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Predictors of outcome of short-term child psychiatric inpatient treatment

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Abstract In this study, 85 children were prospectively followed after discharge from short-term inpatient treatment. Outcome was defined as functioning within normal range at the follow-up or as improvement in the child's behavior problems. Rutter Parent's Questionnaire was used as a measure on admission and at the 5-month follow-up after discharge. The child's more frequent individual behavior problems, antisocial behavior and disengaged family interaction on admission predicted both functioning outside normal range and less improvement at follow-up. Previous treatment because of developmental or behavioral problems and hyperkinetic symptoms on admission predicted

functioning outside normal range. Parent's previous psychiatric hospital treatment was negatively associated with improvement. Pure emotional disorder predicted normal range functioning at follow-up. The child's age, gender, place of treatment and length of short-term treatment were not related to outcome. The results also stress the importance of taking into account both parents' and teachers' evaluations on admission.

Key words Child psychiatric – inpatient – outcome – predictors – short-term

Introduction

The use of short-term child psychiatric inpatient treatment for children is a relatively recent development. Past outcome studies have focused mainly on programs in longer-term units (4, 6, 9, 19). Changes in psychiatric practice, the philosophy of treating children in as unrestricted an environment as possible and national economic trends have contributed to the development of more active short-term treatment programs. However, in a recent review of four decades of outcome studies on child psychiatric inpatient treatment, only six studies examined patient adaptation following treatment in short-term units (8).

Traditional grouping of length of inpatient treatment includes short-term (less than 90 days), intermediate and long-term (more than 9 months) (24, 28). Short hospital-

ization is linked with less traumatic experience, and more successful reintegration of the patient in the family, school and community (19). However, there has been some criticism that shorter length of stay leads to a less empathic response to the child's distress (13). Apart from separation of the child from his/her parents and management of the child's behavior, the extensive psychiatric, somatic and neuropsychological assessment and diagnosis of the child play important roles in the short-term treatment. Dalton and Forman (8) suggest that what really differentiates long-term from short-term inpatient treatment is that the child and his/her environment need a longer treatment to become attuned so that reasonable development growth will ensue.

In the present study, children admitted to short-term inpatient treatment programs in three child psychiatric units in Finland were evaluated before admission and at

follow-up 5 months (4–6 months) after discharge. In a previous report (25) both parents and teachers viewed a significant improvement at follow-up as regards internalizing and externalizing behavior symptoms and overall severity of dysfunction and adaptive functioning. Eighty percent of the children showed improvement in parental ratings of total behavior problems. However, 65% of the children were functioning outside normal range at follow-up. Using place of residence as a 1 year outcome measure, we found that the child's antisocial behavior on admission to short-term treatment was the strongest predictor for long-term treatment or placement at follow-up (26). The purpose of the present report was to identify variables that predict functioning at home after discharge using parental behavior evaluations. Because of lack of follow-up studies on short-term inpatient treatment the present study was explorative. First, the interest was to identify child, family and treatment variables predicting the child's normal functioning at follow-up. A second and related interest was to identify variables predicting improvement in the total behavior problems.

Material and methods

Subjects

The initial sample consisted of 86 children who were admitted to short-term psychiatric inpatient treatment in Turku University Child Psychiatric Unit 1/1991–2/1993 and in Child Psychiatric Units of Satakunta and Seinäjoki Central Hospitals 1/1992–12/1992. All these patients were consecutive admissions to the units and none of the patients had been in child psychiatric inpatient treatment 12 months prior to the admission to short-term inpatient treatment. One of the patients died accidentally during the treatment period and was excluded from the study.

Our sample of 85 inpatients had a mean age of 9.8 years (range from 3.5 to 15.0). There were 69 boys (81%) and 16 girls (19%). Thirty-two (38%) children resided, at the time of admission, with both biological parents, 29 (34%) in a single parent household, 10 (12%) in a remarried household with one biological parent, 9 (11%) in an adoptive or foster household and 5 (6%) in an institutional care setting. Fourteen (16%) children were not at school, 13 (15%) were in a normal school and 58 (68%) in a special education program in a normal school or in a special school.

