

DOCUMENT RESUME

ED 039 040

PS 003 395

AUTHOR Werry, John S.; Quay, Herbert C.
TITLE The Prevalence of Behavior Symptoms in Younger Elementary School Children.
SPONS AGENCY National Inst. of Mental Health (DHEW), Bethesda, Md.
PUB DATE 70
NOTE 17p.; Paper presented at the 1970 Annual Meeting of the American Orthopsychiatric Association, San Francisco, California

EDRS PRICE FDRS Price MF-\$0.25 HC-\$0.95
DESCRIPTORS Age Differences, *Behavior Patterns, Behavior Rating Scales, *Child Psychology, Grade 1, Grade 2, Kindergarten, Psychological Evaluation, *Psychopathology, Sex Differences

ABSTRACT

The purpose of this epidemiological study of psychopathological disorders was to obtain prevalence data on 55 behavior symptoms as they occur in kindergarteners and first and second graders. The behavior symptoms are commonly found in child guidance clinic populations. The population rated in this study was the kindergarten and first and second graders in the Urbana School system, which included 926 boys and 827 girls. The children were rated by their teachers with the use of the Quay Peterson problem checklist. The universality of the population and the data is limited because Urbana is a university town and the per capita income, education level, and youth of the town is higher than usual. Analysis of the data indicated that: (1) prevalence of many of the psychopathological symptoms is quite high, (2) boys have higher rates of acting out or disruptive symptoms, while girls have slight excess of neurotic type symptoms, (3) there is a tendency for many symptoms to decrease at age 5 with a slight increase again at 8 years, (4) total number of symptoms per child is significantly higher in boys than in girls, and (5) there is little doubt that not only do boys have more symptoms than girls, but female teachers consider boys more trouble than girls. (MH)

THE PREVALENCE OF BEHAVIOR SYMPTOMS
IN YOUNGER ELEMENTARY SCHOOL CHILDREN¹

By - John S. Werry, M.D.²

. Herbert C. Quay, Ph. D.³

INTRODUCTION:

Epidemiological studies of psychopathological disorders in children differ from studies of clinic cases or other highly selected subsamples by an effort to study the prevalence of disorder in the total population. This requires two things, first, the locating and examining either the total population within a specified age and geographical area or some sampling of the total population adequate to extrapolate these findings to the total population, and second, some acceptable technique for making judgments about the child's psychopathological status.

There have been several epidemiological studies (see Bower 1960) of which the most recent are those by LaPouse and Monk (1958, 1959, 1964) who studied a representative sample of children between the ages of 6 to 12 years in the city of Buffalo and by Rutter and Graham (1966) who studied the entire 10 and 11 year old population (about 2,000 children) on the Isle of Wight. Both these studies relied at least in part, for the diagnosis of psychopathological disorder on behavior symptom checklists given to mothers and/or teachers. These two studies together with others (Glidewell, Mensh

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and Gildea 1957, Quay and Peterson, 1967) have shown that such symptom checklists have a surprisingly satisfactory inter-rater reliability (especially between parents and among teachers), considerable test retest reliability and can discriminate between normal and emotionally disturbed children with a considerable degree of validity. One of the more consistent findings in these studies has been that it is the total number of symptoms rather than the kind of symptom which is most indicative of emotional disturbance, since behavior symptoms are very common in all children. The study by LaPouse and Monk revealed that many symptoms such as fears, enuresis or restlessness thought by clinicians to be pathognomic of psychiatric disorders were present in from 20 to 40% of the population.

Most of the above studies have revealed a greater number of symptoms in boys (e.g., LaPouse and Monk 1964, Rutter and Graham 1966) and a tendency for the number of symptoms to decrease with age (LaPouse and Monk, 1964).

The purpose of the present study was to get some prevalence data on 55 behavior symptoms commonly found in child guidance clinic populations (Peterson 1961) as they occur in school children in the first three grades (kindergarten through Grade 2), to examine this prevalence rate as a function of sex and age and to give normative data on the distribution of the number of symptoms per child in this population. Such data, in addition to corroborating the findings of others should have epidemiological value, provided the same questionnaire is used.⁴

METHOD

In May 1967, an attempt was made to have teachers in the Urbana Illinois school system rate the behavior of all children in grades K through 2, including those children in special classes.

