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# Factors Influencing Treatment Outcome and Patient Satisfaction in a Short-Term Psychiatric Ward

## A Path Analysis Study of the Importance of Patient Involvement in Treatment Planning

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**Summary.** Factors influencing treatment outcome and patient satisfaction in a short-term psychiatric treatment programme were analysed using a path analysis method. The programme used two models of treatment planning, one with and one without active participation of the patient in formulating a written treatment contract. A causal structural model, which explained 23% of the variance in the model, was used in the final analysis. The results indicated a positive relationship between a cooperation contract procedure and the level of expectations of improvement as well as high ratings of the importance of the patients own effort in treatment. The level of expectations of improvement were related to the symptom level at discharge and global improvement during treatment, indicating a better treatment outcome for the patients of the cooperation contract group, while the importance of own effort was not related to treatment outcome. Symptoms at discharge were mainly determined by symptoms at admission and global improvement, and also by expectations of improvement, initial psychic status and social background. The explained variance was 63%. Satisfaction with treatment was mainly determined by global improvement, symptoms at discharge and expectations of improvement. The explained variance was 60%. It is concluded that attention to patient expectations of improvement viewed as an important intermediate variable, is related to a an improvement in treatment outcome.

**Key words:** Treatment outcome – Treatment planning – Patient satisfaction – Milieu therapy – Path analysis

### Introduction

Outcome of in-patient psychiatric treatment has generally been found to be related to patient factors such as social background and level of pre-treatment adjustment, and treatment variables, which could be divided into treatment setting and treatment process variables. Treatment variables related to outcome also interact with pre-treatment variables in a complex manner (Luborsky et al. 1971; Costello 1978; Erickson 1975; Ellsworth et al. 1979).

Concerning initial patient characteristics, the major variable predictive of treatment outcome seems to be the level of pre-treatment adjustment. Once this has been accounted for, other background variables such as marital status, amount of prior hospitalization, age and sex add little to the variance in treatment outcome, measured either as post-hospital symptomatic adjustment or as psychosocial functioning (Ellsworth 1975). Reports of the relationship of treatment setting variables to outcome are so far inconclusive. Among treatment process variables related to treatment outcome are milieu characteristics such as the level of staff-patient interaction and staff and patient expectations of improvement (Liberman 1983). An appropriate delegation of decision-making has also been related to treatment programme effectiveness. Treatment programmes in which nursing staff play a key role in treatment and decision making, have in controlled studies shown a better treatment outcome compared to more hierarchically structured wards (Ellsworth 1983).

The interaction between initial patient characteristics and treatment process variables have been studied less. There is however rather strong evidence that matching patient characteristics and treatment variables in a differentiated treatment model could improve treatment outcome (Vaglum et al. 1985; Friis 1977). Another area of research is patient attitudes towards treatment. In efforts to relate treatment outcome to other than traditional prognostic factors, patient expectations of improvement have been the object of a number of studies (Wilkins 1973). Results have been conflicting. In general the evaluation of treatment outcome has been based only on patient ratings of outcome (Bloch et al. 1976). Treatment outcome which the patients attributed to their own effort in treatment has been reported to be more enduring. Treatment situations where the patients have a sense of control have also been related to a better treatment outcome (Frank 1974).

The present paper is part of a larger controlled study investigating the effects of patient involvement in treatment planning. Results presented earlier (Hansson et al. 1984) have shown a greater symptom reduction during in-hospital treatment for patients treated in a cooperation contract model compared to those treated in a staff oriented contract model. Satisfaction with treatment also differed between the two contract groups (Hansson et al. 1985). Engaging the patient in his own treatment planning resulted, furthermore, in a significantly higher initial estimation of the importance of the patient's own effort for a successful outcome. Differences in treatment outcome, however, disappeared during a 6-month

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period of follow-up (Hansson et al. 1986). In a methodological paper we showed that standardized rating scales were superior to individualized measures of outcome in differentiating treatment outcome between the two treatment contract models (Hansson et al. 1987).

The aim of the present study was to investigate the two models of patient involvement in treatment planning and their effects on symptomatic behaviour and patient attitudes towards treatment. The relative importance of initial social and psychiatric characteristics were also studied. The use of a multivariate technique, path analysis, makes it possible to study the interaction of these variables in the same model of analysis.

