WORKSHOP "WELL_BEING OF THE ELDERLY"

ESF FORWARD LOOKS project "Ageing, Health and Pensions in Europe"

IEMS, University of Lausanne

Friday October 24, 2008

Preliminary Programme

9:00 – 9:20 Registration & Coffee

9:20 – 9:45 Welcome & Introduction to the Forward Look Project, Arthur van Soest

9:45 – 10:45 "Old age, health, long term care," Alberto Holly

10:45 – 11:00 Coffee break

11:00 – 12:00 "Social productivity and well-being," Johannes Siegrist and Morten Wahrendorf

12:00 – 13:45 Lunch break

13:45 – 14:45 "Social networks," Martin Kohli & Harald Künemund

14:45 – 15:45 "Regulation of psycho-social well-being," Dieter Ferring and Pascalina Perrig-Chiello

15:45 – 16:00 Tea break

16:00 – 17:00 Christophe Bula, Professor of Geriatrics, University of Lausanne (title to be announced)

Ageing, Health and Pensions in Europe

Forward Looks ESF

Working Paper for the Meeting

'Wellbeing of the elderly' Lausanne, 24. October 2008

Socioeconomic and psychosocial determinants of well being in early old age

Johannes Siegrist* and Morten Wahrendorf

Please do not quote!

* Prof. Johannes Siegrist, PhD
Department of Medical Sociology
University of Duesseldorf
P.O. Box 10 10 07
40001 Duesseldorf, Germany

Tel. #49-211-81-14360; Fax #49-211-81-12390
E-Mail: siegrist@uni-duesseldorf.de

1. Introduction and policy questions

Many actions and decisions taken by welfare institutions and health care organizations in modern societies are contingent on a medically defined condition of disease or disability. Medical knowledge on the development and course of diseases and disabilities, their diagnosis, treatment and prevention serves to legitimize access to scarce resources, such as disability pension or some form of early retirement, use of hospitals or rehabilitation centres, or allocation of specific benefits provided by health insurance organisations (e.g. disease management programmes). While convincing reasons favour this approach, positive notions of health and well being as phenomena that deserve an analysis on their own are rare, perhaps with the exception of the International Classification of Function (1). Rather, health and well being are defined as absence of signs of disease or disability. However, more elaborate positive notions of health and well being might be instrumental in supporting attempts of welfare and health care organizations to act pro-actively rather than to react to needs, i.e. to develop incentives to maintain or promote good health and well being over the life course. Developing incentives towards maintaining and promoting good health seems particularly relevant in view of rapidly aging populations in modern societies, including most European countries. Given the economic, social and health care burden of ageing societies, attempts towards promoting 'healthy ageing' (2) must be considered a policy challenge of high priority.

One attempt towards a more elaborate definition of health was made several decades ago by René Dubos who maintained that health is best defined as one's ability to achieve self-defined or other-defined goals by own agency on the basis of relatively stable physiological functions (3). In this definition, goal-oriented agency is given a key significance. Hence, welfare institutions and, more general, societal opportunity structures that support and strengthen people's capability of achieving goals by means of autonomous activity might contribute to healthy ageing at a population rather than individual level.

In this chapter, we consider the potential of societal opportunity structures, including welfare institutions, to provide options of goal-oriented agency to early old age populations by comparing different European countries. Furthermore, we analyse associations of different types of goal-oriented agency of older people with their health status and their well being, using most recent data from the Survey of Health, Aging and Retirement in Europe (SHARE) (4) and comparable investigations, in addition to a review of currently available evidence (section 2). Based on this analysis, gaps of knowledge are identified, and suggestions for future research are developed (section 3). Finally, we discuss to what extent the currently

available scientific evidence can provide answers to relevant policy questions and what will be needed to reduce the gap between science and policy (section 4).

In this contribution, the following two sets of policy questions are addressed:

(1) What needs to be done to maintain as many older people as possible in employed or self-employed working conditions? By what means is it possible to reduce the proportion of employees with early exit from the labour market? How can health and well being of middle-aged to early old-aged working men and women better be protected and improved?

(2) What needs to be done to enable retired people to continue or initiate socially productive activities, such as volunteering, being engaged in informal help or caring for a sick or disabled person? How can the proportion of socially productive early old people be augmented? What are the costs and benefits of extending respective opportunities and incentives?

As can be seen, we have delineated two types of goal-oriented agency with potentially beneficial effects on health and well being: paid work and voluntary or informal work. In either case, the conditions under which such potentially beneficial effects can actually occur need to be analysed. Whereas this is the main task of the following section, we first need to explain why early old age as a distinct phase in the life course deserves special attention with regard to these two types of goal-oriented agency and to what extent well being in this phase of the life course is socially patterned.

2. Understanding the links between socially productive activities and well being: a novel approach and a review of evidence

2.1. Well being in early old age

While life expectancy has increased among most age groups in Europe during the past decades this increase was particularly pronounced at middle age. In England, for instance, life expectancy at middle age has increased since 1970 by more than during the period from 1900 to 1970 combined (5). As a result of demographic aging in combination with substantial improvements of population health a new phase of the life course has evolved, called early old age or ‘third age’ (6). Although this phase lacks precise age limits it typically includes people with an age range from 50 or 55 years to about 75 or 8o years. In early old age, a majority of people is still in good health, free from physical dependency, but also free from earlier responsibilities for work and family, thus opening opportunities for individual freedom, hobbies and other options of self-realization. At the same time, this phase lacks a clear societal definition in terms of social roles and social status, legitimized expectations, norms and values. While most people at middle age experience a secure sense of social identity by maintaining core social roles, such as the work role, the family roles or civic roles, social

identity during third age becomes more fragmented and insecure, often in combination with a reduced intensity of contacts in social networks and with reduced income opportunities (7).

This is exactly the place to consider the role of goal-oriented agency in early old age. As most men and women in this age group are able to continue to engage in some type of activity the question arises to what extent they are offered options of paid (formal) or unpaid (informal) work and under what conditions these options can be realized. Despite distinct differences formal and informal work share some communalities as they represent two manifestations of what can be termed a socially productive activity. Socially productive activity has been defined as "any agreed-upon continued activity that generates goods or services that are socially or economically valued by the recipient(s), whether or not based upon a formal contract" (8, p. 4).

This definition includes paid work as well as volunteering and other types of informal work. It has two relevant implications. First, it underlines the voluntary nature of a continued transaction irrespective of its degree of formalization. Second, it emphasizes the expression and transmission of value, either monetary or non-monetary, from recipients to providers as part of a reciprocal exchange. Thus, socially productive activities are based on a fundamental principle of interpersonal exchange, the norm of reciprocity. According to this norm, any action or service provided by person A to person B that has some utility to B is expected to be returned by person B to A (9). Exchange expectancy does not implicate full identity of the service in return, but is assumed to meet some agreed-upon standard of equivalence.

Thus, the norm of reciprocity is considered a general principle governing voluntary social exchange that includes productive activity. Valuing productive activities through rewards occurs both in formal and informal transactions.

Research has demonstrated that the experience of appropriate rewards that match prolonged efforts spent ('recurrent reciprocity') elicits a pronounced activation of the brain reward circuits and that this activation is associated with strong positive emotions (10). It is likely that the experience of reward evolving from reciprocal exchange reinforces the provider's positive sense of self-esteem and, by doing so, acts as a powerful motivation to continue goal-oriented agency. A theoretical model, effort-reward imbalance, claims that the continued experience of reciprocity between efforts spent and rewards received promotes health and well being whereas violations of this principle under circumstances where efforts outmatch rewards ('recurrent non-reciprocity') elicit sustained stressful experience with adverse long-term effects on health and well being (11) (see below 2.3 and 2.4).