Population:

In any epidemiological study the question of how complete or representative was the sampling of the population is paramount. In this instance, there were 951 boys enrolled of whom 926 (97.2%) and of 864 girls, 827 (95.7%) were rated and had usable data. Of the missing 2-4%, 2% was due to an occasional omission by the teacher of either age or sex. The remaining 2% was due to failure by a few teachers (not of special classes) to rate some children. Thus the goal of rating the total public school population (K through 2nd) appears satisfactorily achieved. One must then ask about children not attending the public school system. The number of children at this grade level attending parochial schools in the area is to all intents and purposes negligible. Very few children in this school system are on homebound teaching, and there are adequate programs in the schools for educable mentally handicapped children, thus only physically handicapped and severely retarded children were excluded from the sample.

The second question relates to the universality of the findings or the prototypic nature of the community surveyed. Urbana, Illinois (population approximately 25,000) is not a typical middle size midwestern city since it is a university town and is the center of a prosperous farming and small merchant community. Thus per capita income, education level and youth of the population is somewhat

higher than usual. The distribution of minority ethnic groups in the population is however, fairly typical at about 13%. Thus the universality of the findings of this study is somewhat limited.

Rating Behavior:

The instrument used to establish the presence or absence of behavior symptoms was that of the Quay-Peterson problem checklist (Quay and Peterson 1967) which has been the subject of a great deal of study in different populations, and which appears to be of satisfactory inter-rater reliability, and which discriminates between normal and deviant populations. The questionnaire consists of 55 separate symptoms (rated as present or absent) comprising those most commonly seen in child guidance population (Peterson 1961). The symptoms are listed in Tables 1 and 2. It should be noted that while a few symptoms would be dependent on hearsay (e.g. bedwetting) and are thus of questionable reliability, the majority describe behavior observable at school.

The rating was done by the teachers who in the majority of instances had taught the children for 9 months. There is reason to believe that the teachers themselves may have been somewhat different from those found in a typical middle-sized midwestern city in that a large number of them were wives of graduate students at the University.

RESULTS

Subject to the limitations of the community studied and the raters, the findings below are offered as estimates of the prevalence rate of the 55 behavior symptoms listed in Table 1 in the school

population grades K through 2.

The effect of sex independent of age.

The distribution of each of the 55 symptoms in the 926 boys and in the 827 girls is set out in Table 1 together with the probability of difference yielded by a Chi Square Test.

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Insert Table 1 about here

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It can be seen that 37 or a majority of the symptoms, are significantly commoner in boys than girls. In 14 (numbers 4, 6, 7, 12, 15, 23, 28, 29, 32, 39, 41, 49, 50, 54) there is no difference between the two sexes, while only 5 (numbers 5, 14, 30, and 55) are significantly more frequent in girls. In surveying the kind of symptomatology, it is very clear that while the items which are commoner in girls (doesn't know how to have fun, shyness, jealousy, hypersensitivity, and physical complaints) would be consistent with the commonly held and occasionally demonstrated (e.g., Rutter and Graham 1966) notion that girls tend to be more neurotic and less acting-out than boys, nevertheless/^{there} appeared to be at least an equal number of neurotic type symptoms which do not differentiate between boys and girls and which are commoner in boys. On the other hand, acting out or disruptive and immature symptomatology is almost uniformly more common in boys.

As far as the frequency of the symptoms goes the finding of

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LaPouse and Monk and others of the high prevalence rate of many symptoms is confirmed in this study. For example, restlessness was present in 49% of boys, disruptiveness 46%, short attention span 43%, inattentiveness 43%, distractability 48%, etc.⁴

Insert Table 2 about here

Effect of Age Within Sex.

In Table 2 are set out the results of the effect of age with, unlike the study by LaPouse and Monk (1964) the sexes still kept separate. Two sets of Chi² analyses have been done. The first to determine whether or not there was a difference in the distribution of the symptom between the sexes at that age level is shown by asterisks within each age group. The second analysis found in the last column marked "p value" shows the analysis for the effect of age within that sex. It can be seen that a substantial minority of the symptoms (25 in boys, 10 in girls) show an age effect. There is a fair degree of consistency in the tendency of both sexes to have fewer symptoms after 5 years of age. The pattern however, is interesting in that while there is a sharp drop between 5 and 6 years, by 8 years there is a beginning increment in prevalence though not as high as at age 5. The differences between sexes at each age level generally maintain the same pattern/as observed in the total group.

