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ABSTRACT

As part of a three phase study designed to survey the teachers and parents of children receiving psychotropic and anticonvulsant drugs, 208 teachers of preschool special education children on medication were mailed questionnaires. The Early Childhood Medication Questionnaire used in the survey included items relating to teacher, program, and student descriptions; medication information; experience with children on medication and interaction with parents and doctors regarding children and medication; role behaviors from the diagnostic, dosage adjustment, and follow-up phase of the drug regimen; statements about drug therapy in general; areas in which teachers received specific training or acquired definite knowledge regarding hyperactivity, convulsive disorders, medications, and involvement in the drug regimen; and problems comments, and questions concerning medication usage. Among the findings of the study's first phase were that most early childhood special education teachers have had experience teaching children receiving drug therapy for both hyperactivity and convulsive disorders; that the majority of teachers has no formal education regarding the most frequently prescribed drugs for preschool special education children; and that over a third of the teachers reported nonprescription drug therapies (including coffee, special diet, and vitamins) for hyperactivity. (A major portion of the document is comprised of tables giving statistical information on the teachers and children involved in the survey.) (SB)

PSYCHOTROPIC AND ANTICONVULSANT DRUG USAGE IN EARLY CHILDHOOD SPECIAL EDUCATION PROGRAMS I. PHASE ONE: A PRELIMINARY REPORT: PREVALENCE, ATTITUDE, TRAINING, AND PROBLEMS

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Paper presented at the annual meeting of the Council for Exceptional Children, Chicago, Illinois, April 1976.

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Institute for Child Behavior and Development
University of Illinois at Urbana-Champaign

The Institute for Child Behavior and Development (ICBD) was officially established on July 1, 1975, by the Board of Trustees of the University of Illinois from a merger of the Institute for Research on Exceptional Children and the Children's Research Center.

The ICBD occupies a modern building of 25,000 square feet and three smaller buildings in the College of Education on the Urbana-Champaign campus of the University of Illinois. Its faculty of more than 20 members represents a variety of disciplines and professional areas including special education, psychology, speech and hearing science, linguistics, ethology, sociology, social work, pediatrics, physical education, recreation, educational psychology, and early childhood education. This faculty, aided by more than 150 staff members and graduate students, engages in multidisciplinary research, training, and service on the full range of behavior and development of normal and exceptional children. Experimental day care and nursery school centers in the Institute's main building provide laboratories for the study of normal children. Special classes for very young children with various types of disabilities are operated in another of the Institute's facilities — the Colonel Wolfe School; and field stations for the study of exceptional children are maintained at several education and mental health facilities in Illinois and in other states. The national ERIC system on Early Childhood Education is also housed in the Institute.

Some of the long-term programs of research being conducted include studies of the development of memory, cognition, and language in normal infants and young children; the effects of psychotropic drugs on hyperactive and retarded children, memory and cognitive development of developmentally disabled children; the effects of anxiety on school performance; the effects of intensive early intervention on the development of very young disabled children; language and cognitive development of deaf children, and vocational training of deaf-blind and severely retarded children.

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PSYCHOTROPIC AND ANTICONVULSANT DRUG USAGE IN EARLY CHILDHOOD SPECIAL EDUCATION PROGRAMS I. PHASE ONE: A PRELIMINARY REPORT; PREVALENCE, ATTITUDE, TRAINING, AND PROBLEMS[1]

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The therapeutic use of psychotropic and anticonvulsant drugs with children has generated considerable interest, concern, and controversy in the past decade. Interest has been generated over the therapeutic value of these drugs in the treatment of a number of different disorders, and concerns have been voiced over their side effects consequences of long term treatment and the possible side stepping of therapeutic problems. Controversy has stemmed from allegations of the misuse of these drugs by physicians and the encouraged misuse by caretakers. Although a growing number of well-controlled studies with children in recent years has explored the safety and efficacy of psychotropic drugs, very little is known about their use aside from research studies and statements of clinical experience from professionals who have treated large numbers of children.

Psychotropic drugs are prescribed for their effects on mood, thought processes and behavior (Balter & Levine, 1969) in contrast with many other medications which are prescribed for physiological or biochemical purposes. Although a number of classification schemes for these drugs have been proposed (Leavitt, 1974; Usdin, 1970), the medications discussed in this paper have been grouped according to six categories proposed by Usdin and Efron (1972). These are psychostimulants, major tranquilizers, minor tranquilizers, antidepressants, hypnotics, and sedatives. Anticonvulsants may also have pronounced effects upon behavior aside from their ability to control seizures, e.g., side effects of antiepileptic drugs may impair learning and cognitive functioning (Crowther, 1969; Livingston, 1972; Schain, Note 1). These two groups of drugs are not mutually exclusive for many psychotropic drugs have anticonvulsant properties. In this discussion, drugs that are used primarily for seizures will be classified as anticonvulsants. It would be inappropriate, however, to infer the reason for which a drug is prescribed from its categorization. For example, diazepam (Valium), a minor tranquilizer, may be used as an antianxiety agent (Honigfeld & Howard, 1973), sedative and hypnotic (Goodman & Gilman, 1970), and anticonvulsant (Livingston, 1972).

The therapeutic use of these drugs with young children is of particular interest for several reasons. First, the young child is particularly responsive to environmental impact (Bloom, 1964). This has considerable importance for handicapped children enrolled in environmental enrichment programs. Early studies on the young mentally retarded (Kirk, 1958; Skeels, 1966; Skeels & Dye, 1939) as well as ameliorative programs for preschool special education children have borne this out (Hunt, 1969; Karnes & Teska, 1974; Shearer & Shearer, 1972). Medication that either enhances or retards classroom performance and cognitive ability could have tremendous implications for later development. Second, there are a limited number of well controlled studies regarding drug therapy with children (DiMascio, 1971; DiMascio, Soltys, &

Shader, 1970), and much research has placed a secondary emphasis on learning and cognitive performance as criteria for evaluating the effectiveness of drug therapy (Sprague & Werry, 1971, 1974). There is also concern about the long term effects of medication on children. This is particularly true of stimulant drugs and the treatment of hyperactivity (Safer & Allen, 1975; Weiss, Kruger, Danielson, & Elman, 1975). And third, the restriction of certain medications to adults, more frequently to children six years of age or older, has resulted in the development of "therapeutic orphans," i.e., children for whom drugs determined safe and effective in adults are not recommended because little is known about their use in the pediatric age range (Shirkey, 1972). This has generated considerable concern in regard to the development of adequate research programs (Shirkey, 1972; Wilson, 1972), the extent to which these drugs are prescribed for young children and not adequately monitored (Bleyer, 1975), and the quasi-legal status of the package insert possibly preventing or discouraging the use of needed and effective therapeutic measures (Klein, 1974, Sirkey, 1971).

Although psychotropic and anticonvulsant drugs may be used for a number of childhood disorders including hyperactivity, tics, separation anxiety, stereotyped behavior, phobias, psychosis, convulsive disorders, aggressive outbursts, enuresis, autism, and cerebral palsy (Campbell, 1975a, 1975b; Conners, 1972; Denhoff, 1966; Freeman, 1970a, 1970b; Gittelman-Klein, 1975; Sleator & Sprague, 1976; Sprague & Werry, 1971, 1974), two disorders of particular interest with young special education children are hyperactivity and convulsive disorders. Hyperactivity is the most common reason for psychiatric referral in children, and the disorder frequently responds to drug therapy, particularly the stimulants (Sleator & Sprague, 1976; Wender, 1971; 1973). The syndrome is often manifest in infancy or early childhood (Chess, 1960; Wender, 1971), and may be concomitant with a number of handicapping conditions including mental retardation, cerebral palsy, brain damage, and convulsive disorders (Chess, 1960; Freeman, 1970a; Laufer, Denhoff, & Riverside, 1957; Ounsted, 1955; Wender, 1971). In like manner, convulsive disorders are not only common among children but are primarily a disorder of childhood (Alter & Hauser, 1972; Livingston, 1972). Prevalence figures for convulsive disorders show a sharp drop after the first year of life with a gradual decline into early adulthood (Hauser & Kurland, 1972; Kurtzke, 1972). A number of drugs are available for the control of seizures (Livingston, 1972), and, as with hyperactivity, convulsive disorders are often concomitant with other handicapping conditions including mental retardation, cerebral palsy, hyperactivity, and brain damage (Baird, 1972; Livingston, 1972; Schain, Note 1).

The extent of psychotropic and anticonvulsant drug usage has been difficult to determine because very few prevalence studies are available. Krager and Safer (1974) surveyed school nurses in Baltimore County, Maryland. They reported that 1.73% of the children in elementary schools were receiving drug therapy for hyperactivity. This represented a 62% increase over prevalence figures reported three years earlier. Gadow (Note 2) surveyed early childhood special education teachers in Illinois for the prevalence of psychotropic and anticonvulsant drug usage. Of the 1,936 children receiving educational services, 12.6% had received at least one of these medications during the school year. The disorders for which these drugs were prescribed was not ascertained.

The involvement of school personnel in the drug regimen for hyperactivity has also generated considerable interest. For purposes of discussion, the

drug regimen can be conceptualized as consisting of three phases: diagnostic, dosage adjustment and follow-up (Sprague & Gadow, in press). In the diagnostic phase, the child is referred for a medical evaluation, and, if the decision to use medication is made, the second phase is initiated. After receiving a trial of medication, dosage is adjusted until optimal therapeutic effect is achieved with minimal side effects. The follow-up phase consists of monitoring the effect of the medication on the child's behavior, periodic breaks in medication, or "drug holidays," to determine maximum benefit, concomitant therapy, the termination of medication and post medication monitoring. In reference to hyperactivity, a number of clinicians and researchers have stressed the importance of the involvement of teachers in the drug regimen (Conners, 1971, 1973; Katz, Saraf, Gittelman-Klein, & Klein, 1975; Sprague & Gadow, in press; Sprague & Werry, 1974; Wender, 1971). Because the disorder frequently cannot be diagnosed from behavior exhibited in a physicians office, the child's caretakers can play an important diagnostic role through evaluations on standardized rating scales (Sleator & von Neumann, 1974). For dosage adjustment, it has been clearly demonstrated that, in the case of stimulants, teachers are quite sensitive to subtle changes in dosage and the resulting effect on classroom performance (Sleator & von Neumann, 1974; Sprague & Sleator, 1973). In the follow-up phase, teachers can also monitor the effect of the medication, evaluate behavior during drug holidays, help parents acquire behavior management skills and most important, continue to facilitate the child's development.