Experiencing reciprocity in a goal-oriented productive activity has been emphasized as a potentially health-protective psychosocial resource. Experiencing autonomy and control over

one's productive activity must be considered an additional health-protective psychosocial resource. Control over one's agency reinforces feelings of self-efficacy and mastery and, thus, reduces uncertainty, threat and anxiety (12)**.** Theoretical concepts of objective and subjective control have been successfully tested with respect to a variety of health outcomes (13, 14, 15; see below 2.3 and 2.4)**.**

Based on these assumptions we propose the following hypotheses to elucidate the links between socially productive activity and well being:

First, people who are engaged in a socially productive activity in general experience better health and well being compared to those who are not engaged. This effect is attributed to the experience of positive emotions of agency and meaningfulness.

Second, people engaged in a productive activity whose efforts are compensated by appropriate rewards ('recurrent reciprocity') in general experience better health and well being compared to those whose efforts are not adequately rewarded ('recurrent non-reciprocity'). This effect is attributed to the experience of strong positive emotions of esteem/recognition/compensation in relation to their commitment.

Third, people engaged in a productive activity that provides control and autonomy in general experience better health and well being compared to those whose activity limits or excludes control and autonomy. This effect is attributed to the experience of strong positive emotions of self-efficacy and mastery.

The socio-emotional consequences of socially productive activities may be particularly relevant in early old age where options of agency, control and reward resulting from core social roles are becoming less frequent and less pronounced. Therefore, being socially productive in a formal (e.g. continued paid work) or informal (e.g. volunteering) activity that provides recurrent reciprocity and autonomy is assumed to exert beneficial effects on health and well being in early old age. Conversely, experiencing recurrent non-reciprocity and lack of autonomy in such an activity reduces the probability of healthy ageing, other things being equal (8).

Below (see sections 2.3 - 2.5) we review the evidence that supports or contradicts these assumptions. In case of robust support, a policy implication would point to the need of maintaining or creating opportunities of socially productive activities in early old age that provide adequate opportunities of reward and control. In this framework, rewards are not confined to the material dimension, but include the socio-emotional dimension of esteem and recognition, given its significant role in triggering positive self-experience, personal need fulfilment and its beneficial health effects.

2.2. The social distribution of well being in early old age

Having outlined a conceptual framework for the analysis of social productivity and well being among older people we must consider the social distribution of well being in early old age. Previous research conducted in middle-aged populations in a variety of Western countries has demonstrated a social gradient of morbidity and mortality across the whole of a society. Results indicate that with each step one moves up on the social ladder, the better one's health. Mean differences in life expectancy between those at the top and at the bottom of a society's social structure are substantial, ranging from four to ten years (16, 17, 18). Yet, it is less well known whether this social gradient persists into older age. Given a high inter-individual variability of healthy ageing and in view of selective mortality it is likely that social inequalities in health and well being will be diminished or even absent in older populations. What is the evidence of a social gradient of health and well being in early old age?

Answers to this question are not easy because the traditional measures of social inequality, i.e. social status as defined by occupational position, income and education, are much more appropriate indicators of one's social standing in midlife than in older age. While it was suggested that material resources, such as housing tenure and wealth, or non-material factors, such as prestige and access to sources of tangible support, may represent more accurate indicators of social inequality in older age few studies have used these indicators so far (19). Moreover, the association of social status with health is more likely to be bi-directional in older age, where ill health leads to income loss and deterioration in some other measures of social standing, restricting the evidence to longitudinal investigations.

Several studies so far explored the associations of socioeconomic position with health and well being in the elderly. Their results can be summarized as follows.

First, concerning mortality a social gradient is still observed, if measures of previous occupational position or education are used, but the steepness of the gradient clearly declines with advanced age (20, 21). Although the relative inequalities between social groups decrease, it is likely that the absolute differences remain substantial, given the general increase of mortality in older age (14). For example, taking the period 1997-1999 in the United Kingdom, life expectancy at age 65 was 30 percent longer for men in the highest one of five social strata (17.5 years) compared to men in the lowest social group (12,3 years) (18). In addition to total mortality, a social gradient was documented for several leading causes of death, including cardiovascular diseases, certain cancers, respiratory diseases, liver diseases, and neurodegenerative diseases (20).

Second, a recent review documents robust evidence of an association of educational degree with risk of disability at older age, leaving those with lower degrees at higher risk (22). This association was found to be less consistent if occupational position, income or wealth were used as indicators of social standing (22). Yet, a study in Great Britain has shown that

occupational grade assessed at midlife strongly predicted level of functioning some 29 years later (23). Moreover, the risk of experiencing a longstanding illness or incident mobility problems increases with lower income or wealth (22).

Third, several studies investigated social inequalities of well being among older people. Two types of measures are used in this regard, self-assessed health and quality of life. Self-reported health was found to be related to educational degree and, independent of education, to financial wealth in a dose-response relationship in several reports (22). Quality of life may represent a more adequate indicator of well being as it captures different dimensions of everyday experience. One such measure, the CASP-questionnaire (24), has proved to be particularly useful in ageing studies. This measure is a summative index consisting of 19 (or in the short version 12) Likert scale items assessing the four domains of Control, Autonomy, Self-realization and Pleasure; hence CASP-19 (25). These domains are thought to describe aspects of well being that are typical for third age populations, while not being confounded by potential determinants such as health status or financial circumstances. In two large-scale investigations the association of socioeconomic position with CASP was tested.

The first one examined this association with multiple social indicators among some 15,000 men and women aged 50 or more in 10 European countries (19). Main findings indicate that education, income and assets are related to quality of life although associations vary by country. Moreover, no indication was found that the socioeconomic differences in quality of life diminished after retirement. The second investigation used data from the English Longitudinal Study of Ageing and applied the newly developed National Statistics Socio-Economic Classification that defines seven different social strata mainly based on occupational characteristics (25). Results show that social position explains quality of life at older ages in a hierarchical manner, with a gradient similar to the one observed in previous morbidity and mortality studies. Interestingly, the predictive power of occupational standing was particularly strong for those who were outside the labour force, suggesting that differences within the world of work become exaggerated after labour market exit (25).

In summary, substantial social inequalities in health and well being are present in third age populations in modern societies. These inequalities were most consistently reported for a variety of Western European countries as well as for the United States of America. Given this evidence, the next challenge consists in exploring the role of socially productive activities in the context of unequal health and well being.

2.3 Social productivity and well being in early old age: the role of work and employment

Early retirement from regular employment provides a major challenge to social and health policy in all European countries as a shrinking proportion of economically active people will have to support a growing number of economically dependent older people. Across European countries, large variations in workforce participation rates among those aged 50 and beyond are observed (26). At least three types of determinants of early retirement have been identified: financial incentives, poor health, and low socioeconomic status in association with poor quality of work.

Concerning financial incentives to retire early, national policies vary quite substantially with respect to regulations. The same holds true for pension schemes with extended eligibility and alternative income options (27). In combination with economic pressure from employers these national variations may largely account for substantial differences in workforce participation rates, e. g. in the age group 55-59, which were recently as low as about 20% in Belgium, Italy and France, about 35 to 40% in Germany and Spain, and much higher in Switzerland and Scandinavian countries (26).

The two remaining determinants, poor health and low socioeconomic status in association with poor quality of work are closely intertwined. Obviously, workforce participation beyond age 50 is socially patterned in all modern societies from which respective data are available: working people with low level of skill or low socio-economic position leave the labour market earlier than higher skilled and higher status people (28). Part of this effect is due to a higher proportion of people working in physically demanding or even precarious jobs. The association of employment duration and well being is bi-directional (29). Poor health and disability are powerful predictors of early exit from labour market, and leaving the job prematurely contributes to reduced well being.

