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The Validity of the Hyperkinetic Syndrome

A Study in Child Psychiatric Clinic Attenders

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Summary. The total group of hyperkinetic children drawn from the pool of consecutive admissions to a child and adolescent out-patient department were compared with further groups admitted consecutively to the same institution in 1979 and 1980. These other groups consisted of normal controls, conduct disorders, emotional disorders or mixed disorders. The question of validity was studied in terms of several comparisons including sex, age, SES, family history, development characteristics, neurological findings and questionnaire scores.

It was found that some data support the concept of concurrent validity of the hyperkinetic syndrome, namely the extremely asymmetric sex distribution in favour of boys, some indicators of developmental delay, the early onset of the symptoms and the higher rates of coordination deficits detected by neurological examination.

Key words: Hyperkinetic syndrome – Developmental behaviour – Neurological assessment – Sex distribution

Introduction

Stimulated by the question of the validity of diagnoses in child psychiatry (Rutter 1978) a number of recent studies have dealt with the differentiation of the hyperkinetic syndrome and conduct disorders. While some authors have argued that they should be considered similar or even identical disorders (Lahey et al. 1980; Sandberg et al. 1978, 1980; Shaffer and Greenhill 1979), there is strong evidence from other studies primarily based on factor analysis that hyperactivity and aggression are independent dimensions (Milich et al. 1982; Roberts et al. 1981; Loney 1980; Achenbach and Edelbrock 1978). While considerable uncertainty still exists over the degree to which the two disorders are separate (August and Stewart 1982; Stewart et al. 1981; Prinz et al. 1981) a recent critical review of the issue by Barkley (1982) opposes a premature abandonment of the diagnosis of hyperactivity as separate from conduct disorders.

In the light of these controversies further studies on the issue are warranted. The present work was therefore intended to study the validity of clinical diagnosis based on ICD 9 definitions. Differentiation between the hyperkinetic syndrome and conduct disorders is certainly the most urgent question because of the partial symptomatic overlapping which can occur. However, a differentiation with respect to emotional disorders is also warranted. Hypothetically these groups should differ with regard to sex ratio and age distribution, social background factors, family history, development and neurological findings.

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Sample

The children for the study were drawn from the general population of patients visiting the child and adolescent out-patient department of a university hospital with an average of between 800 and 900 new patients a year. The cases in question were from a recently developed documentation system. Sample selection began by studying data on a total of 1762 consecutive admissions in 1979 and 1980, from which we were able to draw 99 cases (5.4%) with the hyperkinetic syndrome (ICD 314). In 26 cases (1.4%) this diagnosis was associated with secondary diagnoses involving conduct or emotional disorders respectively; these had to be excluded in order to avoid confounding the diagnoses. The sample was further limited by the fact that this study was to be performed only on children of normal or above average intelligence. The remaining cases ($n = 51$) were augmented by five comparative groups of consecutive patients: a group of children ($n = 113$) with no known psychiatric disturbances, i.e. free of all developmental retardation, impairment of intelligence and physical illness (in these cases parents or teachers had been concerned with some problem while clinical examination did not detect any significant disorder); a group of children with pure conduct disorders (ICD 312), but no further psychiatric symptoms ($n = 107$) and devoid of all impairment to development and intelligence; and a group of children with pure emotional disorders (ICD 313, $n = 217$) but otherwise normally intelligent and devoid of any developmental retardation. Finally groups of patients with mixed disorders, namely mixed disturbance of conduct and emotions ICD 312.3, $n = 131$) and emotional disturbance with relationship problems (ICD 313.3, $n = 223$) were included in the analyses.

Methods

The present study was based on a systematic documentation of data concerning each patient attending the department. Data collection in each case was provided by the clinician who was responsible for the clinical assessment. Besides sex, age

and socio-economic status (SES) (according to the occupation of the father as proposed by Kleining and Moore, 1968), the present examination also included data from the psychiatric history of the parents, the developmental and psychiatric history of the patient and diagnoses according to the multi-axial classification scheme (Rutter et al. 1975).

