

MENTAL HEALTH CARE AND AVERAGE HAPPINESS

Strong relationship in developed nations

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ABSTRACT

Mental disorder is a main cause of unhappiness in modern society and investment in mental health care is therefore likely to add to average happiness. This prediction was checked in a comparison of 143 nations around 2005. Absolute investment in mental health care was measured using the per capita number of psychiatrists and psychologists working in mental health care. Relative investment was measured using the share of mental health care in the total health budget. Average happiness in nations was measured with responses to survey questions about life-satisfaction.

Average happiness appeared to be higher in countries that invest more in mental health care, both absolutely and relatively to expense for somatic medicine. Split up by level of development shows that this difference exists only among developed nations. Among these nations the link between mental health care and happiness is quite strong, both in an absolute sense and compared to other known societal determinants of happiness. The correlation between happiness and share of mental health care in the total health budget is twice as strong as the correlation between happiness and size of the health budget. A causal effect is likely, but cannot be proved in this cross-sectional analysis.

Keywords

Subjective well-being; Happiness; Cross-national; Public health; Mental health care.

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1 INTRODUCTION

Happiness is highly valued in modern society (Harding 1985) and there is strong support for the idea that governments should aim at greater happiness for a greater number (BBC 2006). In this context there is discussion about what governments can do to raise the level of happiness. One of the options is to invest more in mental health care, because mental disorders are a major cause of unhappiness in modern society.

Call for more investment in mental health

Richard Layard makes a strong case for more investment in mental health care in his influential book *Happiness: Lessons from a New Science* (Layard 2005). On the basis of research he concludes that ‘mental illness is probably the largest single cause of misery in Western society’ (ibid.: 183) and that ‘in any year about 20% of us have serious mental problems’ (ibid.: 181-182). He holds that treatment has much improved, both drug therapy since the 1950s and psychotherapies since the 1970s and that ‘the costs of these treatments are not large relative to the huge improvement in wellbeing’ (ibid.: 183). Speaking about Great Britain, Layard continues:

Yet the majority of people who are mentally ill get no treatment. [...] There are simply too few psychiatrists and psychologists. [...] We spend too little on mental illness, compared with other diseases. If we take the entire toll of disease, which includes both disability *and* premature death, mental illness accounts for a quarter of the total. Yet in the United States only 7% of the health expenditures are targeted at mental illness, and in Britain only 13%. [...] Our priorities need a radical change. It is a scandal how little we spend on mental illness compared with, say, poverty. (ibid.: 183; emphasis in original).

Qualms about mental health care

Investment in mental health care is also low in most other countries and mostly less than 5% of what is spent on somatic health care (World Health Organization 2011). Why? One of the reasons could be that the effectiveness of mental health care is not beyond doubt. While somatic health care has proved its effectiveness with unprecedented rises in longevity in countries with good care, mental health care lacks such a convincing outcome on an aggregate level.

This absence of clear evidence of effectiveness gives way to criticism of mental health care, such as by the “anti-psychiatric” movement in the 1970s. The intellectual prophets of that movement were Foucault, Laing and Szasz (Rissmiller & Rissmiller 2006) and its main points of criticism were: 1) the use of the medical models for psychiatric diagnosis, 2) psychiatric institutions function as an instrument of (political) repression, 3) in defining certain behavior as deviant, psychiatry automatically tries to reproduce social norms when it attempts to “fix” such deviations and 4) neglect of the positive aspects of madness (Trimbos 1975).

The momentum of anti-psychiatry was halted in the 1980s, when mental illness began to be seen increasingly as the result of chemical imbalances in the brain, as opposed to the societal context, and research showed the positive effects of several psychotherapeutic interventions (Fonagy & Roth 2005) and a substantial number of psychiatric drugs (Van Gageldonk & Donker 1999). Still doubts about the mental health sector remain. For instance, Achterhuis (1980) claims that by using vague guidelines for diagnosis, mental health care institutions create their own demand by making potential patients “aware” of their “illnesses”,

thereby legitimizing their existence. Furedi (2004) detects a similar problem when he states that common life problems such as grieving over the loss of a relative, are increasingly medicalized into cases of “depression” and that the jargon of mental health professionals has found its way into public discourse. Dehue (2008) concurs with this view and also points to the problematic relation between large pharmaceutical companies and mental health professionals (see also: Healy 2012). Today these issues have revived in the discussions about the revision of the Diagnostic Manual of Mental Disorders (cf. Frances 2012).

