Chapter 7
Comparative Study of Happiness and Inequality in Five Industrialized Countries

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1 Introduction

In many countries, great interest has been shown in the subject of happiness. Traditionally, economists have been interested in utility, which can be obtained from consumption, and so utility was a key concept in microeconomics for a long time. Happiness is concerned not only with utility from consumption but also with satisfaction derived from all kinds of human activities, including marriage, family life, leisure, and such other things. In this chapter, we do not discuss the similarities and differences among utility, satisfaction, and happiness. An important reference is given by, for example, Frey (2008), who presents "happiness" as general satisfaction derived from usual daily life.

The purpose of this chapter is to compare happiness of the populations of the industrialized and developed countries of the G5, namely, the U.S., the U.K., France, Germany, and Japan. In particular, this chapter uses people's evaluation of happiness to examine the relationship between happiness and inequality among these five countries. As Alesina and La Ferrara (2005) show, there is a large, negative, and significant effect of inequality on happiness in Europe but not in the U.S. Thus, it is preferable to consider the subjective aspect of inequality and our chapter adds "the sense of inequality" as one of the subjective inequality variables.

This study proceeds as follows. Part 2 describes the data that we use in this chapter. Part 3 gives some general observations about happiness evaluations in the five countries. Part 4 focuses on the relationship between the degree of happiness and the sense of inequality. In addition, we show the contribution of psychological factors and the personalities, using the so-called "Big Five" factors.

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There are several reasons for our interest in G5 countries. First, these countries are all industrialized and developed, with relatively high per-capita incomes. Also, all are liberal and democratic countries. There are, however, some differences among them. For example, Japan is an Asian country, while the other four are European civilizations, though there are differences between the Anglo-American countries and the continental European countries.

Second, we conducted a survey study using a common questionnaire distributed to respondents in the five countries in order to obtain fairly comparable data sources based on common interests. Of course, we applied standard statistical estimation methods to these data sets in conducting our study.

Third, a particular interest of our survey was to examine the impact of psychological factors and the personalities of individuals in each country, for which use the Big Five factors, and we asked respondents to evaluate their own happiness. The reason for considering the effect of the Big Five factors is that the relative importances may be quite different among countries, and thus they may affect feelings of happiness differently. The common data can give us an excellent source to use in investigating such an effect.

Fourth, nearly all industrialized countries are becoming more unequal in terms of income and wealth distribution. Thus, this particular concern is addressed by examining inequality in relation to happiness.

2 Data Description

Doshisha University conducted a large survey, Life and Happiness in Regional Areas, in 2011, with the financial support of the Japanese Ministry of Education, Culture, Sports, Science and Technology. A large number of people were sent a survey questionnaire concerning economic conditions, work environments, family life, happiness, and leisure. At the same time, we also wanted to obtain information on the psychological factors and personalities of individuals. The survey has a sample size of 4,927 for Japan, 1,001 for the U.S., 1,077 for the U.K., 1,088 for Germany, and 1,049 for France.

One of the most important characteristics of the survey is that we were interested in recognizing each individual's personality, as was done in Benet-Martínez and John (1998). For example, questions included "Are you a brave person, or a careful person?", "Are you optimistic or pessimistic?", "Are you a generous person, or a strict person?", and "What is the most important value in your life?" Using 44 questions regarding individual personalities and psychological factors, we summarized these questions into five categories by using factor analysis, which allows us to indicate a person's personality in a simple way. The five variables we used were (i) conscientiousness, (ii) neuroticism, (iii) openness, (iv) agreeableness, and (v) extraversion. Of course, the degree to which each person shows these traits differs from person to person, and it is expected that such differences are influential

in determining personality. Lastly, it should be noted that these differences lead people to have different judgments and opinions on inequality and happiness.

Another important effort that was made in regard to the data. The questionnaires were translated into English, German, and French (from the original Japanese) and distributed to people in the G5 countries. Common questionnaires were distributed, although the number of questions and the sample number were reduced considerably for the questionnaires distributed outside Japan. It is reasonable, nevertheless, to say that we obtained reliable data to conduct an international comparative study based on the common data preparation for each country.

3 Preliminary Comparisons

Before presenting our estimated results, it would be useful to make a general observation about happiness evaluations among the five countries.

Table 7.1 shows the happiness rank for each country, based on various studies and the related variables that may affect happiness evaluations. The "source" in Table 7.1 is the institution or group presenting the evaluation of people's happiness. The first three—the United Nations, Leicester University as given by White (2006), and the World Values Survey—included both developed and developing countries, and the OECD covered industrialized and semi-industrialized countries only. Our survey, of course, is noted where applicable.

There are several interesting observations that we can make about Table 7.1. First, the U.S. can be regarded as the country where people are the happiest, as all the studies expect for one indicated that Americans had the highest degrees of happiness. The U.S. also ranks at the top for all other related variables, which is curious but may be natural given the overall level of happiness. However, it should also be remembered that the U.S. has the highest levels for Gini coefficient and poverty rate, indicating that it is a highly unequal society, even among industrialized nations.

Second, Japan can be regarded as the country where the people are least happy among the five countries examined. It would be a valuable subject to inquire into the reasons why the U.S. and Japan are such extreme cases in regard to level of happiness. See, for example, Tachibanaki (2013) for Japan.

Third, the U.K. has a similar status as the U.S. in the sense that the degree of happiness across various measures came in first, second, or third among the countries examined, slightly below the U.S. The American and British people broadly share an Anglo-Saxon culture, and thus they hold many common societal characteristics.

Fourth, the continental European countries of Germany and France both generally stay somewhere between the U.S./U.K. group at the top and Japan at the bottom. These two countries differ considerably in their cultural and societal characteristics, and thus it would not be appropriate to treat them as one group in our analysis.

