On Life Satisfaction and Vocational Rehabilitation Outcome in Sweden

BY
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ABSTRACT

This dissertation has two parts. Firstly, satisfaction with life as a whole and with 10 life domains (using an instrument termed LiSat-11 with 6-graded scales) is described in a nationally representative sample aged 18-64 years (n: 2,533) and is related to some socio-demographic circumstances. Secondly, vocationally disabled people (n: 109) at an employability institute are prospectively followed in order to determine their life satisfaction and to identify early predictors of vocational rehabilitation outcome.

**Main results:** Gender independently, 70 % of the national sample were satisfied with life as a whole (were happy). The ten domains formed a 4-factor pattern: "Closeness, Health, Spare time, Provision". Seven domains were sizeable predictors of overall life satisfaction. In a complex manner socio-demographics were predictive of (gross levels) all LiSat-11 items. Main predictors were perceived health, immigrant status and educational level. Generally, the vocational rehabilitees had low LiSat-11 levels except for the closeness items. They had relatively poor background resources (low "sense of coherence" level) for successful coping. Whereas a positive rehabilitation outcome was accompanied by increases in several LiSat-11 aspects, only satisfaction with the vocational situation was clearly responsive. Three early predictors of outcome were identified: belief in vocational return, educational level and sense of coherence.

**In summary:** Besides providing reference values for the LiSat-11 instrument, this dissertation demonstrates that different socio-demographic factors influence different areas of concern (domains) in 18- to 64-year-old Swedes. In turn, satisfaction derived from different areas heavily influences level of overall life satisfaction. Moreover, the vocational rehabilitees generally seemed to be predisposed to being poor copers, possibly a major background of low levels of many LiSat-11 aspects. The identified set of predictors of the outcome of vocational rehabilitation emphasizes a need for focusing on psycho-social aspects within vocational rehabilitation.

**Key words:** Life satisfaction, Quality of life, Epidemiology, Vocational rehabilitation outcome, Sense of coherence.

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ORIGINAL PAPERS

This dissertation is based on the following original papers, which will be referred to in the text by their Roman numerals:


IV. Melin R. On life satisfaction of vocational rehabilitees. In manuscript.
ABBREVIATIONS

EI Employability institute
CI Confidence interval
I Immigrant to Sweden
LiSat-9 Life satisfaction instrument encompassing 9 items
LiSat-11 Life satisfaction instrument encompassing 11 items
OR Odds ratio
QoL Quality of life
SD Standard deviation
SOC Sense of coherence (concept created by Aaron Antonovsky)
SOC-13 SOC instrument encompassing 13 items
SOC-29 SOC instrument encompassing 29 items

Swedish list of abbreviations

EI Arbetsmarknadsinstitut (AMI, numera AF Rehab)
SOC Känsla av sammanhang (KASAM)
AIMS

The principal aims of these studies were:

1. to identify the levels of overall and domain-specific life satisfaction in a nationally representative sample of women and men aged 18-64 years and in vocational rehabilitees;

2. to identify predictors of the outcome of vocational rehabilitation at a Swedish employability institute.
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BACKGROUND

When about twenty-five years ago I started to work as a physician within the area of rehabilitation medicine, my interest was focused to a great extent on physical medicine and biomechanics: At that time it was often believed that if the patient with musculoskeletal pain was only given the proper (joint) manipulations and an ergonomic workplace, she or he would be able to go back to work. This, however, was not always the case. After a few years I came to an employability institute as a consultant and became particularly interested in the outcome of vocational rehabilitation. I soon gained the impression that the individual’s motivation and adaptation were of importance in the above respect and should be taken into account in addition to the (bio-) medical findings. As time went on, the concepts of quality of life (QoL) and life satisfaction came into focus and assessment of life satisfaction was included as a quality measure of the outcome of rehabilitation medicine. Life satisfaction was therefore included as a central theme in our planned investigation (designed in 1995) of vocational rehabilitees. However, Swedish population-based reference values for the life satisfaction instrument that we intended to use were lacking, and when an opportunity to work with such data arose, one major task was to establish and interpret “normative” values of global and domain-specific aspects of life satisfaction in the Swedish population at a vocationally active age.

Quality of life or life satisfaction?

A cornerstone of this thesis is the concept of life satisfaction. Hence I shall start with a discussion of this concept.

Recently, Johnston and Miklos (1) suggested that future research in rehabilitation would do well to consider not only activity outcomes but also the affective quality of everyday life and connections between the two; but they also considered that research is needed to improve measurement of QoL assessments and their interpretation.
Some remarks on quality of life (QoL): This construct has been defined by the WHOQOL (World Health Organization Quality of Life) group (2, 3) as “an individual’s perception of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concern. It is a broad ranging concept affected in a complex way by the person’s health, psychological state, level of independence, social relationships, and their relationships to salient features of their environment”.

The quality of life concept began to be commonly used after the Second World War. Initially it referred more to materialistic factors but later the concept also included non-materialistic aspects. Lau and McKenna (4) stated that there is no precise and consensual definition of QoL, which is a multi-dimensional concept that should not be used synonymously with happiness, life satisfaction and well-being. However, many authors apply these concepts interchangeably and inconsistently (5). According to Meeberg (6), QoL has both subjective and objective aspects and more than one dimension, while life satisfaction is purely subjective and refers to a person’s feelings of happiness in his or her life. Frisch (5) has argued that the construct QoL can be equated to life satisfaction. It might be countered that there is no need for the QoL construct, as it must necessarily be explicitly qualified whenever used.

In their classical work, Campbell et al. (7) concluded that “quality of life is a vague and ethereal entity, something that many people talk about, but which nobody knows very clearly what to do about” and Andrews (8) held the opinion that quality of life is a concept that is impossible to define to everyone’s satisfaction as it can “include well-being, ill-being, happiness, dissatisfaction, mental health, adaptive functioning, morale, physical and mental anguish, pain and suffering and affect balance”.

Musshenga (9) identified three different conceptual definitions of QoL: a) QoL can be regarded as the degree of normal function of a human being (i.e. a normalisable, objectifiable concept); b) QoL can also denote the degree of personal satisfaction that an individual can derive from his life; and c) QoL can
be seen as a level of human development. In the case of patient care and outcome measurement in rehabilitation medicine, a) and b) appear the most relevant.

In medical research and practice it has become fashionable to use a construct termed health-related QoL. Whereas generic health-related QoL instruments can be useful in general surveys of health, disease-specific QoL instruments may best be used for assessing the effects of particular therapeutic and diagnosis-related interventions. Andresen and Meyers (10), from a critical survey of instruments of this kind concluded that most studies using generic health related QoL concerned groups of people with specific impairments rather than heterogeneous groups with disability. None of the tools surveyed appeared to measure health-related QoL without some potential biases (e.g. inappropriate wording) for people with disability.

On life satisfaction: In all languages there seems to be a word for satisfaction, and according to Veenhoven (11), a central figure in (sociological) life satisfaction research, the concept of satisfaction is probably universal. Since antiquity, overall life satisfaction, which is often considered to be synonymous with degree of happiness, has occupied the minds of philosophers (see for instance Aristotle, 12). But in spite of a wealth of philosophical and (later) sociological literature on this subject, life satisfaction was largely ignored in modern medical literature up until the later part of the 20th century. Since then a large body of literature on life satisfaction has emerged. Just using the search phrase “life satisfaction” in a Pub Med database search in March 2003 for the publication years 1983 to 2002 yielded the numbers of published reports shown in Figure 1.

The number almost doubled with each five-year period. Even excluding physiological, philosophical and sociological database searches on this subject, the sheer volume of published reports has precluded any attempt to browse through them all.
From the philosophical perspective, Tatarkiewicz (13) stated in 1962 that to be satisfied with life as a whole is to be happy. He added that happiness means (reasonably) *lasting* satisfaction and that the satisfaction must be *justified*.

In their classical treatise, Campbell et al. (7) stated that satisfaction implies a *cognitive* assessment of a current situation laid against external standards of comparison such as relatives or other people or more private levels of aspiration.

The foundation of aspiration is hedonic affect (Fugl-Meyer et al., 14). If hedonic affect can be attained, or judged to be attainable, the individual experiences pleasure. This experience, primary hedonic judgement (15), is related to the individual’s activity preferences, her/his standing wants (16), which are closely associated with the individual’s internalized roles. According to Gurin et al. (17), fulfilment of the demands of the internalized roles is a prerequisite for satisfaction. Reported life satisfaction can be termed third person’s hedonic judgement (15). To report one’s own life satisfaction, whether overall or derived from a specific domain of life, means that hedonic qualities, reached by activities, are brought to consciousness. An individual will be satisfied with a particular life domain when aspirations and achievements meet, but will feel ‘not satisfied’ if his aspirations exceed his achievement (18).
Veenhoven (19) stated that satisfaction with life as a whole denotes happiness, which is defined as the degree to which an individual judges the overall quality of his life as a whole to be favourable. He pointed out (20) that happiness can buffer stress, preserve health and lengthen life somewhat (about 20 months, cf. 21). Moreover, Veenhoven found no evidence of harmful effects of happiness and considered that society is more likely to flourish with happy citizens than with unhappy ones.