Aim of this paper

While all these critics may have a point, the net effect of mental health care can still be positive. Similar charges of overtreatment and iatrogenic damage are made for somatic health care, but the net effect of somatic health care is clearly positive, since we live now longer in good health than ever before in human history (Unger & Schulze 2013).

In this paper we use happiness as an outcome criterion and explore the statistical relation between investment in mental health care in nations and the average happiness of the people who live in that nation. Our hypothesis is that people live happiest in the nations that provide the most mental health care. Our approach is similar to that used for comparative assessments of the effect of public health expenditures on years lived in good health.

Link with debate on effect of economic growth on happiness

The ‘Easterlin Paradox’ is a major topic in cross-national happiness research. In its original formulation it held that happiness relates to income within countries, but not across countries and that since the 1950s average happiness in nations has remained unchanged in spite of much economic growth. Easterlin (1974) saw this as a result of social comparison, people comparing their income with that of compatriots and not with people abroad. If the effect of mental health on happiness is also driven by local comparison, there will be little cross national difference either and hence little effect of variation in mental health care.

Easterlin advanced this claims in 1974, on basis of the then available data. The rapid increase in available data on this matter spawned further investigation of this phenomenon. In a paper using more recent and longitudinal data from a combination of sources, Hagerty and Veenhoven (2003) argue that even in affluent nations an increase of income per capita is associated with small but significant gains in average happiness. Recently Veenhoven & Vergunst (2014) estimated that in developed nations a 1% economic growth has been accompanied by only 0.03% gain in average happiness per year. Against this background it is worthwhile to investigate more direct and perhaps more effective ways of raising the average life satisfaction of citizens, such as investments in mental health care.

Plan of this paper

In the following sections, we will introduce our concepts and their operationalization. Subsequently, we will present our methodology, after which we will present our results. We will end this paper with a brief conclusion.

2 CONCEPTS AND MEASURES

The first step is to define the variables at hand: What is “happiness” precisely? What is “mental health care”? How can the prevalence of these phenomena in nations be measured?

2.1 Happiness in nations

Happiness is defined as the ‘subjective appreciation of one’s life-as-a-whole’, in other words, how much one likes the life one lives. This definition is explained in more detail in Veenhoven (1984). This matter is also referred to as “life-satisfaction” and “subjective wellbeing”.

Thus defined, happiness is something that we have in mind that can be measured using questioning. Various questions are being used for determining a respondent’s level of happiness at the time of questioning. All the questions that fit the above definition are listed in the collection *Measures of Happiness* of the World Database of Happiness (Veenhoven 2013c).

Responses to these questions in representative samples of the general population in nations are listed in the collection *Happiness in Nations* of the World Database of Happiness (Veenhoven 2013b). These data are sorted by nation, year and type of question and using this set of data allowed us to select the type of question used in most countries in the years 2000 to 2009. The most common variant of this question reads: ‘Taking all together, how satisfied or dissatisfied are you with your life as a whole these days? Please answer with a number between 0 and 10, where 0 stands for most dissatisfied and 10 for most satisfied’.

In the years 2000 to 2009 this question was used in probability samples of the general population in 151 nations and in many of these more than once. The observed means of happiness are listed in the *Rank Report* of average happiness in nations of the World Database of Happiness (Veenhoven 2013a). The lowest average on scale 0-10 was recorded in Togo (2.6) and the highest in Costa Rica (8.5).

2.2 Mental health care in nations

Mental health care is an organized attempt to deal with mental disorders and involves both curative and preventive activities. Mental disorders are generally defined as ‘clinically significant behavioral or psychological syndrome[s] or pattern[s]’, associated with ‘present distress [...] or disability [...] or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom’ (American Psychiatric Association 2000: xxxi). Over a third of people in most countries report problems at some time in their life, which meet criteria for diagnosis of one or more of the common types of mental disorder (European Commission 2006; WHO International Consortium in Psychiatric Epidemiology 2000). Professional mental health care exists in all contemporary nations and investments in this sector are monitored by the World Health Organization. A recent account is found in the *Project Atlas* of the World Health Organization (Henceforth: WHO; World Health Organization 2011), which consists of an online database in which different kinds of country-level data on mental health can be found (World Health Organization 2005a). We selected the following indicators from this set of statistics.