With regard to the psychiatric history of the parents the following diagnoses were taken into account: mental retardation, psychosis, epilepsy, suicide attempts, alcoholism, other drug abuse, neuroses, psychopathy and criminality.

The developmental history of the patient was based on a list of empirically derived obstetrical and post-natal risk factors (Michaelis et al. 1979) comprising complications connected with pregnancy (e.g. ante-partum haemorrhage, accidents, severe infections, alcohol, nicotine or drug abuse), abnormalities of delivery (e.g. abnormal presentation, pre-term delivery etc.) and complications during the neonatal period such as jaundice and anoxia. Furthermore, delay in motor development (not sitting by the 10th month of life and/or not walking by the 18th month) and speech development (only speaking four words by the 18th month of life) were considered. Of the possible psychiatric abnormalities during preschool years we assessed the following: obstinate behaviour, separation anxiety, inability to play and hyperactivity. Finally, the time of entry into school was also recovered.

Neurological examinations were based on descriptions by Touwen and Prechtl (1970). Analysis of data from this part of the examination was restricted to the ratings of coordination deficits.

The data mentioned so far were provided by several clinicians in training. Among the clinicians ($n = 23$) who provided data for this study 8 were trainess in their second year and 15 had had more than 2 years of child psychiatric training. Informal reliability training was carried out by means of weekly training sessions in multi-axial classifications for all the participants throughout the study period. In addition all trainees were enrolled in a training programme providing, among other things, basic information referring to the clinical entities compared in this study.

Furthermore, data on every child obtained by the Children's Behaviour Questionnaire (Rutter et al. 1970) were also included in the analyses. The questionnaires had been completed by the parents when they came for assessment of the child. Evaluation of the hyperactivity dimensions was performed according to Schachar et al. (1981). Scales for scoring emotional and conduct disorders were created on the basis of the results of our own analyses (Steinhausen 1979). Weighted total scores ranging from 0 to 2 were calculated for each scale by dividing the total score by the total number of items of the respective scale.

Group differences between the samples were tested using the χ^2 method and the Fisher test. The level of significance for post hoc tests had to be adjusted to $P = 0.001$ because of multiple comparisons between groups.

Results

Because of missing data there are slightly differing sample sizes in the Tables presented here. A comparison of the data contained in Table 1 reveals significant differences between the four groups in terms of distribution of sex, age and social

Table 1. Comparison of sex, age and socio-economic status (SES)

		(1) Control group		(2) Hyperkinetic syndrome		(3) Conduct disorder		(4) Emotional disorder		(5) Mixed disturbance of conduct/ emotions		(6) Emotional disturbance and relationship problems		Significance of post hoc tests (χ^2 in parenthesis)			
														1 vs 2	2 vs 3	2 vs 4	2 vs 5	2 vs 6
		n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%					
Sex[a]	Male	59	53	46	90	73	68	135	62	108	72	148	66	< 0.00001	0.003	0.004	0.007	0.0005
	Female	53	47	5	10	34	32	83	38	43	28	75	34					
Age (years)[b]	1– 5	19	17	11	21	1	1	10	4	8	5	14	6	0.003	< 0.00001	< 0.00001	< 0.00001	< 0.00001
	6–10	37	33	28	55	36	34	80	37	51	34	73	33	(13.92)	(38.25)	(30.60)	(28.40)	(28.29)
	11–14	32	29	11	21	37	35	80	37	52	34	94	42					
	≤ 15	24	21	1	2	33	30	48	22	40	27	42	19					
SES of the father[c]																		
Lower class		38	39	32	70	51	61	103	55	80	63	106	53	0.001	NS	NS	NS	0.05
Middle class		59	61	14	30	33	39	83	45	47	37	95	47					

