

# Predictors and course of vocational status, income, and quality of life in people with severe mental illness: A naturalistic study

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## Abstract

Due to high unemployment rates, people with mental illness are at risk of poverty and are deprived of the social and psychological functions of work, such as the provision of social support, structuring of time, and self-esteem, with a negative effect on their perceived quality of life (QoL). Two distinct processes are held responsible for the low work force participation of people with mental illness: ‘Social underachievement’ and ‘social decline’. Social underachievement signifies that, due to early illness onset, the educational attainment of people with mental illness is low and entry to the labor market fails. Social decline, on the other hand, describes the loss of competitive employment after illness onset, followed by prolonged periods of unemployment and difficulties to re-enter the labor market. This study examines how social underachievement and decline are reflected in the course of vocational status, income, and QoL of people with severe mental illness in the years after a psychiatric admission in a naturalistic longitudinal design. A total of 176 participants diagnosed with schizophrenia or affective disorders were interviewed during an index hospitalization in two large psychiatric hospitals in Zurich. Follow-up interviews were conducted 12 and 30 months after. Random coefficient models (multilevel models) were used to examine simultaneously the predictors and course of the variables of interest. A low number of psychiatric hospitalizations, a higher educational degree, a diagnosis of schizophrenia, and years of work experience predicted a higher vocational status. Vocational status decreased in first-admission participants with prolonged hospitalizations during the follow-up period. Income did not change over time and was positively influenced by a higher age of illness onset, competitive employment, higher education, and not having had a longer hospitalization recently. Subjective QoL significantly improved and was rated higher by people with any kind of employment than by participants without a job. Participants with an affective disorder, those with few hospitalizations but a recent inpatient stay of longer duration, showed lower QoL. Including employment issues early in treatment is especially important for people with an early illness onset and those with more severe forms of psychiatric disorder. A life course perspective enhances the understanding of patients’ vocational potential and needs for support.

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*Keywords:* Switzerland; Mental illness; Employment; Income; Quality of life; Longitudinal studies

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## Introduction

Vocational integration is a major problem for many people with mental illness. Unemployment estimates range up to an excessive 90% and are consistently higher than rates found in the general

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population (Condrau, Müller, Eichenberger, Gossweiler, & Rössler, 2001; Cook & Razzano, 2000; Gureje, Herrman, Harvey, Morgan, & Jablensky, 2002; Harnois & Gabriel, 2000). Being without work and a regular income puts people with mental illness at risk of poverty even if they receive social security benefits (Baron & Salzer, 2002; Bond et al., 2001; Priebe, Warner, Hubschmid, & Eckle, 1998; Rüesch, Graf, Meyer, Rössler, & Hell, 2004). Apart from economic strain, people with mental illness are deprived of the social and psychological functions of work such as the provision of social support, structuring of time, and self-esteem (Tausig, 1999). Furthermore, employment and a satisfactory financial situation are positively related to subjective quality of life (QoL) and psychological well-being (Hoffmann, Kupper, Zbinden, & Hirsbrunner, 2003; Priebe et al., 1998; Rüesch et al., 2004).

Previous work experience, education, and clinical characteristics like number and duration of hospitalizations, symptom severity, age of onset, and negative symptoms, are the most commonly found predictors of vocational status (Aro, Aro, & Keskimäki, 1995; Marwaha & Johnson, 2004; Mowbray, Bybee, Harris, & McCrohan, 1995; Rogers, Anthony, Cohen, & Davies, 1997; Rüesch et al., 2004; Tsang, Lam, Ng, & Leung, 2000; Turnbull, George, Landerman, Swartz, & Blazer, 1990; Wewiorski & Fabian, 2004). Results concerning diagnosis—though inconsistent—show a tendency towards worse vocational outcomes for persons with schizophrenia (Aro et al., 1995; Cook & Razzano, 2000; Wewiorski & Fabian, 2004). However, interpreting the contribution of a singular predictor is hampered by the fact that many of them are confounded such as age of illness onset, diagnosis, and gender (Angermeyer & Kuhn, 1988; Bromet, Dew, & Eaton, 2002; Horwath, Cohen, & Weissman, 2002; Riecher et al., 1995).

