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Social productivity and well-being of older people: baseline results from the SHARE study

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Abstract Social and productive activities have been associated with more favorable well-being and health outcomes in older populations. There is limited consensus on what aspects account for the observed effect and what pathways may underlie their associations. Using data from the 2004 ‘Survey of Health Aging and Retirement in Europe’ (SHARE), based on some 22,000 participants aged 50 and older from ten European countries, this study explores types and quality of productive activities (voluntary work, care for a person, informal help) and its association with two indicators of well-being (depressive symptoms, quality of life). Quality of social productivity is analyzed in the frame of a sociological model based on the notion of exchange reciprocity. Results of multivariate linear regression analysis, adjusted for important confounders, confirm an association of productive activity with well-being. However, this association varies according to experienced quality of exchange: Experienced reciprocity between efforts spent and rewards received is associated with positive well-being (with the exception of caring), while non-reciprocal exchange (high effort and low reward) is associated with negative well-being in all activities. Findings underline the need to improve quality of exchange in socially productive activities as a means of motivating older people to participate in societal life.

Keywords Social productivity · Well-being · Depressive symptoms · Quality of life · Effort–reward imbalance

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Introduction

A number of studies demonstrated that social engagement is associated with more favorable well-being and health outcomes in older populations (for a review see Bath and Deeg 2005). Yet, despite recent progress in systematizing and disentangling different components of social engagement or participation, there is still limited consensus on what aspects account for the observed effects on health, and what pathways may underlie their association (Glass et al. 1999). A useful taxonomy distinguishes between regenerative and discretionary activities and divides these latter into consumptive (whether social or not) and productive engagement (Klumb and Maier 2002). Whereas both consumptive and productive activities are based on preferences, the former are carried out for their own sake whereas the latter are carried out for purposeful outcomes.

Several studies explicitly tested an association of productive activities with health, well-being, and survival of older people. Glass et al. (1999) found that social and productive activities were independently associated with length of overall survival. Other studies also found that productive activities predict survival (Menec 2003; Maier and Klumb 2005). However, results of the Berlin Aging Study indicate that the effect diminishes after adjustment for important confounders (Maier and Klumb 2005). In terms of other health measures, Herzog et al. (1998) observed that frequency of productive and leisure activities improves physical health and reduces the risk of depression in older people. Using the American Changing Lives data base associations of volunteering with lower mortality (Musick et al. 1999) and with higher self-perceived health and life satisfaction (van Willigen 2000) were found. In a longitudinal study of 2,812 older people in New Haven, Connecticut, Mendes de Leon et al. (2003) observed strong associations of different types of social and productive activities with functional limitations cross-sectionally, but failed to provide prospective evidence of

this link. Again, no homogenous definition and measure of productive activity is available from these studies as they mix up different categories, such as ‘gardening’, ‘helping others’, ‘housework’, and ‘paid work’. In particular, no distinction is made between productive activities that are performed in a social context, i.e. as an exchange process, and solitary activities.

In an attempt to place the notion of social productivity in a theoretical framework that draws on health-related sociology and social psychology, Siegrist et al. (2004) argued that grounding productive activity in norms of social exchange and reciprocity allows for a more nuanced understanding of the activity’s meaning for the provider (who engages in the activity) and the recipient (who values it). Reciprocity of efforts and rewards or lack thereof may help to explain the links between productive activities and health and well-being of older people. Keeping its transactional feature in mind, social productivity can be 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” (Siegrist et al. 2004, p 3f). Accordingly, providing socially productive efforts that are reciprocated by adequate return offers unique opportunities of experiencing social recognition or other types of reward. Recurrent experience of social recognition was shown to enhance self-esteem and associated positive emotions processed by the brain reward system (Henry 1991; Schultz et al. 1997). Socio-emotional reward acts as a protective resource against the organism’s susceptibility to stressful life circumstances and may even affect longevity (Redelmeier and Singh 2001). Conversely, being exposed to non-reciprocal social exchange in terms of high efforts spent and low (or no) rewards received in turn is associated with sustained negative emotions and bodily stress reactions. Prospective epidemiological evidence demonstrates elevated risks of stress-related disorders as a long-term consequence of effort–reward imbalance experienced in core social roles in midlife, such as the work role or the marital and parental roles (for review Siegrist 2005).