Using multidisciplinary evaluation based on family and child interviews, as well as on behavioral observation, DSM-III-R diagnoses (3) were made at the time of discharge by the child psychiatrist who had been primarily responsible for inpatient treatment. Forty-two (49%) of the patients received at least two psychiatric diagnoses.

Patients were grouped into the following four groups: 1) "Antisocial group" (N = 12; 14%) if the patients fulfilled the DSM-III-R criteria for conduct disorder; 2) "Mixed behavior disorder group" (N = 43; 51%) if the criteria were fulfilled for disruptive behavioral disorder or mixed behavioral and emotional disorder but not for antisocial conduct disorder; 3) "Pure emotional disorder group" (N = 24; 28%) if the criteria were fulfilled for an affective or anxiety disorder but not for disruptive behavioral disorder; 4) "Organic and pervasive development group" (N = 6; 7%) which included patients with moderate mental retardation, pervasive development disorder and patients with neurological syndromes. Grouping according to diagnoses was done by the child psychiatrist responsible for inpatient treatment and by one of the researchers (AS). The grouping done by the researcher was based on information collected from the patient records. The reliability between evaluations of the respective child psychiatrist and AS was satisfactory; kappa coefficient was between 0.53 and 0.68. In case of disagreement the grouping was based on consensual agreement.

Treatment programs and referral

All three child psychiatric wards were the only ones in the respective area; there was no other child psychiatric inpatient treatment facility. The staff in each hospital was multidisciplinary and was headed by a child psychiatrist. The number of beds in the hospitals varied from 8 to 11, of which 2–3 beds were reserved for short-term treatment programs and the remaining beds for long-term treatment programs. The standard length of the short-term treatment program was, in Turku University Hospital, 4 weeks, in Satakunta Central Hospital, 5 weeks, and in Seinäjoki Central Hospital, 6 weeks. The number of child psychiatric beds in the three catchment areas was between 1.3 and 1.9 per 10000 children under 16 years. All long-term treatment patients in the three hospitals are first admitted to short-term treatment.

The major concerns of the referring agencies are children's disruptive behavior problems as well as difficulties in the school environment and the family's insufficiency to cope with the problems. Child psychiatric hospital treatment in Finland usually means the last link in a chain of different treatment agencies and modes involving the family, child and several educational, social and psychiatric agencies.

In all hospitals the philosophy of treatment consisted of psychodynamic understanding of the child's development, behavioral approaches to control disruptive behavior and a family-oriented approach.

The principal treatment modes included milieu therapy and dyadic nurse relationship in all cases in the sample, parental guidance (N = 30; 35%) or family therapy (N = 55; 65%) also in all cases, individual

psychotherapy (at least once a week) in 8 (9%) cases and psychopharmacological therapy in 5 (6%) cases. The mean length of stay in inpatient treatment for the sample was 35 days (range from 7 to 70).

Inpatient assessment procedure and measures

Informed consent was obtained from parents. The research plan was approved by the Joint Commission on Ethics of Turku University and Turku University Hospital.

Inpatients and their families completed study measures as part of standard intake and follow-up evaluation procedures. The documentation available on the inpatients was more systematically collected and was more extensive than is usual in clinical practice. This information and collected measures fall into four categories:

1) Demographic measures on the child include biographical and social information (e.g. age, gender, school form, life events). The life events questionnaire was modified by Hurme (12) from the original Coddington scale (7) to contain serious changes in the family and serious illnesses and hospitalizations as well as changes in subsistence levels during the child's total life span.

2) Diagnostic details include DSM-III-R classification as well as behavior ratings recorded on admission using Rutter Parent's Questionnaire A2 (RA2) (22), Rutter Teacher's Questionnaire B2 (RB2) (21) and Children's Global Assessment Scale (CGAS) (23). Assessment of each child was completed by his or her parent or parent figure (usually mother), and by the school teacher in whose class the child was enrolled immediately before admission. Rutter Parent's Questionnaire consists of 31 problem items, each scored on a three-point scale from 0 to 2.

The instrument also provides subscores on antisocial, neurotic and hyperactive behavior. A cut-off point of 13 in RA2 total scores is used in many epidemiological studies, including the Finnish National Epidemiological Study (27), to identify children functioning below the cut-off point for normal range and those who fall outside normal range. Because RA2 was developed for epidemiological purposes, we asked parents on admission to fill in also the Child Behavior Checklist (1), the use of which has been studied with inpatient populations (14). The correlation between instruments was high ($r = 0.87$; $p < 0.001$).