The total number of symptoms:

At the bottom of Tables 1 and 2 can be seen the mean number of symptoms per child for boys and girls both in the total group, and as

broken down by age. As can be seen, the number is surprisingly high, is significantly higher in boys than girls and reflects the age pattern described above.

If the frequency of psychiatric disorder in the population is about 10% (see Bower 1960) then a point of 24 symptoms for boys and 18 symptoms for girls would be a statistical definition of abnormality. The 5th percentile is 30 and 24 symptoms while the 15th is 21 and 15.

However the authors feel that the use of factor scores and the age and sex specific means and standard deviations for the checklist (Quay and Peterson 1967) to be a more fruitful way of diagnosing and classifying psychopathology than a simple total symptom count.

Conclusions

The findings of this study may be summarized as follows:

1. The prevalence of many symptoms of psychopathology in the general 5-8 year old population is quite high and their individual diagnostic value is therefore very limited. This substantiates the findings of others (Glidewell et al 1957, LaPouse and Monk 1958, Rutter and Graham, 1966).
2. Boys tend to have higher prevalence rates of acting^{out}/or disruptive symptoms while girls show a slight excess of neurotic type symptoms. This also supports the findings of others (Rutter and Graham, 1966).
3. There is a tendency in both sexes for many symptoms to decrease in prevalence between the ages of 5 and 6 years with a slight increase at age 8 years.

4. The total number of symptoms per child is significantly higher in boys than in girls.
5. There seems little doubt that not only do boys have more symptoms but the connotative sense of most of the symptoms commoner in boys represents "badness". Thus it can be concluded that at this age level, boys are perceived by female teachers as more trouble or "worse" than girls. The question as to whether this represents more actual or more perceived disorder in boys cannot be answered here but, from the point of view of social function this would appear to be a semantic quibble since all child guidance clinics, special classes, delinquency programs, and so on, report a marked excess of boys in referrals. Thus boys must be considered to have a higher rate of disorder and to be more "at risk" in our society than girls.

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REFERENCES

1. Bower E. Early identification of emotionally handicapped children in school. Springfield, Illinois Thomas 1960 pp 21-28
2. Glidewell J., Mensh I., and Glidea M.
Behavior symptoms in children and degree of sickness. American Journal of Psychiatry, 1957, 114, 47-53.
3. Lapouse R., and Monk M., An epidemiological study of behavior characteristics of children. American Journal of Public Health, 1958, 48, 1134-1144.
4. Lapouse, R., and Monk M., Fears and worries in a representative sample of children. American Journal of Orthopsychiatry 1959, 29, 803-818.
5. Lapouse R., and Monk M., Behavior deviations in a representative sample of children-variation by sex, age, race, social class and family size. American Journal of Orthopsychiatry - 1964, 34, 436-446.
6. Peterson D., Behavior problems of middle childhood. Journal of Consulting Psychology, 1961, 205-209.
7. Quay H. and Peterson D., Manual for the behavior problem checklist; 1967 (Mimeo).
8. Rutter M. and Graham P. Psychiatric disorder in 10 and 11 year old children. Proceedings of the Royal Society of Medicine, 1966, 59, 382-387.

PERCENT PREVALENCE OF BEHAVIOR SYMPTOMS IN GRADES K, I, & II

	<u>Symptom</u>	<u>Boys</u> <u>N = 926</u>	<u>Girls</u> <u>N = 827</u>	<u>P</u>
1.	Oddness, bizarre behavior	22.6	11.2	.001
2.	Restlessness, inability to sit still	49.7	27.8	.001
3.	Attention-seeking, "show-off behavior"	36.4	20.6	.001
4.	Stays out late at night	2.5	3.8	NS
5.	Doesn't know how to have fun; behaves like a little adult	12.6	19.2	.001
6.	Self-consciousness; easily embarrassed	38.5	39.3	NS
7.	Fixed expression; lack of emotional reactivity	14.2	15.7	NS
8.	Disruptiveness; tendency to annoy & bother others	46.3	22.3	.001
9.	Feelings of inferiority	28.8	23.7	.05
10.	Steals in company with others	5.7	3.0	.01
11.	Boisterousness, rowdiness	33.8	11.2	.001
12.	Crying over minor annoyances and hurts	16.1	17.1	NS
13.	Preoccupation; "in a world of his own"	19.9	13.7	.001
14.	Shyness, bashfulness	33.3	41.4	.001
15.	Social withdrawal, preference for solitary activities	16.7	15.5	NS
16.	Dislike for school	10.1	4.4	.001
17.	Jealousy over attention paid other children	11.8	16.0	.01
18.	Belongs to a gang	5.7	3.0	.01
19.	Repetitive speech	7.5	3.6	.001
20.	Short attention span	43.5	25.8	.001