Life span perspectives and the consideration of illness course (George, 1999) facilitate the understanding of how these predictors are connected to vocational status and income. Two distinct processes are held responsible for the low workforce participation of people with mental illness and their risk of poverty: ‘Social underachievement’ and ‘social decline’. Social underachievement signifies that due to early illness onset, educational attainment of people with mental illness is low (Jones et al., 1993; Kessler, Foster, Saunders, & Stang, 1995; Turnbull et al., 1990). As a result, entry to the

labor market fails or only low-paid employment with rapid turnover is obtained (Baron & Salzer, 2002; Jones et al., 1993; Reker, Eikermann, & Inhester, 1992). Social decline, on the other hand, describes the loss of competitive employment after illness onset followed by prolonged periods of unemployment and difficulties to re-enter the labor market (Aro et al., 1995; Jones et al., 1993). Losing competitive employment aggravates the financial situation as social security benefits are often close to the margin of subsistence and sheltered work is barely paid (Rüesch et al., 2004). However, studies examining the predictors of vocational status and income within a longitudinal framework (Bond et al., 2001; Mueser et al., 1997; Rogers et al., 1997) usually focus on vocational rehabilitation programs or on selected psychiatric populations such as first episode patients or patients with schizophrenia (Aro et al., 1995; Beiser et al., 1994) and do not consider development over longer periods of time.

While vocational status and income are important objective measures of psycho-social and economic integration, QoL reflects subjective satisfaction with life circumstances. Although subjective QoL is only moderately related to objective measures (Warner, 1999), some studies have found an influence of vocational status and income (Bengtsson-Tops & Hansson, 1999; Hoffmann et al., 2003; Koivumaa-Honkanen et al., 1996; Mueser et al., 1997). QoL, however, has mostly been used as an outcome measure in the evaluation of mental health services, while questions of change and stability during the illness or after a psychiatric hospitalization have rarely been focused on.

The aim of the presented longitudinal study is to examine how social underachievement and decline are reflected in the course and changes of vocational status, income, and QoL of people with mental illness in the years after a psychiatric admission. We focus on age of illness onset as a predictor of social underachievement, and the number and duration of psychiatric hospitalizations as predictors of social decline. Control variables are gender, education, years of work experience, and diagnosis.

## Material and methods

### *Data source*

Our analysis is based on the data of a longitudinal study on the life circumstances of persons with

severe mental illness. After receiving approval of the local ethics committee, the first part of the study was carried out between January 2000 and March 2001 in two large psychiatric hospitals in the catchment area of Zurich, Switzerland. Inclusion criteria were age between 20 and 50 yr, a main diagnosis of schizophrenia or affective disorder (ICD-10 F2 or F3; diagnosed by the psychiatrist in charge) and sufficient knowledge of German. Approximately one-fourth of all patients fulfilling the inclusion criteria agreed to participate in the first wave of the study ( $n = 289$ ). Main reasons for not participating were refusal by the patient or objection by the psychiatrist in charge. Except for gender, with male participants slightly overrepresented (60% vs. 53%,  $p < 0.05$ ), the study sample did not differ significantly from all eligible participants hospitalized in the respective period regarding age, diagnosis, education, living situation, and employment status (Rüesch et al., 2004). After being told about the study purpose, participants gave written informed consent and took part in a structured interview. Interviews were usually conducted two or three weeks after hospital admission and were carried out by advanced psychology students.