Psychiatrists per 100,000 inhabitants

The WHO defines a psychiatrist as ‘a medical doctor who has had at least two years of post-graduate training in psychiatry at a recognized teaching institution. This period may include training in any sub-specialty of psychiatry’ (World Health Organization 2005b: 33).

Data on the number of psychiatrists are available for 143 of the 151 nations for which we know average happiness. The lowest number (0) was observed in eight nations, predominantly African, and the highest number (25) in Iceland.

These data have some limitations. First, some countries were not able to provide an accurate number, especially for psychiatrists working in the private sector. Second, for some

countries, the source of information was the national association of psychiatrists; in these cases, psychiatrists who are not a member were not counted. Finally, health care professionals like psychiatrists are typically unevenly distributed over a country (ibid.: 34).

Psychologists working in mental health care per 100,000 inhabitants

The WHO defines a psychologist working in mental health as ‘a graduate from a recognized, university-level school of psychology with a specialization in clinical psychology. These psychologists are registered with the local board of psychologists, or equivalent, and work in a mental health setting’ (ibid.: 37).

Data on this matter are available for 93 of the 151 nations for which we also know average happiness. The lowest number (0) was observed in Cameroon and Angola and the highest number (106) in Argentina.

The limitations for this variable are similar to those for the variable on psychiatrists per 100,000 inhabitants. In addition, some countries could not specify which part of the total number of psychologists was active in mental health care (ibid.: 38). These countries were not included in the analysis.

Share of mental health care in the total health budget

The WHO defines the specified budget for mental health as ‘the regular source of money, available in a country’s budget, allocated for actions directed towards the achievement of mental health objectives’ (ibid.: 24). In the particular variant of this variable we used, the specified budget for mental health is expressed as a proportion of the total health care budget of a country. This percentage denotes the priority awarded to mental health care in nations. An additional advantage of this indicator is that it is not too dependent on the wealth of the nation. The total health budget is typically higher in rich nations and for that reason the correlations with outcome measures can reflect effects of wealth rather than of health care. This problem was mitigated when we used the share of the health budget for our analysis. The highest percentage (13) was found in Luxembourg; the lowest percentage (0) was observed in various countries, predominantly African.

A percentage of zero did not necessarily mean that a country does not spend a portion of its health budget on mental health care. First, data for this variable are computed in various ways: while some countries explicitly allocate a specified portion of their total health care budget to mental health, in other instances, the data are computed by expressing the financial allocations for mental health within the overall health budget at federal or state level as a proportion of the total health budget. No data is available for countries that delegate mental health responsibilities to states or provinces. Other countries, such as Austria, cannot provide specific information about their mental health budget: their mental health care is fully integrated with the primary care system. The data also do not specify which proportion of the budget is allocated to non-governmental institutions and which proportion is allocated to governmental institutions and how the budget is distributed to different services and resources (World Health Organization 2005b). In view of these limitations, the WHO concludes that ‘the data on mental health budgets should be viewed as preliminary and indicative, even at the country level’ (ibid.: 26). Finally, besides the countries that do not have a score on this variable, there are also countries scoring 0 that do have a score on the other variables, like Norway. Hence we decided to count a value of 0 as missing for this variable. This means that data on this matter are available for only 65 of the 151 nations for which we know an average happiness rating.

3 METHOD

Using SPSS, all the aforementioned measures of mental health care in nations were compared separately against the average level of happiness in those countries. Our analysis involves the following steps.

3.1 Visual inspection of scatter plots

The relationship between the three indicators of mental health care and happiness was investigated using a number of scatter plots. The scatter plots are used to present nations in a two-dimensional space, where happiness is on the vertical axis and mental health care on the horizontal axis. The plots show at a glance whether there is a statistical association and also whether there is a levelling off or a turning point at the top. Since each country is identifiable in the scatter plots, we can interpret general trends within the context of the knowledge that we have of the countries in question. We made plots for all countries together and for several subgroups of nations, such as for poor and rich nations. In this paper we cannot present all the 90 scatter plots we considered, so we limit ourselves to one illustration ([Figure 1](#)). The interested reader can find all the plots in the statistical supplement to this paper, which is available on the internet*.

3.2 Calculation of correlations

In addition, the strength and direction of the associations were also expressed as correlation coefficients, using the Pearson product-moment correlation coefficient.