Table 1 (cont'd 1)

<u>Symptom</u>	<u>Boys</u>	<u>Girls</u>	<u>P</u>
21. Lack of self-confidence	39.8	32.9	.01
22. Inattentiveness to what others say	43.5	25.0	.001
23. Easily flustered and confused	31.3	27.2	NS
24. Incoherent speech	12.9	5.4	.001
25. Fighting	31.3	6.2	.001
26. Loyal to delinquent friends	9.2	3.3	.001
27. Temper tantrums	8.6	4.6	.001
28. Reticence, secretiveness	13.4	11.4	NS
29. Truancy from school	3.7	2.3	NS
30. Hypersensitivity; feelings easily hurt	26.9	31.8	.05
31. Laziness in school and in performance of other tasks	31.4	16.3	.001
32. Anxiety, chronic general fearfulness	16.0	17.0	NS
33. Irresponsibility, undependability	32.9	16.1	.001
34. Excessive daydreaming	17.6	11.7	.001
35. Masturbation	1.8	1.1	.001
36. Has bad companions	4.6	0.0	.001
37. Tension, inability to relax	23.1	12.3	.001
38. Disobedience, difficulty in disciplinary control	26.1	10.6	.001
39. Depression, chronic sadness	7.2	7.6	NS
40. Uncooperativeness in group situations	26.9	12.2	.001
41. Aloofness, social reserve	14.2	14.7	NS
42. Passivity, suggestibility; easily led by others	29.0	19.6	.001
43. Clumsiness, awkwardness, poor muscular coordination	17.9	8.6	.001
44. Hyperactivity; "always on the go"	30.3	13.8	.001

TABLE 1 (cont'd 2)

<u>Symptom</u>	<u>Boys</u>	<u>Girls</u>	<u>P</u>
45. Distractibility	48.2	28.3	.001
46. Destructiveness in regard to his own and/or other's property	15.9	4.5	.001
47. Negativism, tendency to do the opposite of what is requested	17.4	8.7	.001
48. Impertinence, sauciness	16.3	10.8	.001
49. Sluggishness, lethargy	13.5	10.6	NS
50. Drowsiness	6.1	6.1	NS
51. Profane language, swearing, cursing	10.7	1.5	.001
52. Nervousness, jitteriness, jumpiness; easily startled	21.9	15.5	.001
53. Irritability; hot-tempered, easily aroused to anger	23.4	10.4	.001
54. Enuresis, bed-wetting	2.1	1.1	NS
55. Often has physical complaints, e.g. headaches, stomach ache	7.4	14.4	.001

