinion, how satisfactory is the DOSES as an instrument to detect side effect in children with emotional impairments?
   - ❒ Very satisfactory (skip to question # 8)
   - ❒ Somewhat satisfactory (see question # 7)
   - ❒ Not very satisfactory (see question # 7)
   - ❒ Not at all satisfactory (see question # 7)

7. Why do you feel that the DOSES is in some way unsatisfactory?

_____

_____

Appendix R

Teacher Acceptability Survey Form

Acceptability Survey – Teacher

Purpose:

- Because the medication monitoring system is a "work in progress," we will ask you to evaluate it several times. Your feedback will enable us to improve the monitoring procedures. These improvements will not only ensure better monitoring of the student's behaviors, but they will also guarantee a more practical and acceptable system for teachers and parents who already have substantial workloads.

Directions:

- Below are a few short questions about the Child Behavior Rating Form (CBRF) and the Detection of Side Effect Scale (DOSES). Please fill in the blanks or check the item that best matches your opinion.

1. Are any of the behaviors listed (items 1 – 66) on the CBRF unclear or difficult to understand?
   - ☐ YES (if yes, please list items below)
   - ☐ NO

_____

_____

2. In your opinion, how satisfactory is the CBRF as an instrument for assessing troublesome behavior for children with emotional impairments?
   - ☐ Very satisfactory (skip to question # 4)
   - ☐ Somewhat satisfactory (see question # 3)
   - ☐ Not very satisfactory (see question # 3)
   - ☐ Not at all satisfactory (see question # 3)

3. Why do you feel that the CBRF is in some way unsatisfactory?

_____

_____

4. Are the directions for the DOSES easy to understand?
   - ☐ YES
   - ☐ NO (if no, please explain in the space below)

_____

_____

5. Are any of the side effects (items 1 – 37) on the DOSES unclear or difficult to understand?
   - ❒ YES (if yes, please list items below)
   - ❒ NO

_____

_____

6. In your opinion, how satisfactory is the DOSES as an instrument to detect side effect in children with emotional impairments?
   - ❒ Very satisfactory (skip to question # 8)
   - ❒ Somewhat satisfactory (see question # 7)
   - ❒ Not very satisfactory (see question # 7)
   - ❒ Not at all satisfactory (see question # 7)

7. Why do you feel that the DOSES is in some way unsatisfactory?

_____

_____

8. For one student, how feasible is it for you to complete the two checklists (the CBRF & the DOSES) each month?
   - ❒ Very feasible
   - ❒ Somewhat feasible
   - ❒ Not very feasible
   - ❒ Not at all feasible

9. Considering your multiple obligations as a teacher, how many students could you rate with the CBRF and with the DOSES on a monthly basis?
   - ❒ Very feasible
   - ❒ Somewhat feasible
   - ❒ Not very feasible

## Appendix S

## Parent/Guardian Acceptability Survey Results

Parent/Guardian Acceptability Survey Results

*Are any of the behaviors listed (items 1-66) on the CBRF unclear or difficult to understand?*

**Number of responses**
0 Yes
3 No

*In your opinion, how satisfactory is the CBRF as an instrument for assessing troublesome behavior?*

**Number of responses**
3 Very satisfactory
0 Somewhat Satisfactory
0 Not very satisfactory
0 Not at all satisfactory

*Are the directions for the DOSES easy to understand?*

**Number of responses**
3 Yes
0 No

*Are any of the side effects (items 1-37) on the DOSES unclear or difficult to understand?*

**Number of responses**
0 Yes
3 No

*In your opinion, how satisfactory is the DOSES as an instrument to detect side effect in children with emotional impairments?*

**Number of responses**
3 Very satisfactory
0 Somewhat Satisfactory
0 Not very satisfactory
0 Not at all satisfactory

Appendix T

Teacher Acceptability Survey Results

*Are any of the behaviors listed (items 1-66) on the CBRF unclear or difficult to understand?*

**Number of responses**

1 Yes

4 No

**Comments:**

- Gets in physical fights #26 – How physical is physical? / #28 and #49

*In your opinion, how satisfactory is the CBRF as an instrument for assessing troublesome behavior?*

**Number of responses**

2 Very satisfactory

3 Somewhat Satisfactory

0 Not very satisfactory

0 Not at all satisfactory

*Why do you fee that the CBRF is in some way unsatisfactory/*

**Comments:**

- Some behaviors are not on here but I can't remember
- Difficult to do ratings at times – if behavior occurred one time would we circle a "0" or a "1"?

*Are the directions for the DOSES easy to understand?*

**Number of responses**

4 Yes

1 No

**Comments:**

- I do not understand fully how to rate behaviors given the terms – a little, pretty much, and very much. A little confusing.

*Are any of the side effects (items 1 – 37) on the DOSES unclear or difficult to understand?*

**Number of responses**

1 Yes

4 No

**Comments:**

- Sometimes confusing on "0" and NA

*In your opinion, how satisfactory is the DOSES as an instrument to detect side effect in children with emotional impairments?*

**Number of responses**

4 Very satisfactory
1 Somewhat Satisfactory
0 Not very satisfactory
0 Not at all satisfactory

*Why so you feel that the DOSES is in some way unsatisfactory?*

**Comments:**

- It would be more satisfactory if the rating was more understandable.

*For <u>one</u> student, how feasible is it for you to complete the two checklists (the CBRF & the DOSES) each month?*

**Number of responses**

5 Very feasible
0 Somewhat feasible
0 Not very feasible
0 Not at all feasible

*Considering your multiple obligations as a teacher, how many students could you rate with the CBRF and with the DOSES on a monthly basis?*

***Number of responses***

0 0 students
1 1 student
0 2 students
4 3 students
0 4 students

**Comments:**

- Depends on the caseload.

## Appendix U

## Approval Letter From the Human Subjects Institutional Review Board

Centennial 1903-2003 Celebration

Date: February 20, 2004

To: Alan Poling, Principal Investigator
Lynne Turner, Student Investigator for dissertation

From: Mary Lagerwey, Ph.D., Chair Mary Lagerwey

Re: HSIRB Project Number: 04-02-13

This letter will serve as confirmation that your research project entitled "Monitoring the Effects of Psychotropic Drugs in Students with Emotional Impairments: Home and School Data – Analysis of Data gathered under project 01-01-13" has been **approved** under the **expedited** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: February 20, 2005

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