For the *first follow-up* 12–15 months after the baseline interview, 255 persons who had agreed to take part further in the study were sent a letter and asked to participate again. Of the participants asked, 165 completed the entire interview and 11 participants took part in a short telephone interview assessing basic data like employment status, living situation, and illness course. Reasons for dropout are described elsewhere (Müller et al., 2006). The interviews were conducted between 12 and 24 months (mean 1.34 yr) after baseline. Likewise, 226 persons were sent a letter for the *second follow-up* 12 months after the first follow-up, including persons who had not participated in the first follow-up. One hundred and twenty-nine interviews were carried out, 18 of which were short telephone interviews. Here, reasons for dropout were that participants refused to be interviewed when contacted ( $n = 37$ ) or that participants could not be personally contacted at all ( $n = 44$ ; missing/other reasons:  $n = 16$ ). These interviews were carried out between 2.6 and 4.8 yr after baseline (mean 3.32 yr). As vocational status was essential for the current analysis, the final sample comprised 176 participants with at least two of three respective specifications at baseline, first and second follow-up (see also section on Multilevel modeling). When

comparing the participants excluded from the analysis with those included, no significant differences were found regarding gender, age, education, living situation, general functioning, diagnosis, age of onset, and number of hospitalizations (Müller et al., 2006).

### Measures

Vocational status was transformed into a scale that distinguishes between competitive employment on the one side and having no work on the other side, with other kinds of productive or work-like activity as a middle category. Scores were as follows: competitive employment = 3, further education/schooling, work rehabilitation, or sheltered work = 2, and without a paid job = 1. We then calculated a mean value for vocational status by weighting these scores by the number of weeks spent in the respective status during the previous 12 months. For example, a value of 1.75 was calculated if a person was unemployed for 3 months and attended a work rehabilitation program for another 9 months.

The variable ‘income’ was assessed in Swiss Francs per month converted to Euro and scaled in 1000 Euro. It comprises all payments such as earnings, pensions, unemployment benefits, and the like. The percentage of the total income derived from employment was also categorized as ‘mainly by employment’ if their proportion of earnings was 50% or higher.

Global subjective QoL was measured by the German version of the WHO-QoL-Bref (Angermeyer, Kilian, & Matschinger, 2000). The instrument covers four domains of QoL: physical health, psychological well-being, social relations, and environment. Participants’ ratings in these domains were given on a five-point Likert scale and a global QoL score was computed as the mean of the four domain scores (Cronbach’s  $\alpha = 0.85$ ). The scale ranges from 0 to 100.

Demographic variables were age, gender, education (early school leaver/compulsory, vocational training/high school, college/university), and previous work experience in years. Clinical characteristics were diagnosis, age of onset defined by the first psychiatric admission, number of hospitalizations (including index hospitalization), and days hospitalized in the last 12 months. According to the considerations made in the introduction, age of onset was dichotomized at 25 yr, as at this age

education is usually completed. Number of hospitalizations was grouped into first admission, second/third admission, and fourth admission or more. Second and third admissions were combined to achieve a reasonable category size. Days hospitalized in the previous 12 months were assessed at baseline and both follow-ups. The mean value of these specifications was categorized into never hospitalized, hospitalized up to 2 months, and hospitalized 2–12 months. The cut-off of 2 months was the median of time spent in a psychiatric hospital among those participants who had been hospitalized at least once.

### *Multilevel modeling*

We computed three models with vocational status, income, and QoL as dependent variables. The demographic and clinical characteristics described above were introduced as predictors. Vocational status was included as predictor in the model for income and both vocational status and income were included as predictors in the model for QoL.

In order to analyze the course of vocational status, income, and QoL while simultaneously assessing the influence of the predictor variables, we calculated the models based on multilevel analysis. In the group of multilevel or mixed models, random coefficient models describe the relationship of a variable with time arithmetically, including polynomials of time to model non-linear relationships (Brown & Prescott, 1999). The term ‘random coefficient’ indicates that slopes and intercepts are allowed to vary randomly among persons. A general time trend is calculated that best represents the individual regression lines fitted for each participant. Independent variables and interactions are introduced in the model as ‘fixed effects’. An advantage of these models regarding longitudinal data is that they take into account uneven time intervals between repeated measurements as well as missing data—both of which was the case in our analysis—more adequately than approaches of analysis of variance with repeated measurements (Kenny, Bolger, & Kashy, 2002).

The random coefficient models were fitted and possible outliers were checked with SAS V9.1.3 following Brown and Prescott’s (1999) recommendations. The other calculations were made with SPSS 13.0.