Given the far-reaching significance of reciprocal social exchange for health and well being, we maintain that this conceptual approach can be extended to later stages of the life course, in particular to socially productive activities of older people. Therefore, the present study sets out to test associations of three types of social productivity in older people (voluntary or charity work; care for a sick or disabled adult; provide help to family, friends or neighbors) with measures of well-being, and to analyze the quality of productive exchange in terms of balance or imbalance between efforts and rewards. We test the hypothesis that well-being is significantly lower in older people whose productive activity is characterized by non-reciprocal exchange, compared to those with balanced efforts and rewards. As the results of this report are derived from baseline data of the Survey of Health, Aging and Retirement in Europe (SHARE)

(Börsch-Supan et al. 2005), these associations can be analyzed across ten European countries, with adjustments for important confounders.

Methods

Data

We use data from the first public release version of the ‘Survey of Health, Aging and Retirement in Europe’ from 2004 (Börsch-Supan et al. 2005). SHARE is the first cross-national research project comparing data on working conditions, retirement, health and well-being, and socio-economic status among people aged 50 and older in 10 European countries (Austria, Germany, Sweden, The Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland). Overall, the first data release contains data obtained from more than 22,000 face-to-face interviews with participants from about 15,000 households. In each participating country probability samples were drawn. The country-average of household response rate is 61.8% for the total sample ranging from 38% in Switzerland to 74% in France, with rates above 50% in eight countries (see Börsch-Supan and Jürges 2005 for details).

Measurement

Measures of well-being

We introduce two indicators of well-being: a measure of quality of life specifically designed to capture well being in early old life, the CASP questionnaire, and a measure of depressive mood, reflecting reduced emotional well being. Additional measures of well-being (e.g., Ryff and Singer 1998) were not available, but, as will be shown, our measures are well applicable to the target population and demonstrate discriminant validity (Knesebeck et al. 2005).

The CASP-12 questionnaire represents a psychometrically validated short version of the original 19-item version (CASP-19) (Hyde et al. 2003). It identifies those aspects of quality of life that are thought to be specific to early old age, a stage in the life course characterized by transition from work to retirement, an increase of personal freedom, and new options of social participation (Hyde et al. 2003). In this perspective, quality of life refers to four conceptual domains of individual needs that are particularly relevant in early old age: control (C), autonomy (A), self-realization (S), and pleasure (P). Items measuring the four respective scales assess the degree to which these aspects are perceived as being satisfied on a four-point Likert scale. The first letter of each domain and its 12 items create the acronym CASP-12 that names the measure. The internal consistency of the four domains proved satisfactory, and the domains map onto a latent single factor (quality of life)

in second-order factor analysis. Psychometric properties of CASP-19 are fully described elsewhere (Hyde et al. 2003). A summary measure of the 12 items was used to assess quality of life in this study where the total sum score ranges from 12 to 48, with higher scores indicating better well being (Cronbach's alpha = 0.83). Previous analyses showed substantial mean differences of the CASP score between the countries under study (mean varies from 33 in Greece to 40 in Switzerland) (Knesebeck et al. 2005).

Secondly, we applied a short form of the Center for Epidemiological Studies Depression (CES-D) scale. The CES-D scale is a widely used instrument for measuring depressive symptoms in general population surveys (Irwin et al. 1999; Radloff 1977). Eleven identical items from the original 20-item version with four-point Likert scales were incorporated in the SHARE questionnaire. Values of the total score range from 11 to 44, with higher scores indicating less depressive symptoms (better well-being). Cronbach's alpha of the short form was 0.82. Preliminary analyses showed country-specific variations across the countries under study (mean range from 39 in Denmark to 35 in Italy of the CES-D score) (Dewey and Prince 2005).