**On principles of life satisfaction measurements**

In this thesis satisfaction is regarded as a social indicator and is defined as the degree to which an individual experiences himself as being able to attain his goals, (14). This definition is congruent with the conceptual definition b) of Musschenga (9) for QoL, a definition that is supported by the finding by Campbell et al. (7) of a direct connection between aspiration, achievement and satisfaction. Based on this consideration, the basic theme of studies I, II and IV was to explore overall and domain-specific life satisfaction as indicators of the extent to which individuals have adapted to their situation in life.

There is growing trust in the validity of (life) satisfaction reports. There is no indication that people report how satisfied others think they are instead of describing their own satisfaction, and results from in-depth interviews are not very different from responses to single direct questions (Veenhoven, 11). Computations of correlations between different questions on life satisfaction (congruent-validity testing) yielded values between 0.40 and 0.70. The test-retest reliability was about 0.60-0.70. The changes between two assessment occasions mostly amounted to one scale step. The responses can be sensitive to the environment in which the interview is conducted and the sequence of different items. Life satisfaction ratings also tend to be slightly higher in personal interviews than in anonymous questionnaires.
Pavot et al. (22) have found reliable evidence suggesting that subjective assessments of overall life satisfaction are generally stable over time.

What determines levels of life satisfaction? Cummins (23) estimated that a population standard of life satisfaction is 70±5% of the maximum scale value of the instrument used, and concluded that life satisfaction “is not free to vary over its potential of 0-100% of scale maximum range. Instead it appears to be held under some form of homeostatic control, in a manner analogous to blood pressure”. However, according to Cummins, if people are subjected to a burden that is too strong, such as chronic unemployment, adaptation to the supposed normative range cannot occur. Campbell et al. (7) suggested that a person’s satisfaction within any domain of life reflects the gap between his aspiration level and his perceived circumstances. On the basis of this suggestion, Michalos (24) proposed that life satisfaction is a function of the level of congruence between the perceived goal and the achievement, and that the goal-achievement gap is a function of previous best experiences and comparison with others. He then developed a model according to which reported net satisfaction (happiness or subjective well-being) is a linear function of perceived discrepancies between, on the one hand, what one has, and on the other hand what one wants, what relevant others have, the best one has had in the past, what one expected to have 3 years ago, expects to have after 5 years, deserves and needs (25).

Nordenfelt (26, 27) pointed out that people have different goals. These goals are "weighted". Hence, the impact of attaining or not attaining a goal on satisfaction with life as a whole, leading to a higher or lower degree of satisfaction within a specific domain of life, simply depends upon the importance of that goal or that domain. An aspirations-achievement gap may thus be evident at the domain level but may not necessarily be reflected by low or decreased satisfaction with life as a whole.
Top-down and bottom-up models: Veenhoven (11, 28) has discussed the question of whether overall happiness is a state or a trait. He favours the notion that happiness is more a state than a trait and that it therefore is relevant for politicians to create a better society, as such a society will make people more satisfied with life.

The top-down and bottom-up theories, which have long been discussed, were surveyed by Brief et al. (29). Maslow (30, 31) pointed out five hierarchical needs: 1) physiological (water, food etc), 2) safety, 3) belongingness and love, 4) esteem and 5) self-actualization. Satisfaction with level 1), for example, must be near complete before effort can be aimed at the next level in the hierarchy, thus, basically in line with “bottom-up” theory: The bottom-up theory suggests that the level of overall life satisfaction/happiness is derived from a summation of pleasurable and unpleasurable moments and experiences and that overall life satisfaction is a combination of satisfaction in a number of particular domains. In line with this theory, Andrews and Withey (32) have suggested that satisfaction with one’s life as a whole is additive and reflects the sum of one’s satisfaction with various domains such as income, housing, occupation, leisure activities, family life and so on (33).

From the perspective of rehabilitation medicine, Bränholm and Fugl-Meyer (34) have suggested a causal model: Activity preferences → occupational roles → domain-specific life satisfaction → satisfaction with life as a whole. A similar model has later been proposed by Post et al. (35). Such a causal “chain”, however, has not been ascertained and the finding that the top-down and bottom-up models may interact (36, 37) may cast serious doubt on ”medical” causal bottom-up models of this kind.

According to the top-down model, individuals are predisposed to experience and react to events and circumstances in a positive or negative way. For instance, as early as in the fifth century B.C. the Greek philosopher Democritus postulated that a happy life is not dependent on any external contingencies but mostly on the subject’s cast of mind (cf. 38). Moreover, Lykken and Tellegen (39) found in a
study of monozygotic twins that approximately 50 % or more of the variance in adult happiness was determined by genetic factors. Diener et al. (40) examined the influences of cultural differences on life satisfaction. They suggested that global measures will more reflect a person’s disposition, while actual experiences are of greater importance for specific measures, and that if this is true, overall happiness is not the sum of its parts. Their data support the view that life satisfaction not only depends on how good the various objective life domains are perceived to be in a person’s life, but is also influenced by the degree to which the person judges global domains more positively than specific domains. Cohen (41) reanalysed data collected in 1984-1986 in an investigation of US college students and concluded that a bidirectional model seems to be most appropriate to explain the relationships between overall life satisfaction and various life facets (domains).

**Measurement of life satisfaction**

Many different questions and inventories have been used for recording self-reported life satisfaction. To give some examples: Campbell et al. (7) used a single item 7-point scale with marked extremes (completely satisfied and completely dissatisfied) and asked about the respondent’s satisfaction with different domains of life and then the question “How happy are you with your life as a whole these days?”, using the same scale. Almost 22 % reported complete overall life satisfaction (grade 7), 40 % reported grade 6 and only 1 % complete dissatisfaction (grade 1). In the Eurobarometer (33) the question was asked “On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?”; thus with a four-graded scale. Twenty-one per cent were satisfied and 57 % fairly satisfied. The satisfaction with life scale (42) comprises five questions, rated on a 7-point Likert scale. The scores are aggregated, thus with a range from 5 to 35. In a rather small sample, n=176, the mean score was 23.5.
In the present investigation, the LiSat-11 instrument encompassing 11 items (Fig. 2) was used. A shorter version (LiSat-9) was used by Fugl-Meyer et al. (43)

Here are a number of statements concerning how satisfied you are with different aspects of your life. For each of these statements please mark a number from 1 to 6, where 1 means very dissatisfying and 6 very satisfying.

- 1 = very dissatisfying
- 2 = dissatisfying
- 3 = rather dissatisfying
- 4 = rather satisfying
- 5 = satisfying
- 6 = very satisfying

My life as a whole is 1 2 3 4 5 6
My vocational situation is 1 2 3 4 5 6
My financial situation is 1 2 3 4 5 6
My leisure situation is 1 2 3 4 5 6
My contact with friends and acquaintances is 1 2 3 4 5 6
My sexual life is 1 2 3 4 5 6
My ability to manage my self-care (dressing, hygiene, transfers, etc) is 1 2 3 4 5 6
My family life is 1 2 3 4 5 6
My partner relationship is 1 2 3 4 5 6
My physical health is 1 2 3 4 5 6
My psychological health is 1 2 3 4 5 6

Figure 2. The LiSat-11 checklist (in English translation) as used in the investigation.

to characterize levels of life satisfaction in a northern Swedish city. The results of that investigation are given in Figure 3. The LiSat-9 has been used for assessing overall and domain-specific life satisfaction in different conditions such as stroke (44), other neurological disorders (45), peripheral arterial insufficiency (46),
erectile dysfunctions (47) and also for parents of children with Down’s syndrome (48), spouses of stroke patients (49) and multiple trauma patients (50).

![Diagram showing life satisfaction domains](image)

*Figure 3. Proportions satisfied or very satisfied (grades 5 or 6) in a northern Sweden sample.*

Of particular interest for this thesis was the use of LiSat-9 in a general vocational rehabilitation clientele (only to a minor extent including subjects admitted to an employability institute) from northern Sweden (51, 52). The main findings were that on admission to the County Vocational Rehabilitation Service, the vocational rehabilitees, compared to a reference sample, had low levels of satisfaction with life as a whole and with 6 of the 8 life satisfaction domains. Successful rehabilitation was accompanied by increases in life satisfaction to levels on a par with the reference sample concerning the vocational situation, financial situation, leisure, sexual life and family life. The gross level of satisfaction with life as a whole was predicted in similar proportions among the two samples, about 80 %, by the 8 domain-specific life satisfaction items. A shorter version (satisfaction with ADL omitted) was used in an investigation of male erectile dysfunction.
(53). This (LiSat-8) instrument has been translated and linguistically validated into several languages and dialects.

