A.4. Swedish list of abbreviations

<table>
<thead>
<tr>
<th>English abbreviation</th>
<th>Swedish name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>Arbetarensuddiket (AUM)</td>
</tr>
<tr>
<td>CVRS</td>
<td>Länsarbetsind (LAN)</td>
</tr>
<tr>
<td>EO</td>
<td>Arbetsförmedling (AF)</td>
</tr>
<tr>
<td>EWT</td>
<td>Vårdad arbetspliktning (VAP)</td>
</tr>
<tr>
<td>NLMB</td>
<td>Arbetsmarknadsförbud (AMS)</td>
</tr>
<tr>
<td>TC</td>
<td>Arbetsmarknadsutbildning (AMU)</td>
</tr>
<tr>
<td>VC</td>
<td>Arbetsvägvisning</td>
</tr>
</tbody>
</table>


VOCATIONAL REHABILITATION IN NORTHERN SWEDEN. II

Some Psycho-socio-demographic Predictors

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ABSTRACT. In this prospective investigation a consecutive referred series of vocational rehabilitation clients was studied using eleven socio-demographic and psycho-social items. Subjected to a factor analysis these items were included in five factors which explained 74% of the variance. By discriminant analysis the items could correctly classify 57% of those subjects who faced major vocational changes or were vocationally inactive. The level of experienced health and belief in vocational return had the heaviest overall predictive impact. The findings may help specialists in medical and vocational rehabilitation to estimate the likelihood of vocational return for somatically impaired subjects.

The investigation was designed as an attempt to decide whether it was possible to characterize a consecutive series of vocational rehabilitation clients by a pattern of socio-demographic and psycho-social parameters. The main aim was to explore the possibility of finding simple prognosticators for the outcome of vocational rehabilitation.

The investigation is Part II of a prospective analysis of a consecutive series of subjects who, due to bodily impairment, were referred for vocational rehabilitation to employment offices in the Umeå district of Northern Sweden. In Part I (3) the roles of these offices and types of interventions they used have been described and some socio-demographic characteristics of the particular population were brought into focus at referral approximately 60% were receiving sickness benefit or unemployment allowance while the remaining nearly 40% were vocationally active. Very few could be classified as "handicapped" according to the WHO (27) except that they had vocational handicaps. The vast majority of those who were vocationally active when referred were still at work two years later while 64% of those who were receiving sickness benefit/unemployment allowance initially were then gainfully employed or undergoing vocational training.

In the years 1975, 1980, 1985 the overall costs of the National Labour Market Board (NLMB), which is responsible for all employment offices in Sweden, amounted to 1.6, 2.3, 2.7% respectively of the Swedish Gross National Product. Throughout this period the cost of vocational rehabilitation was roughly 16% of the NLMB budget (21). In spite of the considerable national funds allocated for vocational rehabilitation, an amount which in 1985 was 3.2 billion SEK, only a few investigators have concerned themselves with examining prognosticators for the outcome of vocational rehabilitation.

During the 6-year period 1980–1986 the proportion of those who were vocationally disabled due to bodily impairment increased from approximately 60% to about 70% of all vocational rehabilitation clients. The largest single group was that with musculo-skeletal dysfunction (40% cf. 21). As illustrated in Table I there was a considerable increase in the prescription of special arrangements and of technical devices at the working place during the period 1975–1985 (17). These interventions are aimed at facilitating remaining in/returning to financially gainful work for subjects with vocational disabilities.

In Sweden Elmfeldt (6), using 57 variables, tried to predict the outcome of vocational rehabilitation for 208 somatically or mentally vocationally disabled clients at an employability assessment center. She could not, however, demonstrate that any of these demographic, psycho-social or intellectual variables were of particular prognostic value. Ronnås (23) in a prospective study of mentally impaired or socially disabled vocational rehabilitation clients in Northern Sweden showed that low age, former education and profes-
sional experience were favourable prognosticators of vocational outcome. These findings are in general agreement with Cogstad (13).

In south-western Sweden Estbljönsos (7) studied a sample of chronic long-term patients on admission to and one year after discharge from the Department of Rehabilitation Medicine, Sahlgrens Hospital, Göth-
cenburg. On admission all had been receiving sickness benefits for at least three months. Through stepwise analyses she arrived at a prognostic instrument correctly classifying 90% of the subjects in the working group and 83% of the subjects in the sick-listed group. The instrument included four factors: optimistic-pes-
sumistic view of life, task rigidity, sociability and self-image.

SUBJECTS

The target population were all 175 subjects with a diagnosis of 107 illnesses as the cause of vocational disability, who were referred to the Umeå district vocational reha-
ilitation service throughout a five-month period (October 1984–February 1985). Of these, 149 volunteered to partici-

cipate in the initial part of the investigation (for further details see 5). Two years later it was possible to locate and to obtain information on the current source of income for all subjects.