TOTAL NUMBER OF SYMPTOMS PER CHILD

MEAN	11.4	7.6	<.01
S.D.	9.4	7.9	

PREVALENCE OF BEHAVIOR SYMPTOMS BY AGE & SEX

SYMPTOM	5 YEARS M N=179 F N=161		6 YEARS M N=326 F N=271		7 YEARS M N=229 F N=218		8 YEARS M N=179 F N=170		P value	
	M	F	M	F	M	F	M	F	M	F
1. Oddness, bizarre behavior	21.8	9.3*	23.9	12.5*	23.6	9.6*	20.1	12.4*	NS	NS
2. Restlessness, inability to relax	57.5	31.7*	49.4	30.6*	48.0	20.7*	44.1	30.2*	NS	NS
3. Attention-seeking, "show-off" behavior	39.1	24.8*	36.2	22.1*	35.4	13.7*	35.2	23.2*	NS	NS
4. Stays out late at night	1.8	2.0	2.5	3.7	3.1	2.8	2.3	6.7	NS	NS
5. Doesn't know how to have fun; behaves like a little adult	20.8	29.2	12.8	22.5*	8.7	11.5	7.8	12.9	.01	.001
6. Self-consciousness; easily embarrassed	48.6	47.2	40.5	43.3	30.6	32.7	33.7	30.0	.01	.01
7. Fixed expression, lack of emotional reactivity	16.2	18.6	13.5	16.6	13.2	14.3	14.0	14.1	NS	NS
8. Disruptiveness; tendency to annoy and bother others	52.0	20.5*	43.3	21.0*	47.7	20.2*	35.2	20.6*	NS	NS
9. Feelings of inferiority	34.6	29.2	24.8	24.0	23.1	20.2	35.2	20.6*	.05	NS
10. Steals in company with others	9.7	1.2*	3.7	3.7	5.7	2.3	4.5	4.7	NS	NS
11. Boisterousness, rowdiness	38.5	15.5*	34.4	10.3*	31.4	9.2*	30.2	10.0*	NS	NS
12. Crying over minor annoyances & hurts	27.5	19.3	14.1	21.4*	12.2	14.2	11.7	12.9	.001	NS
13. Preoccupation; "in a world of his own"	21.8	16.1	15.0	12.2	20.5	10.6*	24.0	14.7*	NS	NS
14. Shyness, bashfulness	42.9	47.8	34.7	42.4	24.5	37.5*	30.7	35.3	.01	NS
15. Social withdrawal, preference for solitary activities	24.6	24.8	14.7	14.0	14.6	9.6	15.1	16.5	.05	.01

TABLE 2 (cont'd 1)

SYMPTOM	5 YEARS		6 YEARS		7 YEARS		8 YEARS		p value	
	M	F	M	F	M	F	M	F	M	F
16. Dislike for school	10.1	4.3*	7.1	4.4	10.0	3.7*	14.0	5.3*	NS	NS
17. Jealousy over attention paid other children	17.9	20.5	8.9	18.8*	10.0	11.5	9.5	13.6	.05	NS
18. Belongs to a gang	7.9	3.1	3.7	3.7	3.9	3.2	7.3	1.8*	NS	NS
19. Repetitive speech	11.7	7.5	8.6	2.6*	3.9	1.8	5.0	4.1	.05	.05
20. Short attention span	54.7	30.4*	42.2	29.2*	37.6	18.8*	41.3	24.1*	.05	NS
21. Lack of self-confidence	47.5	38.5	34.4	34.1	37.1	30.7	43.6	25.9*	.05	NS
22. Inattentiveness to what others say	52.0	26.7*	38.7	21.4*	43.0	22.5*	45.3	32.0*	NS	NS
23. Easily flustered and confused	42.5	36.0	31.0	33.0	22.3	17.4	31.3	18.8*	.001	.001
24. Incoherent speech	16.2	16.2*	13.2	6.6*	10.5	3.2*	11.7	3.5*	NS	NS
25. Fighting	45.3	9.3*	25.5	4.8*	28.1	4.6*	30.7	5.9*	.001	NS
26. Loyalty to delinquent friends	13.0	4.3*	5.8	2.6	10.5	2.8*	8.1	4.7	NS	NS
27. Temper tantrums	14.0	8.1	7.1	4.8	5.7	2.8	8.4	2.9*	.05	NS
28. Reticence, secretiveness	17.9	11.2	9.8	12.2	14.4	9.6	11.7	14.4	NS	NS
29. Truancy from school	6.7	1.2*	2.5	3.3	2.6	2.3	2.8	1.2	NS	NS
30. Hypersensitivity; feelings easily hurt	40.2	36.0	23.9	36.5*	21.4	25.7	25.7	26.5	.001	.05
31. Laziness in school and in performance of other tasks	31.3	11.2*	26.1	17.0*	32.3	11.9*	38.5	25.9*	NS	.01
32. Anxiety, chronic general fearfulness	22.9	21.3	13.8	19.6	11.4	14.2	17.4	11.2	.05	NS

TABLE 2 (cont'd 2)