**Life satisfaction levels in different nations**

There is a wealth of literature comparing satisfaction with life as a whole or happiness in different nations (e.g. 33, 54, 55). Veenhoven (11) reported growing trust in the comparability of life satisfaction between nations. Internationally, satisfaction with life as a whole seems to be associated with differences in socio-political structures; the average level being clearly higher in countries with better living conditions. Thus in a study on life satisfaction in 22 countries, 78 % of the variation in average happiness could be explained by differences in material wealth, social equality, political freedom and access to knowledge (11). Curiously, however, Biswas-Diener and Diener (56), in a small-scale study performed in the slums of Calcutta, India, did not find particularly low levels of satisfaction with life as a whole.

Different domain-specific aspects of life satisfaction have also been studied world-wide but unfortunately, such different methods have generally been used that valid comparisons can hardly possible be made. Anyhow, this mainly descriptive dissertation was not designed as an internationally comparative analysis.

**Life satisfaction and gender**

In most investigations, few if any gender differences in life satisfaction have been found. Campbell et al. (7) found that 22 % of the women and 21 % of the men in a sample in the USA were completely satisfied with life as a whole. Pooled data from the Eurobarometer 1975 to 1979 showed that 78 % of the women and 77% of the men were satisfied or very satisfied with life as a whole, and the corresponding figures for 1982 to 1983 were 80 % and 79 % respectively (33). Veenhoven (19) reviewed 70 investigations from 31 nations and only in a
few nations found gender differences in life satisfaction/happiness and those were slight. He also discussed the finding that younger men are less happy (i.e. satisfied with life as a whole) than younger women and that older women are less happy than older men. One explanation for this difference may be that young men and older women are more likely to live alone, which is negative for happiness. In a later report (57), no significant gender differences in life satisfaction were found, which is in line with findings in reviews by Diener et al. (58) and Myers and Diener (59).

Life satisfaction and age

In the Eurobarometer, Inglehart and Rabier (33) found few differences in life satisfaction between different age cohorts, but after adjustment for differences in income, occupation, education, marital status and nationality, 86 % of the subjects older than 64 years were satisfied or very satisfied with life as a whole, compared to 76 to 80 % of those between 15 and 64 years.

Argyle (60) discussed the somewhat unexpected finding that old people, although they are expected to be in poor health and have a lower income than younger people, are just as happy as young people or even happier. He suggested as one explanation that older individuals have had time to adapt to their situation and have lower aspirations and a smaller goal-achievement gap. Diener and Suh (61) reported that older persons had increased levels of financial satisfaction and satisfaction with human relationships.

Life satisfaction and health

Using the LiSat-9 in a study of subjects with different neurological disorders, Bränholm et al. (45) found that compared to healthy controls, these subjects had lower levels of satisfaction with life as a whole, with ADL, with leisure and with sexual life. Subjects with multiple sclerosis and stroke victims had in addition, lower levels of satisfaction with their vocational situation and stroke victims furthermore had lower levels of satisfaction with partner relationship and with
family life. A follow-up study of multi-trauma patients in Norway was performed by Anke and Fugl-Meyer (50), using the LiSat-9. After multiple trauma, significantly fewer patients were satisfied with life as a whole and with several of the domains compared to the number before trauma. Using the LiSat-11, Hallin et al. (46) found that compared to an age-matched control group, patients with peripheral vascular disease reported lower levels of satisfaction with life as a whole and with their vocational situation, economy, sexual life, personal ADL, partner relationship, leisure and with somatic health. Willits and Crider (62) found in a study of subjects aged 50 to 55 years that their health rating was significantly correlated to satisfaction with life as a whole, job satisfaction and marital satisfaction.

**Life satisfaction and education**

The correlation of life satisfaction with education is close in poor countries and low in more wealthy ones (11). Ínglehart and Rabier (33) reported that the more educated were more satisfied with life as a whole than the less educated. The difference found was modest, although the educational level is important with regard to career, income and prestige. Their explanation for this was that the educational level is determined early in life and as aspirations adapt to situations, relatively moderate differences in life satisfaction may be expected across educational levels.

**Life satisfaction and partner status**

In the Eurobarometer, married people have reported higher levels of life satisfaction than unmarried ones, irrespective of gender (59). In his review, Argyle (60) states that many surveys have shown that married people are happier than unmarried one’s and are also happier than those in any of the unmarried categories. Persons who are cohabiting are mostly found to be happier than single persons. In addition, there are indications that being divorced or separated has more negative health effects than being widowed. Moreover, Argyle reports that
the quality of marriage has an impact on happiness and that marital satisfaction varies over the family cycle - the honeymoon and empty nest periods being the best.

Life satisfaction and immigrant status
Ethnic minorities report a relatively low level of happiness and the main explanation has been postulated to be lower incomes, education and job status (60). Veenhoven (63) found that happiness of migrants was clearly higher than the average level in their country of origin. The fact that migrants were slightly less happy than people in the country-of-settlement could be explained by their relatively disadvantaged social position in the new country and by problems of adaptation.

Life satisfaction and economy
The impact of the economic situation on life satisfaction has been studied in different ways. One way has been to compare levels of life satisfaction in different countries. Poor countries had lower satisfaction levels than more well-off countries. Myers and Diener (59) stated that having money is no guarantee of happiness. Life satisfaction levels in the USA were not changed when the personal income was doubled. Lottery winners were only temporarily happier. The wealthiest Americans reported only slightly greater happiness than other Americans and it was found that 37 % of the wealthiest were less happy than the average American.

Life satisfaction and work: In his literature survey, Veenhoven (19) noted that at least since 1933, when Jahoda et al. (64) published their study of unemployed people during the Great Depression, unemployment has been seen as detrimental to happiness. Veenhoven found that having a job was important for overall life satisfaction, although rarely the most important factor and the influence of unemployment on happiness was different for different people. Campbell et al.
(7) reported that the unemployed Americans were considerably less satisfied with most aspects of their lives than were those working full-time. This was especially true concerning men, but was also observed among women. The unemployed were less satisfied with their education, economy and spare-time activities and they were worried about having a nervous breakdown. Job satisfaction was related to the perceived degree of satisfaction of a person with his life as a whole. They concluded that work is clearly one of the most important domains of life.

Verkley and Stolk (65) studied employed and unemployed persons. Happier unemployed people had a better chance of finding a job and happier employed people ran a lower risk of losing their jobs. The correlations, although significant, were rather low. The findings of Brännholm et al. (51) concerning levels of life satisfaction in vocational rehabilitees are described above. Fugl-Meyer et al. (52) concluded that successful vocational rehabilitation resulted in increases in satisfaction with life as a whole, with vocational situation, with financial situation, and with leisure and ADL.

Martella and Maass (66) studied fairly young unemployed persons from the south and north of Italy. The unemployed reported lower overall life satisfaction than students and working people. In a study of accountants, Efraty et al. (67) found that job satisfaction was important for life satisfaction, and Steiner and Truxillo (68) obtained support for the “disaggregating” hypothesis; that there is a particularly strong relationship between job satisfaction and general life satisfaction among those who attach a high value to work in their lives. In a study of police officers, Hart (69) concluded that overall life satisfaction was predicted more by the non-work domains than by the work domain, although work was not unimportant.

**On predictors of vocational rehabilitation outcome**

Studies on prediction of the outcome in somatically disabled persons have been focused to a great extent on those with chronic locomotor pain. Nearly 20 years ago about one-third of all patients participating in rehabilitation programmes in
Gothenburg, Sweden, returned to work after interventions (70). Subjective belief in return to work among patients with low back pain was a significant discriminator of being classified as working or sick-listed at a 1-year follow-up, while no observation at a physical examination predicted the outcome. The main predictive factors were almost invariably psychological or socio-demographic (70, 71).

Eklund et al. (72) found that among a set of significant classificators (discriminant analysis), the main factors for a successful outcome of vocational rehabilitation in a general vocational rehabilitation clientele seen at the County Vocational Rehabilitation Service in a northern Swedish district (only to a minor extent, 22 %, EI clientele) were: experienced relatively good health, high belief in vocational return and lower age. Other, but less pronounced predictors were: relatively high income prior to vocational disability, relatively high educational level, “employment status”, relatively high vocational motivation, stimulation, and satisfaction with prior vocation.

In Uppsala, Sweden, Ljungkvist (73) reported that of 153 individuals with chronic spinal pain who completed an intensive functional restoration programme, 69 % were working at the 2-year follow-up. Predictors (discriminant analysis) for return to work, in both men and women, were time since original pain onset and achieved lifting capacity, and in addition in the men, the work situation prior to disability, and oxygen uptake.

Höög and Stattin (74) analysed background factors for Swedish disability pensions. By logistic regression it was found that being an unskilled worker in industry, being a first-generation immigrants born in Eastern Europe, having no occupation, being divorced or unmarried with no children, having a low educational level and being a woman, all implied a high relative risk for disability pension.