METHODS

All initial measurements were based on structured interviews which were conducted by the same investigator (M.E.). The items intended to measure different “psychosocial” ex-
pervences, which were found to be of particular interest are given in the appendix which also gives the answering alterna-
tives. Vocational stimulation and motivation were measured using items taken from Estbljönsos (7). In her investigation the factor analyzed 77 questions, each answerable on a 7-grade Likert scale. Ten of these items (5 questions and 5 postulates) dominated a factor which she termed vocational stimulation and 14 (1 question and 13 postulates) had high loadings in a factor labelled by her: vocational motivation. In the present investigation all these questions were used (Appendix A and B) but modified. Thus, a 2-grade scale was used for each item. This enabled computation of a stimulation index ranging from 0 (low experienced stimulation from past present job) to 10 (high stimulation). Similarly a motivation index ranged from a low of 0 to a maximum of 16.

Vocational satisfaction (i.e. satisfaction with the present vocational situation), belief in vocational return and subject experienced health were each assessed using a 5-grade ordinal scale (Appendix D). These questions were developed as a total of 6 psychosocial self-description variables were included as psychosocial indicators. Furthermore, 5 sociodemographic variables were included in the statistical analyses. These were age (registered as age), sex (male/female), educational level (dichotomized into compulsory school/ further education), income (dichotomized into < <medium> < median income for the Umeå district) and employment situation (employee/self-employed).

As the 2-year follow-up the subjects reported their present vocational status. Thus different outcome categories must be computed: Group A (n=26, 19%) consisted of subjects who had the same job both at referral and at follow-up. As previously shown (6) the vast majority (n=27) had only continuous and/or technical aids to maintain their employment situation. Group B (n=6, 4%), contained two sub-groups: namely the 28 subjects who were vocationally active who referred but for whom new jobs were found and the 28 subjects who were on sickness benefit or on unemployment allowance when referred but were vocationally active at follow-up. The reason for combining these two sub-groups that the interventions were quite similar. Group C (n=16%) consisted of those who were undergoing vocational training or education at follow-up, whereas subjects in Group D were either receiving sickness benefit or unemployment allowance on both occasions (n=25, 20%) or had become vocationally inactive at follow-up (n=5, 3%). For a more detailed description of interventions, see Eklund et al. (13).

Statistics: To decide whether, at referral, a characteristic combined pattern of social and demographic variables characterized the sample, a factor analysis with various rotation methods (Scand J Rehab Med 21) was performed. In the present sample all eigenvalues were greater than 1.0, and the scree test showed that a three-factor solution was the best. This solution was obtained by the principal component method with varimax rotation. The three factors explained 74.7% of the total variance. The first factor, Vocational Stimulation and motivation, included all 12 variables which were described as significant contributors if they had standardized discriminant coefficients below 0.38. All computations were performed with SYSTAT (19) and a Macintosh Plus computer.

RESULTS

Initial investigation. Fig. 1 shows that only a minority had low scores for vocational stimulation (median 6, range 0–10) and motivation (median 10, range 1–14). This was also the case for the job satisfaction index (Fig. 2) where the median score was 9 (range 1–15). In contrast, the level of satisfaction with the present vocational situation (Fig. 3) was rather low (median 3, range 1–6). In fact, nearly 2/3 assessed their vocational situation as unsatisfactory (scores <3). An equally low median score for experienced health (Fig. 4; median 3, range 1–6) was evident and 41% felt that they never or very rarely felt healthy. In spite of this, the vast majority (77%, cf. Fig. 5) believed that they were at least likely to stay in return to a vocationally active life.

The factor analysis including all 149 clients (Table II) appeared logically to circumscribe all 11 variables within five factors which explained 74% of the vari-
Table I. Number of subjects for whom special arrangements and technical devices were prescribed by Swedish Vocational Rehabilitation for three different years during the period 1975–1985. The relative costs in relation to the National Labour Market Board (NLMB) budget for the various years is given.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Subjects</th>
<th>Cost as % of NLMB Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>281</td>
<td>2.7</td>
</tr>
<tr>
<td>1980</td>
<td>852</td>
<td>16.7</td>
</tr>
<tr>
<td>1985</td>
<td>1,013</td>
<td>19.9</td>
</tr>
</tbody>
</table>

Sociational experience was favourable prognosticators of vocational outcome. These findings are in general agreement with Gogstad (13).

In south-western Sweden 68 patients on admission to and one year after discharge from the Department of Rehabilitation Medicine, Sahlgrens Hospital, Göteborg, had on admission all been receiving sickness benefits for at least three months. Through stepwise analyses she arrived at a prognostic instrument correctly classifying 90% of the subjects in the working group and 83% of the subjects in the sick-listed group. The instrument included four factors: optimistic-pessimistic view of life, task rigidity, sociability and self-image.

SUBJECTS
The target population were all 175 subjects with a diagnosis of somato-somatic illness as the cause of vocational disability, who were referred to the Umeå district vocational rehabilitation service throughout a five-month period (October 1984–February 1985). Of these, 149 volunteered to participate in the initial part of the investigation (for further details see 3). Two years later it was possible to locate and to obtain information on the current source of income for all subjects.