The English Longitudinal Study of Ageing (ELSA) provides direct evidence of this bi-directionality (30). Men and women in paid employment reported better health than those who left their job, with the exception of a privileged, wealthy high status group that could afford early retirement. During follow-up, both men and women who reported that their health was fair or poor at study onset were more likely to be retired prematurely two years later compared to those reporting good health. Among men, relatively largest differences were observed in the age group 50 to 54 years. The same holds true for those who reported some mobility limitations in the beginning. Conversely, those reporting excellent health during the first wave while not being employed had a higher probability of returning to work two years later.

The social patterning of disability pension further supports the argument that health and well being are powerful determinants of early labour market exit. Several large-scale studies from Scandinavian countries found that low occupational status (31), low income (28), or low level

of education (32) were associated with elevated risk of disability pension. A recent study from Germany observed that, among men, low income was a stronger predictor of disability pension than low educational degree, piece work or physically demanding work, whereas, among women, low educational level was the strongest predictor (33).

However, poor quality of work is not only more prevalent among working men and women with low socioeconomic status, but exerts direct effects on health and well being as well. Different dimensions of poor quality of work with direct relevance for health have been identified. First, exposure to noxious physical or chemical stressors, noise and physically strenuous job tasks are still widespread across Europe (34). All these conditions were shown to increase the risk of early retirement, and in particular of receiving disability pension (31, 33). Second, shift work in combination with night shift and extended overtime work adversely affects health, and the same holds true for monotonous, repetitive work such as piecework or work in low status service jobs (28, 31, 32, 33).

A third dimension of poor quality of work concerns the psychosocial features that elicit chronically stressful experience among exposed people. It is important to define poor psychosocial quality of work in terms of a theoretical model that allows for an identification of stressful aspects at a general level, and, thus, can be applied to a wide range of different occupations. Several theoretical concepts of stressful work have been developed (35, 36), but two models have received special attention in recent international research: the demand-control model (14) and the effort-reward imbalance model (11).

The former model identifies stressful work by job task profiles that are characterized by high demand in combination with low control (in particular lack of decision authority over one's tasks). The combination of either component, but also the presence of low level of control or decision latitude alone is critical for health (37). The latter model builds on the notion of social reciprocity that lies at the core of the employment (or work) contract. It claims that an imbalance between high efforts spent and low rewards received in turn (money, esteem, career prospects including job security) adversely affect health. 'High cost/low gain' conditions at work are frequent among those who have no alternative choice in the labour market, or those who work in highly competitive jobs. Moreover, motivational patterns such as work-related overcommitment increase their probability.

Based on psychometrically validated questionnaires (38, 39) both models were tested in a broad range of epidemiological investigations. Recent reviews summarized the current state of research with respect to increased risk of cardiovascular disease (40), mental health (in particular depression) (41), and other types of stress-related diseases, including the analysis of psychobiological mechanisms and behavioural outcomes (42, 43). Overall, working in a high demand/low control job or suffering from high effort in combination with low reward at

work is associated with a twofold elevated relative risk of incident cardiovascular (and especially coronary heart) disease and a similar increase in risk of incident depression. In addition, psychosocial stress at work was found to be associated with an increased risk of metabolic syndrome and type2 diabetes, alcohol dependence, musculoskeletal pain, and reduced physical and mental functioning (42, 43).

An adverse psychosocial work environment in terms of these two models exerts negative effects on health among older workers by increasing their probability of long sickness absence, of reduced performance and productivity, and of forced early retirement due to illness or disability. In fact, robust evidence indicates that low control at work is an independent risk factor of disability pension (28, 31, 44), and at least one large-scale study demonstrates a similar effect of high effort in combination with low reward at work (33). Moreover, the intention to leave one's job prematurely was found to be much more prevalent among older employees suffering from poor quality of work. In an analysis of baseline results from the Survey of Health, Aging and Retirement (SHARE) study based on data obtained from 3523 men and 3318 women in 10 European countries, significantly elevated odds ratios (OR) of effort-reward imbalance (OR 1.72 (1.43-2.08) and of low control at work (OR 1.51 (1.27-1.80) were independently associated with the intention to retire from work, after adjustment for well-being (45). This consistent association across all European countries under study calls for improved investments into better quality of work, in particular increased control and an appropriate balance between efforts spent and rewards received at work (see below section 4).

2.4 Prospective evidence from the SHARE study

Most recent data from the second wave of the SHARE study (46) offer an opportunity to replicate earlier findings and to test the hypothesis that low quality of work (in terms of failed reciprocity between efforts spent and rewards received and in terms of low control) predict reduced health and well being two years later.

Results not shown in detail reveal substantial variations in quality of work between countries. *First*, for both models we observe an overall lower quality of work in Southern and Eastern European countries, compared to Northern and Western European countries. For each country, low quality of work was defined as the percentage of people scoring in the upper tertile on respective scales (46). Western countries were Netherlands, Germany, Belgium, France, Switzerland and Austria, Northern countries were Sweden and Denmark, Southern countries were Italy, Spain and Greece, and Eastern countries were Poland and Czech Republic.

Second, in all countries the prevalence of low quality of work is highest in the group of men and women who are located in the lowest tertile of income distribution, and similarly in the lowest tertile of educational attainment. All figures demonstrate a clear social gradient with decreasing prevalence of stressful work according to increasing income and increasing educational attainment. Social gradients are steeper for education than for income, and they are much steeper in Eastern and Southern as compared to Western and Northern countries. For instance, 43% of older employees with low education in Eastern Europe experience lack of reciprocity between efforts and rewards, but only 8% of those with highest level of educational attainment.

Third, to test the main hypothesis, two indicators of well being were introduced, depressive symptoms, as measured by the EURO-D scale of depression (47), and 'decreased self-rated health', as assessed by a single question comparing one's current health status to previous health. The sample restricted to people who were still in regular employment or self-employed at wave 2 and those with complete data from both waves was composed by 5403 participants. *Figure 1* demonstrates the prevalence of depressive symptoms (at wave 2) for three groups of European countries (Eastern Europe being excluded as only one wave was completed so far) according to whether low quality of work assessed at wave 1 (scores in upper tertiles) was present or not. Despite variations in the prevalence of depressive symptoms clear-cut differences are obvious in all three country groups for effort-reward imbalance and for low control at work. In *Figure 2*, the same analysis was performed with decreased self-rated health as an indicator of well being. Again, a similar pattern of results became obvious (46).

[insert Figures 1 and 2 about here]

These findings were further analysed in multivariate logistic regression models that were adjusted for country affiliation, level of well being at wave 1, age and gender. A remarkable outcome of these latter analyses indicates that the association of education and income with well being is considerably attenuated if measures of quality of work are introduced into the models. For instance, a significant odds ratio (OR) of low education (OR 1.28) for depression was diminished (OR 1.03) after introducing the two work stress summary measures, the effort-reward ratio and low control (respective significant ORs were 1.37 and 1.29 respectively). In analyses with decreased self-rated health as indicator of well being similar findings were observed (unpublished results).

In conclusion, a brief review of recent research testing hypotheses 2 and 3 stated above in general supports these assumptions. Experienced reciprocity between efforts and rewards and control at work are beneficial for health and well being. Conversely, continued exposure to effortful work that is not reciprocated by appropriate rewards as well as exposure to job

tasks with little freedom and decision latitude in the long run undermine the well-being and health of older employees by eliciting recurrent stressful experience and by reducing positive emotions and motivations in daily working life. As these conditions are more prevalent among less educated and less wealthy workers they may account for a part of the elevated burden of ill-health and poor well being that has been documented in these population groups.