In an urban Swedish area (Stockholm), Selander et al. (75) found that unemployed people, especially men, were heavily over-represented among sick-listed persons in a study of a sample of more than 3,000 individuals on long-term
sick-leave. In that study, the number of sick-days for both employed and unemployed people was significantly lower after vocational rehabilitation than before. Unemployed women appeared to be particularly difficult to rehabilitate for return to work. A relatively low age, high income, and few days on sick-leave prior to vocational rehabilitation were associated with a positive outcome for employed people. For the employed men, education was a positive measure. Among the unemployed people, age (women only) and days on sick-leave before vocational rehabilitation (men only) were associated with rehabilitation outcome (76, 77).

From a study of sick-listed persons in a rural area, Marnetoft et al. (78, 79) again reported that women, unemployed and old people had fewer chances of succeeding in their vocational rehabilitation. An early start of the rehabilitation programme and to be only partly sick-listed was associated with a positive outcome. Education was the most effective vocational rehabilitation measure and a multidisciplinary vocational rehabilitation programme with work training and case management was more effective than “conventional rehabilitation” in lowering levels of benefit use for unemployed and sick-listed people.

In the early 1990s Eklund et al. (72) from northern Sweden and Härkäpää et al. (80, 81) from Finland reported that psycho-social variables were closely associated with the outcome (return to work) of patients with low back pain, while objective physical and bio-mechanical factors were generally less important. The results of these northern Nordic studies appear to be in essential agreement with those of relatively large-scale investigations in Great Britain (82) and in the USA (83). In a literature survey of studies related to the prediction of outcome of vocational rehabilitation Riipinen et al. (84) found that factors important for a positive outcome in severely disabled subjects were good motivation, a realistic rehabilitation plan prepared early in the rehabilitation process, a positive attitude of the subject himself towards his disability, and good social integration. Using the multidimensional pain inventory (MPI-S), Bergström et al. (85) classified a group of spinal pain patients as dysfunctional,
interpersonally distressed or adaptive copers and found that the persons in the dysfunctional subgroup were more often absent from work and reported higher utilization of health care than the adaptive copers.

**On coping and sense of coherence**

According to Lazarus’s classical treatise (86), stress refers to any event in which environmental demands, internal demands (or both) *tax or exceed* the adaptive resources of an individual. In part, all illnesses can be regarded as stress-associated as can unemployment. Coping refers to an individual’s effort to master such demands (for refs see 87). It is therefore not surprising that there is increasing interest in studying the way in which humans respond to stress, i.e. the extent to which their coping strategies serve adequate adaptation. In view of the heavy impact of psychological and social factors on vocational return in people with a somatic disability (cf. above), it appears particularly interesting to analyse the background of the coping capacity in the vocational rehabilitation clientele.

It might be appropriate to here mention that Fugl-Meyer et al. (43) suggested that the ultimate goal of the rehabilitation process is to mobilise the (coping) resources of individuals with impairment(s) so that by having realistic goals, they may achieve optimal life satisfaction. According to Sjögren (88), the strategies used in the coping process include defence mechanisms which are or may be appropriate for reaching or maintaining a well-balanced physical and psychological integrity. Moreover, van Dijk (89) in his in depth conceptual analysis suggested that rehabilitation medicine may best be regarded as an intra-individual adaptation process, where adaptation is associated with equilibrium. He conceived rehabilitation as both intra-individual and as assistance towards that process.

The medical sociologist Aaron Antonovsky, in a study of women in Israel, observed that 29 % of survivors from Second World War concentration camps reported themselves to be in quite good overall emotional health, compared to 51 % of a control group. Then, instead of focusing on the significant difference
between these two groups, he asked why as many as 29% of the survivors reported reasonable mental health. This led to the development of the salutogenic health model in contrast to the pathogenic model (90, 91). From this salutogenic point of view the sense of coherence (SOC) concept was developed. Antonovsky analysed data from in-depth interviews of subjects who were functioning remarkably well after severe physical or psychological trauma. Three dimensions of SOC emerged, which he named comprehensibility, manageability and meaningfulness. On the basis of these three dimensions, sense of coherence was defined as: “a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (a) the stimuli deriving from one’s internal and external environments in the course of living are structured, predictable, and explicable; (b) the resources are available to one to meet the demands posed by these stimuli; and (c) these demands are challenges, worthy of investment and engagement”. Moreover, based on the interviews, the SOC instrument was developed (91). This consists of 29 items (SOC-29) rated on a 7-point scale with two anchoring phrases. A shorter version (SOC-13) includes 13 of the 29 items (see Appendix A).

SOC is meant to measure the resources for individual coping. A high SOC score indicates likelihood of successful coping with stressors, while a low score is generally associated with relatively poor coping abilities (for refs. see 92). Nurse educators in Finland with high SOC scores had fewer feelings of negative stress and symptoms of disease (93) and in a study of nephrology nurses in the USA both personal and work-related stress was found to be negatively correlated with SOC (94).

There are several reports on a positive correlation between sense of coherence and life satisfaction. Bränholm et al. (95), using the LiSat-9 in a study of Swedish occupational therapy students, found that SOC-29 scores were positively and significantly associated with levels of satisfaction with life as a whole and the domains sexual life, partner relationship, family life and contacts with friends and acquaintances. SOC-13 scores in Norwegian patients with severe multiple
trauma (50) were significantly related to satisfaction with life as a whole and with the domains sexual life, partner relationship, family life, leisure, contacts with friends and acquaintances and the vocational situation, and Suominen (96) from an investigation in Finland, concluded that sense of coherence had a close positive correlation to life satisfaction.

Against this background some specific objectives of the studies were:

- to provide reference values for life satisfaction in the Swedish population at the vocationally active ages 18 to 64 years (I).

- to determine whether generalizable conglomerations among ten domain-specific life satisfaction items could be identified and to explore the capability of the LiSat-11 items to predict gross levels of life satisfaction (I).

- to relate levels of life satisfaction to some bio-psycho-social descriptors and to analyse the likelihood that gross levels of satisfaction with life as a whole and with the 10 domains could be determined by these variables (I, II).

- to determine whether the outcome of vocational rehabilitation at an employability institute could be predicted by some bio-psycho-social descriptors (III).

- to determine the levels of life satisfaction of vocational rehabilitees on admission to the employability institute and two years later and to relate their levels of life satisfaction to the outcome of the vocational rehabilitation, to prerequisites for coping (sense of coherence), to gender and to being a first-generation immigrant or a native Swede (IV).
SUBJECTS AND METHODS

The nationally representative sample (studies I and II)
A survey of sexual life in Sweden was performed in 1996, initiated and financed by the Swedish National Institute of Public Health. For that investigation a random sample of 5,250 women and men aged 18-74 years (Fig. 4) was drawn from the Swedish Central Population Register. They were first approached through an informative letter, pointing out that participation was voluntary and guaranteeing their anonymity in all computations. Subsequently they were contacted by telephone to ask them if they would agree to participate and to make an appointment for an interview. In no case was more than one person per household included.

After exclusion of persons who were not living in Sweden, not able to communicate in Swedish (159 subjects), unattainable (approximately 100) or not considered able to participate in the investigation on account of loss of vision or hearing or mental impairment, 4,781 persons remained. Of these persons 1,971 did not participate, for the following reasons: The theme \( n=630 \), lack of time \( n=241 \), principles \( n=569 \), other reasons \( n=531 \). A time and place for meeting each of the remaining 2,810 subjects was agreed upon. Among these persons 2,533 (1,207 women and 1,326 men) were within the target age (18-64 years) of the present investigation.

The methods used for data collection and the epidemiological validity of the sample have been described in detail elsewhere (97). Briefly, data were collected by use of strictly structured questionnaires and checklists in combination with structured face-to-face interviews conducted by specially trained professional interviewers.
The drop-out rate of 41% in the sample aged 18-74 years led to post-hoc analyses, which showed that the sample was acceptably valid epidemiologically with one exception, namely that older people appeared somewhat under-represented (97, pp. 35-55). As we excluded subjects aged 65-74 years, the final sample used (18-64 years old) can be assumed to have better representativity concerning age than the sample aged 18-74 years.

Among the approximately 800 variables included in the original study of sexual life in Sweden (97) we focused in (I) and (II) on LiSat-11 (see Background) and on life satisfaction in relation to some bio-psycho-social descriptors given in Table 1 and to age and gender. The proportion of immigrants, 8%, was lower than the about 13% expected. This can probably be explained to a considerable extent by the fact that 159 subjects were excluded for the reason that they were unable to communicate well enough to be interviewed in Swedish.
Table I. Distribution of 1,207 Swedish women and 1,326 Swedish men according to some pertinent subcategories of socio-demographic and health/physical activity items. If significant gender differences were found ($\chi^2$ statistics, $p<0.01$) the proportions of both women and men are given.