METHODS
All initial measurements were based on structured interviews which were all conducted by the same investigator (M.E.). The items intended to measure different “psychosocial” experiences, which were found to be of particular interest are given in the appendix which also gives the answering alternatives. Vocational stimulation and motivation were measured using items taken from Ekbom (7). In her investigation she factor-analyzed 77 questions, each answerable on a 5-grade Likert scale. Ten of these items (3 questions and 5 postulates) dominated a factor which she termed vocational stimulation and 14 (1 question and 13 postulates) had high loads in a factor labelled by her: vocational motivation. In the present investigation all these questions were used (Appendix A and B) but modified. Thus, a 2-grade scale was used for each item. This enabled computation of a stimulation index ranging from 6 (low experienced stimulation from previous job) to 10 (high stimulation). Similarly a motivation index ranged from a low of 0 to 14.

For analysing satisfaction with different aspects of present job we used Simovitz’s job satisfaction questionnaire (24). This questionnaire (Appendix C) includes 8 items and ranges from a minimum of 0 to a maximum of 16. Vocational satisfaction (i.e., satisfaction with the present vocational situation), belief in vocational return and subject experienced health were each assessed using a 6-grade ordinal scale (Appendix D). These questions were developed by a total of 6 psychosocial self-description variables which were included as psychosocial indicators.

Furthermore, 5 sociodemographic variables were included in the statistical analyses. These were age (registered at intake), sex (male/female), educational level (dichotomized into compulsory school/further education), income (dichotomized into <median/>median income for the Umeå district) and employment situation (employed/self-employed).

As the 2-year follow-up the subjects reported their present vocational status. Thus different outcome categories could be computed: Group A (n=28; 16%) consisted of subjects who had the same job both at referral and at follow-up. As previously shown (6) the vast majority (n=27) had only temporary or technical reasons to maintain their employment situation. Group B (n=6; 4%) consisted of two sub-groups: namely the 28 subjects who were vocationally active who referred but for whom new jobs were found and the 9 subjects who were on sickness benefit or on unemployment allowance when referred but who were vocationally active at follow-up. The reason for combining these two sub-groups that the interventions were quite similar. Group C (n=3; 16%) consisted of those who were undergoing vocational training or education at follow-up, while subjects in Group D were either receiving sickness benefit or unemployment allowance on both occasions (n=29; 10%) or had become vocationally inactive at follow-up (n=5, 3%). For a more detailed description of interventions, see Ekbom et al. (13).

Statistics: To decide whether, at referral, a characteristic combined pattern of social and demographic variables characterized the sample, a factor analysis with varimax rotation

Fig. 1: Vocational stimulation and motivation.

including all 11 variables was performed. Factors with Eigenvalue lesser than 1.0 were excluded. The cut-off limit for a variable to be considered a significant contributor to a factor was 0.3. To characterize differences (mentioned only when significant; p<0.05) at referral between the four outcome groups A–D the factor scores were analysed using ANOVA followed by post-hoc tests.

The likelihood of subjects in any of the outcome groups B, C and D presenting common (intergroup) socio-demographic and/or psychosocial characteristics was gauged and discriminant analysis. All 11 items were included in this prognostic analysis. The criterion for acceptance was p<0.05 (Wilks’ Lambda). We did not consider individual items to be significant contributors if they had standardized discriminant coefficients below 0.2. All computations were performed with SYSTAX™ used in a Macintosh Plus computer.

RESULTS
Initial investigation. Fig. 1 shows that only a minority had low scores for vocational stimulation (median 6, range 0–10) and motivation (median 10, range 1–14). This was also the case for the job satisfaction index (Fig. 2) where the median score was 9 (range 1–15). In contrast, the level of satisfaction with the present vocational situation (Fig. 3) was rather low (median 3, range 1–6). In fact, nearly 2/3 assessed their vocational situation as unsatisfactory (scores ≤3). An equally low median score for experienced health (Fig. 4; median 3, range 1–4) was evident and 41% felt that they never or very rarely felt healthy. In spite of this, the vast majority (77%, cf. Fig. 5) believed that they were at least likely to stay in/return to a vocationally active life.

The factor analysis including all 149 clients (Table II) appeared logically to circumscribe all 11 variables within five factors which explained 74% of the vari-
ance. These were: Factor I (19% of the variance) which combined vocational stimulation (0.9) and job satisfaction (0.9). Factor II (16% of variance) incorporated the variables age (0.5), vocational motivation (0.8) and belief in vocational return (0.8).

Factor III (12% of variance) encompassed education (0.8) and income (0.6), while Factor IV (14% of variance) included sex (0.8) and the variable describing the client as self-employed or an employee (0.7). Age was almost a significant contributor in this factor (load 0.48).

Finally Factor V (13% of variance) contained vocational satisfaction (0.8) and experienced health (0.8).

Using individual factor scores Table III elucidates the differences in the psycho-socio-demographic patterns at referral among the four outcome groups. It shows that scores for Factors IV and V were significantly higher for group A than for all the other groups. The factor scores for Factor II were significantly higher in the successful (A, B and C) than in the unsuccessful group D. Finally the scores for Factor III were significantly higher in group A than in group D while scores for Factor IV were significantly higher in group B than in group C.

