

Gender Differences in Subjective Well-Being: Comparing Societies with Respect to Gender Equality

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Abstract These analyses explore the relationship between gender inequality and subjective well-being. The hypothesis was tested as to whether societal gender inequality is related to the size of gender differences in subjective well-being in various societies. Results come from comparative data sets (World Values Survey, involving 57 countries; OASIS project, involving Norway, England, Germany, Spain and Israel). The size of gender differences varied with the extent of societal gender inequality and the cultural attitudes regarding gender equality in different countries. Including individual resources like education and income in the analyses reduced the size of gender and country differences. Gender differences in subjective well-being could therefore be related to gender specific access to goal relevant resources.

Keywords Gender · Well-being · Quality of life · Welfare-state comparisons

1 Introduction

Are women unhappier than men? What are the factors which make men happier than women? Are gender differences in subjective well-being similar in different cultures? Cross-cultural analyses of gender differences in subjective well-being (SWB) are the focus of this paper. Empirical data show a consistent disadvantage of women in respect to negative affect and subjective health: Women have higher rates of negative affect and depression and poorer subjective health than men (Nydegger 2004; Russo and Green 1993). In some studies, life satisfaction and positive affect are also lower for women (e.g.

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Shmotkin 1990). In this paper we analyse the relevance of societal and cultural factors in explaining gender differences in SWB. Using a cross-cultural data set, we examine whether the size of gender differences in SWB varies across countries and how it is tied to societal gender inequality. In the introduction, we will discuss gender differences in SWB, consider factors which might account for these differences, discuss the perspective of comparative research, and formulate hypotheses.

2 Gender Differences in Subjective Well-Being

Looking at the results from empirical gender research, reliable differences between men and women in relation to well-being have been found for longevity, morbidity, and mental health (Maccoby 1998). This line of research has been aptly summarized by Sen (1996): “women get sick and men die”. In relation to mental health and SWB, there is evidence for a higher prevalence of mental illness for women as compared to men, especially in regard to major depression (Nolen-Hoeksema 1987; Russo and Green 1993). Gender differences in the normal range of SWB show a somewhat different picture. In most studies, women consistently report more negative emotions than men (Costa et al. 2001; Feingold 1994; Hansson et al. 2005; Nolen-Hoeksema and Rusting 1999; Smith and Reise 1998; Tesch-Römer and Wurm 2006). This gender difference can also be found in aging and old women and men (Baltes et al. 1999; Pinquart and Sörensen 2001). Gender differences have also been reported consistently in literature in relation to subjective health, a domain specific aspect of life satisfaction. Women rate their subjective health lower than men (Baltes et al. 1999; Wurm and Tesch-Römer 2006). Results for positive affect and general life satisfaction are mixed, however: some studies show higher positive affect and life satisfaction in women (Fujita et al. 1991), some studies show no gender differences in these aspects of SWB at all (Okun and George 1984), and some studies show varying gender differences across the life course (Shmotkin 1990). It should be borne in mind, though, that the majority of studies analysing gender differences in subjective well-being come from the United States and Western European countries.

3 Factors Accounting for Gender Differences in Subjective Well-Being

Given the gender differences described above, which factors account for them? Basically, there are two different perspectives for explaining gender differences in SWB. Firstly, gender differences in SWB could be explained by universal sex differences (Lippa 2005). Women’s greater vulnerability to depression and anxiety has been linked to estrogen and progesterone production (e.g. in puberty, over the menstrual cycle, and during the post-partum period). However, biological explanations for women’s lower SWB are not well supported empirically (Nolen-Hoeksema and Rusting 1999; Nydegger 2004).

Secondly, factors related to the different living conditions of women and men might account for gender differences in SWB. Some authors argue that advances in understanding gender differences in well-being and mental health require “appreciating the violence, powerlessness, and lack of access to resources that pervade women’s lives” (Russo and Green 1993). In many societies the average living situation of women is indeed disadvantaged as compared to that of men. Opportunity structures and action resources are unequally distributed between genders in many societies (United Nations Development Programme 2002; cf. Harvey et al. 1990). Gender equality (or inequality) on a societal

level has a variety of facets and includes—among others—gender specific opportunity structures (like gender differences in labour market participation), access to resources (like gender differences in average income), or power structures (like gender differences in parliamentary representation). These average gender differences in opportunity structures and individual action resources might be responsible for the average gender differences in SWB as described above. Following this line of reasoning, it could be stated that women are unhappier and less satisfied as compared to men if they are disadvantaged in terms of opportunity structures and action resources.

4 Cross-Cultural Perspectives on Gender Differences in Subjective Well-Being

Cross-cultural and cross-societal research could shed light on the factors accounting for gender differences in SWB. Yet cross-cultural research on SWB has been mainly devoted to general aspects of SWB. For instance, researchers have analyzed the cultural and societal differences in the levels of SWB (e.g., Diener et al. 1995) or the cultural specificity of factors influencing SWB (e.g., Diener et al. 2000; Suh et al. 1998; Veenhoven and Ouwenell, 1995). Yet there is, little cross-cultural research on gender differences in SWB (see for an exception Costa et al. 2001). The present study aims to fill this research gap.

If the hypothesis of universal gender differences (gender differences rooted in biological sex differences) is assumed, SWB differences between men and women should be equal across cultures and societies. In contrast, the hypothesis of societal gender inequality would predict varying gender differences in SWB across cultures and societies. In some countries, women and men are treated more equally than in others. If societal factors influence well-being, the gender gap in average SWB should vary across societies as a function of the degree of gender inequality. Differences between women and men in SWB should be smaller in „equal opportunity countries” as compared to countries where opportunity structures are more disadvantageous for women. Hence, cross-cultural data sets permit the analysis of the question of whether societal gender inequality and gender differences in SWB correlate.