3.3 Split-up by economic development

Average happiness is much higher in rich nations than in poor ones and rich nations typically spend more on everything, including mental health care. Hence a possible correlation between mental health care and happiness can be driven by the wider benefits of wealth rather than by a positive effect of mental health care. For that reason we considered the relations at four different levels of economic development separately.

Another reason to split-up by level of societal development is that mental health may be more critical for happiness in modern society and mental health therefore more functional. We will return to this matter in the discussion section.

3.4 No regression analysis

A common technique in happiness economics is to run a regression analysis in which other known determinants of happiness are entered as covariates. This technique wipes out spurious correlations if the covariates are fully independent of the explanatory variable, but throws away the baby with the bathwater if these are much intertwined. In this case that means we cannot use national determinants of average happiness that are likely to be linked to mental health care in nations. Most of the known determinants of happiness fail that criterion. For instance, when we consider the level of education in a country, it is likely that it will correlate considerably with mental health care, among other things because better educated citizens will be more receptive to mental health care and therefore also use it more. Even an institutional factor such as political democracy can play us false, for instance when voters recognize the value of mental health and consequently press for mental health care.

This problem of multicollinearity is especially great if the number of cases is small

* <http://www2.eur.nl/fsw/research/veenhoven/Pub2010s/2014e-supplement.pdf>

and the variance low, such as in the case of only 19 highly developed nations among which few differentiation exists among these variables.

We hold that mental health care is part of the “modernity syndrome”, just like education, computer technology and acceptance of gay marriage. Taking away the common variance with such modernity related variables will therefore disguise the effect of mental health care and as such increase the likelihood of a Type 1 error. The best we can do at the moment is to look at differences in mental health care among roughly equally modern countries, which is exactly what we do with the abovementioned split-up of the countries by level of development.

3.5 Comparison with other societal determinants of happiness in nations

In this approach a next step is to compare the observed correlation between average happiness and investment in mental health care with the correlation between average happiness and other societal determinants, such as democracy, quality of government and the extent to which equal opportunities are offered to women. Like mental health care, these factors are also part of the modernity syndrome and as such their correlation with happiness will be confounded in a similar way. Therefore the difference in correlation provides an estimate of the unconfounded correlation with happiness. Of particular interest in this context is the difference in correlation with happiness between the budget for health care at large and the percentage of that budget spent on mental health. If the latter correlation is stronger, we can be fairly sure that the difference in correlation is not spurious.

3.6 Statistical significance

Tests of significance are used to indicate the probability that a value found in a random sample does not exist in the population from which that sample was drawn. If this probability is sufficiently low, i.e. no more than 5%, it is typically concluded that the association cannot be attributed to the composition of the sample. In other words, a low p-value indicates it is unlikely that the observed association will disappear if another sample is taken. Our dataset of 143 nations does not represent a random sample of all the 196 nations of the world, particularly not the 65 nations for which we have data on the share of mental health care in the total health budget. There is an element of chance regarding data availability within subgroups, for instance among rich nations, there is data on share in the total health budget available for Sweden and Germany, but not for Norway and Austria. Consideration of the other missing countries in this category of highly developed nations does not suggest any system. These countries are Canada, Denmark, Finland, Greece, Hong Kong, Iceland, Italy, Kuwait, Slovenia, Spain, Switzerland, and the United Arab Emirates. For this reason we consider significance tests done on the data informative and report these next to the effect sizes. We do that using the 95% confidence interval around correlations observed in the samples, which we consider more informative than the usual ‘p values’.

4 RESULTS

Average happiness in nations appears to be higher the greater the investment in mental health care, both absolutely and relatively. This tendency is driven by the developed nations. We see this pattern for each of the indicators of investment in mental health care, which we discuss in more detail below.

4.1 Greater happiness in countries with more mental health professionals per capita

In a first analysis of all 143 nations we saw a strong positive correlation between average happiness and the number of psychiatrists per capita ($r = +.51$) and a similar correlation with the number of psychologists per capita ($r = +.57$). This correlation does not necessarily mean that mental health care boosts happiness. Though reverse causality is unlikely in this case, i.e. happiness boosting investment in mental health care, it is well possible that the correlation is spurious.

One of the intervening variables that can obviously be involved is societal development, as developed nations spend more on everything and people also lead a happier life in the developed nations of this time (Veenhoven 2010). For this reason we split the data by level of development, using the standard classification of the Human Development Report (UNDP 2011). In [Tables 1](#) and [2](#) we see that the correlation is strongest at the highest level of development and somewhat weaker at intermediate levels of development. Among the low developed nations we see some negative values, but the number of countries is too small to be conclusive.