The questionnaires were mailed to the teacher with return postage. RB2 consists of 26 problem items which are scored on a three-point scale from 0 to 2. The instrument also provides subscores on antisocial, neurotic and hyperactive behavior. CGAS ratings were made during the first week of inpatient treatment by the child psychiatrist primarily responsible for the treatment. The CGAS measure runs from 1 to 100, with 1 indicating the child with the most severe disorder and 100 the healthiest child.

3) Family measures include social information on the child's family (e.g., living environment being urban or semi-rural; the family structure; parents' age, educational level and employment; number of persons in total or number of children living in the household; child's position in the family; child's sleeping in his/her own bed, or at times or continually in parents' bed); and an observation method on family adaptation and cohesion, the Clinical Rating Scale (CRS) (16, 17). On the dimension of cohesion the extreme poles are enmeshment and disengagement; on the dimension of adaptability the extreme poles are rigid and chaotic family structures. The CRS was based on evaluation made in the first family interview and was used only in Turku University Hospital. The ratings were based on team consensual agreement, and the team was headed by a family therapist supervisor.

4) The final category includes the following information about treatment: place of inpatient treatment, referral primarily by a psychiatric agency (child guidance clinic or child psychiatric outpatient clinic) or other than psychiatric agency (e.g., pediatric ward or outpatient clinic, school health clinic, health center), reason for referral (e.g., suicide attempt, school refusal, sexual abuse), length of inpatient treatment, disruption of treatment and specific treatment modes during the treatment program (dyadic nurse relationship, individual psychotherapy, group therapy, psychoactive medication, parental guidance, family therapy). Information about the content of inpatient treatment was recorded on discharge by the child psychiatrist primarily responsible for the treatment.

Follow-up assessment

The parent or parent figure (usually mother or maternal guardian) was administered the Rutter Questionnaire A2 before the child's admission to inpatient treatment and 5 months (4–6 months) after discharge from child psychiatric hospital treatment. Questionnaires were mailed to the parents with return postage. Because the purpose of the study was to investigate the child's functioning after short-term treatment in a normative environment, RA2 was not mailed to the parents of those 15 patients who had been admitted to long-term inpatient treatment before the follow-up. Of the remaining 70 patients RA2 was completed at follow-up in 60 (86%) cases, and both on admission and at follow-up in 59 (84%) cases. When the patients admitted to long-term treatment before follow-up or otherwise lost to follow-up were compared with patients with complete data available, no significant differences were found in age, sex, family structure, diagnostic groups or RA2 and RB2 total scores.

Statistical methods

There were two variables used as outcome variables. The first was an indicator of normal range and outside normal range functioning, using a cut-off point of 13 in RA2 total scores at follow-up. The second variable was the change in Rutter scale total scores at the beginning of treatment and at follow-up. The association of the outcome variable and the explanatory variables was studied using logistic regression in the first case and using two sample *t*-test or regression analysis in the second case. *p*-values less than 0.05 were interpreted as statistically significant. The statistical computation was performed with the BMDP statistical program package (10).

Results

Predictors of normal functioning at follow-up

The association between demographic, diagnostic, family and treatment variables described in the method part, and outcome variables was studied. Favorable outcome was first defined as the child's functioning within normal range at follow-up using the RA2 cut-off point of 13. All the explanatory variables were entered in a univariate logistic regression analysis. Table 1 shows the statistically significant variables and odds ratios in the univariate logistic regression analysis.

No statistically significant association with outcome was found in most of the patient variables, e.g. child's age on admission, gender or school form. Children with a previous treatment history because of developmental or behavior problems had an about 14-fold risk of functioning outside normal range at follow-up (OR 14.3).