Prediction of outcome: We chose not to include group A (i.e. the subjects who were vocationally active in the same job both when first seen and at the follow-up 2 years later) in the discriminate analysis performed to deduce whether one or a small set of the variables could correctly classify the outcome groups.

The results were that among these 28 subjects (Table IV) 16 had been furnished with technical aids as the only intervention. These 16 subjects included 6 of the 1 farmers. A further 11 clients received counselling only, while one client had the employability assessment at the vocational rehabilitation center. Thus, the group was relatively easily rehabilitated that it appeared rather uninteresting to search for particular predictors.

Table IV shows that most proportions of the subjects in groups B (55%), C (57%) and D (63%) could be correctly classified when all 11 variables were entered in the discriminant analysis. This analysis was significant (p < 0.05). The major overall predictors were: Experienced health and belief in vocational return; but age also had a considerable prognostic impact. In fact, only two of the variables (sex and job satisfaction) had standardized discriminant coefficients below 0.20.

Although the analysis per se shows that the outcome of vocational rehabilitation in Umeå could be predicted for nearly 60% of the sample, the factorial combination of variables appeared to be of very limited pragmatic importance. The group classification function coefficients given in Table V appear to be more interesting. These coefficients characterize the relative prognostic importance of the actually measured variables for each outcome group. They may therefore provide useful information for the rehabilitation staff and/or the vocational counselor: For group B the only fairly important prognosticator was relatively low satisfaction with the vocational situation at the time of referral. Different prognosticators emerged for group C. These were relatively young
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Factor III (12% of variance) encompassed education (0.8) and income (0.6), while Factor IV (14% of variance) included sex (0.8) and the variable describing the client as self-employed or an employee (0.7).

Age was almost a significant contributor in this factor (load 0.46).

Table II. Factor analysis with rotated principal component loadings for the five factors in the group of Northern Swedish bodily impaired vocational rehabilitation clients (n=149)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Factor I</th>
<th>Factor II</th>
<th>Factor III</th>
<th>Factor IV</th>
<th>Factor V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eigenvalue</td>
<td>2.8</td>
<td>1.9</td>
<td>1.2</td>
<td>1.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Vocational</td>
<td>0.9</td>
<td>-0.1</td>
<td>-0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Stimulation</td>
<td>0.9</td>
<td>-0.2</td>
<td>-0.2</td>
<td>0.0</td>
<td>-0.0</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>0.0</td>
<td>-0.8</td>
<td>-0.2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Belief in vocational return</td>
<td>0.1</td>
<td>-0.8</td>
<td>-0.2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Vocational</td>
<td>0.3</td>
<td>-0.8</td>
<td>0.0</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Motivation</td>
<td>0.3</td>
<td>0.5</td>
<td>0.2</td>
<td>0.48</td>
<td>0.3</td>
</tr>
<tr>
<td>Age</td>
<td>0.0</td>
<td>-0.2</td>
<td>-0.8</td>
<td>-0.1</td>
<td>-0.1</td>
</tr>
<tr>
<td>Educational level</td>
<td>-0.0</td>
<td>0.1</td>
<td>-0.6</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Income</td>
<td>0.4</td>
<td>0.1</td>
<td>-0.6</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Sex</td>
<td>0.0</td>
<td>0.1</td>
<td>0.3</td>
<td>0.8</td>
<td>-0.0</td>
</tr>
<tr>
<td>Self-employed/</td>
<td>0.3</td>
<td>-0.2</td>
<td>0.3</td>
<td>0.7</td>
<td>-0.0</td>
</tr>
<tr>
<td>Employee</td>
<td>0.2</td>
<td>-0.1</td>
<td>-0.0</td>
<td>0.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Vocational</td>
<td>0.2</td>
<td>-0.4</td>
<td>0.0</td>
<td>-0.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>19%</td>
<td>16%</td>
<td>12%</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Experienced health</td>
<td>24%</td>
<td>22%</td>
<td>12%</td>
<td>23%</td>
<td>65%</td>
</tr>
</tbody>
</table>

Fig. 4. Experienced health.

Fig. 5. Belief in vocational return.

Finally Factor V (13% of variance) contained vocational satisfaction (0.8) and experienced health (0.8).

Using individual factor scores Table III elucidates the differences in the psycho-socio-demographic pattern at referral among the four outcome groups. It is shown that scores for Factors IV and V were systemically significantly higher for group A than for all the other groups. The factor scores for Factor II were significantly higher in the successful (A, B and C) than in the unsuccessful group D. Finally the scores for Factor III were significantly higher in group A than in group D while scores for Factor IV were significantly higher in group B than in group C.