The initial data set of 143 nations contains 25 former communist countries in which average happiness dropped dramatically in the 1990s, due to the transformations after the fall of communism (Bălătescu 2006). Though this dip was passed around the year 2000, the level of happiness in these countries was still atypical around 2005 (cf. Deaton 2008: 59-60). For that reason we also computed correlations with these countries left out and this gave a more coherent picture.

The correlation is strongest among the most developed nations and pleas for more investment in mental health care are also the loudest in these nations. For that reason we inspected this subset of nations in more detail. The scatterplot of average happiness against the number of psychiatrists per 100,000 inhabitants in 34 nations is presented in [Figure 1](#). The correlation is $+.58$.

In [Figure 1](#) we see in the top right a cluster of Scandinavian countries and in the left bottom an overrepresentation of Asian countries. A similar picture emerged when we plotted average happiness against the number of psychologists working in mental health per 100,000 inhabitants in 30 nations (figure not shown). The correlation is even stronger in this case: $r = +.74!$

4.2 Greater happiness in nations with a greater share for mental health in the health budget

As a next step we considered the percentage of the total health budget of a nation spent on mental health care. This analysis was based on 65 nations. Among all these nations we observed a positive correlation of $+.28$. Again we specified by development of nations, see [Table 3](#). This analysis revealed a very strong correlation among the 20 most developed nations, but a negative or a negligible relation among the less developed nations. The case of developed nations is presented in [Figure 2](#).

4.3 Stronger correlation with % of health budget spent on mental health than with total health budget

Among the 19 highly developed nations for which data about the mental health care budget as well as public health budget were available, we observed a correlation of $+.74$ between average happiness and the percentage of the health budget spent on mental health. For these nations, we also computed the correlation between happiness and total expense for health care in percent of the nation's GDP. This correlation was substantially lower, $r = +.26$. The

difference in correlation is thus .39, which can be considered a minimal estimate of the relation between mental health care and average happiness.

5 DISCUSSION

We found a considerable correlation between average happiness and investment in mental health care in the most developed nations, but no such correlation among less developed nations. These findings raise the following questions: How strong is the correlation in highly developed nations relative to other known determinants of happiness in that kind of societies? Does this correlation denote a causal effect? And if so, why do we not see a similar strong correlation in less developed nations?

5.1 How strong are the correlations?

In the subset of highly developed nations we observed correlations between +.58 and +.75, which can be considered quite strong. The real association is probably even stronger than these numbers suggest, since measurement error is likely to have negatively influenced the correlation. There is some error in the measurement of average happiness in nations and probably a lot of error in the measurement of mental health care available in nations (Veenhoven 2012). Measurement error may also have obscured associations among less developed nations.

How strong is this strong correlation compared to other societal determinants of happiness in developed nations? Using the same set of 34 very highly developed nations we found a correlation with happiness of +.66 for the quality of government and +.30 with gender equality. So the observed correlation with mental health care is in the same range as with realization of these established policy goals. As noted above, the observed correlation with the percentage of the health budget spent on mental health is twice as strong as the correlation between happiness and total expense on health. All this indicates that the correlation between average happiness and mental health care in nations is also strong in a relative sense.

5.2 A causal effect?

Does the strong correlation we found mean that investment in mental health care fosters average happiness of citizens in a nation?

What about reversed causality, could the happiness of voters in a nation give rise to more attention for mental health care? Possibly happy people are more interested in the issue, since happy people tend to be more open-minded and socially responsible and are less apt to accept suffering (Lyubomirsky, King, & Diener 2005). Yet reverse effects seem equally plausible, the less happy people are, the more they need mental health care. So reversed causality is unlikely to play a big role.

A more plausible explanation could be that the correlation is caused by a third factor that is correlated with both average happiness and mental health care in nations. Above we have already noted that economic affluence could cause a spurious correlation and for that reason we made a distinction between more and less developed nations. We also controlled for economic affluence using the variable measuring the budget for mental health care as a share of the total health care budget. So the strong correlation cannot be disposed of as a spurious effect of affluence.