SYMPTOM	5 YEARS		6 YEARS		7 YEARS		8 YEARS		p value	
	M	F	M	F	M	F	M	F	M	F
33. Irresponsibility, undependability	37.4	16.7*	29.8	13.7*	29.8	13.3*	36.3	22.4*	NS	NS
34. Excessive daydreaming.	17.3	10.6	12.6	11.7	21.0	6.0*	21.8	17.1	.05	.05
35. Masturbation	3.9	1.9	0.6	1.5	1.3	0.5	2.3	0.0	NS	NS
36. Has bad companions	7.3	0.6*	2.5	1.5	2.6	1.4	6.1	1.2*	.05	NS
37. Tension, inability to relax	35.2	14.9*	20.2	10.0*	16.2	13.3	24.6	11.8*	.001	NS
38. Disobedience, difficulty in disciplinary control	34.6	10.6*	21.2	10.3*	23.6	8.3*	28.7	12.9*	.05	NS
39. Depression, chronic sadness	7.3	11.8	5.8	6.6	8.3	5.0	7.8	7.6	NS	NS
40. Uncooperativeness in group situations	39.1	15.6*	23.6	11.9*	22.7	9.6*	25.7	12.9*	.01	NS
41. Aloofness, social reserve	25.1	26.1	13.2	16.2	9.6	8.7	8.9	8.8	.001	.001
42. Passivity, suggestibility; easily led by others	44.1	23.0*	27.6	21.8	20.5	15.6	28.5	17.1*	.001	NS
43. Clumsiness, awkwardness, poor muscular coordination	17.9	6.8*	18.5	7.7*	14.0	8.7	21.2	10.0*	NS	NS
44. Hyperactivity; "always on the go"	38.5	19.3*	27.9	13.3*	25.4	10.1*	31.8	14.7*	NS	NS
45. Distractibility	57.5	31.7*	42.6	29.9*	46.3	21.0*	51.4	30.0*	.05	NS
46. Destructiveness in regard to his own &/or other's property	19.6	6.2*	12.0	5.5*	18.9	3.2*	15.1	2.9*	NS	NS
47. Negativism, tendency to do the opposite of what is requested	25.7	11.8*	12.3	7.0*	17.9	9.2*	16.9	7.6*	.01	NS

TABLE 2 (cont'd 3)

SYMPTOM	5 YEARS		6 YEARS		7 YEARS		8 YEARS		P value	
	M	F	M	F	M	F	M	F	M	F
48. Impertinence, sauciness	19.7	13.7	13.5	10.7	15.4	8.7*	17.4	10.0*	NS	NS
49. Sluggishness, lethargy	20.0	19.3	12.0	10.0	10.1	4.6*	14.1	11.2	NS	.001
50. Drowsiness	8.9	6.2	4.9	7.7	5.7	4.1	6.2	5.9	NS	NS
51. Profane language, swearing, cursing	11.2	1.9*	8.3	1.8*	11.4	0.9*	12.5	1.8*	NS	NS
52. Nervousness, jitteriness, jumpiness; easily startled	27.0	18.6	19.0	16.2	17.0	15.2	25.8	11.8*	NS	NS
53. Irritability; hot-tempered, easily aroused to anger	34.6	13.0*	19.3	10.0*	19.3	10.1*	21.9	7.6*	.01	NS
54. Enuresis, bed-wetting	2.9	0.7	1.2	2.2	1.9	1.0	3.0	0.0*	NS	NS
55. Often has physical complaints, e.g. headaches, stomach ache	10.7	11.8	6.1	18.1*	5.7	11.0*	6.7	15.9*	NS	NS
TOTAL NUMBER OF SYMPTOMS										
MEAN	14.5	9.1*	10.2	8.0*	10.1	6.1*	11.4	9.2*	<.001	<.01
S.D.	11.3	8.7	8.5	8.0	8.3	7.4	7.4	7.6		

* significant difference ($p < .05$) between sexes at that age level.

Footnotes

1. Presented to the 1970 Annual Meeting of the American Orthopsychiatric Association in San Francisco. The research described here was supported by USPHS Grant #MH 07346 from the National Institute of Mental Health.
2. Director, Institute for Juvenile Research, 907 South Wolcott Avenue, Chicago, Illinois 60612 and Associate Professor of Psychiatry, University of Illinois College of Medicine.
3. Professor and Chairman, Division of Educational Psychology and Special Education, Temple University, Philadelphia, Pennsylvania.
4. Direct comparisons with other studies however, is not really possible since few have used as many or similarly worded symptoms, teachers as raters or a simple yes/no scoring system. Thus in a sense each measuring technique generates its own level of prevalence which can only be interpreted with reference to its own "norms".