[a] $\chi^2 = 26.08$; $df = 5$; $P = 0.0001$
[b] $\chi^2 = 67.10$; $df = 15$; $P = 0.00001$
[c] $\chi^2 = 18.57$; $df = 5$; $P = 0.002$

Table 2. Comparison of family history

	(1) Control group		(2) Hyperkinetic syndrome		(3) Conduct disorder		(4) Emotional disorder		(5) Mixed disturbance of conduct/ emotions		(6) Emotional disturbance and relationship problems		Significance of post hoc tests				
													1 vs 2	2 vs 3	2 vs 4	2 vs 5	2 vs 6
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%					
Family history[a] of the father																	
Normal	58	74	22	58	30	40	98	58	43	41	95	55	NS	NS	NS	NS	NS
Abnormal	20	26	16	42	45	60	70	42	62	59	77	45					
Alcoholism/drug abuse	1	1	8	21	23	31	31	18	26	25	33	19					
Psychopathy/criminality	2	2	1	3	3	4	2	1	3	3	2	1					
Family history[b] of the mother																	
Normal	55	65	27	64	43	54	97	51	50	43	98	54	NS	NS	NS	0.02	NS
Abnormal	29	35	15	36	37	46	93	49	66	57	82	46					

[a] $\chi^2 = 27.73$; $df = 5$; $P < 0.00001$ (normal vs abnormal)
[b] $\chi^2 = 12.37$; $df = 5$; $P = 0.03$

class. Of particular interest is the fact that the children with hyperkinetic syndrome exhibited an extremely asymmetric sex distribution with a ratio of nine boys to one girl which clearly deviated from all of the other groups. The age distribution also revealed that hyperkinetic children, in contrast to all the other groups which revealed the same distribution pattern, were diagnosed at a significantly younger age. It was further apparent that in two out of three cases these children came from lower social strata. This predominance of lower class children contrasted strikingly with the control group but did not differ significantly from any of the clinical groups.

Comparison of family history is warranted inasmuch as aetiological research literature has repeatedly pointed to indications of possible genetic transmission. The data presented in Table 2, however, reflect significant past family history factors with no discernible pattern. For all of the clinical groups there was a significantly high rate of patrilineal alcoholism. Here, however, the ratio was characteristically not the highest among the hyperkinetic children, but rather among the group of conduct disorders. Matrilineally there were no differences between the clinical groups.

Table 3 contains data on developmental aspects indicating that patients suffering from the hyperkinetic syndrome did not differ from other groups with regard to complications during pregnancy, delivery and neonatal period. On the other hand, retardation of motor and speech development had a characteristic pattern. With the exception of the two mixed disorder groups the hyperkinetic group had higher rates of abnormalities in these areas than the other groups, i.e. pure conduct and emotional disorders. Their further development was characterized by significantly higher rates of obstinate behaviour during pre-school years than in children of the control group and the two emotional disorder groups, although they did not differ from those children with conduct disorders. Additionally the rates of hyperactivity during pre-school years and delayed entry into school were higher among hyperkinetic children in comparison with all the other groups in the study.

Comparison of the data contained in Table 4 involving neurological findings and developmental assessment revealed that hyperkinetic children had the highest rate of coordination deficits and developmental delays. All these findings direct from the clinical assessment distinguished the hyperkinetic group from all the other groups considered in the examination.

While these patterns of symptoms were based on assessment by clinicians, a final source of data used in the study came from parental questionnaires. The scores were analysed in terms of diagnostic group, sex, SES and age effects. Findings are represented in Tables 5 and 6. While total score, conduct disorder score and hyperactivity score differed significantly between the groups (see Table 5), post hoc analyses by the multiple range test resulted in rather poor classification, as may be seen from Table 6. As one might expect, the total score distinguished all clinical groups from the controls only. The same result also applied to the hyperactivity scale, the exception being that emotionally disturbed children had the same low score as the controls. With regard to the conduct disorder score hyperkinetic children were not distinguishable from emotional disturbances, conduct disorders or from controls. Apparently sex effects were relevant with regard to conduct disorders only (see Table 5), in which case boys had higher scores than girls. There were no significant interactions between the different effects on any of the four scores.