<table>
<thead>
<tr>
<th></th>
<th>women/men</th>
<th>First-generation immigrant</th>
<th>women/men</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady partner</td>
<td>81/76</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- university education</td>
<td>30/22</td>
<td>-active (including students)</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>- upper secondary school</td>
<td>51/57</td>
<td>-unemployed</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>- comprehensive school</td>
<td>19/21</td>
<td>-sickness benefit#</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Perceived financial situation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- better than most people’s</td>
<td>36/42</td>
<td>-reduced performance</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>- similar to most people’s</td>
<td>53/43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- worse than most</td>
<td>11/15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- good</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- in between</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- poor</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- active in sports/exercise</td>
<td></td>
<td></td>
<td>69</td>
<td></td>
</tr>
</tbody>
</table>

# 2 % of the women and 1 % of the men were on the sick-list, while 4 % and 3 %, respectively, had a disability pension

The vocational rehabilitees (studies III and IV)

This prospective investigation was carried out at a general employability institute (EI), which mainly supported vocationally disabled subjects in Uppsala, a university and administrative city, situated about 70 kilometres north of Stockholm. At the time of the investigation, the municipality of Uppsala had approximately 185,000 inhabitants. The staff at the EI included employment consultants, psychologists, a physiotherapist, occupational therapists, and a consultant physician. Basic services were vocational counselling and vocational decision courses aiming to define the rehabilitees’ wishes about future jobs and
to provide information about what was needed to manage such jobs. A major reason for referral to the EI was inability to continue in the former employment situation and that there was uncertainty about which job the job-seeker could manage. Means of vocational rehabilitation were aptitude testing, psychological/social support and practical work testing. The EI could perform work capacity testing through special work places established at the EI or at employers who were willing to receive the job-seeker. The EI only to a very limited extent provided medical services and physical rehabilitation. Varying degrees of wage subsidies and possible adaptations of the future work environment were available. Recommendations for different courses were possible interventions. Severely vocationally disabled could be referred to sheltered work.

The study sample consisted of all subjects who during the period October 1995 to December 1996 started their vocational rehabilitation at the Employability Institute in Uppsala, Sweden and were accepted by the team working with people who were vocationally disabled due to somatic impairment. Moreover, only subjects who were able to master the Swedish language sufficiently well to fill in questionnaires/checklists were included. Fig. 5 shows data for the target group, drop-outs and participants. Those who agreed to participate met the consulting physician individually and filled in questionnaires, and a structured interview was conducted by the same investigator (RM).

Of a total of 149 eligible individuals (84 women and 65 men) in the target group, 109 persons (73 %) with a gender-independent median (and mean) age of 38 years (range 21-58) agreed to participate on both occasions of the investigation. There were no significant differences between the respondents and non-respondents concerning age, gender or being/not being a first-generation immigrant. Thirty-eight per cent of the respondents were first-generation immigrants (defined as those born abroad). This is considerably higher than the 13 % of subjects 18-64 years old living in Sweden in 1996, but born abroad. On admission to the EI, 44 respondents were receiving sickness benefit, 13 social
benefit and 51 unemployment compensation. A follow-up was conducted 24 to 25 months later as a telephone interview conducted by the author (RM).

![Diagram](attachment:image.png)

**Figure 5.** Data for the target group of 149 somatically disabled job-seekers admitted to the Employability Institute, and for the drop-outs and participants. I=immigrants.

At that time, the respondents reported their current vocational situation and life satisfaction and they were also asked to fill in and return a LiSat-11 checklist that was sent to them the same day by mail. Altogether, 96 persons returned the checklist, 90 within 28 days.

In (III) we, among the approximately 100 initial items, chose to study the relationship of the following items to vocational outcome: *Socio-demographic items;* age, gender, education (comprehensive school, upper secondary school and university education), immigrant status (immigrant or native Swede) and whether the subjects were on sickness benefit/employment compensation/social
benefit on admission; symptoms (19 items, appendix B) and socio-psychological items. The latter included two items, perceived good health and belief in vocational return adopted from Eklund et al. (72) and belief in ability to work part-or full-time, and the importance, except as source of income, attached to work. For details of scaling, see Appendix C. The SOC instrument of Antonovsky (29 items, seven-graded scales) (91), was included. In a literature survey Antonovsky (92) reported that the SOC instrument has good internal consistency and an acceptable test-retest correlation and that the instrument has good content and construct validity. SOC was by Antonovsky considered to be stable from around the age of 30, but a change over time has been reported (98, 99). The instrument has been validated for Sweden (100) and is fairly widely used in Sweden; Larsson and Kallenberg (101) found a high correlation between SOC and health indicators, in particular psychological well-being. Some objections have been raised against the SOC assessment (cf. 102). Geyer, (103) pointed out the high negative correlation between SOC and depression/anxiety. The abbreviated version of 13 items (SOC-13, Appendix A) was used in the computations. One reason was that SOC-13 values were available from a large Swedish reference sample (104). This reduction of items has been found valid (105). In the present sample there was a close correlation (Spearman’s rs 0.89, p<0.001) between SOC-29 and SOC-13, (cf. Fig 6).

In (IV) the focus was on life satisfaction (LiSat-11) on admission and at follow-up in relation to the outcome; the same sample as in (III). Further, SOC-13 on admission was related to Li-Sat-11 on admission, and the LiSat-11 responses at the telephone interview were correlated to answers in the mailed LiSat-11 questionnaire. The responsiveness of the Li-Sat-11 items satisfaction with vocation and satisfaction with economy was studied.
Ethics: The study was approved by the Swedish Council for Research in the Humanities and Social Sciences (1995) (I, II) and by the Ethical Committee at Uppsala University (1995) (III, IV).

Statistics
In all statistical analyses, the SPSS™ statistical program was used; the MacIntosh versions 6.1 and 10.0 (I), version 10.0 (II) and 11.0 for pc (III, IV).

Univariate analyses: For simple cross-tabulations the \( \chi^2 \) or Fisher’s exact test was performed as appropriate. The unpaired t test was used for comparing means. Generally, when simpler comparisons included a scale with four grades or more, a ranking analysis, i.e. the Mann-Whitney or Kruskal-Wallis test (differences) (I, II) or Spearman’s \( r_s \) (associations) (I, III, IV) was applied. Wilcoxon’s signed rank test was used to analyse changes in LiSat-11 over time (IV).

Multivariate analyses: To find out if interpretable patterns of the LiSat-11 domains items existed, factor analyses with orthogonal design, Varimax rotation...
and four-factor option were performed (I). The cut-off limit for an item to be regarded as a significant contributor to a factor was a rotated loading of at least 0.50.

Logistic (stepwise, backward) regression analysis was used to obtain an impression of the impact (odds ratios) of gross levels of domain scores on gross levels of life as a whole (I). Scores were dichotomized into 1-4 versus 5-6. Corresponding logistic regressions were performed to elucidate the extent to which socio-demographic, health and physical parameters could predict gross levels of life satisfaction (II).

In logistic regressions performed in (III), the dependent variable (outcome) was dichotomized into subjects working or employable at follow-up versus those on sickness benefit/disability pension or those who had not finished their vocational rehabilitation after two years. Educational level was dichotomized into persons who had compulsory school education, (generally nine years) versus upper secondary school of a further three years or university studies as the highest educational level. Age was dichotomized over the median. Perceived good health was dichotomized into very often-always/often/rather often versus very rarely/rarely/rather rarely, belief in vocational return into very likely/likely/rather likely versus very unlikely/unlikely/rather unlikely, belief in ability to work full- or part-time into belief in ability to work less than-half time versus half-time or more, and importance attached to having a job into very great/great versus none/hardly any/some. Finally, SOC-13 was dichotomized over the median.

Because of the relatively small sample size in (III), a series of three logistic regression analyses was performed: first separately for the socio-demographic variables (gender, age, educational level, being an immigrant or not, and receiving sickness benefit/social benefit/unemployment compensation on admission), for the items in Appendix B (symptoms), and for the socio-psychological (dichotomized) variables. The limit for entry/removal was set here to p<0.15 to avoid loss of possibly significant variables in the final calculation. Secondly, the variables contributing significantly to any of the three initial
equations were included in a logistic regression analysis in which the limit for entry/removal was set to p<0.05. To correct for possibly confounding effects of the demographic variables immigrant status, age (dichotomized) and gender, these variables were entered in a subsequent logistic regression analysis together with the three significant predictors.

From the nationally representative sample of 2,533 persons in studies I and II (106, 107), all subjects aged 21 to 58 years (median 38, mean 39) reporting good health and who were vocationally active (n=1,615; 768 women, 847 men; 98 immigrants and 1,517 native Swedes) were selected as references (IV). Kazis effect size (108, 109) KES=Mean change of rehabilitation group/standard deviation of first score in the same group, was used for analysis of responsiveness. (A value of 0.8 or more means high responsiveness and a value of 0.5 moderate responsiveness).

