

The Relative Importance of History and Symptoms in Child Psychiatric Diagnosis

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Summary. This study analyzed the relationship between case history and reported symptoms and child psychiatric diagnosis in a sample of 928 cases. In addition sex, age, socioeconomic status and intelligence were considered. In general, symptoms were more important than case history data and background factors. Antisocial symptoms contained by far the most information for diagnosis. However, the highest information gained by a combination of different variables was only 20%. Overall, case history data represent a nonspecific factor of vulnerability in child psychiatric disorders which are primarily determined by symptoms.

Key word: Child psychiatric diagnosis

Introduction

Generally, child psychiatric diagnosis strongly rests on parental information with regard to case history and symptoms. Although this is normal clinical practice it has seldom been made the subject of empirical analysis. There is no shortage of assertions and investigations pertaining either to the importance that individual case history factors might have for specific symptoms and diagnoses, or to the constellation of individual symptoms within a particular syndrome. There is, however, a lack of systematic investigations analyzing the connection between case history, symptoms, and diagnosis.

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In this study we examined the significance of child case history and symptoms in child psychiatric diagnosis based on a consecutive series of admissions to a child and adolescent psychiatric department.

Method

Subjects. Within a total sample of 928 cases, 576 (61.0%) were male and 352 (37.9%) female patients. The distribution of social status, on the basis of the criteria of Kleining and Moore (1968), showed that 73.2% of the subjects were of lower-class and 26.8% of middle-class origin. Age distribution revealed 9.9% patients under 6 years of age, 37.2% between 6 and 10 years, 31.1% between 11 and 14 years, and 19.8% between 15 and 18 years.

Procedure. The analyses presented here were based on a comprehensive system of documentation containing data on personal details, case history, symptoms, and diagnosis according to the Multi-Axial Classification Scheme for Psychiatric Disorders (Rutter et al. 1975a). According to this scheme all disorders should be described in terms of phenomenology, not etiology. Reliability of diagnoses using the ICD-9 system have been reported by Rutter et al. (1975b). In the present study all data came from different clinicians who were responsible for assessments of the individual cases. Informal reliability training was carried out by means of weekly training sessions in psychiatric diagnosis for all the participants throughout the study period.

Statistical Analyses. Because of the large number of items, it was necessary to group and reduce the data. Items were categorized in terms of ten case history indices (Table 1) and ten symptom scales (Table 2). Subjects' profiles on these indices and scales were gained as follows: whenever one or more individual items of a particular scale or index were present then that scale or index was coded as positive. For example, if there were anomalies in pregnancy then the perinatal risk factor was coded as positive. Similarly, if there was evidence of both lying and truancy the scale antisocial behavior was coded as positive.

Table 1. Case history indices (abbreviations in brackets)

1. *Perinatal risk factors* (perinatal)
Anomalies of pregnancy, reduced birth weight, preterm birth, anomalies of delivery, anomalies of neonatal period
2. *Stress during infancy* (infancy)
Separation from the mother, severe illness, occupation of the mother
3. *Developmental delays* (development)
Delay of motor and/or speech development and/or toilet training
4. *Premorbid behavior abnormalities* (behavior)
Behavior abnormalities in kindergarten, preschool and school, at home or outside the family
5. *Living in institution* (institution)
6. *Delayed school career* (school)
7. *Abnormal family history* (famhist)
Mental retardation, psychosis, psychopathy, epilepsy, neurological disease, suicidal acts, addictive behavior, neurosis, criminality
8. *Illness of the parents* (illpar)
Chronic physical or psychiatric illness
9. *Abnormal social status* (social)
Social decline, discrepant social origin of the parents, social marginality
10. *Partnership problems* (partner)

An information analysis (Attnaev 1959) was initially carried out to determine the multivariate influence that case history indices, symptom scales, and background factors such as sex, age, socioeconomic status (SES), and intelligence have on psychiatric diagnosis. Information analyses were considered extremely suitable for this kind of question. It is a nonparametric method and allows computation of data of different quality and dimension. Furthermore, interactions of variables may be calculated. Similar to regression analysis the relationship between predictors and criteria may be analyzed. The amount of information is analogous to variance and transinformation is analogous to explained variance of a variable.