It should be borne in mind, however, that not only structural characteristics of a society (e.g. labour market participation, income, parliamentary representation) might play a role in this context, but also cultural factors (e.g. attitudes, gender stereotypes). Although it has been shown that the cross-cultural variation in attitudes towards women and men are connected with societal gender inequality (Glick et al. 2000; Glick et al. 2004), culture might be important in its own right. For instance, the magnitude of gender differences in the “Big Five” personality traits differs between cultures (Costa et al. 2001). These gender differences in personality are smaller in traditional societies. Hence, it might be relevant to look at the interaction between structural gender inequality and the cultural acceptance of gender inequality. Unequal living conditions of women and men could possibly affect female and male SWB more strongly in societies where predominant societal attitudes demand gender equality.

5 Transmitting Societal Gender Inequality to Subjective Well-Being

Finally, it seems necessary to explain how gender inequality on the societal macro level is transmitted to individual well-being on the micro-level. Individual SWB depends on the

extent to which people are able to reach goals and ambitions (Brandtstädter and Rothermund 2002). Reaching important personal goals increases satisfaction and happiness of a person, even if this might be moderated by individual motives (Diener and Biswas-Diener 2002; Diener and Fujita 1995; Srivastava et al. 2001), control beliefs (Lachman and Weaver 1998), or coping strategies like accommodation (Brandtstädter and Rothermund 2003). Individual action resources, like education and income, as well as opportunities, like labour market participation, are necessary for the successful pursuit of goals. It can be assumed that people with fewer action resources and opportunities are, on average, less successful in reaching personal goals—and are thus unhappier and less satisfied than people with more action resources and opportunities.

As women have fewer action resources and societal opportunities than men, it can be assumed that they are less successful in reaching important goals and, consequently, on average unhappier and less satisfied than men. In terms of cross-cultural research, this assumption could be tested by separating societal and individual gender inequality. Hence, a comparison could be made between women and men in different societies who have similar access to action resources and opportunities (statistical control would be for action resources and opportunities when comparing countries which differ in societal gender inequality). If the above assumptions are true, it can be expected that gender differences in SWB become smaller and country effects relating to gender differences in SWB decrease when controlling for individual action resources and opportunities. Such a result would indicate that action resources and opportunities form the mechanism which connects societal macro-structures (gender inequality) and individual micro-structure (subjective well-being).

6 Hypotheses

Based on these arguments, we will test macro- and micro-level hypotheses. First we will test a macro-level hypothesis concerning the relationship between societal gender inequality and average gender differences in SWB. “The size of average gender differences in SWB is positively correlated with indicators of societal gender inequality (in countries with higher inequality there are larger gender differences)”. In this hypothesis, societies (or countries) are the unit of analysis (we will use aggregated data for 57 countries from the World Values Survey; Inglehart et al. 2004).

In order to analyse the link between the societal macro-level and the individual micro-level, we will test the assumption that controlling for individual action resources leads to a decrease of gender differences in SWB. This analysis will be done with a comparative data set involving micro-level data on individuals nested in societies (Research project OASIS, “Old Age and Autonomy: The Role of Service Systems and Intergenerational Family Solidarity”; Motel-Klingebiel et al. 2005). For analyses to be systematic, country effects in SWB gender differences need to be established (which is somewhat redundant to the first hypothesis). “Countries varying in the extent of societal gender inequality show diverse gender differences in SWB”. When this has been established, the next hypotheses predict the effects of controlling for individual action resources. “Gender differences decrease after controlling for individual resources (income and level of education)”. “Country effects in gender differences decrease after controlling for individual resources (income and level of education)”.

7 Method

In the following, two data sets are described. (a) The World Values Survey (WVS) is a worldwide investigation of socio-cultural and political change and focuses mainly on political, gender, and economic attitudes (Inglehart et al. 2004). (b) The project OASIS involved five European countries and focused on quality of life and on the relevance of service systems and family support in adulthood. Methodological details are described elsewhere (Motel-Klingebiel et al. 2003).

7.1 Aggregated Data from the World Values Survey

In order to test Hypothesis 1 (size of gender differences in SWB is positively correlated with indicators of gender inequality), we analyzed aggregated data of 57 countries from the fourth wave of the World Values Survey (European Values Study Group and World Values Survey Association 2006). Since 1981, interviews have been carried out with nationally representative samples from more than 80 societies. Two methodological caveats should be mentioned in introducing “country” as a unit of analysis. First, we forego a precise definition and will use the concepts “country” and “society” synonymously in the present context (leaving aside the complex relations and interactions of country, society, and culture). Secondly, we assume that the heterogeneity within countries (e.g. in respect to states, autonomous regions, or communities) is low in comparison to heterogeneity between countries. Hence, we will describe the countries by macro-indicators only.

In the current analyses, aggregated data from countries were used where information on *Relative Female Economic Activity* was available from the UN Human Development Report 2002 (this was the case for 57 countries, see appendix). Three items from the WVS were used: *General Life Satisfaction* (“All things considered, how satisfied are you with your life as a whole these days?”, answer options range on a ten point scale from 1 = dissatisfied to 10 = satisfied), *Subjective Health* (“All in all, how would you describe your state of health these days?”, answer options: very good, good, fair, and poor), and *Gender Equality Norms* (“When jobs are scarce, men should have more right to a job than women”, answer options: agree, neither, and disagree). The items *General Life Satisfaction* and *Subjective Health* was selected because the instrument WHOQOL was not available with the WVS. Using the online analysis module of the WVS (www.worldvaluessurvey.com/services/index.htm), mean levels for general life satisfaction and subjective health for both genders were calculated from the relative frequencies per answer category. Gender differences were calculated by subtracting male mean values from female mean values per country (in the case of negative values, women on average have lower life satisfaction and subjective health than men; in case of positive values, women on average have higher life satisfaction and subjective health than men). For gender equality norms, the percentage of persons disagreeing with the statement was used. For life satisfaction and gender equality norms data are available for 57 countries, for subjective health data are available for 28 countries. In the appendix, data for the selected 57 countries are listed.