## Methods and Materials

The study was carried out on one of the short-term wards at the Department of Psychiatry, University Hospital, Lund. The treatment programme of the ward was based on the principles of milieu therapy as described by Jones (1968) and Clark (1974) with a differentiated group treatment programme. Written treatment contracts had been used on the ward for a number of years as a means of increasing the responsibility and involvement of the patient in treatment planning and in the treatment process. The ward also operated a key worker system (members of the nursing staff had a primary responsibility for the treatment of a number of patients).

### *Design*

All patients admitted during two consecutive 4-month periods were included in the study. During the first period of investigation the patients, during the first days of treatment, formulated a written treatment contract in cooperation with the senior psychiatrist and the staff of the ward (cooperation contract). During the second period there was no active participation on the part of the patient and the objectives and methods of treatment were defined by the staff and the senior psychiatrist and presented to the patient (staff contract). The treatment milieu and the ward treatment programme was, with this exception, the same during the two periods.

The design of the study is shown in Fig. 1. Patients were examined by an independent researcher (L.H.) on the day of admission, after 4 and 5 days, at discharge and 6 months after discharge. Social and psychiatric background characteristics of the patients were registered. Clinical symptom rating scales and patient self-rating scales were used. Patient attitudes were rated on the 4th day after admission, at discharge and 6 months after discharge.

### *Patients*

The sample finally comprised 106 patients, 54 in the cooperation contract group and 52 in the staff contract group. Initial social and psychiatric characteristics are given in Table 1. There were no significant differences between the treatment contract groups. There was a somewhat higher number of alcoholics in the staff contract group and a somewhat higher number of patients with non-psychotic disorders (neuroses, character disorders, crisis patients) in the cooperation treatment contract group (N.S.).

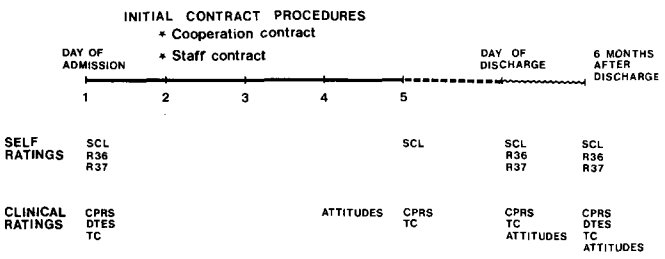


**Fig. 1.** General design of the study

**Table 1.** Social and psychiatric background characteristics for patients with cooperation contracts and staff contracts

| | Cooperation contract | Staff contract |
|---|---|---|
| Number | 54 | 52 |
| Sex | | |
| men | 25 | 17 |
| women | 29 | 35 |
| Age | 44 ± 15 | 45 ± 17 |
| Marital status | | |
| never married | 15 | 18 |
| married | 28 | 16 |
| divorced | 7 | 12 |
| widowed | 4 | 6 |
| Education | | |
| primary school | 35 | 43 |
| high school | 12 | 7 |
| university | 7 | 2 |
| Occupation | | |
| regular work | 32 | 28 |
| vocational rehabilitation | 3 | 4 |
| unemployed | 2 | 7 |
| disability pension/old age pension | 8 | 7 |
| student/housewife | 9 | 6 |
| Diagnosis (ICD 8) | | |
| dementia | 2 | 3 |
| psychoses | 9 | 9 |
| addiction | 6 | 13 |
| other non-psychotic disorders | 37 | 27 |
| Earlier out-patient psychiatric treatment | 38 | 38 |
| Earlier in-patient psychiatric treatment | 34 | 28 |

### *Measures*

*Social Background.* The social belonging and social functioning scales of the Drug Taking Evaluation Scale (DTES) were used (Holsten and Waal 1980). The DTES is a rating scale with 4 subscales. Each scale has 9 operationally defined steps where a rating of 9 depicts most maladjustment. A satisfactory inter-rater reliability and validity have been reported by the constructors of the scale. The group means in the sample were 2.6 ± 1.3 (SD) for the social belonging scale and 2.9 ± 1.0 for the social functioning scale.