Table III. The matrix characterizing differences in factor scores between the different outcome groups (A-D)

<table>
<thead>
<tr>
<th>Outcome groups</th>
<th>A vs. B</th>
<th>A vs. C</th>
<th>A vs. D</th>
<th>B vs. C</th>
<th>B vs. D</th>
<th>C vs. D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor I</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Factor II</td>
<td>NS</td>
<td>NS</td>
<td>A(0.01)</td>
<td>NS</td>
<td>NS</td>
<td>B(0.05)</td>
</tr>
<tr>
<td>Factor III</td>
<td>NS</td>
<td>NS</td>
<td>A(0.05)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Factor IV</td>
<td>A(0.00)</td>
<td>A(0.00)</td>
<td>A(0.00)</td>
<td>B(0.02)</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Factor V</td>
<td>A(0.00)</td>
<td>A(0.00)</td>
<td>A(0.00)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

Although the analysis per se shows that the outcome of vocational rehabilitation in Umeå could be predicted for nearly 60% of the sample, the factorial combination of variables appeared to be of very limited pragmatic importance. The group classification function coefficients given in Table V appear to be more interesting. These coefficients characterize the relative prognostic importance of the actually measured variables for each outcome group. They may therefore provide useful information for the rehabilitation staff and/or the vocational counselor: For group B the only fairly important prognosticator was relatively low satisfaction with the vocational situation at the time of referral. Different prognosticators emerged for group C. These were a relatively young

Table IV. Corrected classified subjects in groups B, C and D

<table>
<thead>
<tr>
<th>Group</th>
<th>Correctly classified</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group B (%)</td>
</tr>
<tr>
<td>Group B</td>
<td>63</td>
</tr>
<tr>
<td>Group C</td>
<td>24</td>
</tr>
<tr>
<td>Group D</td>
<td>34</td>
</tr>
</tbody>
</table>

Total 57% correctly classified

Discriminant coefficients: Experienced health 0.8 > Belief in vocational return 0.6 > Age 0.5 > Income 0.4 > Education 0.3 > Employment status 0.3 > Vocational motivation 0.3 > Vocational stimulation 0.3 > Vocational satisfaction 0.3. All other coefficients <0.20.
Table V. Group classification function coefficients in prediction of vocational outcome using socio-demographic variables (n = 11). The independent variables are arranged according to their distribution in factors

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group B</th>
<th>Group C</th>
<th>Group D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correctly classified</td>
<td>53%</td>
<td>57%</td>
<td>65%</td>
</tr>
</tbody>
</table>

| Vocational stimulation | -0.1     | -0.1     | 0.2     |
| Job satisfaction       | -0.1     | -0.1     | 0.2     |
| Belief in vocational return | -0.3     | 0.3      | -0.6    |
| Vocational motivation  | -0.1     | 0.3      | 0.2     |
| Age                   | 0.1      | -0.6     | -0.4    |
| Educational level      | 0.1      | -0.1     | -0.3    |
| Income                | -0.9     | -0.1     | -0.5    |
| Sex                   | -0.0     | 0.2      | 0.2     |
| Self-employed/employee| -0.1     | 0.3      | 0.3     |
| Vocational satisfaction| -0.3     | 0.1      | 0.4     |
| Experienced health     | -0.9     | -0.3     | -0.8    |

The findings that this group was significantly characterized by higher scores for Vocational Health and Vocational Establishment than were the other three outcome groups and further had higher Vocational Drive and was less educationally disadvantaged compared to the factor group explains why it is a particularly easily rehabilitated group. This is further elucidated by the fact that practically all of the subjects could be dealt with by means of simple counseling or technical aids. Furthermore, Harms (15) demonstrated that in Finland a vocational status of independent entrepreneur is a positive predictor for future vocational activity in patients operated for lumbar disc herniation.

**Prediction of outcome**

It would be tempting to analyze the predictive effect of the factors above. Such an analysis would, however, as already mentioned, be of little pragmatic value for the specialist in vocational rehabilitation in his daily work. Moreover, as shown in Table III, within groups B, C and D only few differences in factor scores were found. For these reasons the predictive analysis was performed entering the answers to the questions actually used during the interview.

**DISCUSSION**

One of the two major features of this investigation is its reasonably successful attempt to characterize the sample of vocational rehabilitation clients in Northern Sweden by a limited set of factors. Two of these (Factors III and IV) are clearly socio-demographic descriptors, while three (Factors I, II and V) contain only psycho-social items. Interestingly none of the factors explained exclusively high or low proportions of the variance. The other major feature is the reasonable accuracy—an average of 57%—by which psycho-social and socio-demographic variables could classify the subjects' vocational outcome.

The situation at admission to vocational rehabilitation

The pair of variables which dominated Factor I appear to characterize (different aspects of) Work Environment, derived from previous or current work. It is also Simon’s (24) analysis of job satisfaction within the heavy industry that it was demonstrated that 76% and 50% of white and blue collar employees, respectively, had a high level (score 6-16) of job satisfaction, which cannot even tentatively explain the significantly higher level (69%) found in the present study. A proportion which, nevertheless, argues to be quite compatible with that found by Ekhjöhnsson (7). This factor, moreover, did not differ among the various outcome groups (cf. Table III). A finding which also agrees with that of Ekhjöhnsson (7) that vocational stimulation was a comparatively poor predictor for return to work.