2.5. Social productivity and well being in early old age: the role of informal work

The definition of social productivity given above includes informal, unpaid work (e.g. in terms of volunteering, informal help, caring) as well as paid work. These activities become more relevant in third age populations past retirement, given a lack of established societal roles. According to the hypotheses stated above people engaged in socially productive activities benefit from these actions in terms of their well being, specifically if they provide experiences of reward and control. In this section, we explore respective evidence in a comparative European perspective. First, variations in the prevalence of productive activities across countries are described, and age and gender differences are considered. Next, the social gradient of productive activities is demonstrated. Finally, associations of socially productive activity with well being are analysed, using voluntary work as a prominent example. This latter analysis considers differences in well being between active versus non-active groups as well as differences within active groups, according to their experience of reciprocity or control.

Concerning variations across countries, baseline data from SHARE demonstrate a North-South European gradient of socially productive activities, with more activities in Northern and North-Western countries and less activities in the Southern region. Taken together, about 10 percent of participants are engaged in voluntary work, about 17 percent in informal help, and about 5 percent in care for a sick person. Every tenth participant of this study is involved in more than one socially productive activity (48). The North-South difference is most pronounced in voluntary work with 20 percent active elderly in the Netherlands, in Sweden and in Denmark, but only 3 percent active elderly in Greece and Spain. Possible explanations of these differences have been discussed elsewhere (15, 48).

Within each country, age, gender and socioeconomic status are relevant determinants of activities. For instance, informal help and caring is more frequent at younger age (50 to 64 and 65 to 74), and the same holds true for the prevalence of voluntary work. The frequency of this latter activity sharply declines in the oldest age group (75 and beyond). In most countries, women are more active in caring and men are more active in volunteering, but in general gender differences are not very pronounced (49).

A significant and consistent finding concerns social inequalities in the frequency of productive activities. For instance, those in the highest tertile of educational attainment are three times more likely to volunteer and twice as likely to provide informal help and care compared to those in the lowest educational tertile. These differences are consistent across all countries and most pronounced in case of voluntary work (49). Taken together, they illustrate lower options of potentially beneficial effects of goal-directed agency on well being among lower socioeconomic third age populations.

The next question to be addressed points to the association of socially productive activity with well being. In the SHARE study, two indicators of well being were introduced: quality of life and depressive symptoms. Quality of life was assessed by the CASP 12 questionnaire where means of the sum score (range 12-48; with higher scores indicating better quality of life) were calculated (24). Depressive symptoms were measured by the EURO-D scale. According to authors (47) the manifestation of 3 or more symptoms on this scale is considered indicating a mild-to-moderate depression. Below we give the percentage of depressive people according to this definition. *Figures 3 and 4* summarize results from bivariate analyses on the association of a main socially productive activity, volunteering (assessed at wave 1) on quality of life (assessed at wave 2), again stratified according to the three groups of European countries. In this case, participants are categorised into one of the following conditions: (1) participants who did not volunteer; (2) participants who volunteered and who experienced reciprocity of exchange; (3) participants who volunteered, but did not experience reciprocal exchange.

Two striking findings are obvious from *Figure 3*. First, we observe again a North-South gradient in quality of life, irrespective of the participants' activity status. Second, in each group of countries those who experience their voluntary work as rewarding enjoy significantly better quality of life than those without experienced reciprocity, and inactive participants have the lowest mean quality of life.

A similar structure of results is apparent from *Figure 4* where the prevalence of mild-to-moderate depression is given according to activity status. Again, a gradient in the prevalence of depression is observed, and those who experience reciprocal exchange in volunteering demonstrate lowest levels of depressive symptoms. In this case, the group of participants with lack of reward in volunteering work has even a higher level of depression than the inactive group.

[insert Figures 3 and 4 about here]

Given the multilevel structure of the data we used a multilevel model with individuals (level 1) nested within countries (level 2). This procedure offers the opportunity of studying variations of well being at each level of analysis (between and within countries). Results not

demonstrated in detail indicate that variations of well being within countries are substantially larger than variations between countries. Individual characteristics (most importantly socioeconomic position and participation in a socially productive activity) contribute most towards explaining variability of well being within countries. Importantly, the effect of participation in social activity is contingent on the experience of reciprocity in exchange (50).

Taken together, results suggest that higher socioeconomic status and participation in rewarding voluntary work exert beneficial effects on well being, and that this association varies according too the larger socio-cultural context of European countries. Additional findings obtained from a French study on an elderly population indicate that well being in terms of low level of depressive symptoms was relatively highest among those participants who were active in a socially productive activity where a high level of control and autonomy was perceived (51).

In conclusion, these results lend some support in favour of the three hypotheses stated above: Being socially productive in informal work where reward and control are experienced is associated with better well being in terms of quality of life and lack of depression (Figures 3 and 4). The findings on informal work to some extent parallel those obtained from working populations where a high quality of work in terms of reward and control was associated with lower level of depression and better self-rated health. Although we are not able to disentangle the pathways between socioeconomic position, productive activity and well being the prospective study design offers an opportunity to further test their interaction.

3. Future directions of research

In policy terms the results presented and discussed in section 2 are mainly directed towards the meso- and micro-level of sociological analysis as their focus was put on the study of associations between older people's activity in core social roles (formal and informal work roles) and their well being. Yet, the larger socio-political contexts that are to be addressed at the policy level in order to develop significant and sustainable changes were not included in this analysis. As countries differ according to their social policy and welfare systems, these differences need to be addressed in a more comprehensive analytical approach.

The most influential typology of European (or Western) welfare systems developed by Esping-Andersen (52) distinguishes between three worlds of welfare state capitalism: the liberal, the conservative, and the social democratic. These three types differ with regard to the ways of how two main components of welfare and social policy are handled at national levels: the degree of welfare transfer to people who are not working, and the degree of welfare service provided to the public (health care and social care). This typology is more strongly based on the first than on the second component, and as such it has evoked critical

discussions (53). Nevertheless, empirical evidence indicates that differences between the three welfare regimes are most pronounced with respect to the transfers provided to population groups outside of the labour market (in particular retired, unemployed, permanently sick persons). In this regard, the social democratic welfare regimen ranks highest, the liberal regime ranks lowest, and the conservative regime lies between these two (54).

It is of interest to know whether and to what extent the associations observed between quality of work and well being vary between the three types of welfare regimes. For instance one can expect that in social democratic systems more resources are invested into an improvement of quality of work and into the social protection of those who are excluded from the labour market, whereas less emphasis is put on these aspects in liberal regimes. Again, countries with a conservative regime may be placed between these two extremes. Along these lines we started preliminary analyses where we categorized the countries of the SHARE study together with England (based on respective data from the English Longitudinal Study of Ageing (ELSA) (7)) into three groups: social democratic (Denmark, Sweden), liberal (England, Switzerland) and conservative (the remaining countries of SHARE). Multivariate logistic regressions were run for each of the three categories where odds ratios of depressive symptoms were estimated according to quality of work. As discussed in *Figures 1 and 2*, low quality of work was defined in terms of scoring high on the summary measure of imbalance between effort and reward and in terms of scoring high on the measure of low control at work (upper tertiles).

Figure 5 indicates that in each type of welfare systems, low quality of work is associated with a higher relative risk of experiencing depressive symptoms. However, odds ratios in both regards (effort-reward imbalance and low control) were lowest in the social democratic countries, intermediate in conservative countries and highest in the country with a liberal welfare state regime. The odds ratios in *Figure 5* are adjusted for socioeconomic status, age and gender.