**Table 2.** Latent and manifest variables of the path-analysis model

| Latent variable | Manifest variable | Factor loading |
|---|---|---|
| Social background | Social belonging (DTES) | 0.59 |
| | Social functioning (DTES) | 0.62 |
| Psychic status | Psychic status (DTES) | 1.00 |
| Treatment contract model | Treatment contract model | 1.00 |
| Symptoms at admission | Clinical symptoms (CPRS) | 0.71 |
| | Self-rated symptoms (SCL) | 0.90 |
| | Anxiety scale (R36) | 0.87 |
| Importance of own effort | Importance of own effort | 1.00 |
| Expectations of improvement | Expectations of improvement | 1.00 |
| Global improvement | Global improvement | 1.00 |
| Symptoms at discharge | Clinical symptoms (CPRS) | 0.88 |
| | Self-rated symptoms (SCL) | 0.95 |
| | Anxiety scale (R36) | 0.88 |
| Satisfaction with treatment | Satisfaction with ward structure | 0.94 |
| | Global satisfaction | 0.93 |

*Psychic Status.* The psychic status scale of the DTES was used. The scale has 9 defined steps. A score of 4 or more indicates a neurotic or more severe personality disturbance. The mean score was $4.0 \pm 0.9$.

*Symptoms.* Clinical symptoms were rated with the Comprehensive Psychopathological Rating Scale (CPRS)(Åsberg et al. 1978). The CPRS is a general psychiatric symptom scale developed by the Swedish Medical Research Council. It consists of 40 reported items and 27 observed items. The rating of each item is performed by 4 operationally defined steps, with the possibility of scoring 3 undefined steps in between. Mean score at admission was $44.1 \pm 15.3$ and at discharge $12.7 \pm 8.3$. Patient self-rating scales were used to measure general psychiatric symptoms, the Symptom Check List (SCL)(Parloff et al. 1954). The SCL has been extensively used in diagnostic and evaluation research procedures. In this study a Swedish version consisting of 52 items with 4 defined steps was used (Takac and Hartvig-Eriksson 1973). Mean score at admission was $124.4 \pm 27.2$ and at discharge $93.7 \pm 27.3$. A patient self-rating scale was also used to measure anxiety, the R36 (Rubenowitz 1971). It consists of 18 items with 5 operationally defined steps. The scale has been standardized and stanine scores have been determined for individual psychotherapy patients. Mean score of the anxiety scale was $52.2 \pm 12.1$ and $46.5 \pm 12.3$ respectively.

*Expectations of improvement.* A scale with 7 defined steps was used. The patients were asked "How do you think you will feel at the end of hospital treatment compared to how you feel now". The steps of the scale were, "much better", "rather much better", "somewhat better", "neither better nor worse", "somewhat worse", "rather much worse", "much worse". The ratings were performed on the 4th day after admission when treatment contract procedures were finished. A rating of 7 indicated greatest expected improvement. Mean score was $5.6 \pm 0.9$.

*Global improvement.* Patients rated actual improvement during treatment on a scale with the same 7 defined steps as on the expectations of improvement scale. The question asked at time of discharge was "How do you feel now compared to when you were admitted". Mean score was $5.5 \pm 1.4$.

*Satisfaction with treatment.* An instrument for the measurement of patient attitudes towards and satisfaction with treatment was developed within the study (Hansson et al. 1985). Factor analysis resulted in 7 clinically well-defined patient attitude factors. The factor ward structure was regarded as an appropriate measure of satisfaction with the treatment programme of the ward. A global satisfaction measure with 7 defined steps was chosen as the second manifest variable of satisfaction. The patients were asked "What is your opinion of your treatment as a whole". A rating of 7 indicated greatest satisfaction. Mean score was $5.8 \pm 1.5$.

*Importance of own Effort.* The item "importance of own effort" of the attitude instrument was used. The scale of the item had 7 defined steps ranging from "very great importance" to "very little importance". A rating of 7 indicated "very great importance". Mean score was $5.5 \pm 1.4$. The inclusion of this item in the analysis was based on earlier findings of the relationship of the patients own effort to treatment outcome (Frank 1974). The cooperation contract procedure was partly used as a means of affecting the patients evaluation of the importance of their own effort in treatment.

### *Statistics*

The path analysis technique was originally used in genetics (Wright 1934) and introduced in the behavioural sciences by Blalock (1971). It is based on linear, additive, asymmetric relationships between variables expressed in a structural model. Quantification of this structural model using multiple regression analysis gives an estimation of the parameters of the model, the path coefficients, which may be looked upon as the beta coefficients in regression equations. Hereby the direct and indirect magnitude of the influence of a variable on other variables in the causal chain can be determined (Bergling 1975).

The version of path analysis used in this study is a development of the general model, made by Wold (1981). A causal

model of latent variables, and the relationships between them, are defined in a structural model. The latent variables are then operationalized in the manifest variables of a measurement model.