The following diagnostic measures on admission predicted the child's functioning outside normal range at follow-up: a rise of 10 points in total behavior scores in parent ratings increased the risk of functioning outside the normal range at follow-up about three-fold; a rise of 10 points in total behavior scores in teacher ratings increased the risk about 2.5-fold. Furthermore, high subscores of antisocial symptoms in parent (OR 1.49 for a rise of one point) and in teacher (OR 1.23) ratings were significant predictors for functioning outside normal range. Also high hyperkinetic symptoms in parent (OR 1.51 for a rise of one point) and in teacher (OR 1.38) ratings predicted the child's functioning outside normal range. Those belonging to other than the pure emotional disorder group had about a 3.7-fold risk of functioning outside normal range at follow-up. No statistically significant associations with outcome were found in the CGAS rating or neurotic subscores in RA2 and RB2 on admission.

Significant family predictors of the child's functioning outside normal range were: child sleeping in own bed (OR

5.81) and, surprisingly, parents' higher level of education when one of the parents living in the household had at least more than compulsory education (OR 4.75).

The Clinical Rating Scale, an observation method on family adaptation and cohesion, was used only in one hospital (N = 37). Family cohesion rated as disengaged on admission produced a 5.3-fold risk of the child's functioning outside normal range at follow-up.

Most of the treatment variables studied were not found to have a statistically significant association with the outcome variable. Referral by other than psychiatric agency (pediatric ward or outpatient clinic, school health agency, health center) predicted functioning outside normal range (OR 3.24).

Table 1 Odds ratios and *p*-values of the significant univariate associations of the predictors for functioning outside normal range in Rutter Parent's Questionnaire at follow-up. Analysis was performed using logistic regression models

Predictors	n	OR	p
Previous treatment because of behavior or developmental problems			
no	11	1.00	<0.001
yes	46	14.30	
Parents' education			
compulsory	41	1.00	0.036
more than compulsory	13	4.75	
Child sleeping in parent's bed	13	1.00	0.008
in own bed	43	5.81	
Referring agency			
psychiatric	28	1.00	0.037
not psychiatric	32	3.24	
Diagnostic category			
pure emotional disorder	20	1.00	0.023
other	40	3.67	
Rutter Parent's Questionnaire (continuous)	59		
total scores		2.99 ^a	<0.001
antisocial subscores		1.49 ^b	<0.001
hyperkinetic subscores		1.51 ^b	0.003
Rutter Teacher's Questionnaire (continuous)	50		
total scores		2.51 ^a	0.015
antisocial subscores		1.23 ^b	0.008
hyperkinetic subscores		1.38 ^b	0.028
Family cohesion ^c			
not disengaged	18	1.00	0.024
disengaged	19	5.33	

^a odds ratios were calculated according with respect to a 10 point increase

^b odds ratios were calculated with respect to a one point increase

^c Family cohesion was evaluated only in the Turku University Hospital (N = 37)

Predictors of change in behavior problems

The second purpose of the present study was to find associations between demographic, diagnostic, family and treatment variables described in the method part, and the change in the child's total behavior problem scores between admission and follow-up.

All the categorial independent variables were entered in a two-sample *t*-test. The following explanatory variables (Table 2) predicted less improvement in the child's behavior problems: parents' psychiatric hospital treatment during the child's life history, disengaged family cohesion, parents' higher level of education and child's referral from other than a psychiatric agency. Children with a history of parent's psychiatric hospital treatment showed, in fact, a slight impairment in their total behavior problems. Acute admission of the child to an inpatient ward was almost significantly associated with less improvement in the child's behavior problems ($p = 0.099$).

Table 3 shows the significant continuous predictors of change in parental evaluation of the child's behavior pro-

blems at follow-up, analyzed by linear regression. There was a negative association between the outcome variable and a high total score (Pearson's $r = -0.321$) (Fig. 1 c) and a high antisocial subscore ($r = -0.290$) rating by teacher on admission, indicating that more frequent individual behavior problems and antisociality were associated with less improvement. However, a high total score ($r = 0.477$) (Fig. 1 b), a high antisocial subscore ($r = 0.284$) and a high neurotic subscore ($r = 0.518$) rating by a parent on admission predicted improvement in the child's behavior problems. When teacher and parent ratings on admission were compared they showed non-significant correlation in total scores ($r = 0.045$) (Fig. 1 a). Low to moderate degree of correlation between teacher and parent ratings on admission was found in antisocial subscores ($r = 0.467$), neurotic subscores ($r = 0.230$) and hyperkinetic subscores ($r = 0.387$). No correlations were found between the following continuous variables and outcome variable: child's age, number of persons living in the family, length of treatment, CGAS score on admission, hyperkinetic and neurotic subscores in RB2.