In like manner the teacher can help the physician in the drug regimen for convulsive disorders (Livingston, 1972). This may include referring children suspected of having certain types of seizures, e.g. petit mal, evaluating the effectiveness of therapy as well as side effects, and, in the case of grand mal seizures, may even have to manage the child and his peers if there is a seizure in the classroom. As with hyperactivity, seizures are a chronic disorder that effects the child's entire development. Teachers, therefore, may also become involved in the child's social-emotional problems.

As with studies of the prevalence of drug treated disorders in school children, very little is known about the actual involvement of teachers in the drug regimen although allegations of misconduct abound (Divoky, 1973; Hentoff, 1970; Schrag & Divoky, 1975). For the diagnostic phase, Robin & Bosco (1973, Note 3) reported from two surveys of elementary school teachers that teachers are involved in the referral process and usually notify school staff members and parents of children they suspect as being hyperkinetic. In regard to monitoring the effect of medication on the child's behavior, teachers report being asked to make evalutions of the child's performance (Gadow, Note 2; Robin & Bosco, 1973; Weithorn & Ross, 1975). However, teachers generally have very little direct contact with physicians concerning information about medication (Gadow, Note 2) or reporting the child's response to drug therapy (Robin & Bosco, 1973; Weithorn & Ross, 1975). Very little information is avilable on teacher participation in the follow-up phase of the drug regimen.

The adequacy of monitoring procedures has been called into question not only from surveys of teachers (Weithorn & Ross, 1975), but also from interviews with parents of children receiving medication for hyperactivity (Solomons, 1973). Solomons reported that contact with the physician was not frequent and considered only 55% of the children in the study to be adequately monitored, i.e.,

at least two contacts, office visit or telephone, in a six month period. Of those parents permitted by their doctor to alter the dosage, a significantly greater number were not monitored appropriately.

In order to characterize the use of medication with preschool special education children, a three phase study was designed to survey the teachers and parents of children receiving psychotropic and anticonvulsant drugs. In Phase One, a general questionnaire was mailed to all teachers. The objectives were to: (1) determine the prevalence of drug therapy, disorders treated, medications prescribed, and the patterns of usage, (2) characterize teacher experience with children receiving medication and involvement in the drug regimen, (3) assess teacher attitude toward different role behaviors in the drug regimen for hyperactivity and convulsive disorders, (5) describe teacher training about the use of medication for hyperactivity and convulsive disorders and teacher involvement in drug therapy and (6) identify problems and questions both teachers and parents have about medications. For Phase Two, teachers completed medication questionnaires for each child reported to have received drug therapy during the school year. The objectives of this phase of the study were to: (1) describe teacher evaluation of the effectiveness of medication and extent of side effects, (2) describe actual teacher involvement in each phase of the drug regimen from data collected on each child, (3) identify problems teachers encountered with children, parents, and physicians. Phase Three was a telephone interview with the parents of children receiving medication. The objectives of this phase were to: (1) gather information about the medication including dosage, when administered, reason for prescription, duration of therapy, and reasons for terminating medication, (2) describe parent evaluation of therapeutic effectiveness and side effects, (3) determine compliance, adequacy of monitoring procedures, and whether parents altered the dosage or gave extra medication on special occasions, and (4) identify problems parents encountered with the school and the physician.

This paper is a preliminary report on Phase One of the study.

Method

When surveyed, Illinois special education programs were separated into 82 administrative units including the City of Chicago which was one of the units. In regard to early childhood special education programs, two provided services jointly with another administrative unit and one had no program. The appropriate administrator in each of the remaining 79 administrative units was contacted by telephone and asked the identification and location of all early childhood special education teachers and approval to contact them about a three phase study concerning medication usage with preschool children. The phases were explained as well as the confidentiality of the information and the protection of the rights of the parents, children and teachers. Programs for low incidence disorders, blind, deaf, and profoundly retarded and programs for the physically handicapped were not involved. Following this initial telephone conversation, a complete description of the study was mailed to the appropriate administrator. Of the 79 units contacted, only two refused to participate in the study preventing contact with five teachers. The City of Chicago proper did not respond to the research requests although contacted several times. The number of teachers involved could not be determined. Eight of the units required direct contact with a total of 35 superintendents or school principals

from the school districts within the special education unit. Of these, five refused to participate preventing contact with six teachers. Two units that approved the study failed to follow through preventing contact with another 7 teachers. Of the 286 teachers so identified, permission was granted to contact 268 early childhood special education teachers and request their participation in the study.

After seeking the appropriate administrative approval, all teachers were mailed the Early Childhood Medication Questionnaire near the end of the school year. The questionnaire was accompanied with a cover letter that explained administrative approval had been granted and described the three phases of the study. This letter also explained the protection of the rights of the children and parents involved in the study and the confidentiality of the data collected. Teachers also received the Children's Medication Chart (Gadow & Sprague, 1975). The chart consists of life-size color reproductions of 32 different medications in a total of 69 different dosage forms. It was explained that this chart would be mailed to parents in the third phase of the study. If teachers were interested, they could receive the results of the survey and a bibliography of articles and books concerning psychotropic and anticonvulsant drug therapy with children by completing an address label and returning a coupon.

The Early Childhood Medication Questionnaire was divided into eight parts. (1) First was a description of the teachers, the programs in which they taught, and the children. Items included teaching experience, degrees received, number, race and sex of the children, number of classes per day, etc. (2) Next was medication information. Teachers were asked to list all children who were presently in their program, or who had been enrolled for a minimum of four months if no longer in attendance, who had received medication for learning, behavior, and convulsive disorders during the school year. Children were identified by age, race, sex, name of medication(s), and whether they were actively receiving drug therapy at the time of the survey. (The child's name was never reported by the teacher.) The questionnaire listed the trade names of 32 medications. Trade names were selected instead of generic names because most prescriptions are written in the former (Silverman & Lee, 1974). These names were selected from previous surveys (Gadow, Note 2; Sprague & Sleator, 1973) and from discussions of clinical practice (Livingston, 1972). Teachers were encouraged to report drugs not listed on the questionnaire. Medications that were neither psychotropic nor anticonvulsant were dropped from the study, and children who were reported as receiving medication that was not from these two categories were also omitted from data analysis. (3) Third, teachers were asked to report experience with children receiving medication for hyperactivity and convulsive disorders, nonprescription drug therapies for hyperactivity, seizures in the classroom, and interaction with parents and doctors regarding children and medication. (4) Fourth, role behaviors from the diagnostic, dosage adjustment, and follow-up phase of the drug regimen including both initiating and responding behavior on behalf of the teacher were listed. Teachers were instructed to agree or disagree with the suggested interactions on a four point scale consisting of: strongly agree, agree, disagree, strongly disagree. They were asked to select an answer closest to their attitude even though they may not have had experience with some of the situations. A "does not apply" category was provided, however, to indicate no opinion. In a separate part they were

also asked to indicate with whom they would prefer to interact, child's parent child's doctor, or school staff member, in different aspects of the drug regimen. (5) Part five was similar to part four except it concerned the drug regimen for convulsive disorders. (6) Next, were statements about drug therapy in general. (7) Seventh, teachers reported areas in which they received specific training or acquired definite knowledge regarding hyperactivity, convulsive disorders, medications, and involvement in the drug regimen. Four sources of information and training were listed: college, inservice training, staff members, and personal experience. No training or knowledge about the items was indicated by circling "does not apply." (8) In the last section, teachers were asked to list problems, comments, and questions they had concerning medication usage. They were also asked to identify problems or questions that parents had in this regard.

Early childhood special education programs in Illinois provide educational services for children aged three-to-five years with learning problems, developmental delays, and handicaps. The areas of exceptionality include vision and hearing impairment, physical or health impairment, socially maladjusted, emotionally disturbed, educable mentally retarded, trainable mentally retarded, speech defective, and learning disabled. Children who are blind, deaf, profoundly retarded, or physically handicapped often served in other programs. These programs were designed to be noncategorical, i.e., neither children nor classrooms would be labeled with a particular handicapping condition. Programs could be either classroom oriented or home based, i.e., educational services are provided primarily in the home. All programs were to place a heavy emphasis on parent involvement in the education of the children (Crain, 1974).

Results

A total of 268 teachers were mailed the Early Childhood Medication Questionnaire of which 208 were returned for a return rate of 77.6%. All but one questionnaire was usable. Thirteen teachers were from team teaching settings reporting the same children. To avoid duplicity of data, information regarding children and medication were recorded for only one member of each team teaching arrangement. On the first mailing, 177(66.0%) questionnaires were returned, and 31(34.1%) of those teachers who received reminder letters also returned questionnaires.

The great majority of the teachers are young and have taught four years or less (Table 1). Most have had experience in early childhood programs for

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only one or two years. (Early childhood special education had been mandated only three years prior to the survey.) A rather large proportion (34%) of the teachers held Masters degrees.

Almost all of the early childhood special education programs can be characterized as noncategorical, have school classroom components (instead

of being home based), consist of one or two classes per day, and have small student-teacher ratios (Tables 2 and 3). Few programs have children without

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learning problems or handicaps that serve as "models" (14%) or team teaching arrangements with other certified teachers (13%).

Excluding "model" children, 2,559 children were either receiving educational services at time of survey or had been enrolled for four or more months if no longer attending school (Table 4). Males outnumbered females almost two

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to one. When teachers were asked to characterize these children in terms of the severity of learning problems and degree of developmental delay, children were normally distributed on both dimensions (Table 5). These are general characterizations of each teachers group of children as a whole, variation within each program, however, may be great.

Teachers reported considerable experience with children receiving medication during the school year (Table 6). Over three-fourths reported

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children receiving psychotropic or anticonvulsant drugs some time during the school year with 63% of these teachers reporting more than one child on medication. For specific disorders, 60% of the teachers reported children who received drug therapy for hyperactivity and 54% for convulsive disorders. It was not unusual for teachers to report more than one child receiving medication for each disorder (Table 7), and actual prevalence of medication usage ranged from 3.4% to 75.0% of the pupils in their programs (Table 8). Prevalence of medication usage for close to half (44%) of those programs who reported children receiving medication was 20% or greater.

Psychotropic and anticonvulsant drugs are not the only treatment modalities that have been proposed for hyperactivity. Thirty-seven percent of the teachers also reported nonprescription drug therapies for hyperactivity (Table 9). Operant conditioning techniques are clearly the most frequently

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listed treatment, but a number of teachers also reported nutrition, coffee, and vitamins.