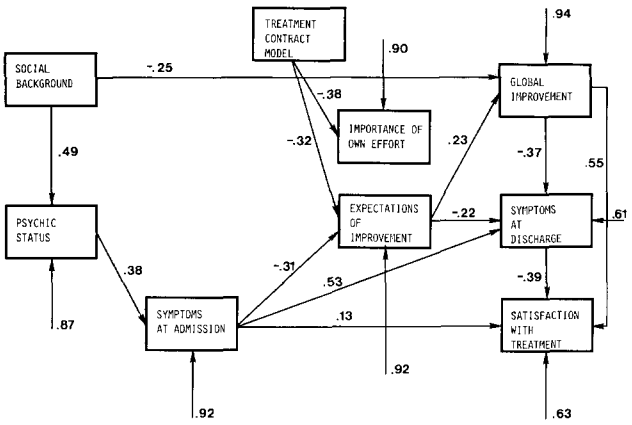


**Fig. 2.** The structural model of the path analysis. Path coefficients and residual path coefficients are given. For path coefficients $\geq 0.20$, $P < 0.05$

In the present study a number of hypothetical causal relationships, based on general findings of outcome research and previous results of the study, were tested. The original causal model was submitted to minor modifications and the final model is presented here. The final set of latent variables and the factor loadings of their respective manifest variables are shown in Table 2.

The LVPLS programme (Lohmöller 1981) was used in the computations of the path analysis models. This programme permits analysis of variables which are not measured on an interval scale. Standard scores and standard coefficients were used in the computations. Tests of significance of the path coefficients were performed according to Duncan (1966). Path coefficients greater than twice the standard error of estimate were considered significant.

## Results

### *The Statistical Model*

The model presented contained 9 latent variables defined by 15 manifest variables. In Table 2 the weight coefficients of the

**Table 3.** Direct, indirect and total effects of variables determining two measures of treatment outcome

| | Global improvement | Symptoms at discharge |
|---|---|---|
| *Social background* | | |
| Direct effect | −0.25 | – |
| Indirect effect | | |
| via initial status | – | 0.10 |
| via global improvement | | 0.09 |
| via combinations of initial status and expectations of improvement | −0.01 | 0.02 |
| Total effect | −0.26 | 0.21 |
| *Psychic status* | | |
| Direct effect | – | – |
| Indirect effect | | |
| via initial symptoms | – | 0.20 |
| via combinations of initial symptoms and expectations of improvement | −0.03 | 0.04 |
| Total effect | −0.03 | 0.24 |
| *Symptoms at admission* | | |
| Direct effect | – | 0.54 |
| Indirect effect | | |
| via expectations of improvement | −0.07 | 0.07 |
| via combinations of expectations of improvement and global improvement | – | 0.02 |
| Total effect | −0.07 | 0.63 |
| *Treatment contract model* | | |
| Direct effect | – | – |
| Indirect effect via expectations of improvement | −0.07 | 0.10 |
| Total effect | −0.07 | 0.10 |
| *Expectations of improvement* | | |
| Direct effect | 0.23 | −0.22 |
| Indirect effect via global improvement | – | −0.09 |
| Total effect | 0.23 | −0.31 |
| *Global improvement* | | |
| Direct and total effect | | −0.37 |

two exogenous latent variables, social background and treatment contract model are shown, together with the factor loadings of the 7 endogenous variables. The loadings of the latent variables were generally high with no manifest variable falling below the recommended 0.50. Five of the latent variables were represented by only 1 manifest variable. The explained variance of the manifest variables was 84% which indicates the relevance of the measurement model.

In Fig. 2 the structural model is presented. The arrows show the direct relationships between the latent variables of the model and also indicate the indirect relationships. Path coefficients and residual path coefficients are also shown. The explained variance of the inner relations of the structural model was 23%. The reliability coefficient according to Bentler-Bonnet was 63% and the redundancy coefficient, which is a measure of the total adjustment of the model, was 24%. The path coefficients were tested with respect to significance ($0.20 = P < 0.05$). In the present solution of the model only one path coefficient was not significant.

### *Influence from Treatment Contract Model*

The treatment contract model affected both expectations of improvement and importance of own effort. Participation in the cooperation treatment contract model was related to higher expectations of improvement (−0.32) and to a higher evaluation of the importance of own effort (−0.38). The treatment contract model showed, however, no direct influence on global improvement, symptoms at discharge or satisfaction with treatment. Expectations of improvement was predictive of global improvement (0.23) and symptoms at discharge (−0.22), i.e. higher expectations of improvement were related to a better treatment outcome. Importance of own effort, on the other hand, showed no relationship with global improvement, symptoms at discharge or patient satisfaction with treatment.