Factor II appears to reflect belief in and motivation for future work capacity. Accordingly, we interpret this factor as describing Vocational Drive, which in some extent is dependent upon age. The impact of motivation on return to work after medical rehabilitation has been pointed out by several other authors. It has, for instance, been demonstrated that patients with a high motivation for recovery and return to work have a favourable attitude towards self and have a realistic view of their ideal selves (2). A positive ideal self is a positive factor for a patient’s cooperation in vocationally oriented rehabilitation (8, 24). Positive beliefs in vocational return are characteristic of individuals who keep their dependency needs to a minimum (22), who are not confined to hopelessness (18) and who are able to make correct decisions concerning solutions to their problems (9). Furthermore, this successfully medically rehabilitated subject has been characterized by positive, hopeful, future oriented attitudes (4), showing a high degree of field independence (1) and with rather flexible domains for future goals (8). That characterization is congruent with the fact that level of Vocational Drive was systematically lower for group D—the group of failed rehabilitation—than for the successful clients.

In Elmöll’s investigation from the early 1970s the compulsory school was the highest level of education for about 1/4 of the population studied, in Ronneby investigation (approximately 5 years later, 23) compulsory school was the highest level of education for about 60%, while our respondents reported a 50% distribution for compulsory schooling. The difference could be due to differences in age and practical education. This apparent time dependence may simply reflect socio-political changes with more easily accessible education. As pointed out else where (5) the median male, but not female income, was significantly lower than the average for the corresponding age group within this Northern Swedish area, this was particularly true for vocationally inactive males. Moreover, income and educational level were significantly correlated. Thus, it appears quite likely that Factors III to include only the two variables educational level and income. For this reason we prefer the term: Educational Inequality, which appears to make a clear distinction (cf. Table III) between two rather ‘polarized’ groups. Those continuing in the same job and those who were vocationally inactive as follow-up.

Previously (5) it was shown that within this sample significantly more elderly males were self-employed, these item (sex and employment status) also formed factor IV. At one extreme of the factor were the male self-employed clients, at the other the female employees. Thus, this factor in our interpretation characterizes: Vocational Establishment. It therefore appears reasonable that it differentiated between those in education on the one hand and on the other those vocationally active in the same job or those who had returned to work after vocational inactivity (cf. Table III).

In an investigation of life satisfaction among 25-55 year old unselected inhabitants of Umeå, Fugl-Meyer et al. (11) recently found an age and gender independent level of satisfaction with current vocational situation. In that sample nearly 60% reported that they were satisfied or very satisfied. Hence, the level of satisfaction with current vocational situation found in the present study was low. Moreover, the experienced health in a normal Umeå population aged 40-64 years was investigated by Gerdle & Algren (12) who found that 69% of the males and 59% of the females felt they were healthy most of the time. The much lower (11%) proportion found here (which is in general agreement with the findings of Fugl-Meyer) is evident to a significant difference, a difference which emphasizes the relative ill health of the vocational rehabilitation clients.

Vocational satisfaction (at the time of admittance) and level of experienced health were combined into a single variable (Factor V). This factor in one extreme appears to characterize the vocationally satisfied subjects who feel that most of the time they are without somatic complaints, evidently a rather small group. At the other extreme are those who feel they suffer ill-health somatically as well as vocationally. We therefore labelled this factor Vocational Health; which was exclusively good for those group (A) who had the same job both on admittance and at follow-up.

The finding that relatively low age can be a negative prognostic factor for vocational (re)adjustment is
<table>
<thead>
<tr>
<th>Vocational rehabilitation</th>
<th>Group B</th>
<th>Group C</th>
<th>Group D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correctly classified</td>
<td>0.63</td>
<td>0.24</td>
<td>0.34</td>
</tr>
<tr>
<td>55%</td>
<td>57%</td>
<td>65%</td>
<td></td>
</tr>
</tbody>
</table>

Vocational stimulation: 0.1 - 0.2 |
Job satisfaction: 0.1 - 0.2 |
Belief in vocational return: 0.4 - 0.6 |
Vocational motivation: 0.1 - 0.3 |
Age: 0.1 - 0.6 |
Educational level: 0.1 - 0.3 |
Income: 0.1 - 0.3 |
Sex: 0.1 - 0.3 |
Self-employed/employee: 0.1 - 0.3 |
Vocational satisfaction: 0.1 - 0.4 |
Experienced training: 0.1 - 0.8 |

**DISCUSSION**

One of the two major features of this investigation is its reasonably successful attempt to characterize the sample of vocational rehabilitation clients in Northern Sweden by a limited set of factors. Two of these (Factors III and IV) are clearly socio-demographic descriptors, while three (Factors I, II and V) contain only psycho-social items. Interestingly none of the factors explained exclusively high or low proportions of the variance. The other major feature is the reasonable accuracy—an average of 75%—by which psycho-social and socio-demographic variables could classify the subjects' vocational outcome.