Table 7.1 Comparison of happiness level in the G5 countries

Source	Ranking					GDP per capital	Gini coefficient	Poverty rate (%)	Divorce rate per 1,000 couples
	UN survey	Leicester University survey	World values survey	OECD survey	Our survey				
Country									
United States	17 (1)	23 (1)	9 (2)	7 (1)	8.03 (1)	6 (1)	0.378 (1)	17.1 (1)	4.0 (1)
United Kingdoms	22 (2)	41 (3)	8 (1)	13 (2)	7.48 (3)	21 (3)	0.345 (2)	8.3 (4)	2.6 (2)
Germany	26 (4)	35 (8)	36 (5)	16 (3)	7.37 (4)	17 (2)	0.295 (4)	11.0 (3)	2.4 (3)
France	25 (3)	64 (4)	19 (3)	18 (4)	7.79 (2)	24 (5)	0.293 (5)	7.1 (5)	1.9 (5)
Japan	43 (5)	90 (5)	24 (4)	19 (5)	7.13 (5)	22 (4)	0.329 (3)	14.9 (2)	2.2 (4)
Total sample countries	156	178	57	34	5	187	5	5	5

Note:
(1) Numbers in our survey imply the degree of happiness
(2) Numbers in parentheses are rankings among the G5 countries

Fifth, we would like to discuss inequality in terms of the Gini coefficient and the poverty rate and its impact on happiness in the U.S. As has been described already, the U.S. has a highly unequal society, as shown by the high level of both its Gini coefficient and poverty rate. Competition among both individuals and businesses is highly appreciated and inequality is often not criticized as there is a common perception in the U.S. that it is fair treatment for winners to receive considerably higher incomes than the losers, who receive considerably less. Also, Americans have a strong spirit of autonomy and sense of higher income mobility, which may lead people to believe that one can become rich at some point in the future, even if they are poor currently. For further information, see the useful studies by Alesina et al. (2004) and Bjornskov et al. (2013), among others. We can safely say that the U.K. is similar to the U.S. with respect to inequality.

An interesting case in the discussion of inequality is Japan. In the past, up until about 30 years ago, Japan was a country with relatively equal income distribution, with a level of equality similar to that in the Scandinavian countries. Japan's degree of inequality, however, has increased considerably in recent years. Persuasive evidence of this can be found in Table 7.1, which shows that the Gini coefficient and the poverty rate are higher in Japan than those in Germany and France. See, for example, Tachibanaki (2005) for more on the reasons for this increasing inequality.

A lower degree of happiness and a relatively high level of income inequality in Japan may give us an interesting subject to investigate, in terms of whether high inequality leads people to feel unhappiness. We can notice that the American case and the Japanese case provide us with opposite extremes, namely, the positive relationship between happiness and inequality in the U.S. and the negative relationship in Japan. It is interesting to search for the reasons why such opposite results appear between the U.S. and Japan.

We suggest two simple reasons. First, the American people feel that they can change their economic conditions if they make a strong effort, while Japanese people feel that they cannot change their status, even when making a strong effort to do so, because the society is so firm and closed. Second, American people are optimistic, whereas Japanese are pessimistic. Our later analysis will provide some support for this interpretation.

Both the German and French cases stay in the middle between the Anglo-Saxon countries and Japan in terms of the relationship between the degree of happiness and the related variables. Nevertheless, it is interesting to speculate about why the levels of all related variables for France are at the bottom, despite their middling level of happiness.

Our next concern is to investigate the causes of happiness. Concretely speaking: for what reasons do people feel happiness? We offer several variables likely to affect feelings of happiness and try to identify which variables are more important and less important in order to explain greater happiness. Table 7.2 presents these results.

The numbers in this table show each variable's rank in importance out of seven variables for explaining greater happiness. The figures in parentheses signify the percentage of respondents who expressed that the corresponding variable is important.

Table 7.2 Causes of happiness

Source	Country				
	United States	United Kingdom	Germany	France	Japan
Male (married)					
Level of household income	20.53	17.47	15.75	10.21	2.97
Level of household assets, savings	17.49	20.89	14.65	7.75	3.47
Relationships with friends	39.16	36.64	31.87	15.49	5.34
Place of residence	43.73	40.07	43.59	23.59	8.95
Amount of free time	48.67	38.01	39.93	17.61	7.17
Relationship with spouse	55.89	63.36	56.04	43.66	26.99
Sample size	263	292	273	284	2190
Male (single)					
Level of household income	15.22	13.17	11.32	8.57	1.91
Level of household assets, savings	15.22	14.81	10.19	7.14	2.25
Relationships with friends	31.30	28.81	25.66	10.48	5.41
Place of residence	32.17	26.75	32.08	15.71	7.66
Amount of free time	40.00	28.81	29.43	10.95	5.41
Relationship with my boyfriend (girlfriend)	41.25	21.81	28.68	28.42	3.72
Sample size	230	243	265	210	888
Female (married)					
Level of household income	19.49	19.33	20.14	8.42	6.12
Level of household assets, savings	17.65	19.33	16.38	5.13	4.71
Relationships with friends	46.69	49.44	44.37	13.55	10.99
Place of residence	47.06	44.24	54.95	24.54	11.65
Amount of free time	43.75	37.92	44.71	14.29	9.17
Relationship with spouse	57.72	66.91	59.04	36.63	22.81
Sample size	272	269	293	273	1210
Female (single)					
Level of household income	13.98	9.89	9.73	3.90	2.35
Level of household assets, savings	11.86	11.36	10.12	3.19	2.97
Relationships with friends	36.44	44.69	40.86	17.73	9.55
Place of residence	38.56	37.73	42.80	19.15	9.86
Amount of free time	43.64	38.46	42.41	11.70	6.57
Relationship with my boyfriend (girlfriend)	49.12	26.01	39.69	35.95	4.69
Sample size	236	273	257	282	639

Note: Nm = sample size of those who are married; Ns = sample of those who are single

The most fascinating observation is given by the fact that in all five countries, both men and women show that the relationship with a spouse is the most important for determining happiness. Married people find that a better relationship with their spouse is crucial in the determination of happiness. This is true not only for the

western countries (i.e., Europe and the U.S.) but also for Japan. Most significantly in people's lives, marriage and family stability provide a higher degree of happiness.