To satisfy the requirements of this analysis several further data reduction procedures were undertaken. First, the two age groups under 6 years and between 6 and 10 years of age were combined. Second, in the case of SES we differentiated only between the two groups of lower-class and middle-class. Third, we only took account of three levels of intelligence namely subnormal intelligence (IQ < 85), average intelligence (IQ 85–115) and above-average intelligence (IQ > 115). Finally, there were only four diagnoses included: no psychiatric disorder (0), conduct disorder (ICD 312), emotional disorders (ICD 313), and all other categories mentioned (rest). Multivariate information analyses were done by selecting in a stepwise manner the combinations of two, three, four, or five variables, respectively, that accounted for the greatest amount of transinformation. Due to sample size restriction analyses had to be restricted to a maximum of five variables. When age and intelligence were included the analyses had to be restricted to four variables only.

In the second phase we carried out an analysis of configuration frequency (Krauth and Lienert 1973) for the factors of influence. Information analyses and analyses of configuration frequency are to a certain extent similar procedures; their tests

Table 2. Symptom scales (abbreviations in brackets)

1. *Physical handicaps* (handicap)
Physical handicaps, sensory deficits, motor disorders
2. *Psychomotor symptoms* (psymot)
Hyperactivity, tics, stereotyped behavior, mannerisms
3. *Psychosomatic symptoms* (psysom)
Sleep disorders, eating disorders, vomiting, gastrointestinal disorders, enuresis, encopresis
4. *Speech and language disorders* (speech)
Stuttering, stammering, dyslalia, dysphasia, speech delay
5. *Abnormal habits* (habits)
Sucking, nail biting, hair pulling, teeth grinding, lip licking, scratching
6. *Antisocial behavior* (antisocial)
Lying, stealing, truancy, arson, vandalism
7. *Aggression* (aggression, agg)
Temper tantrums, anger, verbal and physical aggression
8. *Relationship problems* (relation)
Social isolation, shyness
9. *Abnormalities of achievement and play behavior* (achievement, ach)
Abnormal achievement motivation, low frustration tolerance, perfectionism, abnormalities of impulse, attention deficits, distractibility
10. *Emotional disorder* (emotion)
Instability of emotions, depression, suicidal thoughts and acts, anxiety, phobias, compulsive-obsessive disorders

of significance are equivalent (Attnaev 1959). Since we performed multiple tests, an experiment-wise level of significance was set. Here we used the sequential procedure of Holm (1979).

Results

Table 3 shows the findings of the univariate analyses based on the ten case history indices and the ten symptom scales. The strongest predictor of diagnosis was antisocial symptoms (nominal $P < 0.0001$), contrasting greatly with all the other factors. The predictors aggression, emotional symptoms, and relationship problems were revealed as being roughly equal, each accounting for a little more than 3% of the information. Following these predictors abnormalities of achievement and play behavior, age, premorbid behavior abnormalities, and psychosomatic symptoms were also significant. Each of these predictors accounted for slightly more than 1% of the information. Of the remaining predictors, abnormal family history and early admission to an institution were statistically significant, though like all the other predictors, accounted for less than 1% of the information.

The findings of the multivariate analyses are presented in Fig. 1. Here the cumulative percentage of

Table 3. Univariate information analysis of predictors of child psychiatric diagnosis