Table 2 The significant univariate associations of the categorical predictors of change in Rutter Parent's Questionnaire scores. The mean values, standard deviations and *p*-values of two sample *t*-tests are shown in the table

Predictors	n	Change in total scores		
		mean	SD	<i>p</i>
Parent's psychiatric hospital treatment				
yes	7	-1.3	11.8	0.017
no	47	7.3	8.1	
Parent's education				
more than compulsory	13	0.9	10.7	0.006
compulsory	40	9.5	9.0	
Family cohesion ^a				
disengaged	19	5.2	7.0	0.015
not disengaged	18	11.1	7.1	
Referring agency				
not psychiatric	27	3.7	8.6	0.008
psychiatric	32	10.4	9.8	

^a Family cohesion was evaluated only in the Turku University Hospital (N = 37)

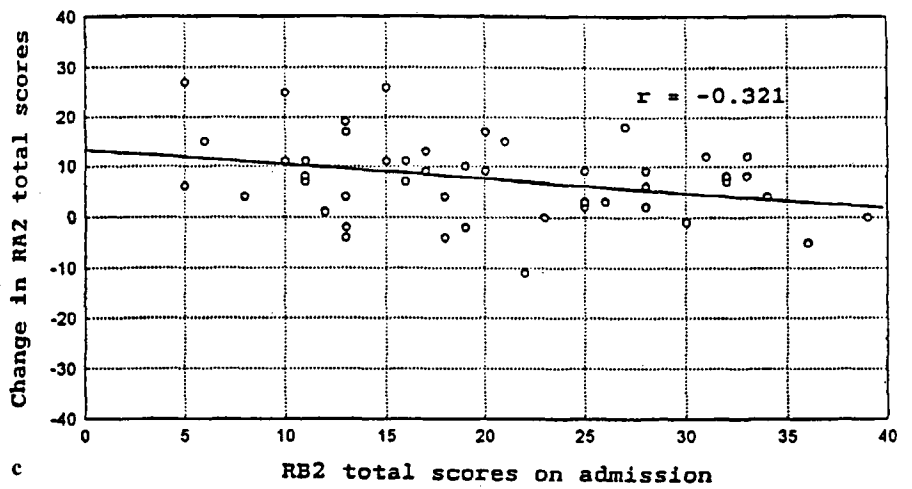
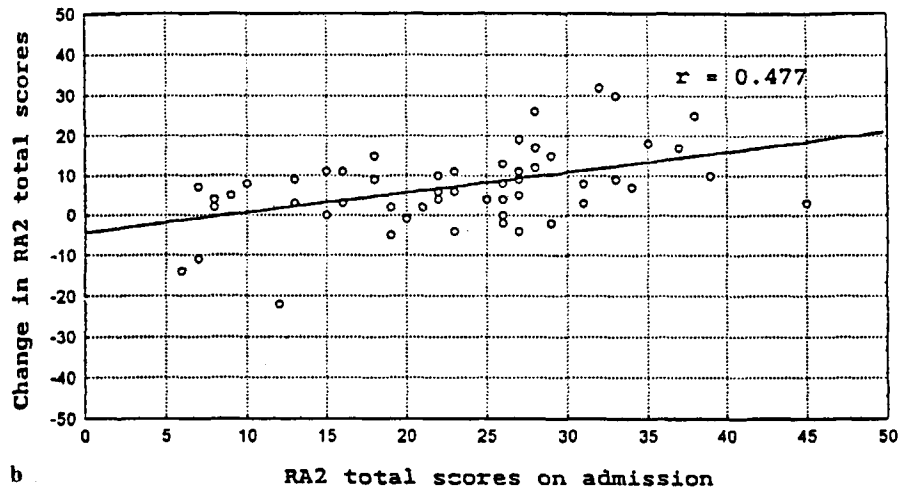
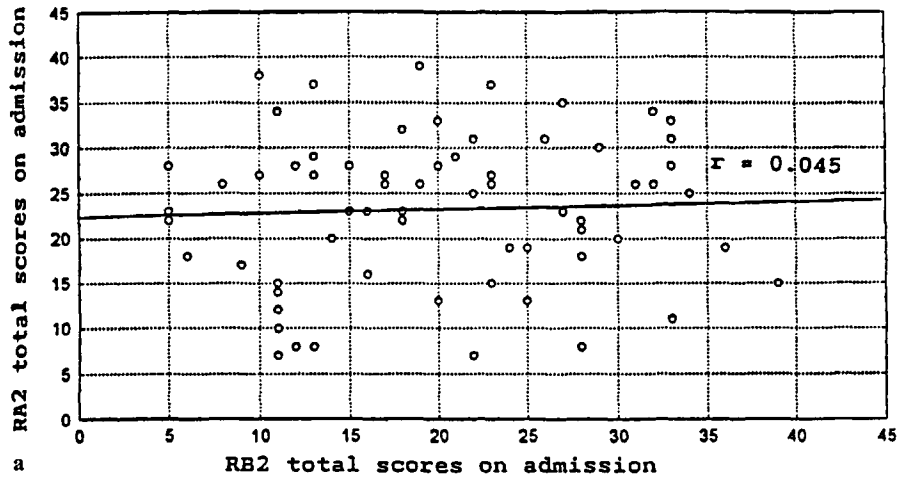
Table 3 The significant univariate associations of the numerical predictors of change in Rutter Parent's Questionnaire scores. Results of regression analyses