[insert Figure 5 about here]

As stated, these are preliminary results which need to be elaborated more systematically in future research in order to elucidate the impact of larger socio-political contexts, such as welfare regimes, on the well being of socially productive older people across Europe. It may be more difficult to study these associations in case of informal work than in case of paid work and employment. The main reason of this difficulty is given by the fact that the welfare typology is more explicitly based on labour marked-related transfer characteristics than on characteristics of welfare services, such as social services and health care services provided to the elderly. For instance, a recent study demonstrated that the welfare regimes vary very

little with regard to health care expenditures and that the correlation between the two components (transfers and welfare services) is generally weak (54). Thus, it seems unlikely to find variations in the strength of association between quality of informal work (e.g. volunteering) and well being according to type of welfare regime similar to those reported above (Figure 5). Yet, in further analyses this assumption will be tested, using available data from the SHARE and ELSA studies.

4. Policy implications of current evidence

In this contribution we set out to analyse socioeconomic and psychosocial determinants of well being in early old age in European countries. Our aim was to emphasize the importance of the social opportunity structure in supporting and strengthening people's health and well being through their agency in rewarding and control-enhancing productive activities. Two such opportunity structures were considered, the formal labour market offering varying degrees of quality of work and employment, and the informal market of unpaid work (volunteering, informal help, caring) provided to elderly people. In either case, the theoretical notions of autonomy and reward resulting from reciprocal exchange were applied to explore variations in well being.

We found that belonging to a higher socioeconomic status group and being socially productive in a rewarding and control-enhancing formal (paid work) or informal (volunteering) social role is associated with better well being. This holds true for different indicators of well being (depressive symptoms, self-rated health, quality of life), and associations are consistent in cross-sectional and longitudinal analyses. An additional finding points to relevant variations according to type of country under study (e.g. a North-South European gradient) or according to type of welfare state regime (social democratic, conservative, liberal).

Despite the fact that some of these results (mainly based on data from the first two waves of the SHARE study) deserve further analysis several policy implications become obvious at this stage of available evidence. These implications differ between formal and informal social roles and are more explicit in the former case. In the introductory remarks three related policy questions were raised: What needs to be done to maintain as many older people as possible in employed working conditions? By what means is it possible to reduce the proportion of employees with early exit from the labour market? How can health and well being of middle-aged to early-old-age working men and women better be protected and improved?

Answers to these questions are obviously complex and involve different levels of activity of shareholders, organizations and policy-making bodies. Yet, a common feature of such

activities concerns measures that aim at improving the quality of work. In the context of our research the following recommendations are examples of theory- and evidence-based policy implications:

-Improving monitoring activities of health-adverse working conditions (including traditional physical and chemical hazards and more recent psychosocial hazards) at national and regional level as well as at the level of branches, occupations and firms or organizations;

-Implementing more comprehensive occupational health and safety measures that include the promotion of healthy work;

-Monitoring occupational high risk groups, in particular those employed in precarious work, temporary and irregular work, as well as those working in risky jobs (e.g. transport workers, construction workers, employees in emergency services);

-Increasing the flexibility of work time arrangements including broader opportunities of part-time work and continued training as well as 'flexicurity' models of occupational careers;

-Securing fair pension and retirement arrangements both in relation to lifetime contributions to the labour market and in relation to major shocks (long-term unemployment, forced early retirement, disability pension);

-Designing and implementing measures of organizational and personnel development that are instrumental in increasing control at work and in providing fair rewards in return to efforts spent; these measures concern single organizations as well as larger bodies of branches, stakeholder associations, trade unions or even national and transnational legislation.

This latter recommendation can be further specified by pointing to models of good practice that are already available in the context of European-wide initiatives (55). Measures include the reorganisation of division of work with the aim of developing more complete job task profiles (e.g. job enlargement, job enrichment), more adequate promotion prospects including job security, more flexible forms of remuneration and non-monetary gratifications, enhanced leadership training and the development of a culture of trust, fairness, and transparency at organizational level. These measures can be further tailored towards specific age groups, in particular middle-aged and early-old-age groups, in order to maintain their health and well being and to enhance their motivation towards staying at work.

Less elaborated policy measures concern the realm of informal work. The following policy questions were addressed in the introductory section: What needs to be done to enable retired people to continue or initiate socially productive activities, such as volunteering, being engaged in informal help or caring for a sick or disabled person? How can the proportion of socially productive early old people be augmented? What are the costs and benefits of extending respective opportunities and incentives?

Two broad answers are obvious. First, the opportunity structure of informal work for third age population groups needs to be developed in a pro-active manner. This includes the creation of new social roles in the context of an emerging civil society, the liberalization of legal restrictions including tax allowance, and a change of societal attitudes and views of the role of ageing in the life course (56). In all these instances lower socioeconomic status groups are a primary target group as they are largely excluded from opportunities of socially productive activities past retirement. The second answer points to the need of developing quality measures of informal work, in particular of providing informal work roles with options of reward that entail the experience of recognition and esteem, and with options of control that entail the experience of autonomy and self-efficacy. Our results have demonstrated that the beneficial effects of being socially productive in an informal role to a large extent are contingent on the presence of these characteristics.

In conclusion, the socio-emotional consequences of participating in rewarding and control-enhancing formal and informal productive activities for healthy ageing are far-reaching. Strengthening these conditions through targeted policy measures is considered a promising approach towards tackling the economic, social and health-related challenges of ageing societies.

References

1) World Health Organization. (2001) International Classification of Functioning. WHO: Geneva.
2) Rowe J W, Kahn RL (1997) Successful aging. The Gerontologist 37:433-440.
3) Dubos R (1969) Man, Medicine, and Environment. New York: Mentor.
4) Boersch-Supan A, Brugiavini A, Jürges H, Mackenbach J, Siegrist J, Weber G (eds.) (2005) Health; Ageing and Retirement in Europe. Mannheim: Mannheim Research Institute for the Economics of Ageing.
5) Blane D, Netuveli G, Bartley M (2007) Does quality of life at older age vary with socio-economic position? Sociology 41, 717-726.
6) Laslett P (1989) A Fresh Map of Life: The Emergence of the Third Age. London: Weidenfeld and Nicolson.
7) Banks J, Breeze E, Lessof C, Nazroo J (eds.) (2006) Retirement, Health and Relationships of the Older Population in England: The 2004 English Longitudinal Study of Ageing. London: The Institute for Fiscal Studies.
8) Siegrist J, Knesebeck Ovd, Pollack CE (2004) Social productivity and well-being of older people: a sociological exploration. Social Theory and Health 2; 1-17.
9) Gouldner AW (1960) The norm of reciprocity. American Sociological Review 25; 161-178.
10) Schultz W, Dayan P, Montague PR (1997) A neural substrate of prediction and reward. Science 275: 1593-99.
11) Siegrist J (2005) Social reciprocity and health: New scientific evidence and policy implications. Psychoneuroendocrinology 30: 1033-38.
12) Haidt J, Rodin J (1999) Control and efficacy as interdisciplinary bridges. Review of General Psychology 3: 317-37.
13) Skinner EA (1996) A guide to constructs of control. Journal of Personality and Social Psychology 63: 407-14.
14) Karasek R, Theorell T (1990) Healthy Work. New York: Basic Books.
15) Wahrendorf M (2008) Soziale Produktivität und Gesundheit im höheren Lebensalter-Vergleichende Untersuchungen (Social productivity and health in early old age-Comparative investigations). Ph.D. Dissertation, Faculty of Philosophy, Heinrich Heine University of Duesseldorf (unpublished). Duesseldorf.
16) Marmot M, Wilkinson R (eds) (2006) Social Determinants of Health. Oxford: Oxford University Press.