Although these teachers have taught early childhood special education for only a few years, (94%) had teaching experience with children receiving

medication for learning, behavior, and convulsive disorders. Of these teachers, 89% had taught children receiving drug therapy for hyperactivity and 85% for convulsive disorders (Table 10). They also report experience

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with children who had grand mal seizures (20%) and petit mal seizures (53%) in their classroom. A third also indicated that either they or another school staff member had given medication to their students during the school year.

Table 11 describes teacher interaction with parents and doctors regarding different aspects of the drug regimen for those teachers who reported working

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with children receiving medication for learning, behavior, and convulsive disorders. Items are arranged from greatest to least amount of experience. Interaction with the doctor is much less frequent than with parents, and for all items, contact with the physician is reported by less than a third of the teachers. No experience regarding monitoring the effects of different dosage levels, decision to use medication, or the termination of drug therapy was indicated by over a third of the teachers.

Attitudes toward interaction in the diagnostic, dosage adjustment, and follow-up phase of the drug regimen are presented in Tables 12, 13, and 14.

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Items are arranged from the greatest consensus on the agree end of the scale to greatest consensus on the disagree end. In the diagnostic phase, almost all teachers agree that they should take an active role in the referral process and assist the physician in the diagnosis of hyperactivity (Table 12). Teachers are split on whether or not they should suggest the necessity for medication, but almost all agree that they should not suggest the name of a particular medication. There is almost unanimous agreement for all items regarding the dosage adjustment phase (Table 13). Teachers feel they should be well informed of the details of drug therapy and participate in the evaluative process. Dissention begins when the teacher is asked to take a directive role, e.g., suggesting a change in dosage (19%). As with the previous two phases, teachers feel they should be actively involved in follow-up of drug therapy including concomitmant therapy and the decision to terminate medication (Table 14). Suggesting "drug holidays," i.e., periodic breaks in medication, does bring some dissention (17%).

Teachers were also asked to indicate with whom they would prefer to interact regarding different aspects of the drug regimen (Table 15). Items

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are arranged from the greatest to least degree of consensus for a particular person. The majority of teachers prefer to interact with the child's doctor regarding information about medication and reporting evaluations of drug effects on the child's behavior. For behaviors regarding the referral process with the teacher initiating the activity, they prefer to interact with the child's parent or school staff member.

Teachers are in almost complete agreement in regard to their participation in the anticonvulsant drug regimen (Table 16). They feel teachers

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should be informed of the medication, type of seizure disorder, and participate in referral and evaluation procedures.

Teacher reaction to statements regarding drug therapy are presented in Table 17. Items are arranged from greatest consensus from one end of the

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scale to the other. Poor communication between doctor, teachers, and parent was believed to be a major problem regarding children receiving medication by 82% of the teachers. Many teachers (67%) also agreed that they did not know when medication was an appropriate treatment for hyperactivity. A majority felt that "drug" was not a good term for children's medication, that too many children are placed on medication, and that hyperactive children could usually be managed through environmental means. Three-fourths of the teachers did not agree that all hyperactive children should be given a trial dosage of medication to assess the therapeutic value of drug therapy.

Tables 18 and 19 describe how teachers acquired definite knowledge or received specific training concerning drug therapy with children. Items are

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arranged from the most to least amount of training reported by teachers. Included in the items are four of the five most frequently reported drugs from a survey of early childhood special education programs (Gadow, Note 2). The most frequently cited source of information regarding hyperactivity is from personal experience, i.e., teaching experience, reading, television, etc., and the least cited one was inservice training. Although teachers indicated receiving formal education regarding the causes of hyperactivity and behavior modification techniques, few received any college training regarding the teachers role in the drug regimen, e.g., assisting the physician in the diagnosis of hyperactivity and the evaluation of different dosage levels. For the items listed in Table 19 concerning convulsive disorders, inservice training is also the least cited source. Teachers indicated formal college training pertaining to seizures and their management, however, omission of the drugs most frequently used in their management is

quite ostensible. In fact, with the exception of methylphenidate (Ritalin), very few teachers reported receiving college training concerning these drugs and their use with children. As with many of these items, the most frequently cited source of training and knowledge about medication was from personal experience. However, between 41% and 76% of the teachers indicated no training at all for thioridazine (Mellaril), diphenylhydantoin (Dilantin), and primidone (Mysoline).

Of all the children reported to have received educational services in these early childhood special education programs, 358 had received at least one psychotropic or anticonvulsant drug at some time during the school year for a prevalence rate of 13.99%. A description of these children in terms of age, race, sex, and whether they were actively receiving medication at the time of the survey is presented in Table 20. Although a significantly

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greater number of males received medication than females during the previous year, sex differences were not significant at the .05 level in this survey. Most of the children were 4 - 6 years of age when they were surveyed near the close of the school year. The children were predominantly white. When surveyed, 15% of the children had ceased to receive medication. Calculating prevalence of medication usage from children actively receiving medication at time of survey would have resulted in a prevalence rate of 11.53%.

The total number of medications reported per child, the number of drugs used in combination, and the number of terminated medications at the end of the school year are presented in Tables 21 and 22. Seventy percent of the

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children were reported to have received only one medication for the school year (Table 21). Of the children receiving medication at time of survey, 25.6% were receiving drugs in combination with a range from two to five medications per child (Table 22). The number of medications terminated per child ranged from one to three with multiple drug terminations accounting for 17% of the total volume of nonactive medications.

The specific disorders for which the drugs surveyed were prescribed and the prevalence of these disorders are preserted in Tables 23 and 24. In the

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total population of early childhood special education children, the prevalence of drug therapy for hyperactivity was 7.93% and 6.56% for convulsive disorders (Table 23). Twenty-eight children (1.09%) were receiving drug therapy for both hyperactivity and convulsive disorders. The prevalence of drug therapy for these disorders among the children receiving medication is 56.7% and 46.9% for hyperactivity and convulsive disorders respectively (Table 24).

The distribution of the children receiving medication for hyperactivity and convulsive disorders by sex is presented in Table 25. There was a signifi-

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cantly greater number of males receiving medication for hyperactivity than females ($X^2 = 13.99$, df = 1, $p < .001$), and conversely, a significantly greater number of females had received drug therapy for convulsive disorders ($X^2 = 16.72$, df = 1, $p < .001$). There were no significant sex differences for the children who were receiving medication for both disorders when considered separately as a distinct group.

The distribution of the children receiving medication for hyperactivity and convulsive disorders by age is presented in Table 26, by on-off medication at time of survey in Table 27, and by number of medications reported in Table 28. A significantly greater number of children treated for hyperactivity

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Insert Tables 26, 27, and 28 about here
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were off medication at time of survey than children with convulsive disorders ($X^2 = 9.84$, df = 1, $p < .001$), and were also reported to have received fewer medications during the school year ($X^2 = 16.23$, df = 1, $p < .001$).

A significantly greater number of children treated for convulsive were receiving drugs in combination than children treated for hyperactivity ($X^2 = 15.35$, df = 1, $p < .001$).

The prevalence of specific psychotropic and anticonvulsant drug usage in early childhood special education programs is presented in Table 29.

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Prevalence values for each of the six drug categories are also listed. The trade names presented in the table are the same as those listed on the questionnaire plus all additional ones reported by teachers. The prevalence values for the six msot frequently reported drugs were Ritalin (4.92%), Dilantin (4.06%), phenobarbital (3.60%), Mysoline (1.02%), Mellaril (1.02%), and Valium (1.02%). These six medications account for 78% of all reported drugs. Of the 34 different medications listed, package inserts contained caveats regarding their safety and efficacy in children under six years of age for nine of the drugs.

Medications reportedly used for the management of hyperactivity and convulsive disorders are presented in Tables 30 and 31. The three most fre-

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quently reported medications for hyperactivity were Ritalin, Mellaril, and Dilantin with Ritalin being the drug of choice accounting for 53% of all reported medications (Table 30). The three most frequently reported drugs used in the management of convulsive disorders are Dilantin, phenobarbital, and Mysoline with Dilantin and phenobarbital accounting for 66% of all reported medication (Table 31).

Table 32 shows the distribution of the six most frequently reported drugs by sex. More than twice as many males as females received methyl-

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phenidate and thioridazine.

Medication used for the management of hyperactivity and convulsive disorders in children treated for both disorders is presented in Tables 33 and 34. The drugs used for hyperactivity are quite similar to hyperactive

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children in general with Ritalin being the drug of choice (Table 33). However, no anticonvulsants are listed as being used for this purpose. The medication used for convulsive disorders is different (Table 34). Only 8.3% of these children had reportedly received phenobarbital in contrast to 46% for all children with convulsive disorders. The drug of choice for convulsive disorders was Dilantin.

Teachers were asked to indicate how certain they were whether or not their students had received medication during the school year (Table 35), and how accurate the medication information they reported was (Table 36).

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Insert tables 35 and 36 about here
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Most teachers (93%) were either "very certain" or "certain" about their knowledge of medication usage. Eighty-three percent felt their information was "very accurate" or "accurate."

The validity of teacher reports of medication usage was assessed by comparing their reports to those of the parents. The parents of 112 children, 31% of the 358 children that received drug therapy, were interviewed by telephone regarding drug therapy and their child. Parents were mailed the Children's Medication Chart prior to the interview. They were asked to find a picture of the medication(s) their child had received during the school year in the chart. Of the 175 drugs reported by both teachers and parents, only 2 were misidentified (1%). For errors of commission, i.e., drugs reported by the teacher but not by the parents, teachers reported 7 drugs. Of these, 6 had been listed in the medical record. These were either errors of omission on the part of the parents or the child had received these medications prior to the school year. All seven drugs had been terminated at the time of

the survey. Parents reported a total of 225 medications of which four were different dosage strengths of the same drug, and two others had been terminated prior to the child's enrollment in school. Teachers, therefore, reported 79% of the total drug volume reported by the parents. A small fraction of the children, 6%,accounted for 59% of the errors on commission. Of the drugs omitted, 59% had either been administered only at bedtime, intermittantly for special circumstances, or for a total of three weeks or less.