Measures of social productivity and its quality

We include three different types of social productivity in our analysis: (1) doing voluntary or charity work (voluntary work), (2) caring for a sick or disabled adult (care for a person) and (3) providing help to family, friends or neighbors (informal help). First, the respondents were asked for each activity whether or not they were involved during the last month. Additionally, the quality of performed activities was assessed using participants' response to the statement: "Considering all the efforts that I have invested into my [activity], I always received adequate appreciation from others." The response options were "Strongly agree", "Agree", "Disagree" and "Strongly disagree". If participants disagreed with this statement, low quality of exchange within a productive activity was assumed, because an imbalance was perceived between the 'costs' and the 'gains' of their engagement. Therefore, differences in well-being can be compared between those who experience satisfying reciprocity and those who are less satisfied, given an imbalance between their 'costs' and 'gains'.

Additional measures

We included a number of additional measures from the SHARE study protocol that mainly served as confounders in multivariate models. These measures are age, gender, retirement status, marital status, health, income, and education. We defined 'number of reported chronic diseases' as a proxy measure of older people's general health status. Income information was based on the total annual household income which is composed

of the sum of different income components assessed in the questionnaire. In case income components were missing, information was obtained through imputation (Brugiavini et al. 2005; Paccagnella and Weber 2005). In order to adjust for household size, we divided the value of income in accordance to the OECD equivalent scale. Education was measured according to the International Standard Classification of Educational Degrees (ISCED-97) (Hoffmeyer-Zlotnik and Wolf 2004) that we categorized into 'low education' (pre-primary, primary or lower secondary education), 'medium education' (secondary or post-secondary education), and 'high education' (first and second stage of tertiary education).

Analysis

Following descriptive analyses, multiple linear regression models were conducted to test significant associations between measures of social productivity and the indicators of well-being. Models were calculated for the total sample including country indicators to adjust for country specificities mentioned above. Additionally, the regression models were adjusted for age, gender, marital status, retirement status, reported chronic diseases, education and income. Whereas sampling weights were adopted for descriptive analyses only, we used robust (Huber-White sandwich) estimators in regression models taking account of the clustering into households (White 1980; Rogers 1993). Robust estimators assume that observations are independent across clusters (households), but not necessarily within clusters (Long and Freese 2003). Traditional model diagnostic was applied based on residual analysis.

Results

Descriptive results

Concerning sample characteristics, the number of participants per country varied from 3,067 to 1,010. The percentage of women was 54.7% and the age distribution was as follows: 50–64 years, 50.7%; 65–74 years, 27.2%; and 75 years and more, 22.6%. A total of 50.4% were already retired.

Table 1 gives an overview of the prevalence of the activities under study. The overall prevalence varies from 5 to 17%. Gender differences are found for volunteering (more men) and caring for a person (more women). With regard to voluntary work and care for a person we observe no differences between the two younger age groups, whereas the prevalence among the oldest group clearly decreases. Moreover, the proportion of those engaging in informal help decreases with age. The prevalence of people engaging in voluntary work or care for a person does not clearly vary according to retirement status.

Table 1 Prevalence (%) of productive activities by sociodemographic variables ($N = 22,777$)

Activity (N)	Total	Gender		Age groups			Retired	
		Male	Female	50–64	65–74	75+	Yes	No
Voluntary work (2,678)	9.6	10.6	8.8	11.2	10.3	5.3	9.8	9.7
Care for a person (1,329)	4.8	3.7	5.8	5.6	5.2	2.7	4.6	5.3
Informal help (5,034)	17.2	16.9	17.5	22.9	14.6	7.4	15.2	19.9

In all three types of social productivity, being active is associated with higher mean scores of well-being (e.g. CASP mean score: 39.1 for those who are volunteering versus 36.2 for those not engaging). This pattern holds particularly true for volunteering and informal help and can be found across all countries under study.

Table 2 gives the results of an association between quality of exchange and well-being. They indicate that means scores of well-being are lower in the group characterized by non-reciprocity of exchange, compared to the group with experienced reciprocity. This holds true for both indicators of well-being and for all three types of productive activities. Interestingly, regarding care for a person and informal help, we also observe lower mean scores of CES-D in the group reporting an imbalance compared to those with no respective activity.