7.2 Individual Level Data From the OASIS Project

In order to test Hypotheses 2 to 4 (controlling for individual resources decreases gender differences in SWB and country effects in SWB gender differences), we analysed data from the OASIS project.

7.2.1 OASIS Countries

The five countries considered in the OASIS project—Norway, England, Germany, Spain, and Israel—represent different types of welfare regimes with different types of gender inequality on a societal level (see Kondratowitz 2003). Norway represents the Scandinavian social-democratic welfare regime, England the liberal model, and Germany belongs to the conservative-corporatist group of welfare states (Esping-Andersen 1990, 1999). Spain has been described as an example of the ‘Southern or Mediterranean model’ (Ferrara 1996), and Israel as a mixed model which cannot be attributed to any of the regimes alone.

Most relevant in the present context is the dimension of societal gender inequality as defined by the United Nations (United Nations Development Programme 2002): availability of income, economic activity, and political power. The United Nations Development Programme has introduced three respective indicators to represent these dimensions empirically (Table 1). A first indicator, *Relative Female Income*, refers to the ratio of female earned income to male earned income (if the value is 100, female and male income is equal). A second indicator offers information on unequal access to the labour market: *Relative Female Economic Activity* is the share of the female population aged 15 and above who supply, or are available to supply, labour for the production of goods and services (a value of 100 shows equal economic activity rates of both genders). A third indicator relates to gender equality in terms of power. The proportion of *Parliamentary Seats Held by Women* indicates the distribution of power between genders (a value of 50 shows an equal share of parliamentary seats for women and men). The United Nations Development Programme has combined indicators on gender inequality regarding parliamentary representation, economic participation, and income into one single Gender Empowerment Measure, which is also included in Table 1.

Table 1 Macro-indices for the five OASIS countries

	Norway	England	Germany	Israel	Spain
Gender empowerment measure	.837	.684	.765	.596	.702
Relative female income	% 64	61	50	52	43
Relative female economic activity	% 84	74	69	67	56
Parliamentary seats held by women	% 36.4	17.1	31.0	13.3	26.6
Gross domestic product per capita ^a	\$ 27.700	22.800	23.400	18.900	18.000
Gini-coefficient for distribution of equivalised household disposable income (new OECD scale) ^b	.26	.33	.28	.38	.33

^a 2000 with purchasing power parity. Source: CIA—Central Intelligence Agency (2001); information for England is UK data

^b 2000, Germany: 2001. Source: OECD—Organisation for Economic Co-Operation and Development (2005), p. 55; information for England is UK data. Israel: Central Bureau of Statistics Israel (2005), p. 235. Spain: Eurostat (2005)

Additionally, we have selected two indicators measuring general societal wealth and general societal inequality. The *Gross Domestic Product* (GDP) is the value of all goods and services produced within a country in a given year, while the GDP per capita shows the GDP divided by the population of the respective country. The GDP per capita is an indicator of a country's wealth. Information on GDPs as applied here is adjusted on a purchasing power parity basis. The *Gini Coefficient* is an indicator of the overall inequality of the distribution of a society's resources. If income were distributed with perfect equality, the index would be zero, while in case of perfect inequality, the Gini coefficient would be 1 (Atkinson 1970, 1983; Gini 1955).

7.2.2 OASIS sample

The survey sample of the OASIS project was drawn as a representative, disproportionally stratified sample of the urban population aged 25 and older living in private households in the participating countries. In Norway and Israel respectively, all three existing urban units were included. In Spain all urban areas with 100,000 and more inhabitants were researched, while in England and Germany a selection of such urban areas was made (England: selection of six major regions with 120 wards which were considered representative of the English urban areas; Germany: random selection of 31 urban regions within 16 states). Sampling strategies with respect to participants differed in the participating countries in order to optimize the sampling procedure according to national best practice (Spain and Israel: random route procedure; Germany: random sampling based on municipality registries; Norway: mixture of random route and register sampling; England: use of electoral registers). The sample was disproportionally stratified by age allowing for sufficient sample sizes for the oldest old. Table 2 gives an overview of the national and the overall samples. The total sample size was $N = 6.106$ (age 25 to 102 years). Interviews took place between September 2000 and May 2001.

7.2.3 OASIS Instruments

The examinations presented here will focus on the short version of the WHOQOL (Hawthorne et al. 2006; Lowenstein et al. 2002; WHOQOL Group 1994) which was used in the OASIS project. Quality of life is seen here as the individual's interpretation of the current living situation under the condition of their respective culture, norms and values compared with their goals, expectations, standards and interests.

The WHOQOL instrument covers physical health, psychological health, environment, and social relationships as four major life domains accessible to assessment irrespective of age, occupational status, and other socio-demographical status variables. The *Physical Health* scale comprises items on activities of daily living, energy and fatigue, dependence

Table 2 Overview of the OASIS sample

		Norway	England	Germany	Israel	Spain
Female Proportion	%	56	63	58	58	56
Age Structure						
25–74	<i>n</i>	790	799	798	816	839
75+	<i>n</i>	413	398	499	385	369
Sample Size	<i>n</i>	1,203	1,197	1,297	1,208	1,201

on medicinal substances and medical aids, mobility, pain and discomfort, sleep and rest, and on work capacity. The *Psychological Health* scale depicts the bodily image and appearance, prevalence of positive and negative feelings, self-esteem, spirituality and religion, as well as thinking, learning and concentration. The *Environment* Scale aims at measuring living conditions and includes items on financial resources, physical safety and security, health and social care, home environment, transportation, participation in and opportunities for recreation and leisure activities, learning opportunities and the ecological environment. The scale on *Social Relations* comprises items on personal relationships, social support and sexuality. The scales show low to moderate correlations with each other (e.g. Hawthorne et al. 2006, report scale inter-correlations between .37 and .64).