It is interesting, however, that the level of importance, as shown by the percentage figures in parentheses, differs considerably from country to country. In particular, the Japanese results are the lowest, with their values being much lower than the Euro-American figures. Since European and American people regard married life as most important, they do not hesitate to get divorced when a marriage is in trouble. Japanese people regard married life as less important, and thus they do not divorce as often.

Now we would like to say a few words about the views of single, non-married people regarding their feeling of happiness based on their relationship with their partner. A similar result with the case of married couples was observed. There are, however, several differences for single people. First, the importance of the relationship is viewed as less by single people than by married couples in the determination of happiness. Second, people in France view relationships with a boyfriend or girlfriend as being fairly important. Love is important in France.

Second, in all five countries, the level of household incomes or assets is not important in the determination of happiness. This holds true for both men and women. When evaluating their own happiness, people do not care about their momentary financial conditions. This may be a somewhat surprising result because people need to have substantial resources in order to survive. The clue for resolving this dilemma can be found in the fact that the sampled population represented in this table includes all kinds of people, from the rich to the poor. If we asked the same question of only poor people, the importance of incomes and assets is likely to increase significantly because they desire more resources to be capable of living at a reasonable level.

Third, different variables, such as relationships with friends, place of residence, and the amount of free time, lie somewhere between spouses and significant others and the effect of family incomes and assets in terms of importance in evaluating the level of happiness.

Next, we turn to several other factors that are necessary for happiness. We identified a large number of variables that are likely to affect the feeling of happiness and asked whether each of these variables is necessary for happiness. In other words, we asked whether people could feel any happiness without access to this variable. If people cannot have any possibility of having a particular variable, then life would be very unpleasant. Ultimately, we chose 15 variables. The percentages of people who answered that the variable is necessary for happiness are shown in Fig. 7.1. Some conclusions we can draw from these results are as follows.

1. Owning a home is most important for people in France, followed, in order, by the U.S., the U.K., Japan, and Germany. A similar ranking is observed for owning a car. Owning a home and a car increases physical and material assets, and French people can been viewed as appreciating these assets quite highly, while German people have the opposite taste.