Discussion

Almost all early childhood special education teachers report experience with children receiving psychotropic and anticonvulsant drug therapy for learning, behavior, and convulsive disorders. This is true for both teaching experience in general as well as for children encountered during the year of the survey. Although most teachers reported limited experience in early childhood special education programs, 89% indicated they had taught preschool children receiving drug therapy for hyperactivity and 85% for convulsive disorders. During the year of the survey, 81% of the teachers taught children receiving psychotropic or anticonvulsant drugs. It was not unusual for teachers to report more than one child on medication, in fact 44% of the teachers reported that between 20% and 75% of their pupils had received drug therapy for either learning, behavior, or convulsive disorders.

Most teachers (94%) indicated experience interacting with either physicians and/or parents regarding different aspects of the drug regimen. Interaction with the doctor, however, was infrequent. This lack of direct contact the the doctor has been reported in other studies (Gadow, Note 2; Robin & Bosco, 1973; Weithorn & Ross, 1975). Almost all the teachers had experience with parents concerning information about medication and the reason for which it was prescribed. However, over a third had never worked with a doctor or parent regarding the evaluation of different dosage levels, decision to use medication, or termination of drug therapy.

Early childhood special education teachers are in strong agreement toward involvement in the diagnostic, drug monitoring, and follow-up phases of the drug regimen for both convulsive disorders and hyperactivity. Teachers feel they should be actively involved in the referral process, but were split on suggesting that a child might benefit from medication when they deemed appropriate. They did not agree (85%) that they should suggest the name of a particular medication to a parent. Concerning dosage adjustment, teachers want to participate in the evaluation of the effect of the medication on the child's behavior and report side effects. Almost all the teachers would like direct contact with the doctor (letter, telephone, meeting) regarding the adjustment of dosage. In the follow-up phase, teachers agree that they should help parents acquire behavior management techniques, use therapeutic approaches concomitant with medication, participate in the decision to terminate drug therapy, and even suggest "drug holidays," i.e., periodic breaks in medication to assess therapeutic benefit.

Teachers would prefer to interact with the child's doctor regarding information about medication and its use and reporting evaluations of the effects of drug therapy on the child's behavior. In regard to the referral process, teachers prefer to interact with the child's parents or other school staff members.

Much of the knowledge and training teachers received regarding the use of medication with children came from personal experience, i.e., teaching experience, reading, television, etc., or through college training. However, the content of instruction in the two sources was quite different. College training was oriented toward the disorders themselves and not to the role of the teacher in the drug regimen or the medications. The teachers received little or no formal training on the most frequently prescribed psychotropic or anticonvulsant drugs for children in early childhood special education programs. What information they did acquire was from personal experience. Although teachers did indicate considerable formal training in regard to convulsive disorders (grand mal and petit mal seizures, seizures in the classroom) few indicated any training in more technical matters, e.g., the termination of drug therapy or febrile seizures. The least cited mode of training or knowledge was inservice training. Surveys of elementary school teachers also point out the inadequacy of teacher training. Bosco and Robin (Note 4) report that elementary school teachers receive very little formal instruction on Ritalin and its use for hyperactivity and have little knowledge of its specific properties. Hopefully, the list of references for this paper will serve as a starting point for those unfamiliar with this topic and are interested in learning more about the use of drug therapy with children.

The prevalence of psychotropic and anticonvulsant drug usage in early childhood special education programs was 13.9% which is not significantly different from the 12.6% prevalence figure of a year earlier (Gadow, Note 2). Unfortunately, there are no other comprehensive studies of psychotropic and anticonvulsant drug usage with either special education or non-special education populations to which these data can be compared. For specific disorders, the prevalence of drug therapy was 7.9% for hyperactivity and 6.6% for convulsive disorders. Excluding children who received medication for both hyperactivity and convulsive disorders (1.1%), the prevalence for hyperactivity is 6.8%. This is considerably higher than the 1.7% prevalence figure for drug therapy and hyperactivity among elementary school children reported by Krager and Safer (1974). However, they also reported that in elementary schools with special education classes for children with learning and behavior disorders the prevalence figure was 2.3%. No data are available on special education classes separate from general school populations.

Several differences in the management of hyperactivity and convulsive disorders, aside from the specific medications prescribed, are evident from the pattern of medication usage. Children receiving drug therapy for hyperactivity receive fewer medications in combination, fewer trial drugs, less medication during the whole school year, and are more apt to have drug therapy discontinued during the course of the school year. Approximately 80% of the hyperactive children treated with stimulant medication respond therapeutically (Sleator & Sprague, 1976). Because these drugs are administered singly, i.e., not in combination with other stimulants, this would account for the predominance of one medication at a time. Although antidepressants (imipramine), tranquilizers (thioridazine), and stimulants may be used in combination with each other, only a small percent of hyperactive children are treated in this manner (Katz et al., 1975).

The management of convulsive disorders is quite a different matter. Often more than one drug is required to achieve satisfactory control of fits, or, if a child has two different types of seizures, for example grand mal and

petit mal, different drugs are required to control different kinds of seizures (Boshes & Gibbs, 1972; Livingston, 1972). Several seizure types are both more common among mentally retarded populations and more refractory to drug therapy, e.g., myoclonic seizures (Livingston, 1972). Combinations of drugs may be used in an attempt to control seizures. In general, selecting an effective antiepileptic agent(s) may require a number of different trial medications singly and then in combination. Termination of drug therapy for both disorders is also dissimilar. Although there are a number of exceptions, antiepileptic drugs are often not discontinued until the patient has been seizure free for at least four years, and then medication is gradually withdrawn over a two year period (Livingston, 1972). The abrupt termination of drug therapy for hyperactivity has less severe consequences than for the child with seizures and may be done if therapeutic response is not completely satisfactory or the child can function satisfactorily without medication after a relatively short treatment period.

Of the 34 different medications reported in this study, the package insert contained caveats regarding their use with children under six years of age for nine of these drugs. One of the medications, methylphenidate (Ritalin), was prescribed for 4.9% of all the children in early childhood special education programs. Although clinicians have discussed the use of methylphenidate with infants, toddlers, and preschoolers (Nichamin, 1972; Renshaw, 1974), the author has encountered only two published well-controlled studies on the use of methylphenidate with hyperactive preschool children (Conners, 1975; Schleifer, Weiss, Cohen, Elman, Cvejic, & Kruger, 1975). Conners (1975) commented that, "Although significant drug effects were noted, it is the impression from the study that the results are more variable and unpredictable than in similar treatment of older children with minimal brain dysfunction" (p. 74). Schleifer et al. (1975) also reported differences between the response of preschoolers and older children to methylphenidate. Although mothers perceived the children as less hyperactive on medication, the authors also report the following:

> Clinical observations indicated that methylphenidate very often had a negative effect on the child's mood and also on his relationship with peers causing less social behavior and interaction. These almost always appeared and were reported as unwanted side effects of the drug, and included sadness, irritability, excessive hugging and clinging, and increased solitary play, as well as the more usual side effects of poor appetite and difficulty getting to sleep, and were determinate factors in the psychiatrist and the mothers deciding that all but three of the 28 children discontinue medication after the experiment ended. (p. 49)

When the safety and efficacy of prescribed drugs are in question, cooperation between parent, teacher, and doctor and adequate monitoring procedures would appear to be judicious.

About 8% of the children receiving medication were receiving drug therapy for both hyperactivity and convulsive disorders. It is not unusual for these disorders to appear concomitantly (Ounsted, 1955), and this is particularly so with epileptics who are also mentally retarded (Eyman, Moor, Capes, & Zachofsky, 1970). Millichap (1969) suggests Ritalin for hyperactivity and Dilantin for seizures as the drugs of first choice in children with both disorders. Phenobarbital may cause hyperactivity in children (Livingston,

1972) which may be a greater handicap than the seizures (Schain, 1972). Phenobarbital is clearly contraindicated for the management of seizures in children who are also hyperactive (Millichap, 1969; Schain, Note 1).

Over a third of the teachers reported the use of nonprescription drug therapies for the management of hyperactivity including special diets, vitamins, operant conditioning techniques, and coffee. Although researchers have established the efficacy of operant conditioning techniques in the management of hyperactivity (Ayllon, Layman, & Kandel, 1975), few studies have compared the use of medication and behavior management techniques either separately or concomitantly (Christensen, 1975; Greenberg, Altman, & Cole, 1975). Several studies have investigated the use of coffee in the management of hyperactivity (Conners, 1975; Garfinkle, 1975; Schnackenberg, 1973), however, the side effects of caffeine when compared to amphetamine are greater at equal levels of potency (Weiss & Laties, 1962). A number of other treatment modalities have been advocated including special diet (Feingold, 1975) and vitamins (Cott, 1971). At this writing, neither have been established empirically through well-controlled studies. A host of sham remedies have received wide audiences through newspapers and popular magazines which presents problems for the physician (Silver, 1975) as well as the classroom teacher.

Several sex differences are apparent from the data. First, almost twice as many males were reported to have received educational services. Other surveys of special education children have reported a higher prevalence of males (Bentzen, 1963; Morse, Cutler, & Fink, 1964). Second, a significantly greater number of males received drug therapy for hyperactivity. The higher prevalence among males for this disorder has been clearly documented (Chess, 1960; Stewart, 1970; Wender, 1971). Third, a significantly greater number of females were reportedly receiving drug therapy for convulsive disorders. This fact is more difficult to account for in that most (if not all) convulsive disorders are distributed equally across both sexes with a possibly greater prevalence among males for certain types (Alter & Hauser, 1972). One explanation for this difference is the possibility that the females selected for special education placement are more severely handicapped manifesting a proportionately higher prevalence of convulsive disorders. There is support for this notion when one considers that: (1) male development is more variable, and (2) is delayed in comparison to the female (Hutt, 1972; Singer, Westphal, & Niswander, 1968). Therefore, screening and placement procedures may select out more males perceiving females as less delayed in comparison. In regard to preschool education, Hutt (1972) observed that this may be an important concern because females ". . . may be [at] a considerable disadvantage since, by the age of five years, they have passed through more of their formative and critical periods in development than have boys" (p. 187).

Teacher medication reports are clearly valid. Comparison of the medications reported by each teacher and parent indicate that only 1% of the drugs reported were incorrectly identified. Possible errors of comission, i.e., medications reported by the teacher but not by the parent, accounted for 4% of the total teacher report. Errors of omission, i.e., drugs teachers did not report, accounted for 21% of the total medication volume reported by parents. Of these drugs, 59% were either administered at bedtime, only for special circumstances, or for three weeks or less duration, and all but four had been terminated at the time of the survey. Teachers may not know offhand, or have an easy access to, the medication information about all the

children they teach. However, when asked to acquire and report such information, it is quite accurate.