In the current analyses, the scores on the four subscales were obtained by latent variable measurement models that allow the estimation of measurement errors. Another important feature of this approach is the option for modelling covariance structures between these errors, thus taking into account shared method variance of items. This became necessary because of the heterogeneous response format of the WHOQOL items. To arrive at a meaningful interpretation of country effects, measurement invariance between all five countries was incorporated into all models. Both the reliability coefficients and relevant fit indices of the four measurement models—as summarized in Table 3—indicate satisfactory measurement properties of the scales employed. Most importantly, configural equivalence (Horn and McArdle 1992) is given for all countries on the four variables. Although the scale measuring social relationships is very short, its reliability coefficient is acceptable. The WHOQOL Group offers a detailed discussion of the psychometric properties of the instrument with a special emphasis on cross-cultural research (WHOQOL Group 1998a, b).

The testing of Hypothesis 3 and Hypothesis 4 requires variables measuring the individual endowment with resources. To measure *Education* we used information on both schooling and vocational training. Three levels of education were defined. A low educational level was associated with primary level of schooling with no vocational training. An intermediate level was indicated by primary level schooling plus vocational training or higher levels of schooling without. All higher levels were defined as higher education. The respondent's *Income* position was measured by a household income per capita adjusted for household size and composition. The adjustment was done by the so called new OECD equivalent scale (e.g., Coulter et al. 1992; Figini 1998, 2000).

The occurrence of missing data in the OASIS data set—with the exception of the items measuring income and satisfaction with sexuality—was very rare. Missing data were

Table 3 Psychometric properties of the WHOQOL scales

	Physical health	Psychological health	Environment	Social relationships
Reliability	.87 ^a	.80 ^b	.77 ^c	.65 ^d
Discrepancy	$\chi^2_{68} = 462.20$	$\chi^2_{54} = 441.52$	$\chi^2_{108} = 590.91$	$\chi^2_{12} = 198.72$
RMSEA	.03	.03	.03	.05
CFI	.98	.96	.95	.92
Number of Items	7	6	8	3

Note: Reliability coefficients computed with list-wise deletion of cases with missing values, latent variable model fit indices computed with FIML missing data handling procedure; ^a*N* = 5.856; ^b*N* = 5.841; ^c*N* = 5.785; ^d*N* = 4.970

handled with the Full Information Maximum Likelihood estimation procedure (Arbuckle 1994, 1996) provided by the AMOS software (Arbuckle 2003).

8 Results

Again, results from two data sets are reported. (a) Firstly, results are reported which are based on the World Values Survey (WVS). The analyses of the WVS data are devoted to testing the hypothesis that the extent of societal gender inequality is correlated with the size of gender differences in SWB (Hypothesis 1). (b) Secondly, we report analyses from the project OASIS. The analyses of the OASIS data focus on the mechanism which transmits societal gender inequality to individual SWB (Hypotheses 2 to 4).

8.1 Aggregated Data from the World Values Survey

8.1.1 Hypothesis 1: Extent of Societal Gender Inequality

In the first step, it was examined whether there is a relationship between the extent of gender differences and indices of gender inequality. For these analyses, data from the World Values Survey (WVS) was used. In order to test Hypothesis 1 (societal gender inequality related to size of gender differences in SWB), the correlation between Relative Female Economic Activity Rate with General Life Satisfaction and Subjective Health were calculated for all 57 countries. Both correlations are low (General Life Satisfaction $r = -.10$, Subjective Health $r = -.01$). Looking at societal gender equality alone does not confirm Hypothesis 1.

However, it could be that the effects of gender inequality on a societal level depend on the cultural attitudes about the idea of “gender equality” itself. Hence, in addition to the structural variable Relative Female Economic Activity (indicating the societal aspect of gender inequality), we considered the attitudes shared in a culture about treating women and men equally. For this purpose, we took into account the country specific Gender Equality Norms which reflect the cultural aspect of gender inequality. Agreeing with the statement “When jobs are scarce, men should have more right to a job than women” shows acceptance of inequality. The 57 countries were divided into two categories: countries where gender inequality on the labour market is widely accepted (in these countries, less than 50% of the total population disagreed with this statement) and countries where gender inequality on the labour market is widely rejected (in these countries, 50% and more of the total population disagreed with this statement). For instance, in Morocco only 7.9% of the total population disagreed with the statement, while in Iceland the proportion of people disagreeing was 94.3%.

Looking at the two groups of countries, a different pattern of correlations emerged (see Fig. 1). In countries where gender inequality on the labour market is widely accepted, there was a negative correlation between the indicator of societal inequality and the two indicators of SWB (Life Satisfaction: $r = -.28$; Subjective Health: $r = -.40$). In contrast, in countries where gender inequality on the labour market is widely rejected, there was a positive correlation between the indicator of societal inequality and the two indicators of SWB (Life Satisfaction: $r = +.24$; Subjective Health: $r = +.43$). The effect sizes of these correlations range between $R^2 = .06$ and $R^2 = .18$. Although none of the coefficients are significant (due to

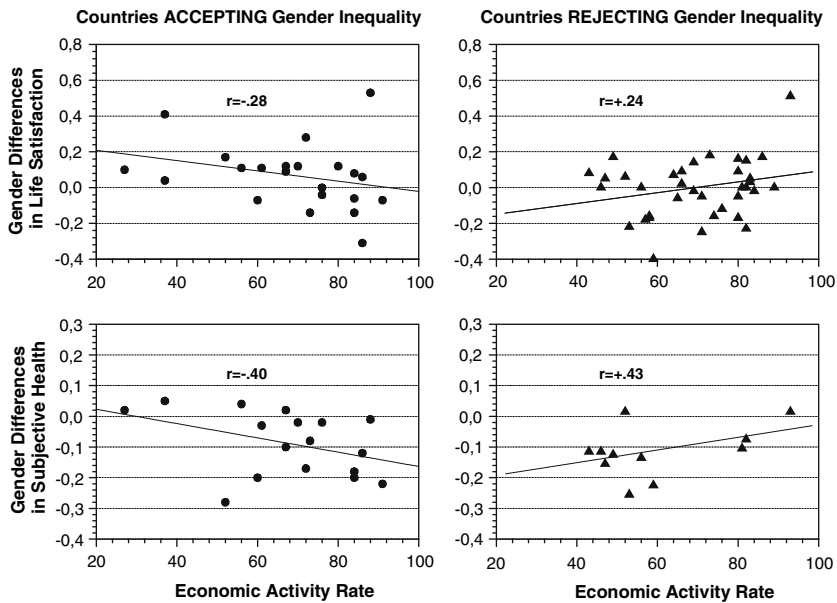


Fig. 1 Correlations between economic activity rate and gender differences in life satisfaction and subjective health for countries where gender inequality on the labour market is widely accepted or rejected