17) Mackenbach JP, Bakker M (eds) (2002) Reducing Inequalities in Health. A European Perspective. London: Routledge.
18) Siegrist J, Marmot M (eds) (2006) Social Inequalities in Health: New Evidence and Policy Implications. Oxford: Oxford University Press.
19) Knesebeck Ovd, Wahrendorf M, Hyde M, Siegrist J (2007) Socio-economic position and quality of life among older people in 10 European countries: results of the SHARE study. Ageing & Society 27: 269-84.
20) Van Rossum CTM, Shipley MJ, Van de Mheen H, Grobbee DE, Marmot MG (2000) Employment grade differences in cause-specific mortality. A 25-year follow-up of civil servants from the first Whitehall study. Journal of Epidemiology and Community Health 54: 178-84.
21) Huisman H, Kunst AE, Andersen O et al. (2004) Socioeconomic inequalities in mortality among elderly people in 11 European populations. Journal of Epidemiology and Community Health 58: 468-75.
22) McMunn A, Breeze E, Goodman A, Nazroo J, Oldfield Z (2006) Social determinants of health in older age. In M. Marmot, R. Wilkinson (eds.) Social Determinants of Health (pp. 267-296). Oxford: Oxford University Press.
23) Breeze E, Fletcher AE, Leon DA et al. (2001) Do socioeconomic disadvantages persist into old age? Self-reported morbidity in a 29-year follow-up of the Whitehall study. American Journal of Public Health 91: 1126-29.
24) Hyde MR, Wiggins R, Higgs P, Blane D (2003) A measure of quality of life in early old age: The theory, development and properties of a needs satisfaction model (CASP-19). Aging and Mental Health 7: 186-94.
25) Blane D, Netuveli G, Bartley M (2007) Does quality of life at older ages vary with socio-economic position? Sociology 41: 717-26.
26) Brugiavini A, Croda E, Mariuzzo F (2006) Labour force participation of the elderly: Unused capacity? In: A. Börsch-Supan, A. Brugiavini, H. Jürges, J. Mackenbach, J. Siegrist, G. Weber (eds) Health, Ageing and Retirement in Europe (pp. 236-240). Mannheim: Mannheim Research Institute for the Economics of Aging.
27) Gruber J, Wise D (1999) Social Security and Retirement around the World. Chicago: The University of Chicago Press.
28) Blekesaune M, Solem PE (2005) Working conditions and early retirement. A prospective study of retirement behaviour. Research on Ageing 24: 3-30.
29) Smith JP (1999) 'Healthy bodies and thick wallets: the dual relation between health and economic status. Journal of Economic Perspectives 13: 145-66.

30) Emmerson C, Tetlow G (2006) Labour market transitions. In: Banks J, Breeze E, Lessof C, Nazroo J (eds) Retirement, Health and Relationships of the Older Population in England (pp. 41-82). London: The Institute for Fiscal Studies.

31) Krokstad S, Johnsen R, Westin S (2002) Social determinants of disability pension: a 10-year follow-up of 62.000 people in a Norwegian country population. International Journal of Epidemiology 31: 1183-91.

32) Hagen KB, Holte HH, Tambs C, Bjerkedal T (2000) Socioeconomic factors and disability retirement from back pain. Spine 25: 2480-87.

33) Dragano N (2007) Arbeit, Stress und krankheitsbedingte Frührente (Work, stress and disability pension). Wiesbaden: VS Verlag für Sozialwissenschaften.

34) Parent-Thirion A, Macias EF, Hurley J, Vermeylen G (2007) Fourth European Working Conditions Survey. Luxemburg: Office for Official Publications of the European Communities.

35) Cartwright S, Cooper CL (eds.) (2008) The Oxford Handbook of Organizational Wellbeing. Oxford: Oxford University Press (in press).

36) Antoniou AS, Cooper CL (eds.) (2005) Research Companion to Organizational Health Psychology. Chelterham: Edward Elgar Publishers.

37) Marmot M, Siegrist J, Theorell T (2006) Health and the psychosocial environment at work. In: M. Marmot, R. Wilkinson (eds.) Social Determinants of Health (pp. 97-130). Oxford: Oxford University Press.

38) Karasek R, Brisson C, KawakamiN, Houtman I, Bongers CP, Amick C (1998). The Job Content Questionnaire (JCQ): an instrument for internationally comparative assessments of psychosocial job characteristics. Journal of Occupational Health Psychology 3:322-355.

39) Siegrist J, Starke D, Chandola T, Godin I, Marmot M, Niedhammer I, Peter R (2004) The measurement of effort-reward imbalance at work: European comparisons. Social Science & Medicine 58:1483-1499.

40) Kivimaki M, Virtanen M, Elovainio A, Kouvonen A, Vahtera J (2006) Work stress in the etiology of coronary heart disease - A meta-analysis. Scandinavian Journal of Work, Environment and Health 32:431-442.

41) Stansfeld S, Candy B (2006). Psychosocial work environment and mental health - A meta-analytic review. Scandinavian Journal of Work, Environment and Health 32:443-462.

42) Siegrist J (2008) Job control and reward: Effects on well-being. In S. Cartwright, CL Cooper (eds) The Oxford Handbook of Organizational Wellbeing (in press).

43) Theorell, T.,ed. 2008. After 30 years with the demand-control-support model – how is it used today. Scandinavian Journal of Work, Environment and Health Special Issue 6: 1-184.
44) Stattin M, Järvholm B (2005) Occupational work environment and disability pension: A prospective study of construction workers. Scandinavian Journal of Public Health 33: 84-90.
45) Siegrist J, Wahrendorf M, Knesebeck Ovd, Jürges H, Börsch-Supan A (2007) Quality of work, well-being, and intended early retirement of older employees-baseline results from the SHARE study. European Journal of Public Health 17: 62-68.
46) Börsch-Supan A, Brugiavini H, Jürges A, Kapteyn J P, Mackenbach J, Siegrist J, Weber G. (eds.) (2008) Health, Ageing and Retirement in Europe – Starting the longitudinal dimension. Mannheim: Mannheim Research Institute for the Economics of Ageing (in press).
47) Dewey, ME, Prince MJ (2005) Mental Health. In: Health, Ageing and Retirement in Europe. In A. Börsch-Supan, A. Brugiavini, H. Jürges, J. Mackenbach, J. Siegrist, G. Weber (eds.) Health, Ageing and Retirement in Europe (pp.108-117). Mannheim: Mannheim Research Institute for the Economics of Ageing.
48) Erlinghagen M, Hank K (2006) The participation of older Europeans in volunteer work. Ageing and Society 26: 567-84.
49) Wahrendorf M, Knesebeck Ovd, Siegrist J (2008) Social productivity and quality of life-first prospective results. In: A. Börsch-Supan, A. Brugiavini, H. Jürges, J. Mackenbach, J. Siegrist, G. Weber (eds.) Health, Ageing and Retirement in Europe-Starting the Longitudinal Dimension. Mannheim: Mannheim Research Institute for the Economics of Ageing (in press).
50) Siegrist J, Wahrendorf M (2008) Social productivity and quality of life in early old age – first prospective findings. European Journal of Social Policy (submitted).
51) Wahrendorf M, Ribet C, Zins M, Siegrist J (2008) Social productivity and depressive symptoms in early old age-results from the GAZEL study. Aging & Mental Health 12: 1-7.
52) Esping-Andersen G (1990) The Three Worlds of Welfare State Capitalism. Cambridge: Cambridge University Press.
53) Jensen C (2008) Worlds of welfare services and transfers. Journal of European Social Policy 18: 151-62.
54) Dahl E, Fritzell J, Lahelma E, Martikainen P, Kunst A, Mackenbach J (2006) Welfare state regimes and health inequalities. In J. Siegrist, M. Marmot (eds.) Social Inequalities in Health. New Evidence and Policy Implications (pp. 193-222). Oxford: Oxford University Press.