Table 3. Comparison of developmental and premorbid characteristics

	(1) Control group		(2) Hyperkinetic syndrome		(3) Conduct disorder		(4) Emotional disorder		(5) Mixed disturbance of conduct/ emotions		(6) Emotional disturbance and relationship problems		Significance of post hoc tests (χ^2 in parentheses)				
													1 vs 2	2 vs 3	2 vs 4	2 vs 5	2 vs 6
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%					
Pregnancy[a]																	
Normal	57	62	29	66	54	64	119	67	70	59	141	74					
Complicated	35	38	15	34	30	35	59	33	49	41	49	26					
Delivery[b]																	
Normal	67	70	26	60	63	75	132	76	88	76	150	78					
Complicated	29	30	18	40	20	24	41	24	28	24	42	22					
Neonatal period[c]																	
Normal	80	83	34	77	71	86	135	77	88	75	143	75					
Complicated	16	17	10	23	11	13	40	23	30	25	47	25					
Motor development[d]																	
Normal	92	95	33	75	78	94	161	90	101	84	170	87	0.001	0.001	0.01	NS	NS
Delayed	5	5	11	25	5	6	17	10	19	16	25	13					
Speech development[e]																	
Normal	84	92	26	62	73	91	138	79	94	81	151	79	0.00004	0.0002	0.025	0.02	0.03
Delayed	7	8	16	38	7	8	35	30	22	19	41	21					
Obstinate behaviour[f] during pre-school years																	
Not present	80	87	22	51	53	70	137	80	61	55	139	73	0.00002	0.05	0.0003	NS	0.006
Present	12	13	21	49	22	29	35	20	50	45	51	27					
Behaviour disorders[g] during pre-school years																	
None	68	83	18	45	48	66	104	63	60	57	100	59	0.00003	0.0003	< 0.00001	< 0.00001	< 0.00001
Hyperactivity	6	7	15	37	6	8	5	3	7	6	13	8	(21.03)	(14.36)	(43.47)	(22.56)	(24.98)
Other	8	10	7	18	18	25	55	34	39	37	55	33					
Entry into school[h]																	
On time	73	90	17	53	69	80	136	80	102	85	154	83	0.00004	0.005	0.003	0.0002	0.0006
Delayed	8	10	15	47	17	19	35	20	17	14	31	17					

[a] $\chi^2 = 9.27$; $df = 5$; $P = 0.10$
[b] $\chi^2 = 8.14$; $df = 5$; $P = 0.15$
[c] $\chi^2 = 6.74$; $df = 5$; $P = 0.24$
[d] $\chi^2 = 17.45$; $df = 5$; $P = 0.004$
[e] $\chi^2 = 24.24$; $df = 5$; $P = 0.0002$
[f] $\chi^2 = 40.68$; $df = 5$; $P = 0.00001$
[g] $\chi^2 = 72.86$; $df = 10$; $P = 0.00001$
[h] $\chi^2 = 23.60$; $df = 5$; $P = 0.0003$

Table 4. Neurological and developmental findings at assessment

	(1) Control group		(2) Hyperkinetic syndrome		(3) Conduct disorder		(4) Emotional disorder		(5) Mixed disturbance of conduct/ emotions		(6) Emotional disturbance and relationship problems		Significance of post hoc tests				
													1 vs 2	2 vs 3	2 vs 4	2 vs 5	2 vs 6
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%					
Coordination deficits[a]																	
Not present	82	94	22	46	74	91	141	85	100	81	139	85	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Present	5	6	26	54	7	9	24	15	23	19	25	15					
Developmental delays[b]																	
Not present	112	100	17	33	83	78	160	74	109	72	156	70	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Present	0	0	34	67	24	22	56	26	42	28	66	30					