## **Results**

Sixty two percent of the sample were men ( $n = 176$ ). The mean age at baseline was 34.6 yr ( $SD = 8.4$ ) for men and 38.0 yr ( $SD = 7.8$ ) for women ( $p < 0.05$ ). 60.2% of the participants were diagnosed with schizophrenia (ICD-10 F2) and 39.8% had a diagnosis of affective disorders (ICD-10 F3). Significantly more men were diagnosed with schizophrenia (67.9% vs. 47.8% of women,  $p < 0.01$ ). At the time of index hospitalization (baseline), 34.7% of the participants were hospitalized for the first time, 16.5% for the second or third time, and the rest had four or more hospitalizations. The number of hospitalizations ranged from 1 to 41.

When grouping participants according to the number of hospitalizations (Table 1, left side), differences were found regarding age, diagnosis, number of days hospitalized last year, and age of onset, using descriptive statistical tests. Persons with a history of repeated psychiatric admissions were older and more likely to have a diagnosis of schizophrenia, an onset of illness before the age of 25 yr, and longer inpatient stays during the last year. When dividing the sample into two groups with an early or late illness onset (Table 1, right side) there were significantly more male participants in the first group. Persons with an early onset of mental illness were younger, more likely to have a lower level of education, less work experience, and a diagnosis of schizophrenia.

Table 2 shows the distribution of the dependent variables vocational status, income, and QoL at baseline and both follow-ups. In order to gain an overview over percentages and means, we included all valid data points. As case numbers vary strongly, no inferential statistics were applied.

The proportion of persons having competitive employment between baseline and follow-up (from 48% to 41.5%) and the number of persons without a job remained relatively stable (31.4%, 33.8%, and 27.9%). The proportion of persons working in a sheltered workplace doubled (10.3–23.4%). The proportion of persons with an income mainly from earnings remained stable (38.1%, 29.3%, and 35.2%) and their total income (€2333) was consistently about 30% higher than that of other participants. For persons without an income from earnings, income increased slightly after the baseline (from €1500 to €1833). Of those with income mainly from earnings, 94.8% derived this from competitive

Table 1  
Demographic and clinical characteristics of subjects ( $N = 176$ ) grouped according to number of hospitalizations and age of onset

	Number of hospitalizations			Age of onset	
	First $N = 61$	Second/third $N = 29$	Fourth or above $N = 86$	Up to 25 yr $N = 78$	Over 25 yr $N = 98$
	$N$ (%)	$N$ (%)	$N$ (%)	$N$ (%)	$N$ (%)
Gender					
Women	26 (38.8)	10 (14.9)	31 (46.3)	22 (32.8)	45 (67.2)
Men	35 (32.1)	19 (17.4)	55 (50.5)	56 (51.4)	53 (48.6)
<i>p</i> -value			Ns		0.016
Age					
Mean (SD)	33.2 (8.1)	35.3 (9.1)	38.0 (7.7)	32.2 (8.7)	38.9 (6.7)
<i>p</i> -value			0.002		<0.001
Education					
Early school leaver/ compulsory	16 (39.0)	11 (26.8)	14 (34.1)	25 (61.0)	16 (39.0)
Vocational training/high school	32 (30.5)	15 (14.3)	58 (55.2)	44 (41.9)	61 (58.1)
College/university	13 (43.3)	3 (10.0)	14 (46.7)	9 (30.0)	21 (70.0)
<i>p</i> -value			Ns		0.006
Work experience in years					
Mean (SD)	11.5 (9.1)	11.2 (9.3)	11.1 (8.1)	7.7 (7.3)	14.1 (8.5)
<i>p</i> -value			Ns		<0.001
Diagnosis					
Schizophrenia	22 (20.8)	18 (17.0)	66 (62.3)	57 (53.8)	49 (46.2)
Affective disorder	39 (55.7)	11 (15.7)	20 (28.6)	21 (30.0)	49 (70.0)
<i>p</i> -value			<0.001		0.002
Hospitalized last year <sup>a</sup>					
Never	43 (48.3)	15 (16.9)	31 (34.8)	35 (39.3)	54 (60.7)
Up to 2 months	15 (24.6)	10 (16.4)	36 (59.0)	29 (47.5)	32 (52.5)
2 to 12 months	3 (11.5)	4 (15.4)	19 (73.1)	14 (53.8)	12 (46.2)
<i>p</i> -value			<0.001		ns
Age of onset					
Up to 25 yr	15 (19.2)	15 (19.2)	48 (61.6)		
Over 25 yr	46 (46.9)	14 (14.3)	38 (38.8)		
<i>p</i> -value			<0.001		