Predictor	Single transinformation			Significance
	Abso-lute (bit)	Per-cent	Nominal <i>P</i>	
Antisocial	0.150	7.8	< 0.0001	*
Aggression	0.069	3.6	< 0.0005	*
Emotion	0.063	3.3	< 0.0005	*
Relation	0.059	3.1	< 0.0005	*
Achievement	0.033	1.7	< 0.0005	*
Age	0.025	1.3	< 0.0005	*
Behavior	0.023	1.2	< 0.0005	*
Psysom	0.021	1.1	< 0.0005	*
Famhist	0.016	0.8	< 0.0005	*
Institution	0.012	0.6	0.001	*
Partner	0.010	0.5	0.007	n.s.
School	0.009	0.5	0.007	n.s.
Ses	0.009	0.4	0.015	n.s.
Habits	0.006	0.3	0.043	n.s.
Illpar	0.006	0.3	0.043	n.s.
Psymot	0.005	0.3	0.073	n.s.
Handicap	0.005	0.2	0.113	n.s.
Social	0.004	0.2	0.198	n.s.
Intelligence	0.003	0.2	0.642	n.s.
Development	0.003	0.2	0.297	n.s.
Speech	0.003	0.1	0.335	n.s.
Infancy	0.002	0.1	0.365	n.s.
Sex	0.002	0.1	0.448	n.s.
Perinatal	0.001	0.1	0.676	n.s.

* Experiment-wise $P = 0.05$

transmitted information from the combinations of predictors accounting for the highest information and their hierarchical importance are shown.

From Fig. 1, it is possible to deduce the following: (1) if one considers four predictors then the combination of four symptom scales, namely antisocial symptoms, relationship problems, emotional symptoms, and psychosomatic symptoms accounted for the highest percentage of information (16.0%) (see the left most branch of Fig. 1). (2) In addition to these four symptom scales, further information is gained by age, intelligence, SES, aggression, and delayed school career, in that order (20.3%) (see the fifth step in the left most branch of Fig. 1). (3) Case history indices and SES only came into play when five variables were admitted. (4) A large number of further variables accounting for equally high amounts of information was associated with the particular combination of the following predictors: antisocial symptoms, relationship problems, psychosomatic symptoms, and age (see middle branch of Fig. 1). (5) Aggres-

sion, which had the second largest transinformation in the univariate analyses, was not represented when only four variables were admitted (i.e., in this analysis aggression had relatively less weight). This also pertained for the predictor of abnormalities of achievement and play behavior. (6) Any effect due to sex was not apparent up to stage five.

Overall the multivariate information analyses indicated that when combined the four symptom scales (antisocial symptoms, relationship problems, emotional symptoms, and psychosomatic symptoms) provided the highest amount of information. Our next step was to determine whether particular configurations of these four scales were linked with specific diagnoses. The transitional probabilities for all the possible configurations of these four symptom scales are presented in Table 2. It is clear from the first row of this Table that the absence of symptoms was indeed significantly linked with the absence of psychiatric diagnosis. Exclusive psychosomatic symptoms (see second row of Table 2) were significantly over-represented among the groups of no psychiatric diagnosis and the so-called rest, whereas it was possible at the same time, to observe a significant underrepresentation in the diagnoses of conduct disorder and emotional disorder. Emotional symptoms were underrepresented in the diagnosis conduct disorder, both with and without psychosomatic disorders. Furthermore, in the diagnosis of conduct disorder emotional symptoms in combination with relationship problems were significantly underrepresented, while in emotional disorder they were significantly over-represented. Antisocial symptoms in combination with emotional symptoms in the diagnosis of conduct disorder were quite common. When relationship problems were added, this configuration was over-represented in the diagnoses of conduct and emotional disorder. Finally, the configuration of all symptoms was overrepresented in the diagnosis of conduct disorder.

Discussion

In view of the findings reported here, it can generally be concluded that individual variables as well as complex variable combinations account for relatively modest amounts of data. The highest figure for a single predictor (antisocial symptoms) was 7.8%, and that for a combination of five predictors 20.3%.