[a] $\chi^2 = 61.53$; $df = 5$; $P < 0.00001$
[b] $\chi^2 = 86.09$; $df = 5$; $P = 0.00001$

Table 5. Analysis of variance and covariance for questionnaire scores

		F	*df*	*P*
Total score	Sample	4.67	390;5	0.001
	Sex	0.48	390;1	NS
	SES	1.11	390;1	NS
	Age (Covariate)	0.02	390;1	NS
Emotional disturbance	Sample	1.44	390;5	NS
	Sex	2.47	390;1	NS
	SES	0.51	390;1	NS
	Age (Covariate)	0.00	390;1	NS
Conduct disorders	Sample	15.69	390;5	0.001
	Sex	10.15	390;1	0.002
	SES	2.18	390;1	NS
	Age (Covariate)	0.16	390;1	NS
Hyperactivity	Sample	9.30	390;5	0.001
	Sex	2.68	390;1	NS
	SES	0.15	390;1	NS
	Age (Covariate)	0.06	390;1	NS

Discussion

The data presented here can be evaluated according to the conceptual framework of "concurrent validity" as proposed by Shaffer and Greenhill (1979). The present study expanded the approach of previous investigations by including emotional disturbances and mixed disorders in addition to the comparison of the hyperkinetic syndrome and conduct disorders. With reference to the question of predictive validity, i.e. concrete proof of specificaetiological factors, this study arrived at negative conclusions similar to Shaffer and Greenhill (1979) in their critical review. The analysis of psychiatric diagnoses among the parents revealed very similar patterns for all of the clinical groups. Particularly with reference to the repeatedly cited inter-relationship between alcoholism in the family history and the hyperkinetic syndrome in the child, this study found no significant differences, thus forcing us to draw similar conclusions to those of Stewart et al. (1980) which tended to qualify earlier research.

On the other hand, some of the comparisons made within the context of this study do provide some indications which would tend to support the concept of concurrent validity. These included the extremely asymmetric sex distribution which revealed no such bias in favour of boys in any of the other groups. Such distribution patterns have been shown to exist both in the clinical and research literature (Werry 1968). The age distribution is also relevant inasmuch as hyperactive children appear to be clinically diagnosed at a significantly earlier age. This is perhaps less a factor of selection than an expression of the fact that hyperactive children reveal such symptoms much earlier than other disorders and are thus subjected to clinical examination at an earlier age. This would tend to corroborate the findings of Sandberg et al. (1978, 1980) and Barkley's (1982) recent proposal, namely that only the early onset and the persistence of the symptoms may establish the diagnosis.

On the basis of the data presented here the distribution of social background cannot be interpreted as a reliable differentiating characteristic inasmuch as the greater prevalence of lower class social background did not distinguish hyperactive

Table 6. Means and standard deviations for parental questionnaire scores

	(1) Control group		(2) Hyperkinetic syndrome		(3) Conduct disorder		(4) Emotional disorder		(5) Mixed disturbance of conduct/emotions		(6) Emotional disturbance and relationship problems		Homogenous subsets
	M	SD	*M*	SD	*M*	SD	*M*	SD	*M*	SD	*M*	SD	
Total score	0.52	0.37	0.67	0.35	0.74	0.31	0.64	0.32	0.85	0.39	0.67	0.33	1, 2, 4, 6/2, 3, 4, 6/2, 3, 5
Hyperactivity	0.80	0.48	1.32	0.35	1.18	0.43	1.02	0.47	1.29	0.36	1.10	0.51	1, 4/2–6
Emotional disturbance	0.63	0.47	0.64	0.47	0.71	0.45	0.82	0.48	0.82	0.51	0.76	0.48	1–6
Conduct disorders	0.47	0.51	0.80	0.50	0.99	0.54	0.52	0.44	1.14	0.49	0.70	0.48	1, 2, 4, 6/2, 3, 5