What other variables are there that might cause a spurious correlation? Possibly individualism, since this adds to happiness (Veenhoven 1999), while the greater self-direction involved could also increase vulnerability to mental disorder and could boost demand for

mental health care. Yet much of such effect is captured by the aforementioned control for economic development. Below we will argue that individualism is a factor in the explanation of why mental health care adds to happiness in developed nations. So far we have kept away from using controls without a good reason (Freund, Wilson, & Sa 2006: 238-240). Instead we estimated the “unconfounded” correlation by focusing on the difference in correlation of happiness with factors likely to be confounded in a similar way.

Another indication of causality is that the expansion of mental health care in developed nations since the 1970s, has coincided with a gradual increase in average happiness and, in particular, with a reduction of the percentage very unhappy people in a population (Veenhoven 2010).

For now, the empirical evidence point at a causal effect of mental health care on average happiness. Yet our data do not allow a definitive proof.

5.3 Why only in the most developed nations?

The aim of mental health care is to improve the functioning of the individual and in this view it is no surprise that improved functioning gives rise to greater happiness. The question is rather why this manifests itself in higher average happiness only in higher developed nations.

One answer to this question is that average happiness is only affected if the share of the population reached by mental health care is substantial. This is the case in highly developed countries where seven to ten percent of the citizens use mental health services over the course of a year (European Commission 2006; Wang et al. 2007), but less so in less developed nations (Angermeyer, Breyer, Dietrich, Kenzine, & Matschinger 2005), where people are more inclined to use their informal network in case of mental distress (ibid.). The scope and availability of preventive mental health care is also greater in the most developed nations, among other things because of integration in school education.

A second answer is that the effect of mental health care on happiness is stronger in the very highly developed nations. The better the living conditions in a society, the more differences around the (high) average level of happiness come to depend on life-abilities, many of which form part of the mental health syndrome. This is particularly so in modern individualistic multiple-choice society, which sets high demands on self-direction and where minor mental disorders can easily lead to occupational failure and social isolation.

In line with the above, the absence of a correlation in less developed nations can be explained by both the limited scope of mental health care and the lower cost of mental disorder. Still another thing is that our measures of mental health care may apply less well in less developed nations, as more care tends to be provided by church and family.

Future research

The above analysis suggests a strong causal effect of mental health care on average happiness in the most developed nations but cannot really prove that. How can we obtain more certainty? One way is to use time series data to see whether changes in mental health care in nations are followed by similar changes in average happiness. Such data are not available as yet and in such analyses we will meet similar problems of multicollinearity, e.g. when expansion of mental health care goes hand in hand with economic growth and rising education. Another way is to gather more data, both to enhance statistical power and to find more divergent cases. Such data are also not yet available, so for the time being, we must make do with the data presented here.

6 CONCLUSION

The availability of professional mental health care seems to add considerably to average happiness in developed nations. Hence governments in pursuit of greater happiness for a greater number of their citizens should consider investing in mental health care.

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Table 1
Average happiness and psychiatrists per capita
 in 143 nations around 2005

<i>Nation set</i>	<i>Psychiatrists per capita</i>		
	<u>Correlation with happiness</u>		N
	r	95% confidence interval	
Very high development	+ .58	+ .31 to + .77	34
- without former communist nations	+ .60	+ .31 to + .78	32
High development	- .04	- .39 to + .32	31
- without former communist nations	+ .19	- .34 to + .62	16
Medium development	- .03	- .29 to + .24	56
- without former communist nations	+ .40	+ .13 to + .61	48
Low development	- .33	- .68 to + .15	19
All nations	+ .51	+ .37 to + .62	143

Table 2
Average happiness and psychologists per capita
 in 93 nations around 2005

<i>Nation set</i>	<i>Psychologists per capita</i>		
	<u>Correlation with average happiness</u>		N
	r	95% confidence interval	
Very high development	+ .74	+ .52 to + .87	30
- without former communist nations	+ .73	+ .50 to + .87	28
High development	+ .39	+ .00 to + .69	25
- without former communist nations	+ .26	- .37 to + .72	12
Medium development	+ .26	- .09 to + .55	33
- without former communist nations	+ .25	- .14 to + .58	27
Low development	- .23	- .98 to + .94	4
All nations	+ .57	+ .42 to + .70	93

Table 3
Average happiness and % mental health care in the total health budget
 in 65 nations around 2005