Chosen levels of significance: In (I) and (II) the sample was relatively large. Hence, small (and clinically irrelevant) differences could be statistically significant. We therefore chose the limit p<0.010. In (II), as multiple tests were performed, in order to minimize type 1 false significances we, when judged relevant, performed Bonferroni corrections (sequentially rejective tests), which are also called the Bonferroni-Holm procedure (110). The Bonferroni corrections were used, even though we do not consider them ideal for LiSat-11 analysis. We used the version described by Gordi & Khamis (111), in which they recommend that the corrections be performed separately for logical groups of items with a suggested number of items of up to five (cf. also 112). However we chose to extended the group to all 11 LiSat-11 items. This meant a rather low p value (as low as 0.001) for statistical significance in (II); but we hereby increased the risk of type 2 errors. The optimal balance between type 1 and type 2 errors is always difficult to find.

In (III) and (IV) the chosen level of significance was p<0.050
MAIN RESULTS, STUDIES I AND II

The LiSat-11: A major finding of this investigation was that irrespectively of gender, 70 % of the representative sample were satisfied or very satisfied (grade 5-6) with life as a whole and the proportion satisfied or very satisfied with the domains varied from 39 % (economy) to 95 % (ADL). All LiSat-11 items were significantly correlated (p<0.001), although the Spearman’s ($r_s$) coefficients varied from a low value of 0.09 to 0.67 (I).

Factor analysis (full scale) of the domains showed that in both men and women they formed a four-factor pattern explaining 70 % of the variance. In further factor analyses two different dichotomies, grades 5-6 versus 1-4 and grades 4-6 versus 1-3 and a trichotomy, grades 5-6 versus 4 versus 1-3 were used. In these analyses identical factors emerged, explaining 63-70 % of the variance. The four factors were labelled as shown below, and given within brackets for each domain is the proportion of subjects who reported grade 5 or 6, i.e. were satisfied or very satisfied:

**Closeness:** Satisfaction with sexual life (56 %), partner relationship (82 %) and family life (81 %).

**Health:** Satisfaction with ADL (95 %), somatic health (77 %) and psychological health (81 %).

**Spare time:** Satisfaction with leisure (57 %) and contacts with friends and acquaintances (65 %).

**Provision:** Satisfaction with vocational situation (54 %) and economy (39 %).

A logistic regression analysis was performed in which gross levels (dichotomies into 5-6 vs 1-4) of all ten domain-specific life satisfaction items were entered as independent variables and gross level of satisfaction with life a whole was the dependent variable. Odds ratios (ORs) for significant contributors were, in order of magnitude:
-Satisfaction with psychological health 3.9  
-partner relationship 3.1  
-vocational situation 2.8  
-leisure 2.7  
-family life 2.3  
-economy 1.7  
-sexual life 1.7

Thus, all closeness and provision items, but only one of the spare time (leisure) and health (psychological health) items were sizeable predictors of the overall gross level of life satisfaction. In order to give the reader a visual impression of reported levels of satisfaction, results are mostly presented graphically. Figures 7 to 13 show for different socio-demographic and health items, the proportions (%) of subjects who reported that they were satisfied or very satisfied (grades 5 or 6 on the LiSat-11 checklist). Significant differences, Bonferroni corrected, from full-scale univariate analyses in levels of life satisfaction between the sub-groups of the variables are indicated in the same figures (*), in which we thus have results both from dichotomy and full-scale use. Only those with a steady partner were included in calculations of satisfaction with partner relation. Odds ratios (OR) are given in the text only if significant (p<0.01).

**Age:** Increasing age was found to be positively associated with satisfaction with family life and with the two provision domains (and in women, with leisure). In men, increasing age was negatively correlated with satisfaction with personal ADL and somatic health. Age above median was a positive predictor of satisfaction with the two provision items (vocation, OR: 1.7; economy, OR: 2.4), with family life (OR: 1.4) and with leisure (OR: 1.4).

**Gender:** The only gender differences, both in favour of the women, were found for satisfaction with contacts with friends and acquaintances and with ADL (Fig. 7). Being a woman was a positive predictor (odds ratio) of satisfaction with
contacts with friends and acquaintances (OR: 1.6) and with ADL (OR: 2.4), but a negative predictor (OR: 0.70) of satisfaction with psychological health.

Figure 7. Proportions of persons who were satisfied or very satisfied (grade 5 or 6), in relation to gender. *Denotes p<0.01 (full scale).

Partner status: Having a steady partner was univariately positively associated with all LiSat-11 items except contacts with friends and acquaintances (Fig. 8).

Figure 8. Proportions of persons who were satisfied or very satisfied (grade 5 or 6), in relation to partner status. *Denotes p<0.01, (full scale).
Those who had a steady partner were likely to have higher gross levels of satisfaction with life as a whole (OR: 2.5) and in particular with sexual life (OR: 6.7), with family life (OR: 2.6) and with psychological health (OR: 1.7).

**Immigrant status:** The native Swedes were more satisfied than immigrants with life as a whole and all domains except two of the closeness items (Fig. 9). Being brought up in Sweden was a positive predictor of gross levels of satisfaction with most LiSat-11 items (ORs between 1.7 and 4.1); the three exceptions were satisfaction with sexual life, with somatic health and with the vocational situation.

![Figure 9. Proportions of persons who were satisfied or very satisfied (grade 5 or 6), in relation to immigrant status. *Denotes p<0.01(full scale).]

**Employment situation:** Vocationally active subjects had higher levels of satisfaction with life as a whole, psychological health and the provision domains than had unemployed subjects. Compared to subjects receiving sickness benefit/disability pension, the vocationally active had higher levels of satisfaction with life as a whole, sexual life, the health items and vocation. Subjects on sickness benefit/disability pension had higher levels of satisfaction with the provision items than the unemployed and lower levels of satisfaction with somatic health. Being vocationally active compared to being unemployed, was a positive predictor of satisfaction with the vocational situation in particular (OR:
9.8), and also with economy (OR: 2.1) and with life as a whole (OR: 1.8). Further, being on sickness benefit/disability pension, compared to being unemployed, was a positive predictor (OR: 5.7) of satisfaction with the vocational situation.

**Educational level:** University education was positively associated with levels of satisfaction with ADL, somatic health and the provision domains, but negatively so with contacts with friends and acquaintances (Fig. 10). University education was a positive predictor of satisfaction with the two provision items (OR: 1.3-1.4) and with ADL (OR: 2.1), but a negative predictor of satisfaction with sexual life (OR: 0.72), family life (OR: 0.71) and with the two spare time domains (OR: 0.65-0.70).

![Diagram](image)

*Figure 10. Proportions of persons who were satisfied or very satisfied (grade 5 or 6), in relation to educational level. *Denotes p<0.01 (full scale).

**Perceived financial situation:** Subjects who perceived their financial situation as worse than most people’s had lower levels of satisfaction with life as a whole and with all domains except for ADL compared to those who perceived it as better than or similar to most people’s (Fig.11). Perceiving one’s financial situation as better than or similar to that of most people was a positive predictor of satisfaction with life as a whole (OR: 1.9), the
two provision domains (vocation OR: 1.5; economy OR: 22.7), partner relationship (OR: 1.8), psychological health (OR: 2.0) and with leisure (OR: 1.9).

Perceived health: Subjects with good perceived health had higher levels of satisfaction with life as a whole and with all the domains (Fig. 12), and good health was a positive predictor of satisfaction with life as a whole (OR: 3.0) and with all LiSat-11 items except for partner relationship, particularly, as expected, concerning satisfaction with somatic health (OR: 18.1).

Figure 11. Proportions of persons who were satisfied or very satisfied (grade 5 or 6), in relation to perceived financial situation. *Denotes p<0.01 (full scale).

Figure 12. Proportions of persons who were satisfied or very satisfied (grade 5 or 6,) in relation to perceived health. *Denotes p<0.01 (full scale).
Subjective performance ability: Subjects who perceived themselves to be disabled to some extent had lower levels of satisfaction with life as a whole and with the three health domains (Fig. 13). Not perceiving reduced performance ability was a positive predictor of satisfaction with somatic health (OR: 3.2) and a negative predictor of satisfaction with contacts with friends and acquaintances (OR: 0.55).

![Figure 13. Proportions of persons who were satisfied or very satisfied (grade 5 or 6), in relation to performance ability. *Denotes p<0.01 (full scale).](image)

Level of physical activity: Univariately, those subjects who were active in sports/exercise reported, compared to inactive subjects, higher levels of satisfaction with life as a whole. This was also true for the health and spare time items and for satisfaction with economy. Being active in sports/exercise predicted higher levels of satisfaction with the two spare time items (OR: 1.4-1.9) and with somatic health (OR: 1.5).
MAIN RESULTS, STUDIES III AND IV.

Socio-demographics: Comprehensive school as the highest educational level was reported by 41 % of the subjects and 59 % had completed upper secondary school or had higher education. On admission 47 % were receiving unemployment compensation, 40 % were on sickness benefit and 12 % were on social benefit.

Symptoms: The vast majority of the vocational rehabilitees (100 subjects, 92 %) had long-lasting pain and a majority reported symptoms from different parts of the locomotor system. Sleep disorders were also common.