The general finding of lower well-being in association with non-reciprocal exchange was replicated at country level. Figure 1 documents the pattern for all countries using informal help and CES-D as an example. Although in some countries the frequency of those experiencing non-reciprocity is rather small, mean scores of well-being indicators are consistently higher if reciprocity is experienced.

Multivariate results

To test the main hypothesis, multivariate linear regression models with depressive symptoms and quality of life as dependent variables were calculated adjusted for the

Table 2 Well-being and productive activities: mean scores and standard deviations (in parentheses) ($N = 22,777$)

Activity	Well-being	
	CES-D	CASP
Voluntary work		
None (20,099)	35.9 (5.4)	36.2 (6.4)
Reciprocal activity (2,364)	37.8 (4.1)	39.3 (4.8)
Non-reciprocal activity (314)	36.7 (5.1)	37.9 (5.6)
Care for a person		
None (21,448)	36.1 (5.4)	36.5 (6.3)
Reciprocal activity (1,151)	36.7 (4.7)	37.3 (5.6)
Non-reciprocal activity (178)	35.1 (5.3)	36.5 (5.9)
Informal help		
None (17,743)	35.9 (5.5)	36.2 (6.5)
Reciprocal activity (4,580)	37.2 (4.6)	38.0 (5.4)
Non-reciprocal activity (454)	35.2 (5.5)	36.3 (5.6)

variables mentioned above. The three activities under study were included simultaneously in the models where each variable of activity had three categories; (1) none; (2) reciprocal activity; (3) non-reciprocal activity, with 'none' as the reference category. Table 3 and Fig. 2 present the parameter estimates (unstandardized regression coefficients) for the activities with 95% confidence intervals.

Results confirm our descriptive findings. With the exception of caring, experienced reciprocity between efforts spent and rewards received is associated with positive well-being. Compared to older people without respective activities these differences are statistically significant for both well-being indicators. Conversely, non-reciprocal exchange is associated with negative well-being in two of the three activities (again significantly different compared to those not engaging).

Discussion

This study examined the association between social productivity and well-being of older people, based on the SHARE data set, a unique opportunity of studying types and quality of socially productive activities and their association with well-being across ten European countries. After exploring the associations between three different types of social productivity and two indicators of well-being, we tested the hypothesis that well-being

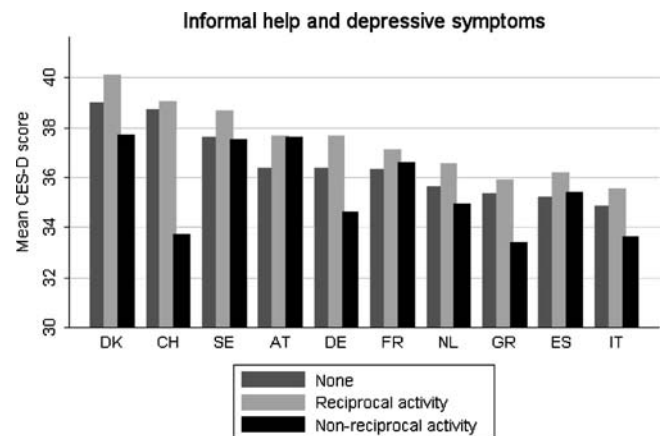
**Fig. 1** Associations of informal help and depressive symptoms across Europe: mean CES-D scores ($N = 22,777$)

Table 3 Association of productive activities with well-being (unstand. regression coefficients, 95% confidence intervals and *P* values)

Activity	CES-D			CASP		
	Coef.	95% CI	<i>P</i>	Coef.	95% CI	<i>P</i>
Voluntary work						
None	–			–		
Reciprocal activity	0.71	(0.50 to 0.92)	< 0.001	1.23	(0.98 to 1.49)	< 0.001
Non-reciprocal activity	–0.14	(–0.82 to 0.55)	0.70	0.42	(–0.35 to 1.18)	0.29
Care for a person						
None	–			–		
Reciprocal activity	–0.40	(–0.72 to –0.07)	0.02	–0.37	(–0.75 to 0.01)	0.06
Non-reciprocal activity	–1.12	(–2.05 to –0.19)	0.02	–1.30	(–2.35 to –0.25)	0.01
Informal help						
None	–			–		
Reciprocal activity	0.56	(0.39 to 0.74)	< 0.001	0.63	(0.41 to 0.84)	< 0.001
Non-reciprocal activity	–0.66	(–1.22 to –0.10)	0.02	–0.77	(–1.39 to –0.16)	0.01