### *Influence from Initial Social and Psychiatric Characteristics*

Social background influenced global improvement (−0.25), i.e. a better social adjustment was related to greater improvement during treatment, and psychic status (0.49), indicating that a better social adjustment was related to a less severe personality disturbance. Psychic status was associated with the level of symptoms at admission (0.38). Symptoms at admission were the strongest determinant of symptoms at discharge (0.53) and also influenced expectations of improvement (−0.31).

### *Total Effects on Treatment Outcome and Satisfaction with Treatment*

One essential feature of the path analysis model is the possibility of analysing both direct and indirect causal effects in order to determine the total effect on subsequent variables of the model. Table 3 shows total, direct and indirect effects for variables determining treatment outcome.

The major determinant of symptoms at discharge was symptoms at admission (0.63). Only a minor part of this influence was distributed via intervening variables (0.10). Global improvement also considerably affected symptoms at discharge (−0.37) as did expectations of improvement (−0.31). Social background showed a somewhat lower influence (0.21), and initial psychic status only indirectly effected symptoms at discharge (0.24), mainly via symptoms at admission (0.20).

Global improvement was essentially affected by social background (0.26) and expectations of improvement (0.23). Indirect effects of intervening variables only played a minor insignificant role.

The determinants of satisfaction with treatment, divided into direct and indirect effects are shown in Table 4. Global improvement had the major influence (0.70), to a minor part distributed via symptoms at discharge (0.15). Symptoms at admission had a mainly indirect effect (−0.21). Expectations of improvement showed an indirect effect, via treatment outcome (0.25), as did social background (−0.20).

**Table 4.** Direct, indirect and total effects of variables determining patient satisfaction with treatment

| | Satisfaction with treatment |
|---|---|
| *Social background* | |
| Direct effect | - |
| Indirect effect | |
| via initial status | −0.01 |
| via treatment outcome | −0.18 |
| via combinations of initial status, expectations of improvement and treatment outcome | −0.01 |
| Total effect | −0.20 |
| *Psychic status* | |
| Direct effect | - |
| Indirect effect | |
| via initial symptoms | 0.05 |
| via initial symptoms and treatment outcome | −0.08 |
| via initial symptoms, expectations of improvement and treatment outcome | −0.03 |
| Total effect | −0.06 |
| *Symptoms at admission* | |
| Direct effects | 0.13 |
| Indirect effects | |
| via expectations of improvement and treatment outcome | −0.08 |
| via treatment outcome | −0.21 |
| Total effect | −0.16 |
| *Treatment contract model* | |
| Direct effect | - |
| Indirect effect | |
| via expectations of improvement and treatment outcome | −0.08 |
| Total effect | −0.08 |
| *Expectations of improvement* | |
| Direct effect | - |
| Indirect effect via treatment outcome | 0.25 |
| Total effect | 0.25 |
| *Global improvement* | |
| Direct effect | 0.55 |
| Indirect effect via symptoms at discharge | 0.15 |
| Total effect | 0.70 |
| *Symptoms at discharge* | |
| Direct and total effect | −0.39 |

The total explained variance of the psychic status variable was 24%, symptoms at admission 14%, importance of own effort 15%, expectations of improvement 18%, global improvement 12%, symptoms at discharge 63% and satisfaction with treatment 60%.

## Discussion

### *Influence from the Treatment Contract Procedure*

The cooperation contract procedure was, in this study, associated both with higher expectations of improvement and with a greater initial emphasis on the importance of the patient's own effort in treatment. The level of expectations of improvement were further predictive of treatment outcome, as rated by a combined measure of patient self-ratings and ratings of an independent rater. This finding is in agreement with a significantly greater improvement of the cooperation contract group in a self-reporting scale measuring anxiety, in comparison with the staff contract group (Hansson et al. 1984).

The relationship of patient expectations of improvement to treatment outcome has been the object of theoretical and empirical investigations in numerous studies. The results have been contradictory. Correlation studies have in general shown a positive relationship, some studies have reported curvilinear or no relationship (Bloch et al. 1976). In 17 experimental studies, reviewed by Wilkins (1973), a positive relationship to treatment outcome was found in 6 studies and no relationship in the other studies. A general shortcoming has been that outcome has only been measured by patient self-ratings. In 2 studies, where a therapist or an independent judge rated outcome (Bloch et al. 1976; Brady et al. 1960), no relationship to expectations of improvement was found.