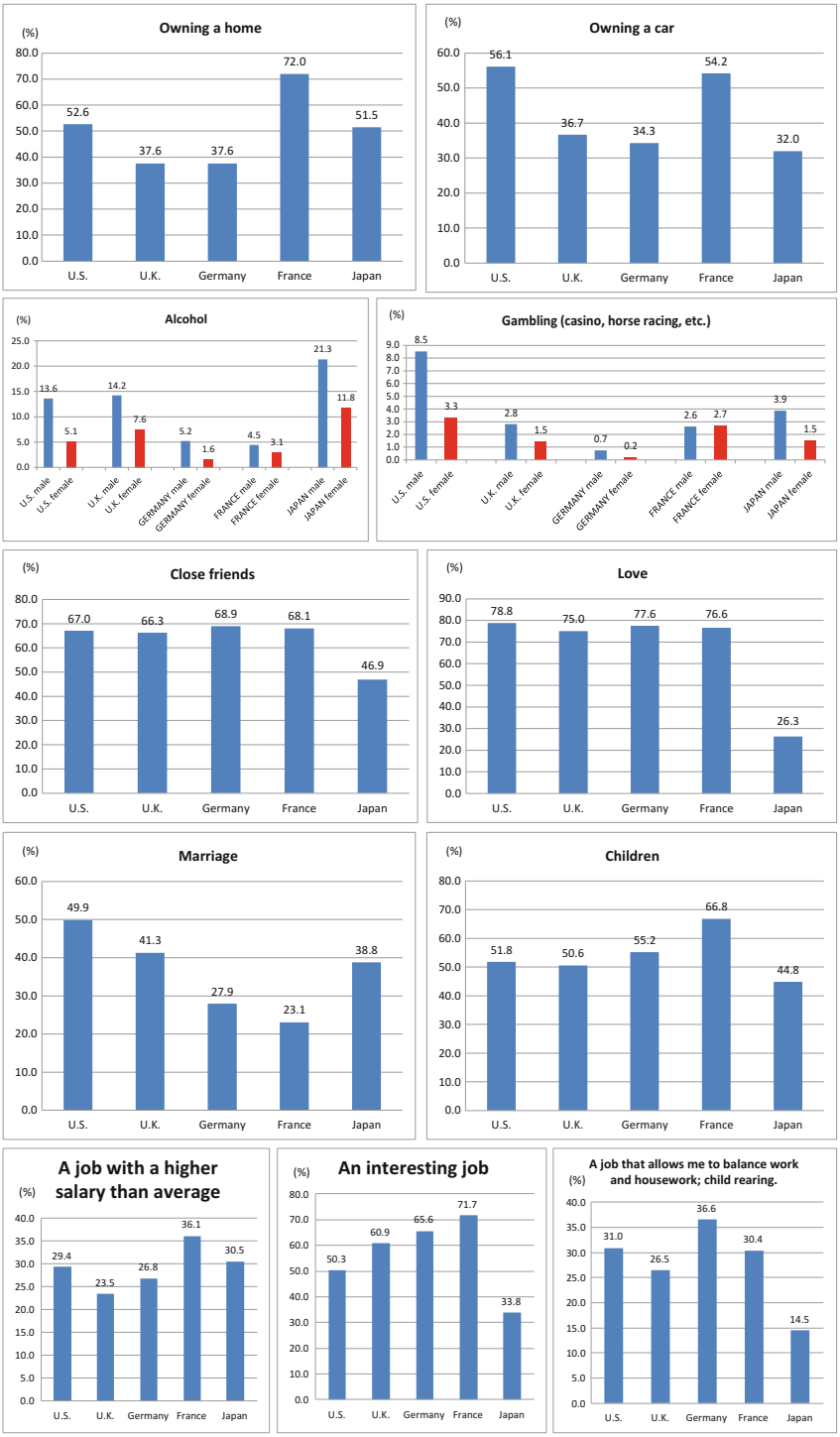

Fig. 7.1 Necessary factors for happiness

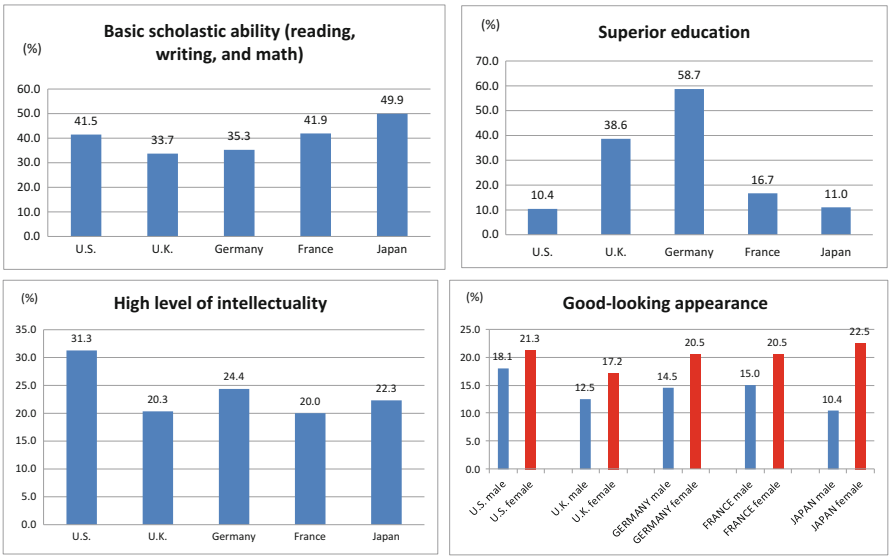

Fig. 7.1 (continued)

2. Japan shows a relatively high evaluation of the importance of alcohol, while the other countries do not show such figures. However, the Germans view beer as not being alcohol, and the same thing is true for wine for the French. Thus, we have to be careful on questions about alcohol. A more solid result, however, is that men feel that alcohol is a higher necessity than women in all countries. There are not many people who appreciate gambling as necessary for happiness in any of the countries, with the exception being American men.
3. There are no significant differences among the four Euro-American countries regarding the effect of close friends. Japan is the exception in this regard, with the Japanese showing a slightly lower degree of importance for friendship. An astonishing result can be seen for the influence of love because the Japanese respondents showed it as being a much lower necessity in the determination of happiness than respondents in the western countries, which all had almost the same high level of necessity, did. It is hard to prepare detailed and justifiable explanations for why the Japanese feel this way. Is love a direct outcome of animalism and sensualism or of spiritualism? Is it due only to cultural differences?
4. Three countries, the U.S., the U.K. and Japan, replied that marriage is necessary for happiness, while the other two countries thought this to a lesser extent. The effect of children is different from that of marriage because France appears to value children the highest for happiness and Japan values them the lowest. Nevertheless, there is no significant difference among the five countries regarding children.

5. We now explain the next three figures that concern jobs. Almost all countries show equivalent levels for the importance of pay, and their levels are not very high, at about 30 % of respondents. An interesting job, however, is more important than pay in the Euro-American countries, with about 50–60 % expressing its importance. The exception to this is Japan, which shows only about 30 % of respondents viewing an interesting job as necessary for happiness.

   The above result suggests and supports the previous finding that people do not regard income (more precisely pay or wage) as an important factor for happiness in their day-to-day lives, but instead want to choose an interesting or valuable job regardless of wage payments. Simply put, a job's character trumps its pay.

   Next, we turn to work-life balance. All countries show that women evaluate it more highly than men do. This is quite understandable. The degree to which men and women differ varies somewhat from country to country.
6. The influence of scholastic ability, superior education, and intellectuality is discussed together. The most interesting result appears for the role of superior education, with the U.K. and Germany in particular viewing it as very necessary for happiness, while the U.S., France, and Japan showed fairly lower levels of necessity for this. We know that the latter three countries have high levels of university attendance and academic credentials because graduates of prestigious universities and the *grandes écoles* in France can enjoy advantageous careers in their professional lives, while the difference between the best and worst universities is quite small in Germany. The U.K. case is somewhere between these two extremes.

The Germans and the English find that a superior education is necessary for happiness, while the Americans, the French, and the Japanese do not find it to be overly important. At a glance, this is a bit strange and counterintuitive. It would seem more natural if the latter three countries had shown greater important for a superior education for happiness.

We interpret this finding as follows. Since the people in the latter three countries know well that their countries are led by those with strong academic credentials, people who do not have a superior education view other factors besides superior education as being necessary for happiness. In other words, they have already given up on the role of education to a large extent, and try to find and use the other factors that can compensate for their disadvantage due to lower education. Thus, they indicate a lower necessity of superior education.

The German case is the opposite. Since university attendance rate in Germany is lower than in the other countries, people there find that university education is quite advantageous in their professional lives. Thus, they express the view that superior education is necessary.