Socio-psychological aspects: Twenty-six per cent of the subjects perceived good health at least rather often, 76 % believed that vocational return was at least rather likely, 91 % believed that they (if they were able to work) could work half-time or more and 79 % attached great or very great importance to having a job.

The mean SOC-13 value for the vocational rehabilitees was 57.2 (SD 12.6) (median 56) which was significantly lower than the value of 65.3 (SD 10.6) reported for a Swedish reference sample by Larsson and Kallenberg (104). Immigrants in the studied sample had significantly lower SOC-13 scores than the native Swedes (p<0.01), while there was no gender difference in SOC scores.

Figure 14. Outcome categories of 109 vocational rehabilitees.
**Outcome after two years:** Two main outcome categories (positive and negative) were distinguished. These were sub-classified as shown in Figure 14.

The series of logistic regressions (see statistics) yielded three significant outcome predictors (Table II) with an overall correct classification of 71 %, (negative outcome 75 %, positive outcome 64 %).

Table II: Odds ratios (OR), p values and confidence intervals (CI) for a positive outcome of the vocational rehabilitation in 109 subjects.

<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>p&lt;</th>
<th>95 % CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relatively high belief in vocational return</td>
<td>4.6</td>
<td>0.013</td>
<td>1.4-15.4</td>
</tr>
<tr>
<td>Relatively high sense of coherence</td>
<td>3.5</td>
<td>0.004</td>
<td>1.5-8.4</td>
</tr>
<tr>
<td>Relatively high educational level</td>
<td>2.6</td>
<td>0.037</td>
<td>1.1-6.3</td>
</tr>
</tbody>
</table>

On admission the life satisfaction levels of the vocational rehабilitees were generally low as compared with those of the reference subjects concerning life as a whole, all health and provision domains and leisure. SOC was significantly and positively correlated with satisfaction with life as a whole, with all closeness items, with the two spare time items and with somatic and psychological health (p<0.01).

At follow-up the native Swedes with a positive outcome had “normalized" their satisfaction levels concerning life as a whole, ADL and vocation. Hardly any positive changes occurred for those with a negative outcome. No gender differences in life satisfaction were found among the rehабilitees either on admission or at follow-up. Moreover, among all the LiSat-11 items, only satisfaction with the vocational situation showed an adequate responsivity in relation to outcome.

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GENERAL DISCUSSION

One major aim of this study was to apply the LiSat-11 instrument to determine overall and domain-specific levels of life satisfaction in a nationally representative sample of subjects at their vocationally active age and thus, to provide reference values for its (potential) users. The finding that 70% of the subjects were satisfied or very satisfied with life as a whole is in good conformity with the reports by Campbell et al. (7) from the USA, by Glatzer (113) from (West) Germany and, using the LiSat-9, by Fugl-Meyer et al. (52) from northern Sweden. Four gender-independent domain-specific factors interpretable as denoting Closeness, Health, Spare time and Provision were found. Three of these resemble those identified using the LiSat-9 (52) in a small unselected northern Swedish sample. The construct of the four factors found in the present investigation appears to be not only very stable and independent of different types of scale reductions, but also pragmatically sound. In Sweden it seems that major contributors to satisfaction with life as a whole, but not necessarily causal ones, are satisfaction with intimate interpersonal relationships (closeness items) and with the provider role, but also satisfaction with psychological health and with leisure. These findings confirm those of several authors who have demonstrated that the Closeness items, either separately or in combination, are closely related to overall life satisfaction (cf. Background). Other authors (68, 114) have shown close co-variations between vocational satisfaction and satisfaction with life as a whole.

It has been described that higher levels of satisfaction can be expected to be reported at a personal interview than in anonymous questionnaires (19). In our prospectively studied sample of vocational rehabilitees (IV), however, there was reasonable congruence at follow up, within an interval of four weeks, between the satisfaction levels reported in different ways; a finding that may also support the relative short-time validity of the LiSat-11 questionnaire. In this context, it is
worth recalling the statement by Tatarkiewicz (13) that satisfaction with life as a whole, if of reasonable duration, equals happiness. Moreover, good responsiveness was found, especially for the vocational situation, among those in the positive outcome group who were actually working.

In the nationally representative sample, levels of satisfaction with life as a whole and with the 10 LiSat-11 domains were significantly correlated with different bio-psycho-social descriptors in the univariate analysis. The discussion below, however, will mainly address the likelihood that in logistic regression analyses gross levels of satisfaction with life as a whole and with the 10 domains will be determined by these descriptors. The bio-psycho-social descriptors will be discussed in order of the numbers of LiSat-11 items on which they have a significant predictive effect:

Perceived health appears to have the most pervasive effect on the different aspects of life satisfaction, influencing life as a whole and 9 of the 10 LiSat-11 items (the only exception being satisfaction with a partner relationship). The finding that perceiving oneself to be in good health is a sizeable predictor of satisfaction with life as a whole is a verification of previous observations (19, 60). It is a truism that being in bad health is a negative predictor of satisfaction with health. Not being in good health may reasonably imply restrictions in ADL and leisure activities, and problems at work and with one’s economy, and not being in good health may also lead to a high level of sexual dysfunction which, if accompanied by distress, will result in a low level of sexual satisfaction (115).

The finding that being a first-generation immigrant is a negative predictor of being satisfied with life as a whole and with 7 of the 10 domains has many different explanations. One hypothetical reason can be that the satisfaction levels of recent immigrants are near to those in the country of origin and the levels of satisfaction in Sweden are close to the highest in the world (55). This is, however, contradicted by findings of Veenhoven (63). Another, probably more
likely explanation is that many immigrants may have been forced to leave their
country of origin for political reasons, and may have been psychologically (and
physically) traumatized. Moreover, the low levels of satisfaction may simply be a
sign of poor integration in Sweden.

A high educational level is a positive predictor of satisfaction with instrumental
aspects of life (vocation, economy and ADL), but is a negative predictor of
satisfaction with the emotional type of domains (family life, sexual life, contacts
with friends and acquaintances) and leisure. Thus it influences 7 of the 10
domains but not life as a whole. This can probably be explained by a more
performance-related orientation among those with a higher educational level,
who invest much time and engagement in their provider role at the cost of
interpersonal communication outside the job sphere.

The perceived financial situation influences the degree of satisfaction with life as
a whole and with 5 of the domains. It is not surprising that perceiving one’s
financial situation as worse than that of most people is a strong negative predictor
of satisfaction with the economy, and the finding that those in a bad economic
situation are less likely to be satisfied with life as a whole confirms reports from
a large-scale European survey (33). That persons perceiving their financial
situation as being poor are at disadvantage concerning the likelihood of being
satisfied with their psychological health, leisure and partner relationship might be
an indication that poor economy is a burden on the relationship and
psychologically trying, and also reduces the possibilities of carrying out
rewarding leisure activities.

Partner status influences life as a whole and 3 (of the 9 relevant) domains. We
have used the dichotomy having/not having a steady partner, whereas most
reports in the literature on life satisfaction usually operate in terms of subjects
being married/unmarried. In reasonable agreement with the present finding,
mixed people have been found to be more satisfied with life as a whole and
with close relations (58, 60).
Age influences 4 of the 10 domains but not life as a whole. In agreement with other reports (33, 61), we found that age is not a significant predictor of satisfaction with life as a whole for people in the age span 18-64 years. A more stable situation concerning family life and the provider role with increasing age appears to be a reasonable explanation for the fact that higher age is a relatively sizeable predictor of levels of satisfaction with the provision items and, in accordance with Butt and Beiser (116) with family life. Concerning economy and leisure, the result may be explained by an increase in income with age, in combination with grown-up offspring, needing less financial support and allowing more possibilities for leisure activities.

In Sweden, unemployment (influencing life as a whole and 2 of the domains) is a negative predictor of satisfaction with life as a whole, a finding in agreement with a review of Argyle (60). This finding has long been known (see for instance 19, 33). That unemployment is a negative predictor of satisfaction with the provision domains is in accordance with the report by Brännholm et al. (51) that those persons who were successfully rehabilitated vocationally had increased their initially low levels of satisfaction with their vocation and economy to the levels of a reference sample. These findings are also in general accordance with our results in the vocational rehabilitees (IV).

In this context it is relevant to point out the low levels of SOC in our vocational rehabilitees on admission, especially among the immigrants. Close correlations were on admittance found between the relatively low SOC levels and satisfaction with life as a whole, as well as with many of the domains (provision domains excluded). If we assume that levels of satisfaction with life as a whole and with the different domains reflect levels of life adaptation (i.e. more or less realistic goals) through a more or less adaptive coping capacity, and that SOC, as postulated by Antonovsky (91), is a measure of the available intrapersonal resources for coping, the low satisfaction levels of the vocational rehabilitees (emotion-related items excluded) may be interpreted simply as an indicator that a
considerable number of this clientele are relatively poor copers. Additionally, it should be emphasized that the stress of migration has been reported to have a negative effect on SOC (117).