Given the scope of the predictors, including as they did typical information from child psychiatric practice, criticism cannot really be leveled at this aspect of the study. Indeed, the univariate analyses showed that some individual predictors were signifi-

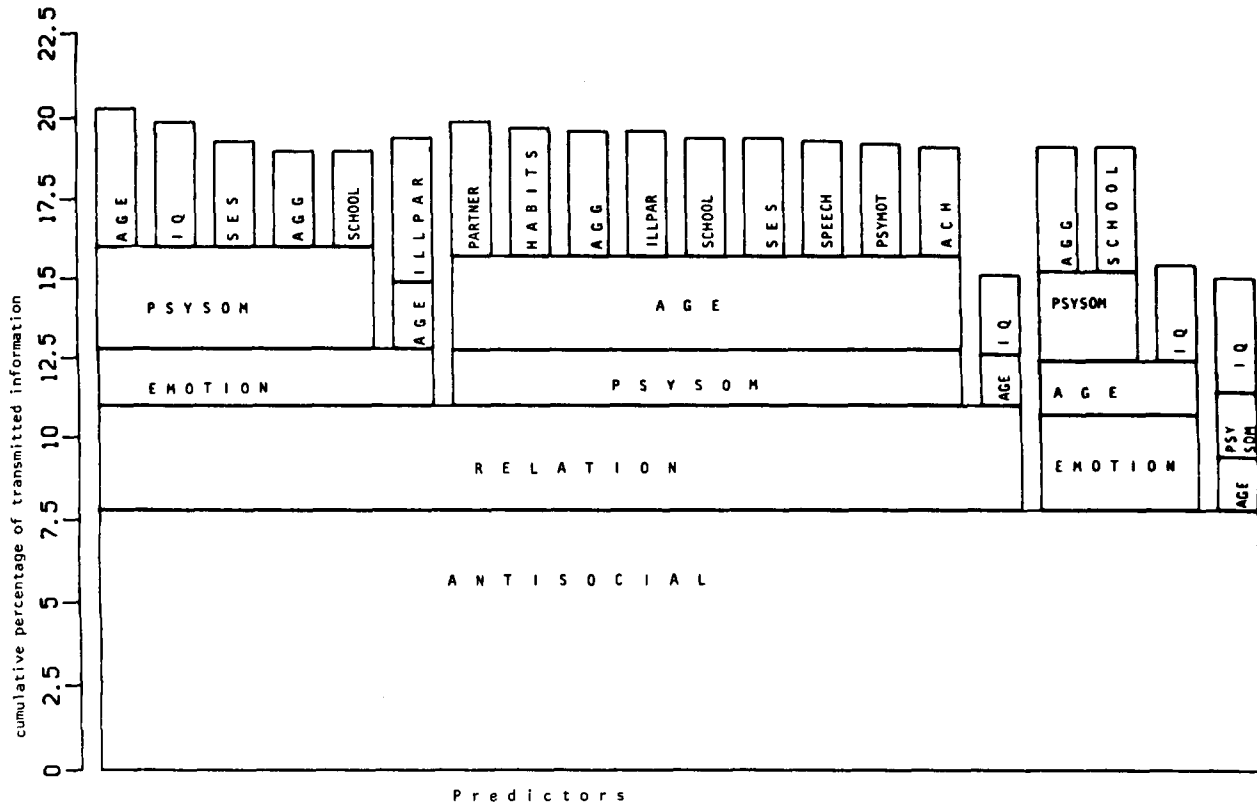


Fig. 1. Cumulated percentages of transmitted information from the hierarchical combination of five or four variables

Table 4. Transitional probabilities of child psychiatric diagnoses, observed and expected frequencies for the configurations of four predictors