55) Breucker G. (ed.) (2000) Towards Better Health at Work. Successful European Strategies. Bremerhaven: Wirtschaftsverlag NW.
56) Erlinghagen M, Hank K (eds.) (2008) Produktives Altern und informelle Arbeit in modernen Gesellschaften. (Productive ageing and informal work in modern societies). Wiesbaden: VS Verlag für Sozialwissenschaften.

Figures and tables

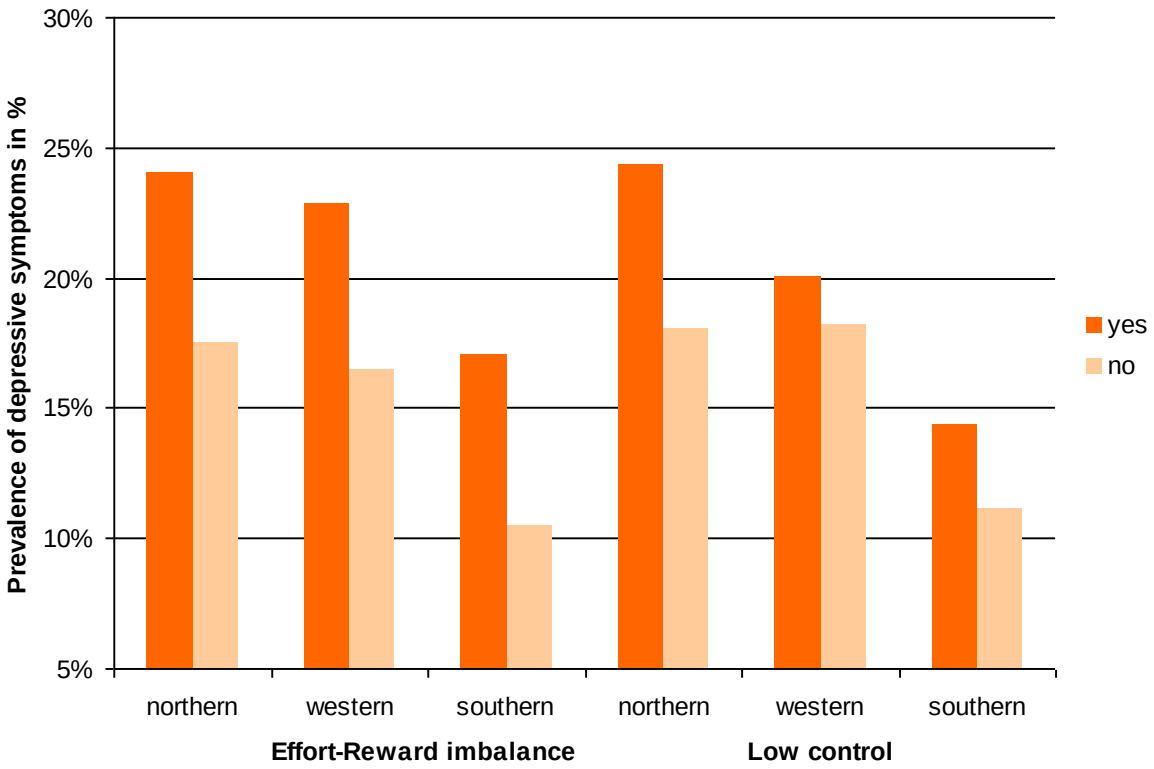

Figure 1: Prevalence of depressive symptoms in wave II (EURO-D) according to low quality of work in wave I (yes= highest tertile effort-reward ratio or low control; no= lower tertiles)

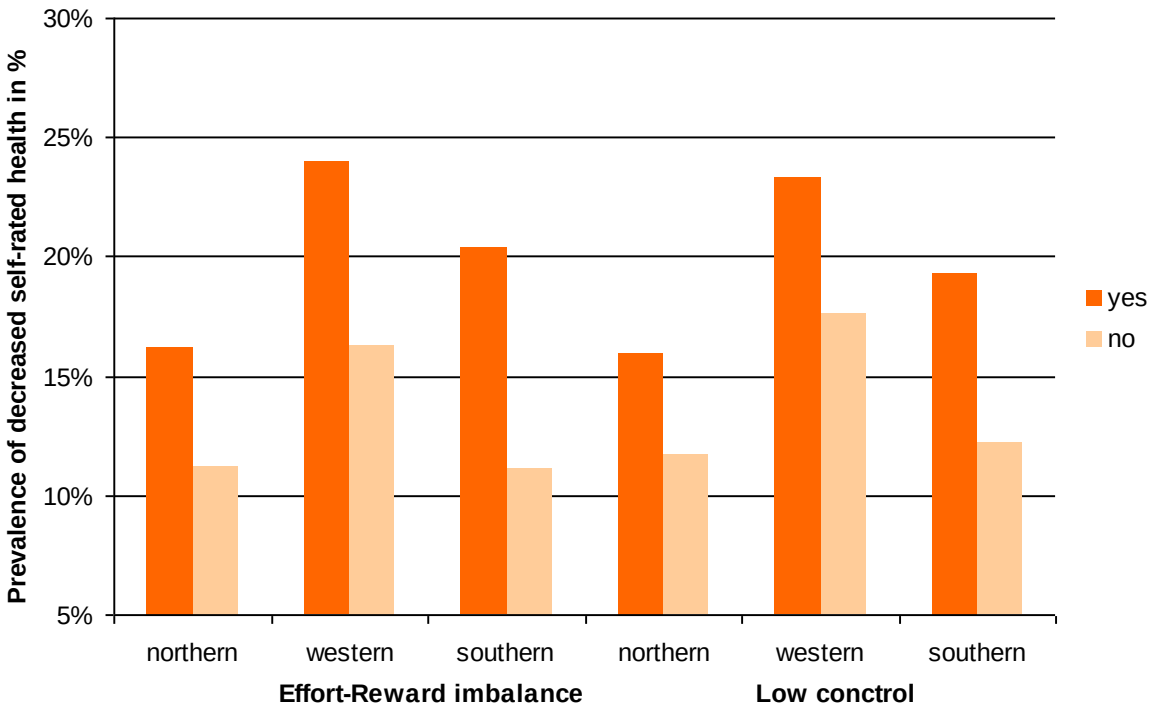

Figure 2: Prevalence of decreased self-rated health in wave II according to low quality of work in wave I (yes= highest tertile effort-reward ratio or low control; no= lower tertiles)