From a top-down point of view, it can be argued that the vocational rehabilitees, having (as a group) a low SOC, i.e. a trait for a low coping capacity, will have a low level of life satisfaction. On the other hand, from the bottom up perspective it can be pointed out that the vocational rehabilitees, besides being unemployed and having a poor economy, have a somatic disorder. They will therefore experience wide-spread aspiration-achievement gaps, leading to low levels of satisfaction though not afflicting their closeness sphere and only marginally so concerning spare-time. Since in general all life satisfaction domains except those concerning provision were closely associated with SOC-13, it may very cautiously be suggested that goal achievements within the expressive facets of life (closeness and contacts with friends and acquaintances) are only relatively weakly dependent upon coping resources. The small size of the sample, however, precludes further speculations around this particular finding.

In this context a comment on the meaning of work may be appropriate: The meaning of work is a construct which encompasses “the totality of values, including the importance that individuals seek and expect to derive from work” (118). Jahoda (119), described five latent functions (beyond earning a living) accounting for positive work motivation: 1) to structure time, 2) to provide shared experiences and social activities 3) to promote social goals 4) to grant status and identity and 5) to provide regular activity.

The “lottery question” has been used to estimate the non-financial value attached to work. Persons were asked whether they would continue to work if they won a lottery or inherited a large sum of money: Harpaz (120) found that in Israel, almost 90% would continue to work even if there was no longer any financial need. High work centrality (i.e. the degree of general importance that working has in one’s life at any given time) was a strong predictor of continuing to work.
The finding that gender (influencing 3 of 10 domain-specific items but not life as a whole) is not a significant predictor of life as a whole verifies several earlier reports (7, 33). The observation that women had a lower probability of being satisfied with their psychological health is in line with previous epidemiological findings of Rorsman et al. (121) and Kessler et al. (122). Diener et al. (58) discussed the paradox that although depression is more prevalent in women than in men, no gender differences in global happiness are found. They suggested as an explanation, that women may experience both negative and positive emotions more strongly than men, and thus if their lives are good, they are more likely to experience intense levels of happiness, hence on average, no gender difference will appear.

That those active in sports/exercise (influencing 3 of the 10 domains but not life as a whole) are more likely to be satisfied with their somatic health may be explained - somewhat paradoxically - by the fact that at least relatively good health is needed for sports and exercises, but also on the other hand by suggesting that sports/exercises enhance health.

It seems reasonable that persons with a reduced general performance capacity (influencing 2 of 10 domains but not life as a whole) are less likely to be satisfied with their somatic health. Bränholm et al. (45), using LiSat–9, found that patients with stroke, multiple sclerosis or spinal cord injury reported lower satisfaction with life as a whole and with many of the domains compared to a control group.

The set of three predictors of the outcome of vocational rehabilitation (belief in vocational return, SOC-13 and educational level) found here is difficult to discuss in relation to other reports, as reports concerning early prediction of this outcome are fairly sparse. However, in Sweden both Sandström and Esbjörnsson (70) and Eklund et al. (72) have found that the subject’s belief in vocational return is important for the outcome of his vocational rehabilitation, and Grahn et al. (123) concluded that motivation was a predictor of working ability. On the
other hand (cf. Background) the main early predictor of outcome identified by Eklund et al. (72) was perceived health. Consistent with the results in (III) Johansson-Hanse and Engström in a study of effects of closure of a Swedish plant found, two years after the closure, that persons who were re-employed had higher SOC levels than those who were still unemployed (124). They pointed out that their study did not allow for the determination of cause-effect relationships. Our finding in (III) that a relatively high level of education is a significant predictor of the outcome of vocational rehabilitation appears to be in conformity with previous findings (83, 125).

In this predictive context it should be pointed out that the findings in (III) and (IV) need to be interpreted with caution. The investigation was carried out at an employability institute in Uppsala and the results cannot be applied as valid for all other EIs. Moreover, changes in the labour market and in the organization of the vocational rehabilitation at the EIs have to be taken into account. Finally, although outcome predictors may be statistically valid, they should not be used as instruments for exclusion from vocational rehabilitation. In contrast, the present findings suggest that, besides educational level, the rehabilitees’ adaptational resources and attitudes (sense of coherence and belief in vocational return) are parameters that can help vocational rehabilitators to make decisions about individual rehabilitation measures.

**In Summary**

- In this dissertation, population-based Swedish reference values for the social indicator LiSat-11 instrument are established. All of the ten domains, which form a four factor very robust pattern, are significantly associated with overall life satisfaction, but only seven of them are sizeable predictors of satisfaction with life as a whole.
In a complex manner, socio-demographic variables are univariately and multi-statistically (logistic regression) associated with the LiSat-11 items. The two most prominent predictors, in terms of number of LiSat-11 items predicted, are: perceived health and being or not being a first-generation immigrant.

Compared to a population sample (subjects at a reasonably comparable age who perceived themselves in good health and who were vocationally active) low levels of satisfaction with life as a whole, with provision and health LiSat-11-items were found in a selected vocational rehabilitation clientele, while they were as satisfied with expressive (emotion related items) as were the reference subjects. Successful rehabilitation led to “normalization” of the native Swedes’ satisfaction with life as a whole and with their vocation and ADL.

Sense of coherence as reported by the rehabilitees on admission was significantly correlated with satisfaction with life as a whole, with the closeness and spare time items and with their somatic and psychological health. No gender differences in levels of satisfaction with life as a whole or with the domains were found among the rehabilitees.

The outcome of vocational rehabilitation at an employability institute could be predicted by a set of three variables, namely belief in vocational return, sense of coherence and educational level.
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Appendix A

The 13 questions in English version (from SOC-29) used in calculation of SOC-13. (Scores in questions nr 1, 2, 3, 7, and 10 reversed before summation).

Orientation to life Questionnaire

Here is a series of questions relating to various aspects of our lives. Each question has seven possible answers. Please mark the number which expresses your answer, with numbers 1 and 7 being the extreme answers. If the words under 1 are right for you, circle 1; if the words under 7 are right for you, circle 7. If you feel differently, circle the number which best expresses your feeling. Please give only one answer to each question.

1. Do you have the feeling that you don’t really care about what goes on around you?
   
   1               2               3               4               5               6                7
   very seldom or never

2. Has it happened in the past that you were surprised by the behaviour of people whom you thought you know well?
   
   1               2               3               4               5               6                7
   very seldom or never

3. Has it happened that people whom you counted on disappointed you?
   
   1               2               3               4               5               6                7
   never happened always happened

4. Until now your life has had:
   
   1               2               3               4               5               6                7
   no clear goals or purpose at all very clear goals and purpose

5. Do you have the feeling that you’re being treated unfairly?
   
   1               2               3               4               5               6                7
   very often very seldom or never
### Appendix A (continuation)

6. Do you have the feeling that you are in an unfamiliar situation and don’t know what to do?

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<td>very often</td>
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7. Doing the things you do every day is:

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<td>a source of deep pleasure and satisfaction</td>
<td>a source of pain and boredom</td>
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8. Do you have very mixed-up feelings and ideas?

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9. Does it happen that you have feelings inside you would rather not feel?

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10. Many people -even those with a strong character- sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?

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11. When something happened, have you generally found that:

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<td>you overestimated or underestimated its importance</td>
<td>you saw things in the right proportion</td>
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12. How often do you have the feeling that there’s little meaning in the things you do in your daily life?

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13. How often do you have feelings that you’re not sure you can keep under control?

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Appendix B

Questionnaire focusing symptoms, formulated (in the English translation) as follows: Have you during the last 12 months had……..). Mark only symptoms that restricted your work or leisure. (Response alternatives were yes and no).

- Long-lasting pain
- Head and neck symptoms
- Thoracic/lumbar back symptoms
- Shoulder/arm symptoms
- Hip/leg trouble
- Other locomotor symptoms (such as joint symptoms or muscle pain)
- Sleep disorders
- Mental symptoms
- Disease or injury of the nervous system (brain, spinal cord, nerves)
- Other symptoms due to accident(s)
- Eye disease or visual impairment
- Ear disease or hearing impairment
- Pulmonary illness (including asthma)
- Skin disease (including eczema)
- Hypersensitivity/allergic reactions from nose/eyes
- Heart ailment and/or high blood pressure
- Gastro-intestinal/liver/kidney disease
- Diabetes (mellitus)
- Miscellaneous
Appendix C

*Socio-psychological items (in English translation) used in study III*

How often do you, nowadays, feel somatically healthy?
- Never-very rarely - rather often
- rarely - often
- rather rarely - very often-always

Do you honestly believe that you are able to work to some extent in the future?
- Very unlikely - rather likely
- unlikely - likely
- rather unlikely - very likely

If you can work, to which extent?
- Part-time 2 h/day
- part-time 4 h/day
- part-time 6 h/day
- full-time 8 h/day

What importance do you, except as source of income, attach to work?
- None
- hardly any
- some
- great
- very great