The other variables examined, such as ability and intellectuality, do not show much difference between the five countries. Thus, we provide no interpretation for them. For respondents in all countries, about 20–40 % found these variables as necessary for happiness.

Last, we examine the effect of appearance. There is not much difference among the five countries regarding the necessity of having an attractive appearance for happiness. An interesting observation appears in the difference between men and women. In Japan, women are almost twice as likely as men to view appearance as necessary for happiness. The U.S. case, however, shows no significant difference. Thus, the role of appearance differs from country to country in terms of the difference between men and women.

4 Inequality and Happiness

4.1 Data Description

This section presents an analysis of inequality and happiness, and the effect of inequality on happiness. At the same time, the contribution of personality, especially various of the Big Five factors, to inequality and happiness is examined.

We explain the meaning of the dependent variables in Table 7.3. The dependent variable "inequality" is measured as the individual's judgment of inequality on a five-point scale of whether an increasing trend toward unequal income distribution in their country is detrimental. The higher the numerical value, the more detrimental the respondent views inequality to be. In other words, a higher value implies that an individual feels that it is not good to have a high level of income inequality in his or her own country.

The next dependent variable, "happiness," is measured by capturing individuals' feeling of happiness on an 11-point scale. The higher the numerical value, the higher an individual's feeling of happiness. We know that there are several shortcomings in this method of estimating one's happiness. We followed, nevertheless, this tradition approach without modifying our method of estimating happiness.

Next, the meaning of each independent variable is briefly explained. "Income" is measured using an equivalent scale family income, adjusted by the number of family members. We adopted a value of 0.5 for equivalence elasticity in this adjustment.

Educational variables are classified by level of education completed, namely (i) compulsory education and secondary education, (ii) junior colleges and professional schools, and (iii) universities and graduate schools. Since years of schooling differ by country, it was impossible to have a common numerical scale for years of schooling in grouping educational attainment.

Employment status is classified as (i) regular, full-time employees, executives, and civil servants, (ii) non-regular, part-time employees or employees with a limited duration of contract, or with other special contracts, (iii) self-employed, including homemakers, and (iv) unemployed persons and students.

These are several dummy variables in our model, including (i) marriage (1 if married), (ii) sex (1 if female, 0 otherwise), and (iii) age. Age is binned by decade

Table 7.3 Estimation results for inequality and happiness

Variables	United States		United Kingdom		Germany		France		Japan	
	Sense of inequality	Happiness	Sense of inequality	Happiness	Sense of inequality	Happiness	Sense of inequality	Happiness	Sense of inequality	Happiness
Sense of inequality		3.044***		−5.576***		−6.522***		−1.268*		−2.611***
		(0.814)		(1.680)		(1.390)		(0.656)		(0.202)
Equivalent income (e = 0.5)	−0.00594		−0.0113		−0.0130		−0.0358***		−0.0422***	
	(0.0153)		(0.0134)		(0.0103)		(0.0114)		(0.00646)	
Marriage dummy (Married = 1, otherwise = 0)		0.821***		0.918***		0.591***		0.894***		1.179***
		(0.152)		(0.138)		(0.139)		(0.136)		(0.0613)
Compulsory and secondary education		−0.168		−0.206		−0.194		−0.373**		−0.945***
		(0.180)		(0.178)		(0.257)		(0.161)		(0.192)
Junior college and professional school		−0.0977		–		–		–		−0.0658
		(0.173)		–		–		–		(0.0570)
University and graduate school		–		0.228		0.406***		−0.314**		–
		–		(0.185)		(0.149)		(0.160)		–
Compulsory and secondary education	–		–		–		–		–	
	–		–		–		–		–	
Non-regular employment	0.130		0.00890		0.0540		0.00823		0.203***	
	(0.129)		(0.0890)		(0.0990)		(0.0909)		(0.0444)	
Self-employed	0.00788		−0.0159		0.0857		−0.177		0.0506	
	(0.122)		(0.125)		(0.0985)		(0.127)		(0.0517)	
Not-working	−0.152*		0.0632		0.0502		−0.0325		0.134***	
	(0.0897)		(0.0881)		(0.0794)		(0.0716)		(0.0416)	

Age	−0.113	−0.00639	0.326**	1.350**	0.381***	1.355**	−0.0278	−0.707**	0.135	−1.064***
	(0.183)	(0.359)	(0.166)	(0.603)	(0.143)	(0.596)	(0.154)	(0.344)	(0.0873)	(0.160)
Age squared	0.0197	−0.0200	−0.0327	−0.111*	−0.0406**	−0.128*	0.0178	0.0927**	−0.00317	0.182***
	(0.0232)	(0.0458)	(0.0212)	(0.0658)	(0.0180)	(0.0669)	(0.0202)	(0.0455)	(0.0102)	(0.0187)
Sex dummy (Female = 1, male = 0)	0.225***	−0.198	−0.0500	0.0228	0.0806	0.523***	0.190***	0.471***	0.106***	0.990***
	(0.0761)	(0.217)	(0.0683)	(0.150)	(0.0593)	(0.181)	(0.0591)	(0.182)	(0.0339)	(0.0670)
Constant	4.030***	−3.986	3.348***	26.12***	3.566***	32.22***	4.149***	13.27***	3.353***	16.89***
	(0.346)	(3.240)	(0.306)	(5.746)	(0.266)	(5.030)	(0.283)	(2.695)	(0.179)	(0.789)
Observations	843	843	929	929	945	945	825	825	4,850	4,850
R-squared	0.017	0.062	0.012	0.079	0.019	0.063	0.051	0.062	0.042	0.161
Sense of inequality		1.345*		−3.430		−6.690***		−0.739		−1.893***
		(0.748)		(2.347)		(1.405)		(0.638)		(0.205)
Equivalent income (e = 0.5)	−0.00319		−0.00913		−0.0134		−0.0331***		−0.0395***	
	(0.0154)		(0.0133)		(0.0104)		(0.0113)		(0.00649)	
Marriage dummy (married = 1, otherwise = 0)		0.687***		0.734***		0.587***		0.711***		1.019***
		(0.134)		(0.123)		(0.140)		(0.124)		(0.0575)
Compulsory and secondary education		−0.120		−0.103		−0.191		−0.220		−0.591***
		(0.161)		(0.158)		(0.258)		(0.145)		(0.179)
Junior college and professional school		−0.181		–		–		–		−0.00420
		(0.154)		–		–		–		(0.0532)
University and graduate school		–		−0.0153		0.392***		−0.366**		–
		–		(0.137)		(0.150)		(0.144)		–