<sup>a</sup>Categorized mean value of time hospitalized in the 12 months before each interview (baseline, first follow-up, and second follow-up).

employment, but some with competitive employment had income mainly from other sources (24.7%). Global subjective QoL also showed rise from 57.22 at baseline to 64.53 at first follow-up.

The results of the random coefficient models are shown in Table 3.

There was no overall time trend for vocational status, neither linear nor curvilinear. Females had the same vocational status as males. Higher education was connected with higher vocational status. People with a diagnosis of affective disorder had a lower vocational status than those with a diagnosis

of schizophrenia. Age of onset did not predict vocational status, but number of hospitalizations did. Participants hospitalized for the first time had a higher vocational status over the whole follow-up period, as did participants having their second/third admission compared to those with four or more hospitalizations. Previous work experience also accounted for vocational status. Longer periods of hospitalization (more than 2 months) resulted in markedly lower vocational status in first-admission participants but not in the groups with two, three, or more hospitalizations.

Table 2  
Descriptive statistics for vocational status, income and quality of life at baseline, first, and second follow-up

Dependent variables	Baseline		First follow-up		Second follow-up	
	N (%)		N (%)		N (%)	
<b>Vocational status<sup>a</sup></b>						
Competitive employment	84 (48.0)		64 (40.8)		46 (41.5)	
Further education/schooling	13 (7.4)		6 (3.8)		5 (4.5)	
Work rehabilitation	5 (2.9)		9 (5.7)		3 (2.7)	
Sheltered employment	18 (10.3)		25 (15.9)		26 (23.4)	
Without job	55 (31.4)		53 (33.8)		31 (27.9)	
	Median	N (%)	Median	N (%)	Median	N (%)
<b>Income in €/month<sup>b</sup></b>						
Mainly by employment ( $\geq 50\%$ )	2333	51 (38.1)	2333	39 (29.3)	2333	37 (35.2)
Mainly by other resources	1500	83 (61.9)	1833	94 (70.7)	1833	68 (64.8)
	Mean (SD) (N = 176)		Mean (SD) (N = 149)		Mean (SD) (N = 107)	
Global quality of life <sup>c</sup>	57.22 (14.60)		64.53 (14.73)		65.51 (15.06)	

<sup>a</sup>Main occupation defined by number of months.

<sup>b</sup>Gross income/month in catchment area (median): €3106.

<sup>c</sup>Standardized value for general population (Angermeyer et al. 2000; age group 36–45 yr: 74.3 (17.16)).

Income from any source, earnings or benefits, did not change over the 4 years and was consistently lower for persons with an early onset of illness (−€470/month;  $p < 0.01$ ). Competitive employment and educational level were positively related to income. Longer periods of hospitalization (more than 2 months during the previous year) resulted in a markedly lowered income.

Subjective QoL significantly increased over time. There was a linear (+7.12;  $p < 0.001$ ) as well as a curvilinear (−1.46;  $p < 0.001$ ) time trend. While competitive employment and other kinds of work-like activities had a significant influence on QoL, income did not. Persons with an affective disorder had an overall lower subjective QoL. The number of hospitalizations did not influence subjective QoL but people with two or three hospitalizations and a recent inpatient stay of long duration showed a markedly lower QoL.

## Discussion

To our knowledge this is the first study to examine the course and predictors of vocational status, income, and QoL using the integrative perspective of socio-economic underachievement and decline.