Adjusted for age, gender, marital status, retirement status, reported chronic diseases, countries, education and income

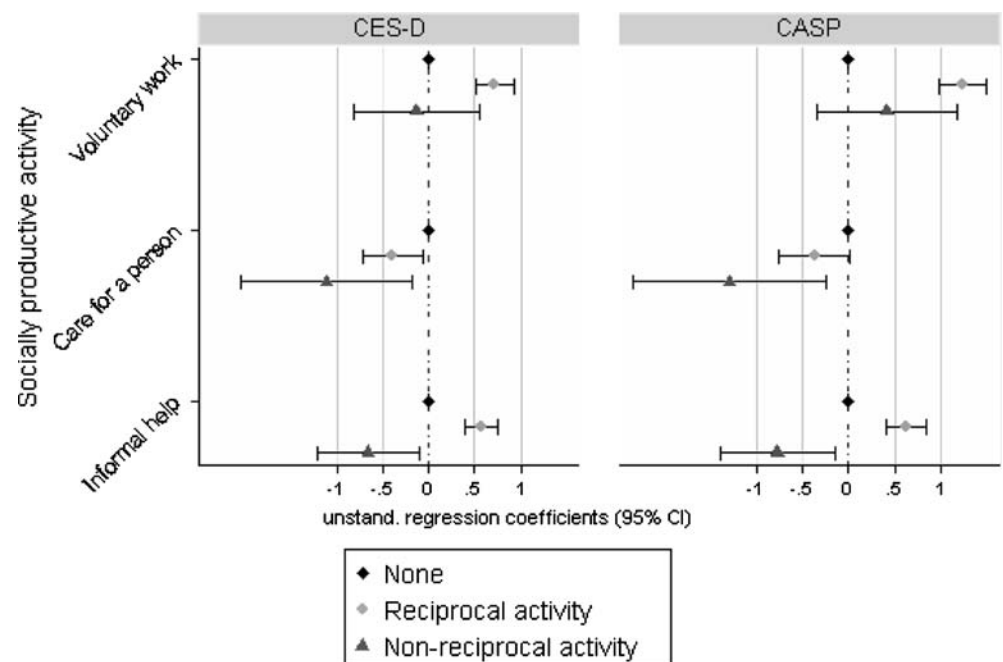
varies according to the quality of exchange experienced in the activity.

While results indicating better well-being of socially productive older people further contradict the assumptions of disengagement theory (Bath and Deeg 2005; Maier and Klumb 2005), they add a novel element: it is the quality of exchange experienced in productive activities that matters for well-being. Our results showed that providing help to others and volunteering are associated with positive well-being to the extent that they are rooted in a fundamental principle of social exchange: reciprocity of exchange. Once these activities result in high ‘cost’ while providing poor ‘gain’ frustration or lack of reward and esteem is likely to occur, with adverse effects on well-being. This is most often the case if older people care for a sick or disabled adult. In these conditions of dependency, reciprocity of exchange is

almost impossible, and spending recurrent efforts in situations with little hope for improvement is often experienced as stressful (Schulz and Beach 1999; Lee et al. 2003). In contrast, doing voluntary work in a context of balanced social exchange strengthens the sense of well-being of older people. Additional results not shown in detail demonstrate that the association of volunteering with well-being is particularly strong in the group of retired people. This may indicate that acting in a social role beyond employment is beneficial for well-being.