the small sample size), the differences between the negative and positive pairs of correlations are significant (life satisfaction: $z = 1.86$, $p < .05$, subjective health: $z = 1.97$, $p < .05$). In countries characterized by acceptance of gender inequality, actual gender equality on the labour market is related to lower feelings of SWB in women as compared to men. However, in countries where gender inequality is rejected, actual gender equality on the labour market leads to higher feelings of SWB in women as compared to men.

8.2 Individual Level Data from the OASIS Project

Data from the OASIS project come from countries rejecting gender inequality. Hence, these data are used in the second set of analyses. The focus here is on the mechanisms which relate societal gender inequality to individual subjective well-being. The analyses involve three steps: First, we test if the OASIS countries which vary in the extent of societal gender inequality show diverse gender differences in SWB (Hypothesis 2). Then we control for individual resources (income and level of education) and test if gender differences decline (Hypothesis 3) and if country effects in gender differences decline (Hypothesis 4).

In order to test the hypotheses, four multi-group regression models were computed. For the sake of clarity, models and their relationship to the hypotheses are presented in Table 4 (multi-group regression models were used for the analyses of the hypotheses 2 to 4 and were based on individual level data from the OASIS project). Although hierarchical regression models (cf. Bryk and Raudenbush 1992) would conceptually better fit the structure of the data, this type of analysis was abandoned due to the small sample size of the countries (Maas and Hox 2005; cf. Bowers and Drake 2005). The measurement models

Table 4 Overview of the latent variable models and corresponding hypotheses

Model 1	Gender effect estimated for each country separately; income and education effect fixed to zero
Model 2	Equal gender effect assumed across countries; income and education fixed to zero
Model 3	Gender effect estimated for each country separately; income and education considered as covariates
Model 4	Gender effect fixed for each countries to its Model 1 values (i.e., without income and education as covariates); income and education considered as covariates
Model 5	Equal gender effect assumed across countries; income and education considered as covariates
Hypothesis 2	Countries varying in the extent of societal gender inequality show diverse gender differences in SWB: Comparing Model 2 with Model 1
Hypothesis 3	Gender differences decline after controlling for income and level of education: Comparing Model 4 with Model 3
Hypothesis 4	Country effects in gender differences disappear after controlling for income and level of education: Comparing Model 5 with Model 3

presented above were employed for the dependent variables. Note that the following analyses were repeated four times (for each dependent variable there was one analysis).

Firstly, Model 1 was computed to establish a baseline and to estimate the extent of gender effect in the five countries separately. Model 1 was also used to confirm the fact that there are indeed gender effects in SWB as suggested by the literature. Gender effects were calculated by means of a standardized regression coefficient (β). As can be seen in Table 5 (respective rows denoted by “Model 1”), there are significant gender effects on all four scales measuring subjective well-being (these effects are graphically depicted in the first row of Fig. 2). In Norway, however, men and women do not report different subjective well-being for the scales Psychological Health and Social Relationships; the same applies to England for the scale Social Relationships. In all other countries, however, women reported significantly lower subjective well-being. This finding replicates findings reported in the literature.

8.2.1 Hypothesis 2: Societal Gender Inequality

Hypothesis 2 stated that there are significant country effects in respect to gender differences. To test this Hypothesis, Model 2 with fixed gender differences across the five countries was compared with Model 1, where gender differences were allowed to vary across countries. Since the two models are nested, a chi-squared difference test (Bentler and Bonnet 1980) was applicable. The chi-squared discrepancy values for Models 1 and 2 and the difference between them are displayed in Table 6 (row denoted by “Model 2-Model 1 [Hypothesis 1]”). The critical value for a chi-squared difference with four degrees of freedom is 9.49 at the 5%-error-level. Consequently, there is a significant effect for the OASIS countries regarding the size of gender differences for the scales Physical Health, Psychological Health and Social Relationships, but not for the scale Environment. The size of the gender differences described above varies between countries. Differences between women and men in SWB are smaller in Norway and larger in Spain and Israel.

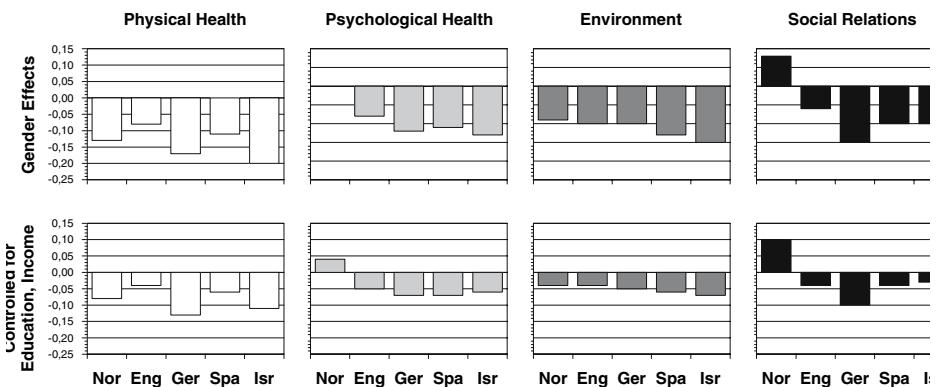
8.2.2 Hypothesis 3: Individual Resources and Gender Differences