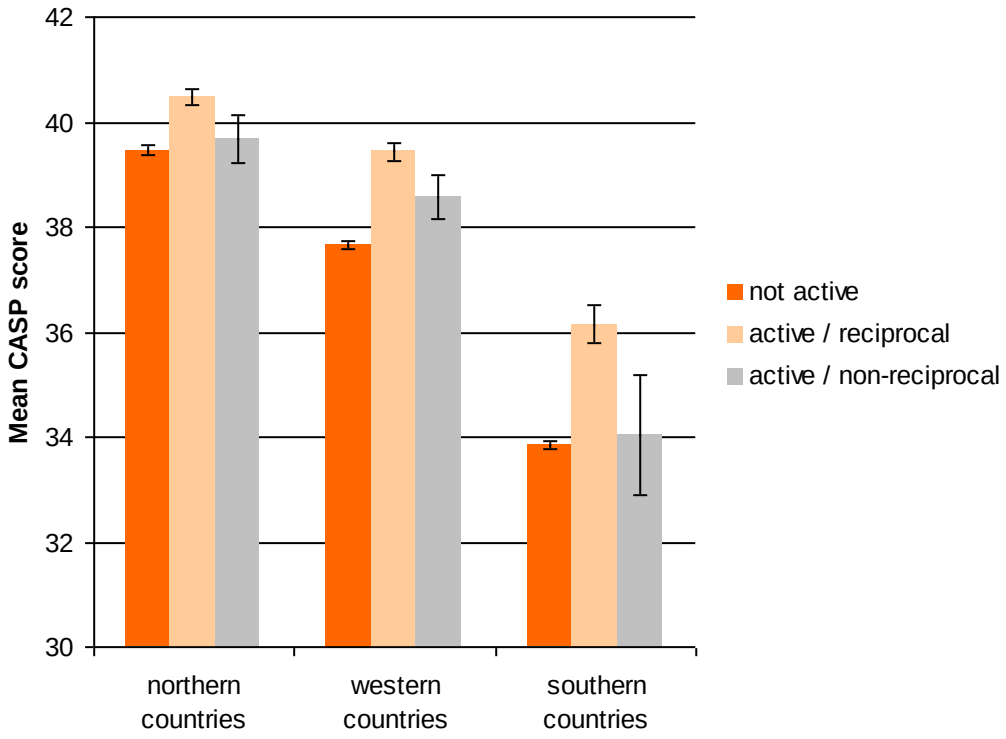

Figure 3: Quality of life in wave II (mean scores of CASP-12 (range 12-48) and standard errors) according to voluntary work (3 categories) in wave I

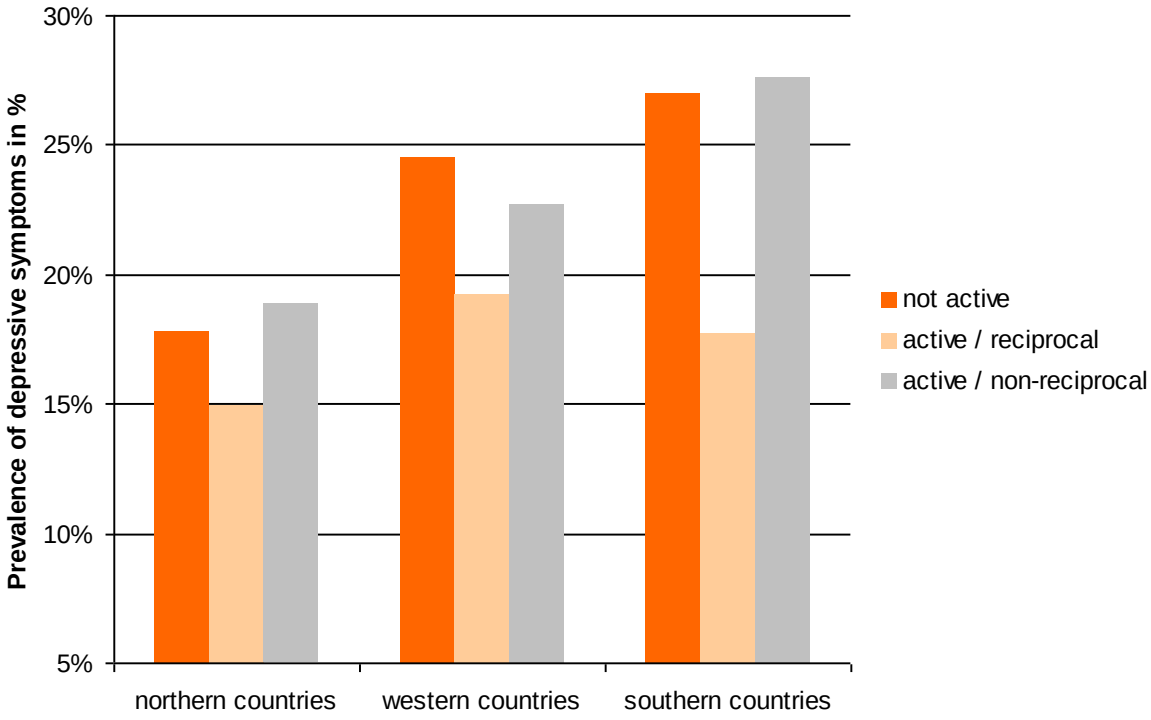

Figure 4: Prevalence of depressive symptoms in wave II (EURO-D) according to voluntary work (3 categories) in wave I

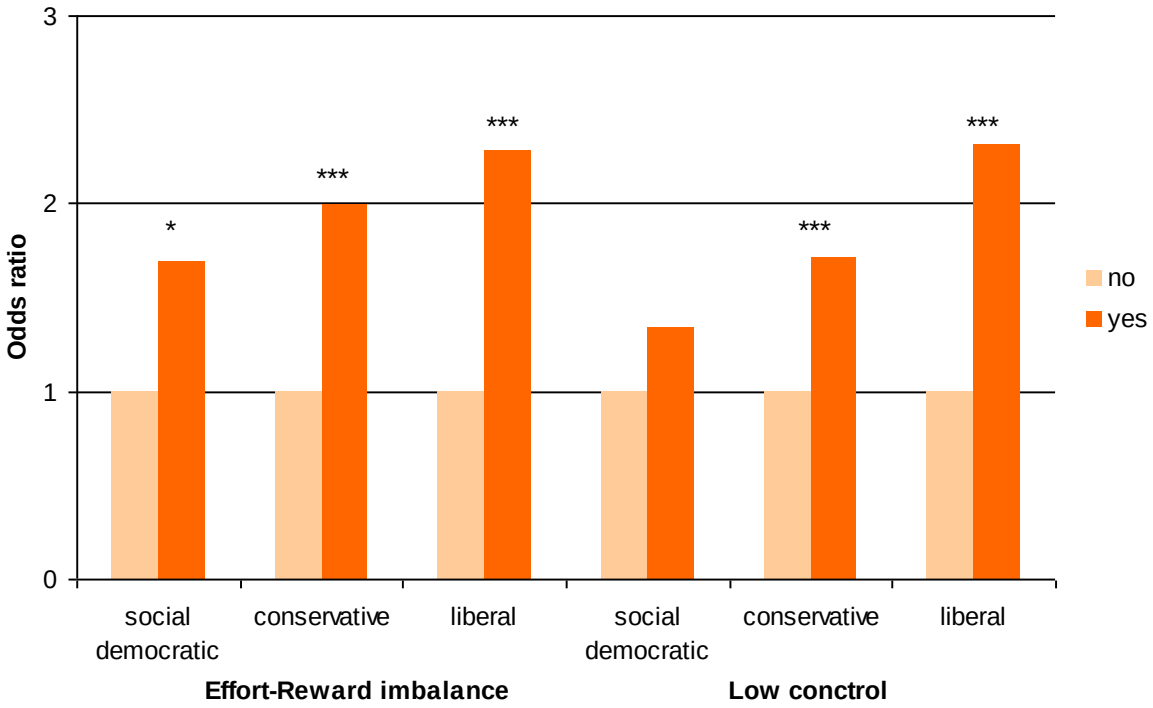

Figure 5: Associations between low quality of work (yes= highest tertile effort-reward ratio or low control; no= lower tertiles) and depressive symptoms: Odds ratios adjusted for socioeconomic position (education, income), age and gender.