The situation at admission to vocational rehabilitation

The pair of variables which dominated Factor I appear to characterize (different aspects of) Work Environment derived from previous or current work. It is Simonsen's (1976) analysis of job satisfaction within the heavy industry that it was demonstrated that 76% of workers and blue collar employees, respectively, have a high level (score 6-10) of job satisfaction which, although not even tentatively explain the significantly higher job level (54%) found in the present study. A proportion which, nevertheless, appears to be quite comparable with that found by Ehrnrooth (7). This factor, however, did not differ among the various outcome groups (cf. Table III). A finding which also agrees with that of Ehrnrooth (7) that vocational stimulation was a comparatively poor predictor for return to work.

Factor II appears to reflect belief in and motivation for future work force capacity. Accordingly, we interpret this factor as describing Vocational Drive, which at some extent is dependent upon age. The impact of motivation on return to work after mental rehabilitation has been pointed out by several other authors. It has, for instance, been demonstrated that patients with a high motivation for recovery and return to work have a favourable attitude toward self and may have a realistic view of their ideal selves (2). A positive self-image is a positive factor for a patient's cooperation in vocationally oriented rehabilitation (18, 24). Positive beliefs in vocational return are characteristic of individuals who keep their dependency needs in check (22), who are not confined to hopelessness (10) and who are able to make correct decisions concerning solutions to their problems (9). Furthermore, the successfully medically rehabilitated subject has been characterized by positive, hopeful, future oriented attitudes (4). According to this view, the high level of satisfaction with current vocational situation found in the present study was low. Moreover, the experienced health in a normal Umeå population aged 40-64 years was investigated by Gerdt & Widerström (12) who found that 69% of the males and 61% of the females felt they were healthy most of the time. The much lower (11%) proportion found here is in general agreement with the findings of Best (3). Consequently, it is evident that the vocational job satisfaction at the time of admittance (21) of experienced clients was considered to be a significant determinant of the relative health of the vocational rehabilitation clients. A high level of satisfaction with current vocational situation predisposes a subject to vocational training or education (9, 15). This is a positive factor for the group who had no positive effect for this—such as vocational training.

That ill-health in combination with low expectations for future work capacity was the major predictor for the unsuccessful group D is at least partly confirmed by Macwell & Hark (19) in Northern Norway's post-muscular infarction subjects. They found that perceived low level of global health was significantly associated with low rate of return to work.

Vocational rehabilitation in northern Sweden, II

The findings that this group was characterized by higher scores for Vocational Health and Vocational Establishment than were the other three outcome groups and further had higher Vocational Drive and was less educationally disadvantaged compared to the factor group explains why it is a particularly easily rehabilitated group. This is further elucidated by the fact that practically all of the subjects could be dealt with by means of simple counseling or technical aids. Furthermore, Harmé (15) demonstrated that in Finland a vocational status of independent entrepreneur is a positive predictor for future vocational activity in patients operated for lumbar disc herniation.

**Prediction of outcome**

It would be tempting to analyze the predictive effect of the factors above. Such an analysis would however, as already mentioned, be of little practical value for the specialist in vocational rehabilitation in his daily work. Moreover, as shown in Table III, within groups B, C and D only few differences in factor scores were found. For these reasons the predictive analysis was performed entering the answers to the questions actually used during the interview.

Group B, the returnees to a new job, had no very clear prognosticator. If any, dissatisfaction with the vocational situation—whether or not vocationally active—on admittance appeared to have a stimulating effect for vocational return. Somewhat surprisingly high vocational motivation, though a predictor of some importance in Ehrnrooth's investigation (7), had no positive effect for this—or for any other group.

It appears reasonable that a relatively young age and being a vocationally disabled employee with limited freedom to modify the vocational situation predisposes a subject to vocational training or education (group C). This choice is reinforced by relatively low motivation to work in subjects who feel that they are in a state of relatively ill-health but believe that they can probably return to a job when properly trained.

That ill-health in combination with low expectations for future work capacity were the major predictors for the unsuccessful group D is at least partly confirmed by Macwell & Hark (19) in Northern Norway's post-muscular infarction subjects. They found that perceived low level of global health was significantly associated with low rate of return to work.

The finding that relatively low age can be a negative prognostic factor for vocational (re-) adjustment is in
contrast to that reported by other investigators. Thus, increasing age is an obstacle to vocational rehabilitation in "mixed" samples of chronically ill or "handicapped" subjects (16, 20), after cerebral infarction (14), in bypass operated subjects with coronary scle-
rosis (24) and in chronic low back-pain sufferers (10). This discrepancy concerning the effect of age may be due to the fact that only a few of the subjects studied by us were classified as physically "handicapped" according to the normative categorization proposed by the World Health Organization (cf. 5). Moreover, the mean age of our sample was relatively low.

The relatively low income which also characterizes group D is difficult to explain from the variables used in this investigation. The fact that this group is also predicted—although to a lesser extent—by low educational level classifies it as socio-economically disadvantaged (cf. the factor: Educational Inequal-
ity). To the specialist in vocational rehabilitation this group of relatively young "knocked outs" (3) calls for special attention.