Hypothesis 3 focused on the relevance of individual resources as compensating factors for the effects of gender inequality. In Model 3, therefore, we have included income and education as covariates in the calculations. As can be see in the lower rows of Table 5

Table 5 Estimated gender effect by country both before (Model 1) and after (Model 3) controlling for individual income and level of education

	Model	Gender effect ^a				
		Norway (N = 1203)	England (N = 1197)	Germany (N = 1297)	Israel (N = 1208)	Spain (N = 1201)
Physical Health	Model 1	-.13***	-.08*	-.17***	-.11***	-.20***
	Model 3	-.08**	-.04	-.13***	-.06*	-.11***
Psychological Health	Model 1	.00	-.08*	-.12***	-.11***	-.13***
	Model 3	.04	-.05	-.07**	-.07**	-.06**
Environment	Model 1	-.09**	-.10***	-.10**	-.13***	-.15***
	Model 3	-.04	-.04	-.05	-.06*	-.07*
Social Relationships	Model 1	.08	-.06	-.15***	-.10**	-.10**
	Model 3	.10	-.04	-.10***	-.04	-.03

Note: Significance tests computed one-tailed: * $p < .05$, ** $p < .01$, *** $p < .001$; ^aBeta weight (β) of gender on subjective well-being

**Fig. 2** Estimated gender effects by country before (upper row) and after (lower row) controlling for individual income and level of education

(denoted by “Model 3”), gender differences decrease after controlling for individual resources, but do not disappear completely. With the exception of England, there are still significant gender differences after controlling for income and education. This result is not surprising, given the fact that there are various other factors, like gender stereotypes, that might be connected to gender differences in SWB, but were not considered here. We therefore tested whether the gender effect is significantly smaller if individual resources are included. This was, technically speaking, tested by comparing Model 3 with Model 4, a model in which the effect of covariates was considered but the gender effect coefficients

Table 6 Nested model fit comparisons

	Physical health	Psychological health	Environment	Social relationships
Model 1	$\chi^2_{168} = 1631.01$	$\chi^2_{139} = 1427.35$	$\chi^2_{223} = 1946.89$	$\chi^2_{52} = 748.30$
Model 2	$\chi^2_{172} = 1641.76$	$\chi^2_{143} = 1439.07$	$\chi^2_{227} = 1949.43$	$\chi^2_{56} = 772.86$
Model 2–Model 1 (Hypothesis 2)	$\Delta\chi^2_4 = 10.75^*$	$\Delta\chi^2_4 = 11.72^*$	$\Delta\chi^2_4 = 2.53$	$\Delta\chi^2_4 = 24.56^*$
Model 3	$\chi^2_{158} = 761.55$	$\chi^2_{129} = 887.22$	$\chi^2_{213} = 1090.47$	$\chi^2_{42} = 349.17$
Model 4	$\chi^2_{163} = 774.00$	$\chi^2_{134} = 897.44$	$\chi^2_{218} = 1101.93$	$\chi^2_{47} = 356.61$
Model 4–Model 3 (Hypothesis 3)	$\Delta\chi^2_5 = 12.45^*$	$\Delta\chi^2_5 = 10.21^a$	$\Delta\chi^2_5 = 11.46^*$	$\Delta\chi^2_5 = 7.44$
Model 5	$\chi^2_{162} = 766.82$	$\chi^2_{133} = 897.20$	$\chi^2_{217} = 1091.46$	$\chi^2_{46} = 367.24$
Model 5–Model 3 (Hypothesis 4)	$\Delta\chi^2_4 = 5.27$	$\Delta\chi^2_4 = 10.05^*$	$\Delta\chi^2_4 = .99$	$\Delta\chi^2_4 = 18.07^*$

Note: ^a $p < .10$, * $p < .05$

fixed to their original values from Model 1. The chi-square difference tests can be found in the middle of Table 6 (row denoted by “Model 4–Model 3 [Hypothesis 3]”). The critical value for this test with five degrees of freedom is 11.07. Gender effects are indeed significantly different (i.e. smaller) for the scales Physical Health, Psychological Health and Environment after accounting for income and education. They do not, however, significantly change for the scale Social Relationships, which was the scale with the largest gender differences. This effect is graphically depicted in Fig. 2 (for the scales Physical Health, Psychological Health, and Environment the gender effects in the upper row are significantly greater than the gender effects in the lower row, where education and income is controlled for).

8.2.3 Hypothesis 4: Individual Resources and Country Differences

Hypothesis 4 stated that after controlling for income and education, the country effect would decrease. To test this hypothesis, Model 5, that assumed equal gender differences after controlling for income and education, was set up. This model was compared to Model 3, which does not assume equal gender differences across countries. This test was only significant for the scales where differences in gender effects were initially found, i.e. Physical Health, Psychological Health and Social Relationships. The critical value for this chi-squared difference test with four degrees of freedom is 9.49 at the 5%-error-level. As can be seen in the last row of Table 6 (denoted by “Model 5–Model 3 [Hypothesis 4]”), gender differences between countries remain for the scales Psychological Health and Social Relationships after controlling for education and income. However, for the scale Physical Health, country effects in gender differences are no longer present: If individual endowment with resources is taken into account, there are no longer gender differences in Physical Health between countries with different levels of gender inequality.

9 Discussion

The focus of this study was gender differences in SWB that result from unequal opportunity structures on a societal level. This focus called for a comparative approach and, consequently,

a selection of countries which differ in the extent of gender inequality. Two data sets were used for the analyses (World Values Survey, OASIS project). The WVS provides a large sample of countries, whereas the OASIS data set allows detailed analyses on the individual level. The countries selected in the OASIS project are representative of different types of welfare regimes (Esping-Andersen 1990, 1999) and thus allow a generalization of the results vis à vis other comparable countries. Furthermore, the application of best practice sampling and well-defined populations enhance the external validity of the OASIS data.