Predictors				Diagnosis													
A	B	C	D	No psychiatric syndrome			Conduct disorder			Emotional disorder			Rest of sample			Total	
				trpr	of	ef	trpr	of	ef	trpr	of	ef	trpr	of	ef	of	ef
0	0	0	0	0.545	42*	5	0.091	7	7	0.182	14	9	0.182	14	13	77*	35
0	0	0	+	0.267	20*	7	0.013	1*	9	0.027	2*	12	0.693	52*	18	75*	46
0	0	+	0	0.000	0	4	0.071	1	6	0.286	4	8	0.643	9	12	14	31
0	0	+	+	0.350	7	6	0.150	3	8	0.200	4	1	0.300	6	15	20	40
0	+	0	0	0.262	17	12	0.031	2*	17	0.231	15	22	0.477	31	32	65	82
0	+	0	+	0.140	12	16	0.081	7*	22	0.221	19	28	0.558	48	42	86	108
0	+	+	0	0.059	4	11	0.029	2*	15	0.588	40*	19	0.324	22	28	68	72
0	+	+	+	0.087	9	14	0.049	5	19	0.369	38	25	0.495	51	36	103	95
+	0	0	0	0.167	4	4	0.417	10	6	0.125	3	8	0.292	7	11	24	29
+	0	0	+	0.150	6	6	0.375	15	8	0.125	5	10	0.350	14	15	40	38
+	0	+	0	0.000	0	4	0.333	3	5	0.222	2	7	0.444	4	10	9	25
+	0	+	+	0.000	0	5	0.529	9	7	0.059	1	9	0.412	7	13	17	33
+	+	0	0	0.098	6	10	0.459	28*	14	0.230	14	18	0.213	13	26	61	68
+	+	0	+	0.060	4	13	0.478	32	18	0.254	17	24	0.209	14	34	67	89
+	+	+	0	0.024	2	9	0.373	31*	12	0.373	31*	16	0.229	19	23	83	60
+	+	+	+	0.025	3	11	0.294	35*	16	0.294	35	21	0.387	46	30	119*	78

Predictors are: A: antisocial symptoms, B: emotional symptoms, C: relationship problems, D: psychosomatic symptoms; absence of a predictor is indicated by 0, presence by +

trpr: transitional probabilities, of: observed frequencies, ef: expected frequencies

* Observed frequencies differ significantly from expected frequencies at a level of $P = 0.05$

cant, while others contained little information. In general, the symptom scales were relatively more important than the case history indices. Among case history indices, only premorbid behavior abnormalities, abnormal family history, and early admission to an institution contributed significantly to psychiatric diagnosis.

The relatively small figure of approximately 20% of information accounted for may be explained in several ways. Mathematically an initial limitation stems from the fact that only four or at the most five predictors found their way into the analysis. Precisely because making a diagnosis is a complex, multifactorial process, such a limitation brings about a substantial loss of information. Failing to consider the severity of case history abnormalities and symptoms (in the present study only presence or absence of symptoms was considered) brings about a further loss of information. In a subsequent analysis not reported here we did include a measure of severity, and, as expected, this produced consistently higher transmitted information. However, this inclusion did not alter order of significance of the predictors except that the influence of age fell behind that of aggression and psychosomatic symptoms. Finally, it should not go unmentioned that given the large number of diagnoses only four categories could be considered. All these mathematical limitations could be eliminated by the availability of a larger number of cases.

In addition to these mathematical reasons, a few aspects resulting from clinical practice should be considered. Along with the items recorded, diagnosis of a child psychiatric disorder also takes account of psychopathological findings and the clinical impression of the patient — items which could not be considered among those presented here. Furthermore, the heterogeneity of diagnosticians, with their different levels of experience and training, can also represent a limiting factor. Finally, the possibility cannot be ruled out that theories of personality implicitly held by the diagnosticians play a role in influencing information collection.

Because of the size of the sample and the frequency of cells, the concluding multivariate information analyses together with analyses of configuration frequency could be interpreted only for the combination of four predictors. Here there were four symptom groups — antisocial symptoms, relationship problems, emotional symptoms, and psychosomatic symptoms — which proved to be items with the highest cumulative information. At the same time, these analyses were also proof of the high significance of psychosomatic disorders. They clearly stand out from the main diagnoses of conduct and emotional disorders while being simultaneously overrepresented in the case of subjects with apparently no psychiatric disorder and the remaining group of heterogeneous diagnoses.

Taken as a whole, the analyses reported here of the structural relationship between case history, symptoms, and diagnosis reveal that only a few case history events represent more than a generally non-specific factor of vulnerability in a child psychiatric disorder. It is apparent that child psychiatric diagnosis is mainly determined by symptoms.

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