The errors of omission make teacher prevalence figures for total drug volume on the conservative side. It should be noted, however, that: (1) drug omissions from 6% of the children accounted for 59% of all errors of omission, and (2) that many of the omitted medications would be expected to have little impact upon the child's classroom performance because they were administered only at night or given intermittantly. In the case of short duration medications, three weeks or less, total educational impact would also be expected to be minimal. The question as to whether the total number of children on medication is also conservative is very difficult to establish. Even if a sample of parents from the entire population were questioned about medication usage with their children, those who would withhold medication information from their teachers may respond in similar fashion to a direct survey. Teachers did feel quite certain that they knew whether or not the children they were teaching had received drug therapy for learning, behavior, or convulsive disorders. Small student-teacher ratio and the involvement of parents in the educational process both give credibility to this certainty.

Although these data answer a number of questions about the use of medication with children in early childhood special education programs, it also raises a number of questions. Teachers are interested in taking an active role in the drug regimen, but do they, or are they permitted to participate? In particular, do they refer children for medical evaluations or suggest that a child should receive medication? Do they assist the physician in monitoring drug therapy? They have perferences for whom they would like to interact regarding children and medication, but do they interact with these persons? There are also questions regarding the therapeutic effect of the medications, side effects, and actual impairment of classroom functioning. It also may be instructive to know the kinds of problems that teachers encounter with each child who receives medication in order to identify ways of providing a better delivery of services to these children. These and other questions are attended to in Phase Two of this study.

Parents can also provide valuable information about the use of medication with their children. For example, how do the dosages of medication that are prescribed compare to laboratory studies of side effects and cognitive performance? How do parent evaluations of the therapeutic value of medication compare to the reports of teachers? It would be interesting to question parents about people who may have referred them to a physician. Parents can also provide information about compliance to physician instructions, whether they are permitted to adjust the dosage or give medication on special occassions. How closely medication is monitored is also an important medical question. Phase Three attempts to answer these questions through parent interviews.

Conclusions

The findings of this preliminary report can be summarized as follows:

(1) Most early childhood special education teachers have had experience teaching children receiving drug therapy for both hyperactivity and convulsive

disorders and interacting with parents regarding children and medication. The prevalence of children receiving drug therapy per teacher ranged from 3.4% to 75.0%. During the school year, 60% of the teachers taught children receiving medication for hyperactivity and 54% for convulsive disorders.

(2) Teachers are interested in taking an active role in the diagnostic, dosage adjustment, and follow-up phase of the drug regimen. Teachers feel they should participate in the referral procedure and evaluate the effects of the medication upon the child's behavior. They also agree that teachers should be involved in concomitant therapy and assist parents in the acquisition of behavior management techniques.

(3) Although teachers indicated considerable teaching experience interacting with parents regarding medication, contacts with doctors were infrequent. However, teachers would prefer to interact directly with the physician regarding information about medication and reporting the effects of medication on the child's behavior.

(4) Much of the information teachers acquire about the use of medication with children comes from personal experience, i.e., teaching experience, reading, television, etc. The great majority of teachers had no formal education regarding the most frequently prescribed drugs for preschool special education children.

(5) The prevalence of psychotropic and anticonvulsant drug usage in early childhood special education programs was 13.9%. Of the total population, 7.9% received drug therapy for hyperactivity and 6.5% received medication for convulsive disorders.

(6) Methylphenidate (Ritalin), diphenylhydantoin (Dilantin), phenobarbital, primidone (Mysoline), thioridazine (Mellaril), and diazepam (Valium) accounted for 78% of all reported psychotropic and anticonvulsant drugs.

(7) The most frequently reported drugs for the management of hyperactivity were Ritalin, Mellaril, and Dilantin with Ritalin being the drug of choice accounting for 53% of all reported drugs.

(8) The most frequently reported medications for the management of convulsive disorders were Dilantin, phenobarbital, and Mysoline with Dilantin and phenobarbital accounting for 66% of all reported medications.

(9) About 8% of the children receiving medication were receiving drug therapy for both hyperactivity and convulsive disorders.

(10) The drugs of choice for the management of hyperactivity and convulsive disorders in children being treated for both are similar to those in children treated for each disorder separately with the exception of phenobarbital, which is known to cause hyperactivity and exacerbate the condition in children who are already hyperactive.

(11) Several differences in medical management between hyperactivity and convulsive disorders were reflected in the fact that children receiving medication for hyperactivity received fewer drugs during the school year, fewer trial medications, fewer drugs in combination, and were more likely to

be off medication at the close of the school year than children with convulsive disorders.

(12) The safety and efficacy of nine of the 34 reported medications has not been established for children under six years of age. One of these drugs, Ritalin, was prescribed for 4.9% of all preschool special education children.

(13) Over a third of the teachers reported nonprescription drug therapies for hyperactivity including operant conditioning techniques, special diet, vitamins, and coffee.

(14) Almost twice as many males were receiving educational services in these programs, and a significantly greater number of males were receiving drug therapy for hyperactivity. However, a signifiantly greater number of females were receiving drug therapy for convulsive disorders.

(15) Early childhood special education teachers are a valid source of medication information.

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Footnotes

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Table 1

Description of Teachers

(Teachers = 207)[a]

Item	Frequency	Percent
Years of teaching experience (N=204)		
1 - 2	105	51.4
3 - 4	51	25.0
5 - 6	20	9.8
7 or more	28	13.8
Years of teaching experience in early childhood special education (N=206)		
1	75	36.4
2	87	42.2
3	32	15.5
4 or more	12	5.9
Last degree received (N=206)		
Bachelor	133	64.6
Master	71	34.4
Advanced Certificate	2	1.0
Age in years (N=207)		
21 to 30	168	81.2
31 to 40	24	11.6
41 to 50	10	4.8
51 or over	5	2.4

[a]Smaller N's indicate missing data.

Table 2

Background of Teaching Situation

(Teachers = 207)

Item	Frequency	Percent
Home based program		
Yes	6	2.9
No	201	97.1
Number of classes taught per day (n=201)		
1	79	39.3
2	118	58.7
3 or more	4	2.0
Noncategorical		
Yes	186	89.9
No	21	10.1
Categorical programs (n=21)		
TMH	7	33.3
Multiply handicapped	6	28.6
Other	8	38.1
Children without learning problems or handicaps that serve as "models"		
Yes	29	14.0
No	178	86.0
Number of "model" children reported (n=29)		
Males	48	
Females	41	
Team teaching		
Yes	27	13.0
No	180	87.0
Types of team teaching and reported information (n=27)		
Reported same children (double team)	10	37.0
Reported different group of children (double team)	14	51.9
Reported same children (triple team)	3	11.1

Table 3

Mean Number of Children Per Class

(Teachers = 194)[a]

Number of Classes Taught Per Day	Mean Number of Children Per Class	Frequency	Percent
1	8.2	76	39.2
2	7.6	114	58.8
3	8.0	2	1.0
4	4.8	2	1.0

[a]Excluded from this analysis are the six homebound teachers and seven team teachers.

Table 4

Distribution of the Total Population of Early Childhood Special Education Children by Race and Sex

(Children = 2,559)

Sex	Frequency	Percent
White males	1,535	60.0
Black males	114	4.5
Other males	31	1.2
Total	1,680	65.7
White females	791	30.9
Black females	76	3.0
Other females	12	.4
Total	879	34.3
Grand total	2,559	100.0

Table 5

Teacher Characterization of the Severity of Educational Problems

(Teachers = 207)

Item	Frequency	Percent
Severity of learning problems		
1 (mild)	1	.5
2	24	12.6
3	48	25.1
4	78	40.8
5	30	15.7
6 (severe)	10	5.2
Degree of developmental delay		
1 (slightly delayed)	0	0
2	14	7.4
3	64	33.7
4	74	38.9
5	32	16.8
6 (greatly delayed)	6	3.2

Table 6

Teacher Experience with Children Receiving Drug Therapy During the School Year

(Teachers = 207)

Item	Frequency	Percent
Reported children receiving medication		
Yes	161	77.8
No	46	22.2
Number of children reported receiving medication per teacher (n=157)[a]		
1	57	36.3
2	42	26.8
3	30	19.1
4	18	11.5
5	6	3.8
6	3	1.9
7	1	.6
Taught children receiving drug therapy for hyperactivity during the school year		
Yes	124	59.9
No	83	40.1
Taught children receiving drug therapy for convulsive disorders during the school year		
Yes	111	53.6
No	96	46.4
Taught children receiving drug therapy for other disorders during the school year		
Yes	14	4.8
No	193	95.2

[a]Only one teacher from each of four team teaching situations reporting children receiving drug therapy is reported in this analysis.

Table 7

Number of Children Reported Receiving Drug Therapy for Specific Disorders Per Teacher

(Teachers = 157)[a]

Disorder	Frequency	Percent
Hyperactivity[b] (teachers = 121)		
1	67	55.4
2	34	28.1
3	14	11.6
4	5	4.1
5	0	0.0
6	1	.8
Total	121	100.0
Convulsive disorders[c] (teachers = 108)		
1	67	62.1
2	28	25.9
3	8	7.4
4	4	3.7
5	1	.9
Total	108	100.0
Other[d] (teachers = 17)		
1	16	94.1
2	1	5.9
Total	17	100.0

[a]Number of teachers who reported children receiving medication.

[b]Includes 28 children who also received drug therapy for convulsive disorders (children = 203).

[c]Includes 28 children who also received drug therapy for hyperactivity (children = 168).

[d]Includes three children who also received drug therapy for hyperactivity (children = 18).

Table 8

Prevalence of Children Receiving Drug Therapy Per Teacher[a]

(Teachers = 157)[b]

Percent of Children Receiving Medication	Frequency	Percent
1 - 9	33	21.0
10 - 19	55	35.0
20 - 29	41	26.1
30 - 39	16	10.2
40 - 49	7	4.5
50 - 59	1	.6
60 - 69	2	1.3
70 - 79	2	1.3
Total	157	100.0

[a]Prevalence calculated on number of children reported by each teacher for entire school year.

[b]Number of teachers who reported children receiving medication.

Table 9

Nonprescription Drug Therapies for Hyperactivity

(Teachers = 77)[a]

Item	Frequency	Percent
Nutrition (diet, special foods)	17	22.1
Vitamins	8	10.4
Operant conditioning techniques	56	72.7
Coffee	14	18.2
Other	1	1.3
Total[b]	96	

[a]Number of teachers who reported nonprescription drug therapies.