Vocational integration of persons with mental illness is poor compared to the employment rate of 80% and unemployment rate between 2% and 5% in the general population in Zurich during the study period. However, a decline, defined here as a decrease in vocational status, was not found. This relative stability of vocational status and the association with years of past work experience confirms the findings of previous research that prior employment status and work history are strong and consistent predictors of current employment status (Bundesamt für Statistik, 2004; Rüesch et al., 2004; Russinova, Wewiorski, Lyass, Rogers, & Massaro, 2002; Tsang et al., 2000; Wewiorski & Fabian, 2004). First episode participants with more than 2 months of psychiatric inpatient care appear to show the most decline in their ability to work.

No income decline was observed. This may be due to our use of a variable that combines regular wages, insurance, and social welfare benefits. If lost wages are replaced by social welfare benefits, then income as we defined it would not change. However, compared to the median income of the general population (€3106/month), the participants' income is strikingly low even for those with an income mainly from earnings (€2333). The income of those persons without employment (€1833) lies just above the subsistence level (in Switzerland €1577/month).

Table 3  
Coefficients (standard error) derived from random coefficients models ( $N = 176$ )

Fixed effects (SE)	Dependent variables		
	Vocational status <sup>a,b</sup>	Income (1000 €)	QoL <sup>b</sup>
Intercept	1.43 (0.22) <sup>***</sup>	1.45 (0.33) <sup>***</sup>	53.47 (4.60) <sup>***</sup>
Time	−0.08 (0.06)	0.09 (0.11)	7.12 (1.37) <sup>***</sup>
Time <sup>2c</sup>	0.02 (0.02)	−0.01 (0.03)	−1.46 (0.36) <sup>***</sup>
Female	−0.08 (0.09)	−0.22 (0.14)	−0.74 (1.93)
Education <sup>d</sup>	0.15 (0.07) <sup>*</sup>	0.28 (0.11) <sup>*</sup>	1.13 (1.54)
Affective disorder (ref. Schizophrenia)	−0.24 (0.10) <sup>*</sup>	0.20 (0.15)	−7.87 (2.09) <sup>***</sup>
Onset ≤25 yr	0.06 (0.10)	−0.47 (0.16) <sup>**</sup>	0.00 (2.18)
No. of hospitalizations (ref. fourth or above)			
First	0.57 (0.11) <sup>***</sup>	−0.21 (0.18)	2.38 (2.39)
Second/third	0.42 (0.13) <sup>**</sup>	0.40 (0.20)	−0.36 (2.77)
Hospitalized previous year (ref. never)			
Up to 2 months	−0.12 (0.08)	−0.07 (0.14)	−1.49 (1.45)
2–12 months	−0.21 (0.11)	−0.44 (0.18) <sup>*</sup>	4.14 (2.12)
2–12 months/first hosp.	−0.62 (0.28) <sup>*</sup>	0.73 (0.46)	−7.59 (4.56)
2–12 months/second/third hosp.	−0.35 (0.25)	0.02 (0.40)	−9.67 (4.63) <sup>*</sup>
Work experience (years)	0.02 (0.01) <sup>***</sup>	0.01 (0.01)	0.08 (0.12)
Main vocational status (ref. without job)			
Competitive employment	−	0.42 (0.13) <sup>**</sup>	4.78 (1.58) <sup>**</sup>
Education/work rehab./sheltered emp.	−	−0.24 (0.14)	3.95 (1.60) <sup>*</sup>
Income (1000 €)	−	−	0.02 (0.58)
Model parameters			
G matrix	$\begin{pmatrix} 0.302 & & & \\ -0.083 & 0.229 & & \\ 0.014 & -0.049 & 0.010 & \\ & & & \end{pmatrix}$	$\begin{pmatrix} 0.564 & & & \\ -0.106 & 0.307 & & \\ 0.016 & -0.069 & 0.017 & \\ & & & \end{pmatrix}$	$\begin{pmatrix} 181.6 & & & \\ -93.6 & 227.4 & & \\ 19.2 & -54.0 & 13.3 & \\ & & & \end{pmatrix}$
Residual	0.187	0.529	17.0
−2 log(L)	897.91	1206.92	3124.0
Number of parameters	21	23	24

Note: <sup>\*</sup> $p < 0.05$ ; <sup>\*\*</sup> $p < 0.01$ ; <sup>\*\*\*</sup> $p < 0.001$ .