Predictors	Intercept	Coefficient	<i>p</i>
Parent's Questionnaire			
High total score	-4.43	0.51	<0.001
antisocial score	2.78	0.97	0.030
neurotic score	-2.14	2.14	<0.001
Teacher's Questionnaire			
High total score	13.30	-0.29	0.025
antisocial score	10.48	-0.55	0.043

Discussion

The results of the present report suggest that a pure emotional disorder predicted functioning within normal range at follow-up. More frequent individual behavior problems reflecting severity of initial dysfunction, antisocial symptoms and hyperkinetic symptoms were associated with functioning outside normal range at follow-up. In teachers' evaluations, the child's antisocial problems and more frequent behavior problems on admission also predicted less improvement in behavior problems. However, in parents' evaluations, a high total behavior score on admission was associated with improvement in behavior problems. This should not automatically be judged as a sign of unreliability. The difference between parents' and teachers' evaluations reflects the importance of taking into account the different environments in which problems arise (2). For example, the teacher can report aspects of the child's functioning not evident elsewhere. Furthermore, teachers' reports are not liable to be affected by family dynamics, although they are affected by the interpersonal dynamics of the school setting. Previous reports suggest that children with an emotional disorder do better in hospital than those with psychotic or organic disorders (11). In a review by Pfeiffer and Strzelecki (19), the majority of follow-up studies corroborated that children and adolescents with undersocialized aggressive conduct disorders respond less favorably to inpatient treatment. Brief hospitalization is not likely to be sufficient to controvert severe antisocial behavior. Children referred to inpatient treatment because of aggressive and antisocial behavior carry this aggression often from early

Fig. 1 Scatter-plots and correlations between Rutter Parent's Questionnaire (RA2) and Rutter Teacher's Questionnaire (RB2) total scores on admission (a); between change in RA2 total scores at follow-up and RA2 total scores on admission (b); between change in RA2 total scores at follow-up and RB2 total scores on admission (c)



childhood, and their disturbance is the result of multiple causes. Often it is a phenomenon that lies in the family and is transmitted from one generation to another. However, brief hospitalization for antisocial children may serve important purposes related to crisis and family interventions, long-term treatment planning, and diagnostic investigations. Disengaged family cohesion, as assessed on admission, and parent's psychiatric hospital treatment during the child's life span were associated with less favorable outcome. Previous studies have also provided strong support for the relationship between the role of the family and the child's response to inpatient treatment. The level of family functioning, the degree of marital conflict, the presence of mental illness within the family, the frequency of separations or interrupted relationships with parents during early childhood and the level of parental denial, have been related to the subsequent outcome (9, 19). A previous treatment history of developmental or behavior problems, indicating prolonged difficulties, predicted functioning outside normal range at follow-up. It is of interest that the child's age on admission, gender, family structure, family size and most single life events were not associated with outcome variables. In the studies reviewed by Pfeiffer and Strzlecki (19), age and outcome showed only a weak or no relationship. Six studies have discussed the effect of gender on outcome. Five reported no relationship between gender and outcome and one study suggested that girls had better adjustment. However, Blotcky et al. (6) cited two studies suggesting that the prognosis for girls was less favourable than for boys.