[b]Totals are inflated because teachers were permitted multiple responses.

Table 10

Teacher Experience with Children Receiving Drug Therapy[a]

(Teachers = 195)[b]

Item	Frequency	Percent
Have you had children this year receiving medication for these disorders? (n=195)		
Yes	167	85.6
No	28	14.4
Have you or another school staff member given medication to any of the children you teach? (n=193)		
Yes	63	32.6
No	130	67.4
Have you ever taught children that were receiving medication for hyperactivity? (n=194)		
Yes	172	88.7
No	22	11.3
Have you ever taught children receiving medication for convulsive disorders? (n=193)		
Yes	163	84.5
No	30	15.5
Have you ever taught a child who has had a grand mal seizure in the classroom? (n=190)		
Yes	38	20.0
No	152	80.0
Have you ever taught a child who has had a petit mal seizure in the classroom? (n=192)		
Yes	101	52.6
No	91	47.4

[a]Tabulated for teachers who had experience teaching preschool special education children receiving drug therapy for learning, behavior or convulsive disorders.

[b]Smaller n's indicate missing data.

Table 11

Teacher Experience Interacting with Parents and Doctors Concerning Drug Therapy[a]

(Teachers = 195)[b]

Item	Parent		Doctor		Doctor & Parent		No Interaction	
	F	%	F	%	F	%	F	%
Reason the child was receiving medication (n=191)	114	59.7	7	3.6	54	28.3	16	8.4
Information about the medication (n=189)	103	54.5	8	4.2	53	28.1	25	13.2
Diagnosis of the disorder for which medication was prescribed (n=188)	71	37.8	15	8.0	51	27.1	51	27.1
Side effects of the medication (n=190)	87	45.8	12	6.3	38	20.0	53	27.9
Monitoring the effect of different dosage levels on the classroom behavior of the child (n=189)	72	38.1	8	4.2	43	22.8	66	34.9
Decision to use medication (n=190)	65	34.2	6	3.2	49	25.8	70	36.8
Termination of the medication (n=190)	70	36.8	5	2.6	29	15.3	86	45.3

[a]Tabulated for teachers who had experience teaching preschool handicapped children receiving drug therapy for learning, behavior or convulsive disorders.

[b]Smaller n's indicate missing data.

Table 12

Teacher Attitude Toward Involvement in the Diagnostic Phase of Drug Therapy for Hyperactive Children

(Teachers = 207)[a]

Item	Strongly Agree		Agree		Disagree		Strongly Disagree		No Opinion	
	F	%	F	%	F	%	F	%	F	%
Participate in staffings which recommend that a child see a doctor when medication may be appropriate. (N=206)	136	66.0	69	33.5	1	.5	0	0	0	0
Have direct contact (letter, telephone, meeting) with physician concerning diagnosis and decision to use medication. (N=206)	92	44.7	97	47.1	17	8.2	0	0	0	0
Suggest to parents that their child should see a physician when you suspect that the child might benefit from medication. (N=206)	79	38.3	108	52.4	15	7.3	2	1.0	2	1.0
Suggest to parents an alternative to medication therapy. (N=205)	53	25.8	112	54.6	35	17.1	1	.5	4	2.0
Suggest to parents that their child needs medication when you feel medication is appropriate. (N=204)	27	13.2	68	33.3	79	38.7	25	12.3	5	2.5
Give your opinion whether or not a child needs medication if the parent asks that question. (N=206)	27	13.1	87	42.2	73	35.4	17	8.3	2	1.0
Suggest to parent the name of a particular medication that you believe may benefit the child. (N=206)	4	1.9	18	8.7	73	35.5	103	50.0	8	3.9

[a]Smaller N's indicate missing data.

Table 13

Teacher Attitude Toward Involvement in the Dosage Adjustment Phase of Drug Therapy for Hyperactive Children (Teachers = 207)[a]

Item	Strongly Agree		Agree		Disagree		Strongly Disagree		No Opinion	
	F	%	F	%	F	%	F	%	F	%
Be informed that a child is receiving medication and the reason for which it was prescribed. (N=206)	197	95.6	8	3.9	1	.5	0	0	0	0
Be informed of possible side effects of the medication. (N=205)	181	88.3	24	11.7	0	0	0	0	0	0
Report the effects of different dosage levels to either parent or doctor. (N=205)	178	86.8	25	12.2	2	1.0	0	0	0	0
Be informed of the specific medication the child is receiving. (N=206)	177	85.9	28	13.6	1	.5	0	0	0	0
Report side effects of the medication to either the parent or doctor. (N=206)	167	81.1	38	18.4	1	.5	0	0	0	0
Assist in evaluation of effects of different trial dosages on the child's classroom behavior. (N=206)	130	63.1	74	35.9	2	1.0	0	0	0	0
Have direct contact with the doctor (letter, telephone, meeting) concerning the effects of different trial dosages on classroom behavior. (N=206)	130	63.1	71	34.5	5	2.4	0	0	0	0
Give the parent your evaluation of the medication on the child's behavior if the parent requests that information. (N=206)	76	36.9	121	58.7	5	2.4	3	1.5	1	.5
Suggest a change in dosage to the parent or doctor if you think it is best for the child. (N=206)	42	20.4	124	60.2	28	13.6	11	5.3	1	.5

[a]Smaller N's indicate missing data.

Table 14

Teacher Attitude Toward Involvement in the Follow-Up Phase of Drug Therapy for Hyperactive Children

(Teachers = 207)[a]

Item	Strongly Agree		Agree		Disagree		Strongly Disagree		No Opinion	
	F	%	F	%	F	%	F	%	F	%
Assist the child in developing self-management behaviors along with medication therapy. (N=206)	144	69.9	61	29.6	0	0	0	0	0	0
Teach parents behavior management techniques to help them manage their child. (N=206)	140	68.0	61	29.6	3	1.4	0	0	2	1.0
Help parents find community resources to assist with their problems concerning their hyperactive child. (N=205)	132	64.4	70	34.1	3	1.5	0	0	0	0
Participate in the decision to end medication. (N=206)	71	34.5	121	58.7	12	5.8	0	0	2	1.0
Suggest to parent or doctor "drug holidays" (periodic breaks in the medication) to see if the child still requires medication. (N=205)	54	26.3	114	55.6	26	12.7	8	3.9	3	1.5

[a]Smaller N's indicate missing data.

Table 15

With Whom Teachers Prefer to Interact Concerning a Child and Medication

(Teachers = 207)[a]

Item	Child's Parent		Child's Doctor		School Staff Member		Multiple Response	
	F	%	F	%	F	%	F	%
Receiving information about possible side effects. (N=206)	8	3.9	182	88.4	11	5.3	5	2.4
Receiving information about the medication. (N=206)	14	6.8	164	79.6	23	11.2	5	2.4
Reporting the effects of different dosage levels on the child's classroom behavior. (N=204)	42	20.6	120	58.8	16	7.8	26	12.8
Suggesting the possible termination of medication. (N=205)	40	19.5	112	54.6	32	15.6	21	10.3
Suggesting that a child might benefit from medical diagnosis. (N=204)	97	47.5	36	17.6	61	29.9	10	5.0
Suggesting alternative therapeutic measures instead of medication. (N=205)	76	37.1	57	27.8	56	27.3	16	7.8
Suggesting that a child might benefit from medication. (N=198)	66	33.3	52	26.3	72	36.4	8	4.0

[a]Smaller N's indicate missing data.

Table 16

Teacher Attitude Toward Involvement in the Anticonvulsant Drug Regimen

(Teachers = 207)

Item	Strongly Agree		Agree		Disagree		Strongly Disagree		No Opinion	
	F	%	F	%	F	%	F	%	F	%
Be told what behaviors to expect if the child has a seizure.	196	94.7	10	4.8	1	.5	0	0	0	0
Report to the physician or parents the occurrence of seizures.	192	92.7	14	6.8	1	.5	0	0	0	0
Be informed of the reason for each drug if multiple drugs are prescribed.	173	83.6	34	16.4	0	0	0	0	0	0
Report medication side effects that impair classroom performance.	178	86.0	28	13.5	1	.5	0	0	0	0
Assist in the diagnosis of convulsive disorders by describing seizures you see.	146	70.5	56	27.1	3	1.4	1	.5	1	.5
Notify the parent of a child you suspect of having a convulsive disorder.	168	81.1	29	14.0	8	3.9	2	1.0	0	0

Table 17

Teacher Attitude Toward Medication Usage

(Teachers = 207)[a]

Item	Strongly Agree		Agree		Disagree		Strongly Disagree		No Opinion	
	F	%	F	%	F	%	F	%	F	%
Poor communication between parent, physician and teacher is a major problem with children receiving medication. (N=207)	82	39.6	87	42.0	25	12.1	2	1.0	11	5.3
I really don't know when medication is the right thing to do for hyperactivity. (N=205)	27	13.2	110	53.7	55	26.8	7	3.4	6	2.9
"Drug" is not a good word to use when referring to children's medication. (N=204)	42	20.6	84	41.2	54	26.5	11	5.4	13	6.3
Too many children are being placed on medication for hyperactivity. (N=206)	47	22.8	77	37.4	44	21.3	4	2.0	34	16.5
Hyperactive children that I encounter can usually be managed effectively with behavior management techniques without medication. (N=206)	17	8.3	93	45.1	64	31.1	7	3.4	25	12.1
Physicians in our community tend to overprescribe medication. (N=204)	26	12.7	46	22.6	87	42.7	7	3.4	38	18.6
Parents sometimes feel that their child should be on higher dose that I think is necessary. (N=202)	17	8.4	59	29.2	73	36.1	7	3.5	46	22.8
All hyperactive children should be given a trial dosage of medication to see if it can help them. (N=207)	15	7.3	31	15.0	110	53.1	46	22.2	5	2.4

[a]Smaller N's indicate missing data.