The interpretation of the results of this study is restricted by several limitations. First, given the cross-sectional study design and the fact that information on either type of variable, social productivity and well-being, is based on self-reported data, we cannot draw any conclusion concerning the causal direction of their

Fig. 2 Association of productive activities with well-being (unstand. regression coefficients and 95% confidence intervals). Based on results from Table 3



association. Although adjustment for the effect of health status of participants was made by including the variable 'number of reported chronic diseases', a selection bias may affect parts of the observed association, as people who are socially engaged are in better health. However, it is important to note that observed differences of well-being between reciprocal and non-reciprocal activities can hardly be explained by this selection bias. Furthermore, given the methodological problem of common method variance, we cannot exclude the possibility that participants with a negative mood state or trait (e.g., negative affectivity) are more likely to report non-rewarding social exchange.

A further limitation concerns the measurement of social productivity. In this study, information was restricted to three main types of activities: volunteering, caring for a sick person, and providing help to family, friends, or neighbors. Although these are activities with relatively highest prevalence at older age, we cannot rule out the possibility that other types of activities produce different results. We also did not explore the duration of activities, nor did we analyze the different motivations underlying engagement. Moreover, a more subtle assessment of quality of exchange was not feasible within the constraints of a large survey. Finally, although the overall sample is large and represents the population of the respective age groups within countries quite well (Klevmarken et al. 2005), survey participation in some countries was not very high. The country-average of household response rate was 61.8% for the total sample, with considerable variation between countries (see Börsch-Supan and Jürges 2005 for details). Although this is above average by European standards, we cannot rule out that an unobserved selection bias affects reported results. On the other hand, concerning important variables (e.g., sociodemographic and socioeconomic indicators, health indicators), comparative analyses of the SHARE sample showed that the final SHARE sample is well comparable with samples from three other prominent European surveys, the Quarterly European Union Labour Force Survey, the European Country Household Panel, and the European Social Survey (Börsch-Supan and Mariuzzo 2005).

Apart from these limitations several strengths of the study are obvious. The survey covers a large population of older people in ten European countries. It was conducted on the basis of a vigorously controlled study protocol, including standard procedures of translating the measures into different languages and of collecting and controlling data. Data were obtained through face-to-face interviews with trained interviewers and were carefully checked for bias and errors (Börsch-Supan and Jürges 2005).

Secondly, this study introduces a new approach towards analyzing socially productive activities by extending a theoretical model applied to work-related activity and its effects on well-being, effort-reward imbalance (Siegrist 1996), to major types of unpaid engagement in early old age. The effort–reward imbalance model

was successfully tested in employed populations where high efforts spent at work in combination with low reward received in turn was associated with an increased incidence and prevalence of several physical and mental disorders (for review see Siegrist 2005; Tsutsumi and Kawakami 2004). Moreover, non-reciprocity of exchange in terms of high effort and low reward was studied with regard to well-being in other types of close social relationships, especially non-reciprocal marital exchange where it was associated with increased levels of depressive symptoms (Knesebeck and Siegrist 2003). The present study is the first to report associations of non-reciprocal exchange with reduced well-being in relatively frequent socially productive activities performed by third age populations.

A further strength of the study concerns the high consistency of our findings as we replicated all analyses with two indicators of subjective health that were shown to predict well-being: self-rated health (Idler and Benyamini 1997), and number of reported bodily symptoms (van Wijk and Kolk 1997). In our data set, these two indicators were each associated with depressive mood ($r=0.28$ and 0.31) and quality of life ($r=0.23$ and 0.32). Findings of multivariate analysis paralleled those reported above with regard to all three activities. A further test of robustness of results concerns a concurrent measure of depressive symptoms, the EURO D-scale (Dewey and Prince 2005) that was additionally included in the SHARE questionnaire. We observed a high consistency between the two measures and their associations with productive activities (results not shown).

In conclusion, being socially productive in old age is associated with positive well-being in all European countries under study, but this association varies according to the quality of exchange. Strongest associations are observed among older people who experience a balance between investment in these activities and return in terms of appreciation and satisfaction. Policy implications of these findings indicate that in addition to extending the opportunity structure of socially productive activities in aging societies (Commission of the European Communities 2005), efforts are needed to maintain and improve the quality of exchange inherent in these activities. Strengthening the options of experiencing balance in social exchange may increase the motivations of remaining or becoming socially productive past retirement and, additionally, may result in better health and well-being of older people.

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