(continued)

Table 7.3 (continued)

Variables	United States		United Kingdom		Germany		France		Japan	
	Sense of inequality	Happiness	Sense of inequality	Happiness	Sense of inequality	Happiness	Sense of inequality	Happiness	Sense of inequality	Happiness
Regular employee	–		–		–		–		–	
	–		–		–		–		–	
Non-regular employment	0.121		−0.0288		0.0521		0.0247		0.189***	
	(0.129)		(0.0885)		(0.0998)		(0.0903)		(0.0441)	
Self-employed	−0.0222		−0.00777		0.0764		−0.165		0.0430	
	(0.122)		(0.123)		(0.0994)		(0.127)		(0.0515)	
Not working	−0.154*		0.00381		0.0513		−0.0239		0.117***	
	(0.0915)		(0.0887)		(0.0799)		(0.0717)		(0.0415)	
Age	−0.112	−0.721**	0.276*	0.435	0.410***	1.540**	−0.0662	−0.920***	0.123	−0.956***
	(0.185)	(0.321)	(0.166)	(0.698)	(0.145)	(0.637)	(0.153)	(0.311)	(0.0869)	(0.149)
Age squared	0.0204	0.0643	−0.0257	−0.0256	−0.0449**	−0.155**	0.0221	0.107**	−0.00127	0.143***
	(0.0233)	(0.0409)	(0.0211)	(0.0700)	(0.0183)	(0.0727)	(0.0201)	(0.0418)	(0.0102)	(0.0175)
Sex dummy (female = 1, male = 0)	0.205***	0.222	−0.114	−0.128	0.0835	0.560***	0.139**	0.433***	0.0674*	0.664***
	(0.0778)	(0.188)	(0.0695)	(0.299)	(0.0598)	(0.186)	(0.0603)	(0.150)	(0.0349)	(0.0614)
conscientiousness	0.0929*	0.272**	0.0756*	0.624***	0.0181	0.168*	0.0807*	0.137	0.0832***	0.422***
	(0.0504)	(0.113)	(0.0442)	(0.188)	(0.0388)	(0.0914)	(0.0450)	(0.104)	(0.0195)	(0.0374)

Openness	0.0630	−0.147	0.0391	0.257**	−0.00473	−0.149*	0.0224	0.0568	−0.0134	−0.00859
	(0.0489)	(0.0976)	(0.0417)	(0.121)	(0.0369)	(0.0843)	(0.0391)	(0.0823)	−0.0195	(0.0342)
Neuroticism	0.0545	−0.979***	0.153***	−0.289	−0.0752**	−0.441***	0.0570	−0.498***	0.120***	−0.142***
	(0.0514)	(0.0940)	(0.0455)	(0.372)	(0.0371)	(0.135)	(0.0381)	(0.0909)	(0.0191)	(0.0431)
Extraversion	−0.0343	0.259***	−0.0436	0.102	−0.0314	−0.00639	−0.000375	0.549***	−0.00487	0.381***
	(0.0540)	(0.0952)	(0.0454)	(0.128)	(0.0392)	(0.0999)	(0.0434)	(0.0888)	(0.0191)	(0.0336)
Agreeableness	−0.0109	−0.244***	0.124***	0.206	0.00307	−0.0135	0.123***	0.00382	0.0803***	0.218***
	(0.0505)	(0.0884)	(0.0435)	(0.306)	(0.0378)	(0.0862)	(0.0374)	(0.115)	(0.0182)	(0.0360)
Constant	4.018***	4.004	3.472***	20.01**	3.525***	32.67***	4.242***	12.02***	3.380***	14.69***
	(0.354)	(2.972)	(0.309)	(8.134)	(0.269)	(5.026)	(0.281)	(2.689)	(0.178)	(0.788)
Observations	843	843	929	929	938	938	825	825	4,850	4,850
R-squared	0.028	0.281	0.038	0.281	0.025	0.069	0.077	0.248	0.056	0.275

Standard errors in *parentheses*
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

up to 69: 2 if 20–29 years old, 3 if 30–39, 4 if 40–49, 5 if 50–59, and 6 if at least 60 years old. We also use the square values of the age variables in order to capture any quadratic relation with age.

Detailed explanations are necessary for the personality variables, which are the psychological characteristics of each individual. These variables were used as the independent variables for inequality and happiness.

We prepared 44 questions that captured respondents' self-evaluations regarding their personalities. For example, questions were included such as "Do you finish your task perfectly?", "Are you a person who makes plans before performing your task?", "Are you a person who worries a lot?", and "Do you love to talk with other persons?". Of course, each question was quantified in order to obtain some useful information that can be used for later econometric work.

We applied factor analysis to summarize each respondent's personality, or psychological characteristics, and obtained five variables that indicate an individual person's personality in a fairly simple way. These five variables are regarded as the Big Five factors: (i) conscientiousness, (ii) neuroticism, (iii) openness, (iv) agreeableness, and (v) extraversion. Next, we provide a few words on the meaning of each item.