Table 18

How Teachers Received Specific Training or Acquired Definite Knowledge in Regard to Hyperactivity[a]

(Teachers = 207)[b]

Item	College		Inservice Training		Staff Members		Personal Experience		No Training	
	F	%	F	%	F	%	F	%	F	%
Behavior modification techniques and hyperactivity. (N=207)	164	79.2	58	28.0	82	39.6	116	56.0	8	3.9
Working with parents of hyperactive child. (N=207)	78	37.7	39	18.8	76	36.7	150	72.5	21	10.1
Causes of hyperactivity. (N=207)	139	67.1	30	14.5	64	30.9	119	57.5	26	12.6
Local school district policy for giving medication at school. (N=207)	5	2.4	44	21.3	116	56.0	54	26.1	33	15.9
Methylphenidate (Ritalin^{R}): Effects and use with children. (N=206)	70	34.0	21	10.2	57	27.7	98	47.6	57	27.7
How teacher can assist the physician in the diagnosis of hyperactivity. (N=206)	47	22.8	21	10.2	53	25.7	85	41.3	68	33.0
Assisting the doctor in the evaluation of the effects of different drug dosage levels on classroom behavior. (N=206)	23	11.2	8	3.9	37	18.0	85	41.3	69	43.2
Thioridazine (Mellaril^{R}): Effects and use with children. (N=207)	26	12.6	8	3.9	19	9.2	42	20.3	138	66.7

[a]Teachers were permitted multiple responses.

[b]Smaller N's indicate missing data.

Table 19

How Teachers Received Specific Training or Acquired Definite Knowledge in Regard to Convulsive Disorders[a]

(Teachers = 207)[b]

Item	College		Inservice Training		Staff Members		Personal Experience		No Training	
	F	%	F	%	F	%	F	%	F	%
Petit mal seizures. (N=207)	129	62.3	23	11.1	52	25.1	94	45.4	20	9.7
Grand mal seizures. (N=207)	134	64.7	22	10.6	42	20.3	85	41.1	25	12.1
How to manage a child having a grand mal seizure in the classroom. (N=207)	115	55.6	19	9.2	52	25.1	70	33.8	28	13.5
How to manage the classmates of a child who has a seizure in their presence. (N=207)	82	39.6	14	6.8	40	19.3	86	41.5	46	22.2
Social and emotional adjustment of the child with convulsive disorders. (N=207)	92	44.4	12	5.8	33	15.9	80	38.6	56	27.1
Diphenylhydantoin (Dilantin^{R}): Effects and use with children. (N=206)	40	19.4	8	3.9	41	19.9	77	37.4	84	40.8
Termination of medication for convulsive disorders. (N=204)	22	10.8	5	2.5	23	11.3	41	20.1	133	65.2
Primidone (Mysoline^{R}): Effects and use with children. (N=204)	18	8.8	4	2.0	12	5.9	23	11.3	158	77.5
Febrile seizures. (N=205)	20	9.8	1	.5	7	3.4	17	8.3	165	80.5

[a]Teachers were permitted multiple responses.

[b]Smaller N's indicate missing data.

Table 20

Description of Children Receiving Medication

(Children = 358)[a]

Item	Frequency	Percent
Sex (n=358)		
Males	249	69.6
Females	109	30.4
Age in years (n=358)		
3	31	8.7
4	90	25.1
5	148	41.3
6	72	20.1
7 or over	17	4.8
Race (n=356)		
White	333	93.5
Black	16	4.5
Other	7	2.0
On or off medication when surveyed (n=357)		
On medication	295	82.6
Off medication	54	15.1
Unknown	8	2.3

[a]Smaller n's indicate missing data.

Table 21

Number of Reported Medications Per Child

(Children = 358)[a]

Number of Medications	Frequency	Percent
1	249	69.5
2	75	21.0
3	25	7.0
4	7	2.0
5	2	.5
Total[b]	358	100.0

[a]Number of children reported to have received medication at some time during the school year.

[b]Total number of medications was 512.

Table 22

Active and Terminated Medications at Time of Survey

(Children = 350)[a]

Item	Frequency[b]	Percent
Number of drugs actively used per child (children = 296)	(393)	
1	220	74.4
2	58	19.6
3	16	5.4
4	1	.3
5	1	.3
Total	296	100.0
Number of drugs terminated per child (children = 88)	(107)	
1	73	83.0
2	11	12.5
3	4	4.5
Total	88	100.0
Grand[d] Total	384[c]	(500)[d]

[a]Data were not available for eight children.

[b]Values in parentheses represent total number of medications.

[c]Total is inflated because 34 children were both receiving medication at time of survey and had ceased to receive other drugs during the school year.

[d]Data were not available for 12 drugs.

Table 23

Prevalence of Drug Treated Disorders in Early Childhood Special Education Programs[a]

(Children = 2,559)[b]

Disorder	Frequency[c]		Percent	
Hyperactivity	175	(203)	6.84	(7.93)
Convulsive disorders	140	(168)	5.47	(6.56)
Hyperactivity and convulsive disorders[d]	28		1.09	
Other	18		.70	
Total[e]	361		14.10[f]	

[a]Tabulated from the reports of early childhood special education teachers (N=207).

[b]Total number of children in early childhood special education programs represented in the survey.

[c]Numbers in parentheses are the prevalence values when children receiving drug therapy for both hyperactivity and convulsive disorders are not partialled out.

[d]Children received drug therapy for both hyperactivity and convulsive disorders.

[e]Totals are inflated because 3 children received drugs for more than one disorder.

[f]Of all the children in the survey, 14.0% had received at least one psychotropic or anticonvulsant drug at some time during the school year.

Table 24

Distribution of Drug Treated Disorders Among the Children Receiving Drug Therapy[a]

(Children = 358)[b]

Disorder	Frequency[c]		Percent	
Hyperactivity	175	(203)	48.9	(56.7)
Convulsive disorders	140	(168)	39.1	(46.9)
Hyperactivity and convulsive disorders[d]	28		7.8	
Sleep problems	1		.3	
Muscle relaxant	5		1.4	
Nervousness	3		.8	
Miscellaneous	3		.8	
Unknown	6		1.7	
Total[e]	361		100.8	

[a]Tabulated from survey of early childhood special education teachers (N=207).

[b]Total number of children reported to have received medication.

[c]Numbers in parentheses are the prevalence values when children receiving drug therapy for both hyperactivity and convulsive disorders are not partialled out.

[d]Children received drug therapy for both hyperactivity and convulsive disorders.

[e]Totals are inflated because 3 children received medication for more than one disorder.

Table 25

Distribution of Drug Treated Disorders by Sex

(Children = 358)[a]

Disorder	Sex[b] Male (n=249) F	%	Female (n=109) F	%
Hyperactivity	138 (158)	55.4 (63.5)	37 (45)	33.9 (41.3)
Convulsive disorders	80 (100)	32.1 (40.2)	60 (68)	55.0 (62.4)
Hyperactivity and convulsive disorders	20	8.0	8	7.4
Other	14	5.6	4	3.7
Total[c]	252	101.2	109	100.0

[a]Total number of children reported to have received medication.

[b]Numbers in parentheses are the prevalence values when children receiving drug therapy for both hyperactivity and convulsive disorders are not partialled out.

[c]Totals are inflated because 3 children had received medication for more than one disorder.

Table 26

Distribution of Drug Treated Disorders by Age

(Children = 358)[a]

Disorder	Age in Years 3		4		5		6		≥7	
	F	%	F	%	F	%	F	%	F	%
Hyperactivity (n=175)	13	7.4	38	21.7	78	44.6	37	21.1	9	5.1
Convulsive disorders (n=140)	17	12.1	42	30.0	55	39.3	20	14.3	6	4.3
Convulsive disorders and hyperactivity (n=28)	0	0	7	25.0	10	35.7	11	39.3	0	0
Other[b] (n=18)	1	5.6	5	27.8	5	27.8	5	27.8	2	11.1
Total[c]	31	8.7	92	25.7	148	41.3	73	30.4	17	4.8

[a]Total number of children reported to have received medication during the school year.

[b]Three children also received drug therapy for hyperactivty.

[c]Total percentages are based on n=358.

Table 27

Distribution of Drug Treated Disorders by On-Off Medication at Time of Survey

(Children = 358)[a]

Disorder	On Medication		Off Medication		Unknown	
	F	%	F	%	F	%
Hyperactivity (n=175)	136	77.7	36	20.6	3	1.7
Convulsive disorders (n=140)	126	90.0	11	7.9	3	2.1
Convulsive disorders and hyperactivity (n=28)	25	89.3	2	7.1	1	3.6
Other[b] (n=18)	11	61.1	5	27.8	3	11.1
Total[c]	298	83.2	54	15.1	9	2.5

[a]Total number of children reported to have received medication during the school year.

[b]Three children also received drug therapy for hyperactivity.

[c]Total percentages are based on n=358.

Table 28

Distribution of the Number of Drugs Reported by Type of Disorder

(Children = 358)[a]

Disorder	Number of Drugs									
	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
Hyperactivity (children=175)	147	84.0	23	13.2	3	1.7	2	1.1	0	0
Convulsive disorders (children=140)	90	64.3	31	22.1	14	10.0	4	2.9	1	.7
Hyperactivity and convulsive disorders (children=28)	0	0.0	19	67.8	7	25.0	1	3.6	1	3.6
Other[b] (children=18)	14	77.8	3	16.7	1	5.6	0	0.0	0	0.0
Total[c]	251	70.1	76	21.2	25	7.0	7	2.0	2	.6

[a]Number of children reported to have received medication during the school year.

[b]Three of these children also received drug therapy for hyperactivity.

[c]Total percentages are based on n=358.

Table 29

Prevalence of Specific and Group Psychotropic and Anticonvulsant Drug Usage in Early Childhood Special Education Programs[a]

(Children = 2,559)[b]

Generic Name	Trade Name	Frequency[c]	Percent
I. Stimulants		(147)	(5.74)
Methylphenidate hydrochloride	Ritalin[d]	126	4.92
Dextroamphetamine sulfate	Dexedrine	13	.51
Magnesium pemoline	Cylert[e]	6	.23
Deanol	Deaner	1	.04
Amphetamine sulfate	Benzedrine	1	.04
II. Anticonvulsants		(148)	(5.78)
Diphenylhydantoin sodium	Dilantin, Ekko	104	4.06
Primidone	Mysoline	26	1.02
Methsuximide	Celontin	5	.20
Acetazolamide	Diamox	3	.12
Ethosuximide	Zarontin	3	.12
Carbamazepine	Tegretol	3	.12
Ethotoin	Peganone	2	.08
Mephenytoin	Mesantoin	1	.04
Phensuximide	Milontin	1	.04
III. Hypnotics & Sedatives		(107)	(4.18)
Phenobarbital		92	3.60
Mephobarbital	Mebaral	10	.39
Metharbital	Gemonil	3	.12
Sodium butabarbital	Butisol	1	.04
Chloral hydrate		1	.04
IV. Major Tranquilizers		(36)	(1.41)
Thioridazine	Mellaril	26	1.02
Chlorpromazine	Thorazine	3	.12
Clorazepate dipotassium	Tranxene[f]	2	.08
Haloperidol	Haldol[g]	2	.08
Trifluoperazine hydrochloride	Stelazine[h]	2	.08
Piperacetazine	Quide[i]	1	.04
V. Minor Tranquilizers		(34)	(1.33)
Diazepam	Valium	26	1.02
Hydroxyzine hydrochloride	Atarax	6	.23
Hydroxyzine pamoate	Vistaril	2	.08

(Table 29 con't.)