children from the other clinical groups. On the other hand, some elements of early childhood development appeared to be significant. The data from group comparisons tended to emphasize the early onset and persistence of developmental retardation in the areas of motor and speech development and delayed entry into school among children showing the hyperkinetic syndrome. Furthermore, there was some evidence of characteristic behaviour associated with the syndrome at a very early age in terms of high rates of obstinate behaviour and hyperactivity during pre-school years—analogous to the earlier age at which hyperkinetic children are subjected to initial clinical examination. However, the same rate of perinatal symptoms in multiple control group comparisons does not permit any differentiation, and confirms the findings presented by Minde et al. (1968) which also found no differences in a simple control group comparison.

Developmental retardation as evidenced by history-taking was also a significant marker of hyperkinetic children when they were assessed clinically. These findings are similar to those described by Stewart et al. (1981) with respect to specific learning disorders as a criterion of the hyperkinetic syndrome, and they are also confirmed by the significant higher rate of coordination deficits which came to light in neurological examinations. The latter is in accordance with findings by Werry et al. (1972) where hyperactive children were compared with neurotic and normal controls and showed an excess of soft signs reflecting sensorimotor incoordination. Similar findings were also obtained in a recent study by Mikkelsen et al. (1982).

By way of analogy to the lack of differentiation touched upon by Sandberg et al. (1978) with respect to the Conners Questionnaire scales (Conners 1973) parental questionnaire scores also failed to discriminate between the clinical groups in this study. Using the scales of Rutter et al. (1970) we encountered little room for discrimination between the clinical groups with respect to all dimensions—total score, hyperactivity, emotional and conduct disorders. These findings corresponded with the view of Barkley (1982) and Loney (1980) indicating that comprehensive clinical assessment yields valid categories while relying on rating scales does not.

In summarizing we can state that data from the psychiatric case history and development of the child provide several significant criteria of validity. However, reliability of these findings may be questioned, since only restricted analyses were feasible in this study. When analysing the internal consistency of diagnostic classification by comparing symptom ratings of the clinicians it was found that the hyperkinetic syndrome group in fact had the highest rate of hyperactivity, clearly distinguishing it from the other groups ($\chi^2 = 155.92$; $df = 5$; $P < 0.00001$). In the same way, anti-social symptoms permitted a clear distinction between conduct disorders and the hyperkinetic syndrome ($\chi^2 = 25.47$; $df = 1$; $P < 0.00001$). Furthermore, symptoms of social withdrawal were found significantly more often among emotional ($\chi^2 = 24.05$; $df = 1$; $P < 0.00001$) and mixed disorders ($\chi^2 = 12.70$; $df = 1$; $P = 0.0002$).

Despite the fact that these findings indicate an internal consistency of the diagnoses, further research is necessary to determine the validity of diagnoses provided by independent investigators. This highly important demand should include formal reliability testing (in order to overcome any possible effect due to diagnostic imprecision) and blind evaluation of background factors and clinical diagnoses. It could not, how-

ever, be met on the basis of the clinical material analysed retrospectively in this study. It would appear that on this question replicative prospective studies are called for, where it might be possible to examine the extent to which the indicators of validity identified in this study for the diagnosis of the hyperkinetic syndrome are sample dependent and thus the result of unidentified selection factors in an out-patient population. Both replication studies on other similar populations as well as epidemiological research could help to clarify these questions.