In summary, the prognostic analysis indicates that two questions may be of particular importance for assessing the likelihood of a successful outcome for vocational rehabilitation. These two questions (also see Tables IV and V) are the subjects' own experi-
enced health and their belief in regaining a vocational potential. Vocational counselors should find these two questions quite easy to pose during the first interview with a recently referred client.

ACKNOWLEDGEMENT
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selling.

APPENDIX A
Modified vocational stimulation questionnaire
Answer the following 10 items:
How do you assess your possibilities of returning to work? (0 = no possibilities; 1 = great possibilities)

APPENDIX C
Job satisfaction questionnaire
How satisfying are/were the following aspects of your former/current job?

APPENDIX D
Vocational satisfaction
How is your present vocational situation?

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How do you assess your possibilities of returning/to continue working? (0=no possibilities; 1=great possibilities)

Vocational motivation index (range 0–14)

APPENDIX C

Job satisfaction questionnaire
How satisfying are/were the following aspects of your former/current job?

0=disatisfying
1=moderately satisfaying
2=satisfying

Physical environment
Tasks
Income
Chances of advancement
Peers
Recognition
Supervision
Responsability

APPENDIX D

Vocational satisfaction
How satisfying is your present vocational situation?

1: Very dissatisfying
2: Dissatisfying
3: Rather dissatisfying
4: Rather satisfying
5: Satisfying
6: Very satisfying

Experienced health
How often do you feel healthy? Indicate the number which best suits you.

1: Never
2: Rarely
3: Rather rarely
4: Rather often
5: Often
6: Very often/always

Belief in vocational return/continuation
How likely is it that you will continue in/return to work? Indicate the number which best suits you.

1: Very unlikely
2: Unlikely
3: Rather unlikely
4: Rather likely
5: Likely
6: Very likely

Vocational rehabilitation in northern Sweden. II

REFERENCES
ABSTRACT. Levels of global (1 item) and domain-specific (8 items) life satisfaction were explored at the commencement of vocational rehabilitation and two years later in a consecutive series of subjects who were partly or completely vocationally disabled with a diagnosis of bodily impairment. At the outset of vocational rehabilitation, global life satisfaction (satisfaction with life as a whole) and satisfaction derived from performance- and provider-related (instrumental) domains of life were significantly lower than satisfaction derived from socio-emotional (expressive) facets of life. The eight domain-specific items of life satisfaction described a characteristic three-factor pattern (76% of variance) which resembled quite closely that of non-impaired subjects, one factor being expressive. The other two factors were instrumental and separated respectively from vocational domains of satisfaction. Successful vocational rehabilitation resulted in increases in vocational satisfaction. For those subjects who were successfully rehabilitated, satisfaction with other instrumental aspects of life and with life as a whole also increased. The results indicate that successful vocational rehabilitation leads to increased social well-being.

Key words: vocational rehabilitation, disability, life satisfaction, quality of life, outcome.

As the third part of a prospective study of a consecutive series of vocational rehabilitation clients this investigation brings into focus various aspects of life satisfaction and analyses the extent to which these aspects are related to outcome of vocational rehabilitation.

The Swedish system for vocational rehabilitation has been described briefly in other parts of the investigation (2, 3). In Part I it was demonstrated that 64% of those who were not working when referred were, at follow-up two years later, gainfully employed (44%) or undergoing vocational re-training (20%). Nearly all (91%) of those who were vocationally active when referred—due to partial vocational disability—needed assistance with their rehabilitation—were still gainfully employed (80%) or were undergoing re-training (11%) at follow-ups. Nine per cent of them had become vocationally inactive. Vocational rehabilitation was financially beneficial for those subjects who were re-integrated into working life. Hence, from the financial point of view vocational rehabilitation appeared to be quite successful. In Part II it was demonstrated that the outcome of vocational rehabilitation two years after its initiation was predictable for 57%. Predictors were a subset of the data registered at the commencement of vocational rehabilitation. Whereas the outcome of vocational rehabilitation is reasonably successful and predictable (2, 3), its effect on a subject's social well-being, remains, however, to be analyzed.

SUBJECTS AND METHODS

The sample has been described in detail earlier (2). In brief: 149 of 175 recently referred vocational rehabilitation clients volunteered to participate in a structured interview which included filling in several questionnaires when initially seen at their local employment offices. All interviews/completion of questionnaires were conducted/ supervened by the same investigator (M.E.). Two years later it was possible to locate all the subjects and using a mailed questionnaire to obtain information from 126 (85%) on their current vocational situation and life satisfaction. These were no significant differences as regards sex, vocational outcome or rehabilitative measures between the respondents and the 29 non-respondents. Nor were any significant differences concerning these parameters for those 26 (175-149) who initially declined to participate.

The pre-postvocational rehabilitation status of the 126 subjects included in this investigation was as follows: Group A' (n=24, 19%) were those who had the same job both at

1 Please observe that in this report Groups A-D below are somewhat smaller than the corresponding groups in our previous reports (2, 3).