Generic Name	Trade Name	Frequency[c]	Percent
VI. Antidepressants		(15)	(.58)
Imipramine hydrochloride	Tofranil[j]	12	.47
Nortriptyline hydrochloride	Aventyl[k]	3	.12
VII. Miscellaneous		(25)	(.98)
Unspecified drugs		15	.59
Diphenhydramine hydrochloride	Benadryl	7	.27
Hydrocortisone	Cortef	1	.04
Prednisone		1	.04
Levodopa[l]		1	.04
Total[m]		512	20.01

[a]Tabulated from children reported to have received at least one psychotropic or anticonvulsant drug at some time during the school year (n=358).

[b]Of the total number of children represented in the survey, 14.0% were reported to have received drug therapy.

[c]Numbers in parentheses indicate values for drug categories.

[d]"Ritalin should not be used in children under six years, since safety and efficacy in this age group have not been established (Physician's Desk Reference, 1975, p. 710)".

[e]"Cylert is not recommended for children under six years of age since safety and efficacy in this age group have not been established (package insert, 1975)."

[f]"Because of the lack of sufficient clinical experience, Tranxene (clorazepate dipotassium) is not recommended for use in patients less than 18 years of age (Physician's Desk Reference, 1975, p. 543)."

[g]"Safety and effectiveness in children have not been established; therefore, this drug is not recommended for use in the pediatric age group (Physician's Desk Reference, 1975, p. 989)."

[h]Only dosages listed in regard to pediatric use are for psychotic children between 6 and 12 years of age (Physician's Desk Reference, 1975, p. 1403).

[i]"The use of Quide (piperacetazine) in children under 12 years of age is not recommended because safe conditions for its use have not been established (Physician's Desk Reference, 1975, p. 758)."

[j]"Administration of the drug in pediatric conditions other than enuresis or in children younger than 6 years is not recommended (Physician's Desk Reference, 1975, p. 807)."

[k]"This drug is not recommended for use in children, since safety and effectiveness in the pediatric age group have not been established (Physician's Desk Reference, 1975, p. 912)."

[l]"The safety of Larodopa under the age of 12 has not been established (Physician's Desk Reference, 1975, p. 1242)." Larodopa is one trade name for levodopa.

[m]Totals are inflated because 109 children were reported to have received more than one drug during the school year.

Table 30

Medication Reportedly Used in the Management of Hyperactivity[a]

(Children = 203)[b]

Generic Name	Trade Name	Frequency[c]	Percent
I. Stimulants		(144)	(70.94)
Methylphenidate hydrochloride	Ritalin	123	60.59
Dextroamphetamine sulfate	Dexedrine	13	6.40
Magnesium pemoline	Cylert	6	2.96
Deanol	Deaner	1	.49
Amphetamine sulfate	Benzedrine	1	.49
II. Major Tranquilizers		(29)	(14.29)
Thioridazine	Mellaril	23	11.33
Chlorpromazine	Thorazine	3	1.48
Haloperidol	Haldol	1	.49
Trifluoperazine hydrochloride	Stelazine	1	.49
Piperacetazine	Quide	1	.49
III. Minor Tranquilizers		(10)	(4.93)
Diazepam	Valium	5	2.46
Hydroxyzine hydrochloride	Atarax	3	1.48
Hydroxyzine pamoate	Vistaril	2	.99
IV. Antidepressants		(10)	(4.93)
Imipramine	Tofranil	9	4.43
Nortriptyline hydrochloride	Aventyl	1	.49
V. Hypnotics and Sedatives		(8)	(3.94)
Phenobarbital		6	2.96
Mephobarbital	Mebaral	1	.49
Sodium butabarbital	Butisol	1	.49
VI. Anticonvulsants		(22)	(10.84)
Diphenylhydantoin sodium	Dilantin	20	9.85
Primidone	Mysoline	2	.99
VII. Miscellaneous		(10)	(4.93)
Diphenhydramine hydrochloride	Benadryl	7	3.45
Unknown		3	1.48
Total[d]		233[e]	114.79

[a]Tabulated from the reports of early childhood special education teachers.

[b]Number of children reported to have received medication for hyperactivity including 28 children who also received drug therapy for convulsive disorders.

[c]Numbers in parentheses represent values for drug categories.

[d]Totals are inflated because 30 children were reported to have received more than one medication for hyperactivity during the school year.

[e]Medication reported as being used for both hyperactivity and another disorder (n=4) and those for which no distinction was made between hyperactivity and convulsive disorders (n=9) are excluded.

Table 31

Medication Reportedly Used in the Management of Convulsive Disorders[a]

(Children = 168)[b]

Generic Name	Trade Name	Frequency[c]	Percent
I. Anticonvulsants		(116)	(69.05)
Diphenylhydantoin sodium	Dilantin, Ekko	78	46.43
Primidone	Mysoline	23	13.69
Methsuximide	Celontin	5	2.98
Acetazolamide	Diamox	3	1.79
Ethosuximide	Zarontin	3	1.79
Ethotoin	Peganone	2	1.19
Phensuximide	Milontin	1	.60
Mephenytoin	Mesantoin	1	.60
II. Hypnotics & Sedatives		(89)	(52.98)
Phenobarbital		78	46.43
Mephobarbital	Mebaral	8	4.76
Metharbital	Gemonil	3	1.79
III. Tranquilizers (Major & Minor)		(15)	(8.93)
Diazepam	Valium	13	7.74
Clorazepate dipotassium	Tranxene	2	1.19
IV. Miscellaneous		(17)	(10.12)
Carbamazepine	Tegretol	3	1.77
Hydrocortisone	Cortef	1	.60
Prednisone		1	.60
Levodopa		1	.60
Unknown		11	6.55
Total[d]		237[e]	141.07

[a]Tabulated from the reports of early childhood special education teachers.

[b]Number of children reported to have received medication for convulsive disorders including 28 children who also received drug therapy for hyperactivity.

[c]Numbers in parentheses represent values for drug categories.

[d]Totals are inflated because 57 children were reported to have received more than one medication for the management of convulsive disorders during the school year.

[e]Medication for which no distinction was made between hyperactivity and convulsive disorders are excluded (n=9).

Table 32

Distribution of the Six Most Frequently Reported Medications by Sex[a]

(Children = 358)[b]

Medication	Sex					
	Male (n=249)		Female (n=109)		Total	
	F	%	F	%	F	%
Methylphenidate hydrochloride	105	42.16	21	19.27	126	35.20
Diphenylhydantoin sodium	63	25.30	41	37.61	104	29.05
Phenobarbital	59	23.69	33	30.28	92	25.70
Diazepam	15	6.02	11	10.09	26	7.26
Primidone	13	5.22	13	11.93	26	7.26
Thioridazine	21	8.43	5	4.59	26	7.26
Total[c]	276	110.84	124	113.77	400	111.73

[a]These medications account for 78.12% of all reported drugs.

[b]Total number of children reported to have received medication.

[c]Totals are inflated because children were reported to have received more than one medication during the school year.

Table 33

Drugs Used for the Management of Hyperactivity in Children Receiving Drug Therapy for Convulsive Disorders[a]

(Children = 24)[b]

Generic Name	Trade Name	Frequency[c]	Percent
I. Stimulants		(14)	(58.3)
Methylphenidate hydrochloride	Ritalin	11	45.8
Dextroamphetamine sulfate	Dexedrine	2	8.3
Magnesium pemoline	Cylert	1	4.2
II. Tranquilizers (Major & Minor)		(7)	(29.2)
Thioridazine	Mellaril	4	16.7
Chlorpromazine	Thorazine	1	4.2
Trifluoperazine hydrochloride	Stelazine	1	4.2
Diazepam	Valium	1	4.2
III. Antidepressants		(3)	(12.5)
Imipramine	Tofranil	3	12.5
IV. Other		(3)	(12.5)
Phenobarbital		1	4.2
Diphenhydramine hydrochloride	Benadryl	2	8.3
Total[d]		27	112.5

[a]Tabulated from the reports of early childhood special education teachers.

[b]Excluded from this analysis are four children for whom data were not available as to which of the two disorders each drug was prescribed.

[c]Numbers in parentheses indicate values for drug categories.

[d]Totals are inflated because two children had received more than one drug for hyperactivity during the school year.

Table 34

Drugs Used for the Management of Convulsive Disorders in Children Receiving Drug Therapy for Hyperactivity[a]

(Children = 24)[b]

Generic Name	Trade Name	Frequency[c]	Percent
I. Anticonvulsants		(26)	(108.3)
Diphenylhydantoin sodium	Dilantin	19	79.2
Primidone	Mysoline	4	16.7
Methsuximide	Celontin	2	8.3
Ethosuximide	Zarontin	1	4.2
II. Hypnotics & Sedatives		(3)	(12.5)
Phenobarbital		2	8.3
Mephobarbital	Mebaral	1	4.2
III. Tranquilizers (Major & Minor)		(3)	(12.5)
Diazepam	Valium	2	8.3
Clorazepate dipotassium	Tranxene	1	4.2
Total[d]		32	133.5

[a]Tabulated from the reports of early childhood special education teachers.

[b]Excluded from the analysis are four children for whom data were not available as to which of the two disorders each drug was prescribed.

[c]Numbers in parentheses indicate values for drug categories.

[d]Totals are inflated because seven of these children had received more than one drug for convulsive disorders during the school year.

Table 35

Teacher Certainty of Medication Usage With the Children They Teach

(Teachers = 205)[a]

Item	Frequency	Percent
Very certain	105	51.2
Certain	86	41.9
Uncertain	11	5.4
Very Uncertain	3	1.5
Total	205	100.0

[a]Two respondents left this item blank.

Table 36

Teacher Perception of the Accuracy of Their Drug Information

(Teachers = 202)[a]

Item	Frequency	Percent
Very accurate	56	27.7
Accurate	112	55.4
Inaccurate	28	13.9
Very inaccurate	6	3.0
Total	202	100.0

[a]Five respondents left this item blank.