Most of the previous follow-up studies on child psychiatric inpatient treatment investigate children from only one psychiatric facility. Thus, it is interesting to note that the place of inpatient treatment was not related to the outcome in the present study. Neither the length of inpatient treatment nor different treatment modes predicted outcome in the present study. Although no significant effect was found between different specific treatment modes and outcome variables, it is hard to draw conclusions because the treatment modes did not differ significantly between the different hospital settings. For example, all the patients were treated with milieu therapy, dyadic nurse relationship and a family-oriented approach. Furthermore, the use of psychoactive medication was too insignificant for its effect on outcome to be evaluated. In general, the conditions of child psychiatric inpatient treatment in Finland were found to be rather similar when different units were compared in a previous study (18).

Only few previous studies have investigated effects of treatment variables on outcome. The efficacy of short-term versus long-term hospital treatment has been largely unexplored (9). In Pfeiffer and Strzlecki's (19) analyses,

three studies suggested a positive relationship and four no relationship between length of stay and outcome. Only four studies looked at the impact of various aspects of the planned interventions. However, most of the previous follow-up studies (6, 9, 19) were retrospective and examined treatments in more traditional, longer-term units. A recent study (15) on short-term follow-up of child psychiatric hospitalization reported that limited aftercare involvement, but not length of stay or extent of inpatient services, was related to follow-up outcome.

Prediction of the outcome in this report relied upon child, family and treatment variables identified on admission and during the inpatient phase. Variables that may be significant for follow-up status after discharge were not examined. The present study did not include control conditions that would permit evaluation of the impact of hospitalization relative to any other treatment. Although changes during the interval may be due to maturation or other influences, the short follow-up period relates the outcome in the child's behavior more clearly to the inpatient treatment intervention than would a longer follow-up. Changes evident over the course of hospitalization cannot be interpreted as necessarily reflecting the therapeutic effects of hospitalization. Inpatient treatment is often a passport to further help rather than a complete treatment in itself (5). However, the purpose of the study was not to evaluate the impact of the hospital experience per se.

Although one can argue that the heterogeneous patient population hinders the interpretation of the results, the clinical reality in most inpatient services is that the population is heterogeneous. Children with mixed disorders and multiple diagnoses, and with diverse socioeconomic backgrounds are admitted to inpatient services. The study of this heterogeneous group of children should be considered worthwhile if research in an inpatient setting is to be valued (20). We compared the parental total scores between the six children with organic or pervasive development disorder and the remaining sample to find out if the findings are influenced by the exclusion of these six patients. The differences of parental total scores on admission as well as the changes in parental scores between admission and follow-up were nonsignificant between the two groups.

Furthermore, there is a lack of standardized measures to evaluate children in child psychiatric hospitals, and even the Rutter Parent's Questionnaire does not fully meet the demands of evaluating children in psychiatric hospital settings. There is an absence of consensus on how to define improvement after inpatient treatment. The field of child and adolescent psychiatry has long recognized that symptoms among children and adolescents often wax and wane, suggesting that simply looking at the diminution in symptoms may be too narrow a perspective.