Conscientiousness implies that a person is reasonable, careful, sincere, and serious. Neuroticism means that a person is pessimistic, unstable, distracted, and temperamental. Openness signifies that a person is creative, imaginative, eccentric, and open to new experiences. Agreeableness signifies that a person is pleasant, cooperative, and comfortable. Extraversion indicates that a person is sociable, talkative, lively, and spirited.

It is interesting and valuable to see a simple correlation between the degree of happiness and the five personality variables. Table 7.4 presents such results. We explain the results in detail only for Japan since the Japanese dataset is the most reliable because of the large sample size, 4,927.

By observing the correlation coefficients between happiness and each personality variable, we notice that the highest positive correlation coefficient (0.34) is observed for extraversion. The next highest correlation was for conscientiousness, followed in order by openness and agreeableness. In contrast, neuroticism showed a negative correlation with happiness. Since these positive and negative correlations are explainable intuitively, we do not provide detailed interpretations. It may be useful to note, nevertheless, that a person who is sociable, talkative, lively, and spirited is more inclined to have a higher degree of happiness, while a person who is pessimistic, unstable, distracted, and temperamental tends to feel greater unhappiness. In terms of the simple correlations between the personality and psychological variables, the highest positive correlation (0.56) is observed between conscientiousness and openness, and the highest negative correlation (−0.34) is observed between extraversion and neuroticism. In particular, it is worthwhile to note that all the other variables were negatively correlated with neuroticism. These results are quite reasonable and intuitively justified. Thus, we add no further comment.

Table 7.4 Simple correlation coefficients between happiness and personality factors in G5 countries

	Happiness	conscientiousness	Openness	Neuroticism	Extraversion	Agreeableness
US						
Happiness						
conscientiousness	0.0953**					
Openness	0.0899**	0.5091**				
Neuroticism	0.0135	−0.3218**	−0.1534**			
Extraversion	0.0381	0.4341**	0.4515**	−0.3729**		
Agreeableness	0.0193	0.3611**	0.0521	−0.4237**	0.0032	
Sample size	1,001					
UK						
Happiness						
conscientiousness	0.2928**					
Openness	0.1889**	0.4567**				
Neuroticism	−0.4368**	−0.2894**	−0.1244**			
Extraversion	0.2814**	0.3142**	0.3608**	−0.3129**		
Agreeableness	0.1351**	0.3455**	0.0213	−0.4118**	−0.0226	
Sample size	1,077					
Germany						
Happiness						
conscientiousness	0.0285					
Openness	−0.0231	0.4567**				
Neuroticism	−0.0195	0.2894**	−0.1244**			
Extraversion	0.0467	0.3142**	0.3608**	−0.3129**		
Agreeableness	−0.0278	−0.3455**	−0.0213	0.4118**	0.0226	
Sample size	1,088					
France						
Happiness						
conscientiousness	0.1174**					
Openness	0.0549	0.5879**				
Neuroticism	−0.0115	−0.1816**	−0.1426**			
Extraversion	0.0482	0.5882**	0.4553**	−0.3762**		
Agreeableness	0.1806**	0.1932**	−0.0685	−0.4038**	0.1106**	
Sample size	1,049					
Japan						
Happiness						
conscientiousness	0.3094**					
Openness	0.205**	0.5644**				
Neuroticism	−0.3388**	−0.3428**	−0.2305**			
Extraversion	0.3445**	0.3356**	0.3718**	−0.3817**		
Agreeableness	0.0957**	0.1491**	−0.1409**	−0.266**	−0.1289**	
Sample size	4,927					

Standard errors in *parentheses*
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Last, we discuss the reasons that we introduced these personality and psychological variables in our analysis of inequality and happiness. First, people are quite different with respect to their personalities and psychological characteristics. They may, therefore, be expected to have different feeling about the evaluations of inequality and happiness. Typically, an optimistic person is likely to express a higher degree of happiness than his or her intrinsic evaluation, while a pessimistic person is likely to reveal a higher degree of unhappiness than his or her intrinsic evaluation. Simply, the evaluation that appeared in the numerical values of happiness may be superficial.

Second, the observation above suggests the need to conduct a further analysis that controls for the contribution of personalities and psychological factors in the analysis of happiness. In fact, Ohtake and Tomioka (2010) estimated a happiness function by adopting a large number of independent variables for Japan, finding that there are missing and unobservable variables that explain happiness. The Big Five factors are candidates for these missing or unobservable variables. Our later analysis can be regarded as the finding that the missing or unobservable variables are equivalent to the Big Five factors.

4.2 Empirical Analysis

We present two models in Table 7.3. The first includes the case in which the Big Five factors are treated as independent variables, and the second excludes those variables. However, it should be noted that the two models are basically recursive (i.e., self-referential) in nature. This recursive nature assumes that the inequality variable is the dependent variable at the first stage, while at the second stage the happiness variable is the dependent variable and the inequality variable is included as an independent variable. We apply Zellner's (1963) seemingly-unrelated-regression (SUR) estimation in these models.

4.2.1 Inequality

The first column in the estimation results for each country shows the inequality equation without considering Big Five factors. The highest attention is paid to the effect of equivalent family income because an individual's judgment on inequality or income distribution is influenced by his or her own income. There are two possibilities. First, if the estimated coefficient is negative, it indicates the fact that people do not observe high inequality in their country. Second, if it is positive, it implies the reverse, that high inequality is observed.

The results in this table show statistically significant negative coefficients for both France and Japan, which implies that people whose income levels are higher in France and Japan find that wider income differentials are not socially unjust. This result for France is consistent with that in Alesina et al. (2004). One possible

answer may be suggested for France, namely the idea of *noblesse oblige*, implying that people with higher incomes should contribute to the society more strongly. In Japan, there is a proverb stating that people with strong powers should be more humble. Fuller discussions are needed to explain the reason why the French and the Japanese people judge inequality in this way because the historical, socioeconomic, and cultural factors must be taken into account and we have not included these in our analysis. The American, British, and German cases show no effect for family income. The U.S. case is discussed later.