References

Achenbach TM, Edelbrock CS (1978) The classification of child psychopathology: A review and analysis of empirical efforts. Psychol Bull 85:1275–1302

August GJ, Stewart MA (1982) Is there a syndrome of pure hyperactivity? Br J Psychiatr 140:305–311

Barkley RA (1982) Guidelines for defining hyperactivity in children. In: Lahey BB Kazdin AE (eds) Advances in clinical child psychology, vol 5. Plenum Press, New York

Conners CK (1973) Rating Scales for Use in Drug Studies with Children. Psychopharmagology Bulletin—Special Issue

Kleining G, Moore H (1968) Soziale Selbsteinstufung. Kölner Zeitschrift für Soziologie und Sozialpsychologie 20:502–552

Lahey BB, Green KD, Forehand R (1980) On the independence of ratings of hyperactivity, conduct problems, and attention deficits in children: A multiple regression analysis. J Consult Clin Psychol 48:566–574

Loney J (1980) Hyperkinesis comes of age—What do we know and where should we go? Am J Orthopsych 50:28–42

Michaelis R, Dopfer R, Gerbis W (1979) Die Erfassung obstetrischer und postnataler Risikofaktoren. Monatsschr Kinderheilkd 127: 149–155

Mikkelsen EJ, Brown GL, Minichiello MD (1982) Neurological status in hyperactive, enuretic, encopretic, and normal boys. J Am Acad Child Psychiatr 21:75–81

Milich R, Loney J, Landau S (1982) Independent dimensions of hyperactivity and aggression: A validation with playroom observation data. J Abnor Psychol 3:183–198

Minde K, Webb G, Sykes D (1968) Studies on the hyperactive child. VI. Prenatal and paranatal factors associated with hyperactivity. Develop Med Child Neurol 10:355–363

Prinz RJ, Connor PA, Wilson CC (1981) Hyperactive and aggressive behaviors in childhood: Intertwined dimensions. J Abnor Psychol 9:191–202

Roberts MA, Milich R, Loney J, Caputo J (1981) A multitrait-multimethod analysis of variance of teachers' ratings of aggression, hyperactivity, and inattention. J Abnor Child Psychol 9:371–380

Rutter M (1970) Diagnostic validity in child psychiatry. Child Psychopharmacol 2:2–23

Rutter M, Tizard H, Whitmore K (1970) Education, health and behavior. Longman, London

Rutter M, Shaffer D, Sturge C (1975) A guide to a multiaxial classification scheme for psychiatric disorders in childhood and adolescence. Department of Child and Adolescence Psychiatry, Institute of Psychiatry, London, s.d.

Sandberg ST, Rutter M, Taylor E (1978) Hyperkinetic disorder in psychiatric clinic attenders. Devel Med Child Neurol 20:279–299

Sandberg ST, Wieselberg M, Shaffer D (1980) Hyperkinetic and conduct problem children in a primary school population. Some epidemiological considerations. J Child Psychol Psychiatr 21:293–311

Schachar R, Rutter M, Smith A (1981) The characteristics of situationally and pervasively hyperactive children; implications in syndrome definition. J Child Psychol Psychiatr 22:375–392

Schaffer D, Greenhill L (1979) A critical note on the predictive validity of "the hyperkinetic syndrome". J Child Psychol Psychiatr 20: 61–72

Steinhausen H-C (1979) Parents' report on child's behaviour as a diagnostic tool in child psychiatry. Paper presented at the VI. Congress of the Union of European Paidopsychiatrists, Madrid

Stewart MA, De Blois CS, Cummings C (1980) Psychiatric disorder in the parents of hyperactive boys and those with conduct disorder. J Child Psychol Psychiatr 21:282–292

Stewart MA, Cummings C, Singer S, De Blois CS (1981) The overlap between hyperactive and unsocialized aggressive children. J Child Psychol Psychiatr 22:35–46

Touwen BLL, Prechtl HFR (1970) The neurological examination of the child with minor nervous dysfunction. Clinics in Developmental Medicine 38. London, Spastics International Medical Publications/Heinemann Medical

Werry JS (1968) Studies on the hyperactive child: An empirical analysis of the minimal brain dysfunction syndrome. Arch Gen Psychiatr 19:9–16

Werry JS, Minde K, Guzman A (1972) Studies on the hyperactive child. VII. Neurological status compared with neurotic and normal children. Am J Orthopsychiatr 42:441–451

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