In the WVS, we found evidence for a correlation between indicators of gender inequality on the country level and gender differences in SWB: The larger the gender inequality in a society, the larger gender differences in SWB (Hypothesis 1). The analysis of the OASIS data also shows a consistent—low to moderate—disadvantage of women in respect to SWB (Hypothesis 2). However, the original Hypothesis 1 has to be modified. Only in countries favouring a culture of gender equality is there a positive relationship between societal gender inequality and extent of gender differences in indicators of SWB. If the majority of a population rejects gender inequality on the labour market, gender differences in SWB decrease with increasing equality for both genders on the labour market (higher gender equality is related to small gender differences in SWB). Conversely, in countries where gender inequality on the labour market is widely accepted, the gender differences in SWB increase with higher equality of women on the labour market. Hence, the data show the interplay between societal structures and cultural belief. Only where the demand for gender equality has a cultural base is the equal treatment of men and women associated with equal levels of SWB.

In the OASIS data we explored the mechanisms which transmit gender inequality on the societal level to SWB on the individual level. This was done by controlling for individual resources (education, income). The assumption behind these analyses is the idea that action resources like competencies (i.e. education) and finances (i.e. income) are prerequisites for successful goal attainment which in turn influences SWB. If gender effects in SWB are due to unequal access to action resources, differences between women and men should decrease when controlling for these resources. This interpretation is partially supported by the analyses of OASIS data. Controlling for income and education reduces gender effects in three of the four scales considered (Physical Health, Psychological Health and Environment; Hypothesis 3). However, country effects in gender differences only decreased for one scale (Physical Health) when controlling for income and education (Hypothesis 4). Hence, the analyses of the OASIS data hint at the importance of gender differences in action resources (education, income) for explaining gender differences in SWB. However, there might be other resources that are more proximal to goal attainment which were not measured in the data sets used for these analyses. Finally, it might be possible that other factors are relevant for gender differences in SWB, like negative or ambivalent gender stereotypes (Glick et al. 2004).

9.1 Methodological Considerations

The validity of these results should be discussed before looking at their theoretical implications. Firstly, although the basic analyses concerning the association between gender inequality and gender differences were based on a large sample of countries, there is a major drawback in the macro-micro-linkage, as in the OASIS study only five countries are involved. The problem of generalization, however, can be controlled by selecting a representative sample of countries or/and restricting the range of inference to those

countries for which the sample is representative. The countries selected in the OASIS project are representative of European welfare states. Of course it could be argued that an aggregation on a national level does not take intra-national variation into account and that a lower level of aggregation (e.g., counties) would provide a more fine-grained picture. This, however, is an open empirical question and was not tested here.

Secondly, as mentioned already, there are complex conceptual relations between the constructs “country”, “society”, and “culture”. Country effects in respect to gender differences were attributed to a specific aspect of society (gender inequality). However, this does not mean that cultural factors are insignificant in this context: The attitudes toward “gender equality” as a societal norm moderated the association between gender inequality and gender differences in SWB. Moreover, interactions between societal dimensions were not tested here. For instance, the extent and impact of societal inequality might vary depending on the level of societal wealth.

Thirdly, the analyses were based on two studies which defined subjective well-being (SWB) differently. While the WVS used single item indicators for two aspects of SWB (life satisfaction, subjective health), the OASIS project used an established SWB scale (WHOQOL short form, with the four scales Physical Health, Psychological Health, Environment, Social Relations). Despite the heterogeneous definitions and instruments, there are commonalities between the two studies. Satisfaction with life (single item in WVS, four scales in the OASIS project) was central in both studies. The construct of subjective health was measured in both studies as well (single item in WVS, scale Physical Health in the OASIS project), which is not only an indicator of somatic health, but reflects also emotional well-being. Hence, one could argue that cognitive and emotional aspects of SWB (Diener 2000) were represented in both studies. Moreover, the fact that both studies showed convergent results despite heterogeneous instrument strengthens the argument. Despite these problems, the comparative approach definitely has some significant advantages. We were able to study the effects of macro-structural characteristics on individual outcome variables. This is not possible by drawing a sample from a single population. In order to show that gender effects vary as a function of opportunity structures on a societal level, variation is also required on the macro level. It was also possible to show that similar mechanisms – access to action relevant resources like education and income – are related to SWB gender differences in various societies. Hence, differences between cultures and societies might be due to cultural or societal environments, which operate with universal mechanisms (Daatland and Motel-Klingebiel 2006).

9.2 Theoretical Implications

The results presented here show that the size of gender differences in subjective well-being varies with societal gender inequality and cultural norms regarding gender equality. This study provides evidence that gender effects in well-being go beyond an ubiquitous gender factor. If biology were the sole cause for a gender effect in well-being, this effect would not vary across countries.

Firstly, the results of this study show the complex relationships and interactions of cultural beliefs and norms on the one hand, and societal structures and institutions on the other. Although it is necessary to monitor national and regional development in gender equality and to analyse the influence of policies on gender equality (Di Noia 2002; Michalos 2000; Sugarman and Straus 1988), it also seems necessary to take the cultural background into account. Looking at our analyses, gender equality would not lead to small

differences in SWB in all countries (with their different cultural bases). It could be that in cultures which accept gender inequalities, the role identity of women is in conflict with certain non-traditional roles (e.g. participating in the labour market) and leads to gender differences with lower mean levels of SWB for women (cf. Costa et al. 2001). On the other hand, in countries which accept, welcome and encourage gender equality, societal equality of genders has a positive effect: Under these cultural conditions, with increasing equality on the labour market gender differences in SWB seem to disappear.

Secondly, the results of the present study show that individual access to resources are relevant to SWB—for women as well as for men. In European countries in particular, policies on the European and national level are aimed at improving gender equality, mainly in the context of access to the labour market (Gerhards 2005). Although there are differences between European countries, they are relatively homogeneous in their attitudes to equality between genders. In countries where gender equality is highly regarded, the availability of resources relevant to goal-directed behaviour might be the link between gender inequality on the macro-level and gender differences in SWB on the micro-level. These results have implications for gender differences and theoretical models of SWB. Hence, these results show that gender differences in SWB are linked to societal inequality – thereby indicating equity problems in relation to gender equality (Sen 2004).