Another important variable is the positive correlation with being female for the U.S., France, and Japan. Women understand that they tend to face higher income differentials than men in their countries. One interesting difference appeared between the positive coefficient for universities and graduates schools in Germany and the negative coefficient in France with respect to the effect of education. Both values are statistically significant. The difference between the two countries is somewhat curious because we have a common understanding that Germany is not a country with a high level of academic credentialism, while France is the opposite.

The British and the German cases have positive coefficients for the age variable, implying that the greater the age, the higher the degree of dissatisfaction with higher inequality. It should be noted, however, that this property becomes weaker when people in Germany are older because of the negative coefficient of age squared.

4.2.2 Happiness

The second column for each country presents the estimated results for the happiness function without consideration of the effects of Big Five factors.

The most interesting observation is given by the fact that the "inequality" variable is statistically significant in the determination of happiness for each country. Therefore, judgments on inequality (i.e., on wider income distributions) has some impact on the feeling of happiness. More specifically, the effect is positive for the U.S., while it is negative for the U.K., Germany, France, and Japan. The former implies that Americans are likely to feel higher degrees of happiness when inequality and wide income differentials are higher, while the latter implies that people in the U.K., Germany, France, and Japan are likely to feel higher degrees of unhappiness. This is consistent with the proposition given by Alesina et al. (2004) who found a similar difference between the U.S. and Europe regarding the relationship between inequality and happiness.

People in the U.S. feel happiness even when wider income differentials are observed, while people in Europe and Japan do not feel happiness when the degree of income inequality is high. American people view competition and self-reliance favorably, and thus they accept wider differentials in incomes between people regarded as capable, productive, and hard-working and people regarded as incapable, less productive, and lazy; people in Europe and Japan have a different opinion on the subject. This characteristic, namely the difference between the U.S. and Europe, led several economists to propose that the two regions have different

openness to the power of income redistribution policies (see, for examples Alesina and Angeletos (2005) and Alesina and La Ferrara (2005)) and acceptance of the state of income and social mobility (see Piketty 1995). We propose similar results as these studies from our investigation into the relationship between inequality and happiness.

Another possible reason may be suggested for the U.S. The degree of income mobility among different income classes is perceived to be high. Thus, current members of lower income groups in the U.S. are not unhappy because they expect that they can receive higher incomes in the near future if they work hard.

This study produced new information regarding Japan, since no studies of this nature have been performed in the past. For Japan, we can make similar observations as for the group of European countries. Additional observations should be described for Japan, nevertheless, in the sense that the average level of happiness was much lower than in Europe and the U.S.

4.2.3 Effect of Personalities and Psychological Variables

The effect of these variables on both the perception of inequality and on happiness is argued simultaneously. The first worthwhile result appears in the increase in the goodness of fit from the inequality equation to the happiness function by the inclusion of these personality variables. The biggest increase in the adjusted R-squared value was provided in the case of the U.S. (0.219) and the smallest increase was for Germany (0.006).

Secondly, the goodness of fit is fairly good for the happiness function in the U.S., the U.K., France, and Japan. The one exception is Germany, where there is not much difference between the inequality equation and the happiness function.

The previous two propositions suggest the following additional conclusions. It is quite useful to consider the effect of the contribution of personalities and psychological variables in the analysis of happiness functions in the cases of the U.S., the U.K., France, and Japan. Moreover, it would be misleading to estimate a happiness function without including personality and psychological variables. To do so would make the mistake of ignoring the contribution of missing or unobservable variables.

We obtain the following findings from the second model. First, the effects of conscientiousness, neuroticism, and agreeableness are statistically significant in many countries. This is true for both the inequality and happiness functions.

Second, the effect of conscientiousness is positive for the U.S., the U.K., and Japan for both inequality and happiness. The effect is positive for Germany and negative for France. The former may lead to a conflicting view at first glance because people who are conscientious in many activities accept higher inequality but have a higher level of happiness. One clue to resolve this conflict may be the fact that people who are conscientious commit to many activities with solid plans, and their success from such planned activities may lead to greater feelings of happiness.

Third, the negative effect of neuroticism on inequality in Germany is somewhat surprising because in all other countries it showed positive effects. A person in Germany who is unstable regards high inequality as bad, while a person in the U.K. and Japan does not view it as negatively.

Fourth, the effect of agreeableness gives a negative value in the U.S., which suggests that people who are altruistic or generous feel lower happiness, while people in Japan who have the same personality trait feel higher happiness. This is an interesting contrast.

Fifth, the effect of openness is statistically significant only in the U.K. and Germany in the determination of happiness, although the signs are different (Germany is negative and the U.K. is positive). People who are anxious for intellectuality and the spirit of inquiry feel greater happiness with increased openness in the U.K., while people who prefer stability feel lower happiness with increased openness in Germany.

5 Concluding Remarks

This chapter conducted an international comparative study on happiness and inequality for five industrialized countries (the G5 countries, including the U.S., the U.K., Germany, France, and Japan). Two extreme countries with respect to the degree of happiness exist: the U.S. with the highest and Japan with the lowest. The continental European countries stay somewhere between them. We provided some suggests for why such differences exist between these countries and showed how people view the importance of various factors affecting happiness through our own surveys of people in these countries.

Two important features can be proposed for this study. First, we were interested in the effect of Big Five factors on feelings of happiness. The effect of neuroticism was negative in all countries. Second, we investigated the interactions between inequality and happiness. In particular, we estimated the effect of inequality on feeling of happiness and found that the sign of the effect differed by country.

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