References

1. Achenbach TM, Edelbrock C (1983) Manual for the Child Behavior Checklist and Revised Child Behavior Profile. Burlington, VT
2. Achenbach TM, McGonahy SH, Howell CT (1987) Child/adolescent behavioral and emotional problems: implications of cross-informant correlations for situational specificity. *Psychological Bulletin* 101:213–232
3. American Psychiatric Association (1987) Diagnostic and statistical manual of mental disorders. 3rd ed., revised. APA, Washington, DC
4. Asay TP, Dimperio TL (1991) Outcome of children treated in psychiatric hospitals. In: Mirin SM, Gossett JT, Grob MC (Eds.), *Psychiatric Treatment: Advances in Outcome Research* (pp. 21–29). American Psychiatric Press, Washington, DC
5. Barker P (1974) The results in inpatient care. In: Barker P (Ed.), *The Residential Psychiatric Treatment of Children* (pp. 294–309). Crosby Lockwood Staples, London
6. Blotcky MJ, Dimperio TL, Gossett JT (1984) Follow-up of children treated in psychiatric hospitals: A review of studies. *American Journal of Psychiatry* 141:1499–1507
7. Coddington RD (1972) The significance of life events as etiological factors in the diseases of children: A study of a normal population. *Journal of Psychosomatic Research*, 16:205–213
8. Dalton R, Forman MA (1992) Psychiatric hospitalization of school-age children. American Psychiatric Press, Washington, DC
9. Dalton R, Muller B, Forman MC (1989) The psychiatric hospitalization of children: an overview. *Child Psychiatry and Human Development* 19:231–244
10. Dixon WJ (Ed.) (1992) *BMDP Statistical Software Manual*, Volumes 1 & 2. University of California Press, Berkeley
11. Hersov L (1994) Inpatient and day-hospital units. In: Rutter M, Taylor E, Hersov L (Eds.), *Child and adolescent psychiatry* (pp. 983–995). Blackwell: Oxford
12. Hurme H. (1981). Life changes during childhood. Thesis. Jyväskylä, Finland: Jyväskylä Studies in Education, Psychology and Social Research 41
13. Jemerin JM, Philips I (1988) Changes in inpatient child psychiatry: consequences and recommendations. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31:397–403
14. Jones RN, Latkowski ME, Kircher JC, McMahon WM (1988) The Child Behavior Checklist: normative information for inpatients. *Journal of the American Academy of Child and Adolescent Psychiatry* 27:632–635
15. Kolko DJ (1992) Short-term follow-up of child psychiatric hospitalization: clinical description, predictors, and correlates. *Journal of the American Academy of Child and Adolescent Psychiatry* 31:719–727
16. Olson D, McCubbin M, Barnes H, Larsen A, Muten M, Wilson M (1985) Family inventories. University of Minnesota, St. Paul, Minnesota
17. Olson D, Russell C, Sprenkle D (1983) Circumplex model of marital and family systems: Theoretical update. *Family Process*, 22:69–83
18. Piha J, Salmisaari T, Koskinen M (1990) Characteristics of recent child psychiatric inpatient treatment in Finland. *Psychiatria Fennica* 21:77–86
19. Pfeiffer SI, Strzelecki SC (1990) Inpatient psychiatric treatment of children and adolescents: A review of outcome studies. *Journal of the American Academy of Child and Adolescent Psychiatry*, 29:847–853
20. Riddle MA (1989) Research on a children's psychiatric inpatient service. *Journal of the American Academy of Child and Adolescent Psychiatry* 28: 42–46
21. Rutter M (1967) A children's behavior questionnaire for completion by teachers: preliminary findings. *Journal of Child Psychology and Psychiatry* 8: 1–11
22. Rutter M, Tizard J, Whitmore K (1970) *Education, Health and behavior*. London: Longman
23. Shaffer D, Gould MS, Brasic J (1983) A Children's Global Assessment Scale (CGAS). *Archives of General Psychiatry* 40:1228–1231
24. Silver LB (1976) Professional Standards Review Organizations: A handbook of child psychiatrists. American Academy of Child Psychiatry, Washington DC
25. Sourander A, Heikkilä T, Leijala H, Heinisuo AM, Helenius H, Piha J (1995) Follow-up of short-term child psychiatric inpatient treatment. *Nordic Journal of Psychiatry*, 49:95–101
26. Sourander A, Leijala H, Lehtilä A, Kanerva A, Helenius H, Piha J (1996). Short-term child psychiatric inpatient treatment: place of residence as one year outcome measure. *European Child and Adolescent Psychiatry*, 5:38–43
27. Tamminen T, Almqvist F, Piha J (1991) Psychiatric symptoms in Finnish children: an epidemiological study of 1000 8-year old children in five regions of the country. *Reports of Psychiatria Fennica* No 91
28. Woolston JL (1991) Psychiatric inpatient services for children. In: Lewis, M. (Ed.) *Child and Adolescent Psychiatry. A Comprehensive Textbook*. Williams & Wilkins, Baltimore