Finally, there has been a debate on whether SWB is regulated by top-down or bottom-up processes (e.g. Headey et al. 1991). Personality theorists have emphasized that temperament and individual traits have a powerful effect on SWB. Proponents of the top-down perspective have argued, that “despite circumstances, some individuals seem to be happy people, some unhappy people” (Costa et al. 1981, p. 79). On the other hand, from a bottom-up perspective it has been argued that “traits can be powerful, but are not enough” (Diener 1996). Hence, the SWB of a person is influenced by daily up-and-downs (Kozma et al. 1992) and, to a greater extent, by critical life events (Krause 1991). The present study has shown that societal conditions are part of these bottom-up processes affecting SWB.

9.3 Outlook

Core results of this study are (a) that societal gender inequality is connected with gender differences in SWB and (b) that gender differences in SWB are influenced by unequal access to individual resources and—even more significant—by indicators of macro-structural settings that describe the degree to which women are disadvantaged or excluded from societal resources and opportunity structures. Detailed research on a longitudinal or international comparative basis is needed to analyze how structural opportunities are translated into well-being in individual every-day life as a multilevel phenomenon. However, the results of this study already suggest consequences for social policy intervention focusing on gender equality in modern societies. According to this argument, interventions should address restrictions in women’s access to social positions within labour markets or to political power and influence the ways in which female contributions to society are rewarded.

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Appendix Aggregated Data from the Fourth Wave of the World Values Survey

	WVS 99-04 <i>Norms on gender inequality</i>	WVS 99-04 <i>Gender differences in general life satisfaction</i>	WVS 99-04 <i>Gender differences in subjective health</i>	HDR 2002 <i>Relative female economic activity</i>
Countries where gender inequality on the labour market is widely accepted				
Albania	31.5	-0.138	-0.079	73
Bangladesh	16.5	-0.035	-0.015	76
Bosnia- Herzegovina	47.7	-0.065	-0.199	60
Bulgaria	45.1	-0.306	n.a.	86
China	43.0	0.060	-0.120	86
Indonesia	40.2	0.086	-0.097	67
Iran	22.7	0.408	0.052	37
Japan	20.8	0.116	0.022	67
Korea	27.1	0.119	-0.018	70
Kyrgyzstan	39.4	-0.144	-0.199	84
Macedonia	35.2	0.285	-0.173	72
Malta	44.2	0.044	n.a.	37
Moldova	38.9	-0.059	-0.177	84
Morocco	7.9	0.165	-0.276	52
Nigeria	29.9	0.109	0.039	56
Philippines	15.5	0.112	-0.032	61
Poland	47.8	0.123	n.a.	80
Romania	47.4	0.002	n.a.	76
Saudi Arabia	8.6	0.096	0.018	27
Slovakia	45.2	0.083	n.a.	84
Uganda	47.7	0.528	-0.012	88
Viet Nam	45.2	-0.074	-0.215	91
Countries where gender inequality on the labour market is widely rejected				
Argentina	61.0	0.012	-0.111	46
Austria	54.4	-0.053	n.a.	65
Belarus	63.8	-0.224	n.a.	82
Belgium	69.6	0.096	n.a.	66
Canada	78.5	0.158	-0.072	82
Chile	51.6	0.183	-0.122	49
Croatia	63.2	0.185	n.a.	73
Czech Republic	65.9	0.041	n.a.	83
Denmark	89.4	-0.007	n.a.	84
Estonia	75.5	0.006	n.a.	82
Finland	83.2	0.176	n.a.	86
France	68.3	-0.105	n.a.	76
Germany (West)	55.7	0.149	n.a.	69

Appendix Aggregated Data from the Fourth Wave of the World Values Survey

	WVS 99-04 <i>Norms on gender inequality</i>	WVS 99-04 <i>Gender differences in general life satisfaction</i>	WVS 99-04 <i>Gender differences in subjective health</i>	HDR 2002 <i>Relative female economic activity</i>
Great Britain	68.6	−0.153	n.a.	74
Greece	72.6	−0.152	n.a.	58
Hungary	66.7	−0.039	n.a.	71
Iceland	94.3	0.064	n.a.	83
Ireland	76.9	0.074	0.022	52
Italy	56.8	−0.155	n.a.	58
Latvia	69.5	0.102	n.a.	80
Lithuania	63.3	−0.038	n.a.	80
Luxembourg	64.0	−0.167	n.a.	57
Mexico	55.8	0.064	−0.152	47
Netherlands	83.8	0.030	n.a.	66
Peru	67.1	0.086	−0.111	43
Portugal	59.8	−0.235	n.a.	71
Singapore	54.4	0.080	n.a.	64
Slovenia	67.8	0.172	n.a.	80
South Africa	56.3	−0.391	−0.222	59
Spain	68.0	0.013	−0.131	56
Sweden	93.4	0.005	n.a.	89
Tanzania	56.7	0.523	0.022	93
Ukraine	60.0	−0.158	n.a.	80
United States	81.9	0.011	−0.104	81
Venezuela	52.6	−0.213	−0.251	53

Note: n.a. data were not available

First column: Countries for which there were data available both from the fourth wave of the World Values Survey 1999–2004 (European Values Study Group and World Values Survey Association 2006) and the Human Development Report 2002 (United Nations Development Programme 2002). *Second column:* “Norms on Gender Inequality”: percent of the total population disagreeing with unequal treatment of men and women on the labour market based on the World Values Survey 1999–2004 (WVS 99-04). *Third column:* Mean level gender differences for general life satisfaction based on WVS 99-04. *Fourth column:* Mean level gender differences for subjective health based on WVS 99-04. *Fifth column:* Relative female economic activity rate per country based on the Human Development Report (2002)

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