The results of the present study indicate that expectations of improvement are related to outcome and could be viewed as a relevant intermediate variable, conceptualizing the importance of initial patient involvement and participation in the psychiatric treatment process. Frank (1968) has proposed that the possibilites of affecting patients expectations is dependent more on the patients momentary state and qualities of the initial treatment situation, than on enduring personality traits. According to Frank, situational features that mobilize the patients expectations, and facilitate improvement, include amount of attention he receives, the extent to which the therapy proposed coincides with the patients expectations of treatment and the confidence-inspiring qualities of the therapists behaviour. This is well in line with the features of a cooperation contract procedure. A mutual negotiating of the contract implies both an increased attention to the needs of the patient, an evaluation of the optimal mode of treatment and a shared responsibility for the treatment process. The higher level of expectations of improvement in the cooperation contract group could be viewed as the result of a process which both evaluates the patients need for care and stresses their active participation in the treatment. To do the latter only is not sufficient to affect treatment outcome.

The evaluation of the importance of own effort showed no association with treatment outcome. We have previously reported that an initial significant difference between the contract groups with respect to the evaluation of own effort had vanished at time of discharge (Hansson et al. 1984). Thus our study did not confirm earlier reports of a relationship between the rated importance of own effort and treatment outcome (Frank 1974).

In the present analysis the psychic status variable, defined by the psychic status scale of the DTES, measured the degree of personality disturbance. High scores indicated a psychotic personality structure, intermediate scores indicated borderline or severe neurotic personality structures and low scores normals and less severe neurotic states. The influence of psychic status on expectations of improvement was not significant (−0.12). Thus the degree of personality disturbance did not influence the effects of the treatment contract model. The low number of psychotic patients according to the ICD 8 indicate, however, that our findings could not be generalized to wards mainly admitting severe psychotic and schizophrenic patients.

### *The Influence on Treatment Outcome and Patient Satisfaction*

As to the other variables affecting treatment outcome, the major determinant of the symptom level at discharge was the initial level of symptoms. This mainly reflects the correlation of pre-treatment adjustment to post-treatment adjustment. A patient more well-adjusted at admission will typically be more well-adjusted at discharge (Luborsky 1962; Luborsky et al. 1980; Ellsworth et al. 1968). Indirect effects on treatment outcome emanated substantially from the social background and level of personality disturbance (psychic status). A better social adjustment was related to a better treatment outcome, as was a less severe personality disturbance. These are factors which have been shown to influence treatment outcome (Ellsworth 1983) and are well in line with earlier findings that pretreatment psychiatric adjustment seems to be the major patient input variable related to treatment outcome (Erickson 1975; Fontana and Dowds 1975).

The major causes of patient satisfaction with treatment were global improvement during treatment and the discharge level of symptoms. This has been found previously (Brady et al. 1959; Jones and Keener 1968) and is a rather plausible result. Expectations of improvement also showed a distinct indirect connection with patient satisfaction, which mainly mirror the causal relationship of expectations to treatment outcome discussed above. However, as distinguished from outcome of treatment, the severity of personality disturbance and initial level of symptoms played only a minor, insignificant, role in the determination of patient satisfaction with treatment. This is at variance with a number of studies where psychiatric background variables such as diagnosis have been related to patient satisfaction (Weinstein 1979).

### *The Statistical Model*

A path analysis model with latent variables was applied to the present analysis. The use of latent variables reduced the capitalizing on error variance inherent in regression analysis. The profits of the version of path analysis used were, however, weakened by the fact that 5 of the latent variables were represented by only 1 manifest variable. The variables of interest for the analysis and the data used restricted full use of the features of the model. The causal ordering of variables made interpretation of both direct and indirect effects on subsequent variables possible. In the final model all path coefficients but one were significant at the 5% level and around 2/3 of the variance in treatment outcome and patient satisfaction was accounted for. This must be considered satisfactory and

was in agreement with earlier research, though more definite comparisons may be hard to make (Costello 1978; Cronkite and Moos 1980; Fillmore 1974). The model presented showed a high relevance, explaining the high figure of the variance in the manifest variables. The reliability of the structural model was also acceptable.

In summary, this study has replicated some of the established findings of factors influencing outcome of in-hospital psychiatric treatment. However the major findings of this study have concerned the effects of patient involvement and participation in treatment planning. It was found that a cooperation contract procedure could improve treatment outcome via an influence on patient attitudes towards treatment in the initial treatment planning procedure.

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