<sup>a</sup>Competitive employment (3), further education/schooling, work rehabilitation, and sheltered employment (2), and without job (1).

<sup>b</sup>One outlier removed.

<sup>c</sup>Time squared (curvilinear time trend).

<sup>d</sup>College/university (3), vocational training/high school (2), and early school leaver/compulsory (1).

Furthermore, we cannot assume strong social welfare disincentives as described by other authors (Baron & Salzer, 2002; Bundesamt für Statistik, 2004; Marwaha & Johnson, 2004): vocational status had a strong impact on income with participants in competitive employment earning €420/month more than those without a job.

Inconsistent with the prediction of a socio-economic decline, the association of an early onset of illness with low education and low income support the hypothesis of underachievement. From this perspective, the postulated underachievement (Aro et al., 1995; Jones et al., 1993; Turnbull

et al., 1990) is both educational and economic, assigning those with an early onset of mental illness to the likelihood of being in the category of working poor.

Subjective QoL strongly increased in the time period observed. Still, the participants in our study viewed their QoL as low compared to the general population (Angermeyer et al., 2000). Consistent with other studies, those with an affective disorder rated their QoL markedly lower than participants with schizophrenia (e.g., Ruggeri, Gater, Bisoffi, Barbui, & Tansella, 2002). Vocational status had a strong influence on QoL, while income did not.

### Limitations

The study is limited by the lack of additional information about activities of participants. Our study did not account for work-like activities or unpaid work such as housekeeping or informal help for neighbors and family. The influence of such activities especially on QoL (Condrau et al., 2001; Priebe et al., 1998) in the group of participants without paid work could have been substantial. Furthermore, we did not include part-time employment and the type of work, both of which are probably related to income and subjective QoL, as well as to underachievement and decline. Weighting vocational status by the number of weeks, however, accounts for job retention as an important indicator of vocational outcome (Bundesamt für Statistik, 2004; Twamley, Jeste, & Lehman, 2003; Wewiorski & Fabian, 2004), and including income in the models gave a more detailed picture of the participants' socio-economic situation.

We did not assess negative symptoms or impairment in executive functioning, both of which are known to affect the ability to work (Cook & Razzano, 2000; Marwaha & Johnson, 2004; Rüesch, Meyer, Graf, & Hell, 2002). In addition, the influence of depressive symptoms, substance abuse, somatic diseases or axis II disorders was not determined (cf. Turnbull et al., 1990). Because of the focus on underachievement and decline, we selected illness characteristics based on age of onset and number and duration of hospitalizations instead.

All the participants of our study were recruited in inpatient units. As health insurance is compulsory in Switzerland, data were not biased by a limited access to the mental health service system. Still there was a loss of participants over the course of the study. The course of vocational status, income, and QoL in people with severe mental illness may be quite different in other countries. Thus, our conclusions about the role of underachievement and decline are limited by these and other aspects of a naturalistic design.

### Conclusion

With regard to vocational integration, the early course of mental illness seems to be a critical period. Persons with an early onset of illness tend to start with low economic and educational resources. Including employment issues early in treatment as

well as planning vocational decisions cautiously, e.g., to work part-time, may help the client to stay in competitive employment. The clients of rehabilitation programs also need the opportunity to cope with their impairments individually, be it educational underattainment, negative symptoms, or social skills deficits (Crowther, Marshall, Bond, & Huxley, 2001; Reker, Hornung, Schonauer, & Eikelmann, 2000; Rüesch et al., 2002).

In order to understand and eventually reduce the high unemployment rates of people with severe mental illness, it is important to embrace a developmental perspective that links characteristics of the illness and its course to normative tasks in life such as finishing school and starting to work (Angermeyer & Kuhn, 1988). The distinction between underachievement and socio-economic decline in future research and clinical practice may contribute to a more fine-tuned perspective of the antecedents and consequences of unemployment.

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