<i>Nation set</i>	<i>% expense on mental health care</i>		
	<i>correlation with average happiness</i>		
	<i>r</i>	<i>95% confidence interval</i>	<i>N</i>
Very high development	+ .75	+ .47 to + .90	20
- without former communist nations	+ .74	+ .43 to + .90	19
High development	- .11	- .59 to + .43	15
- without former communist nations	+ .37	- .53 to + .88	7
Medium developed	- .25	- .58 to + .15	27
- without former communist nations	- .22	- .59 to + .22	22
Low developed	- .29	NA	3
All nations	+ .28	+ .04 to + .49	65

Figure 1
Happiness by number of psychiatrists per 100,000 inhabitants
 in 34 very highly developed nations in 2005

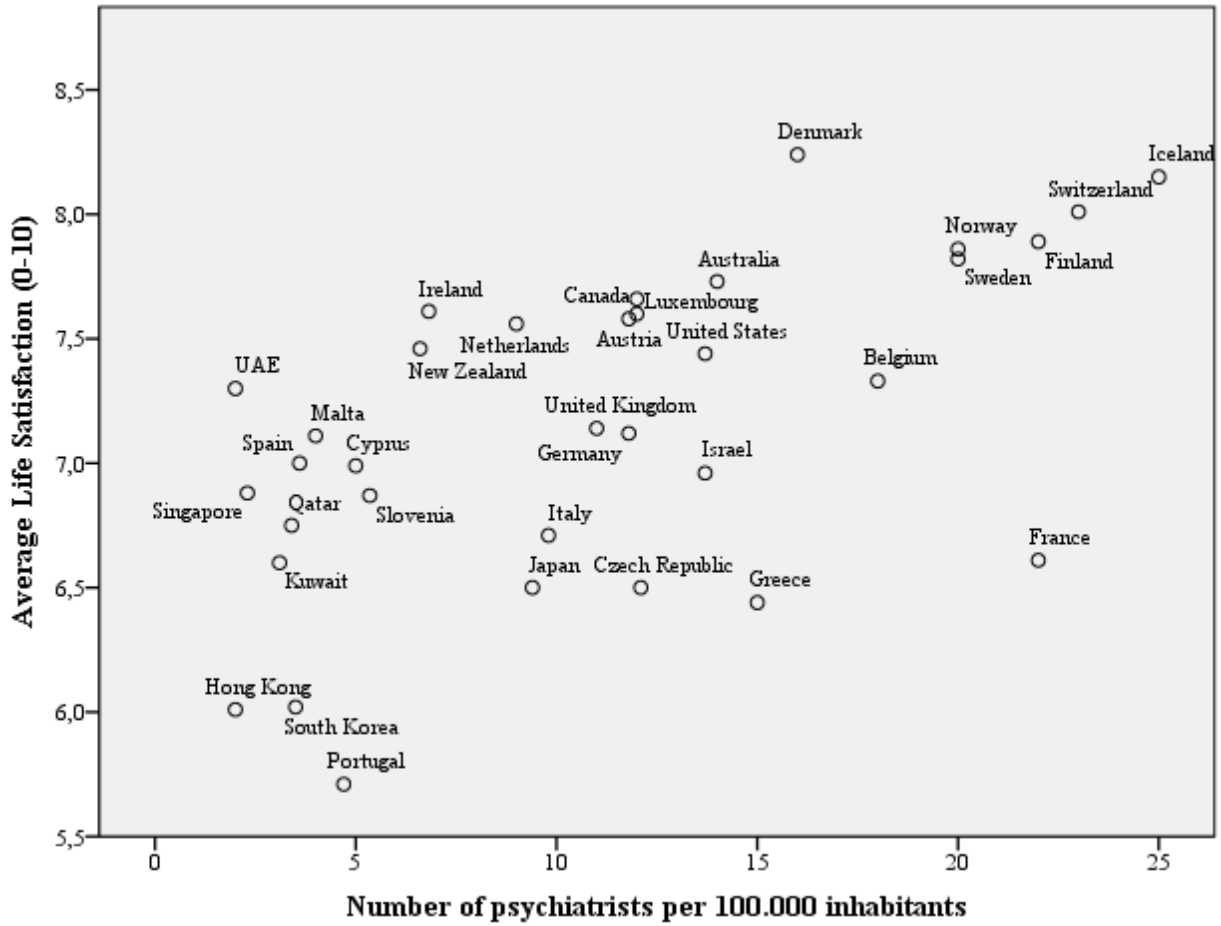
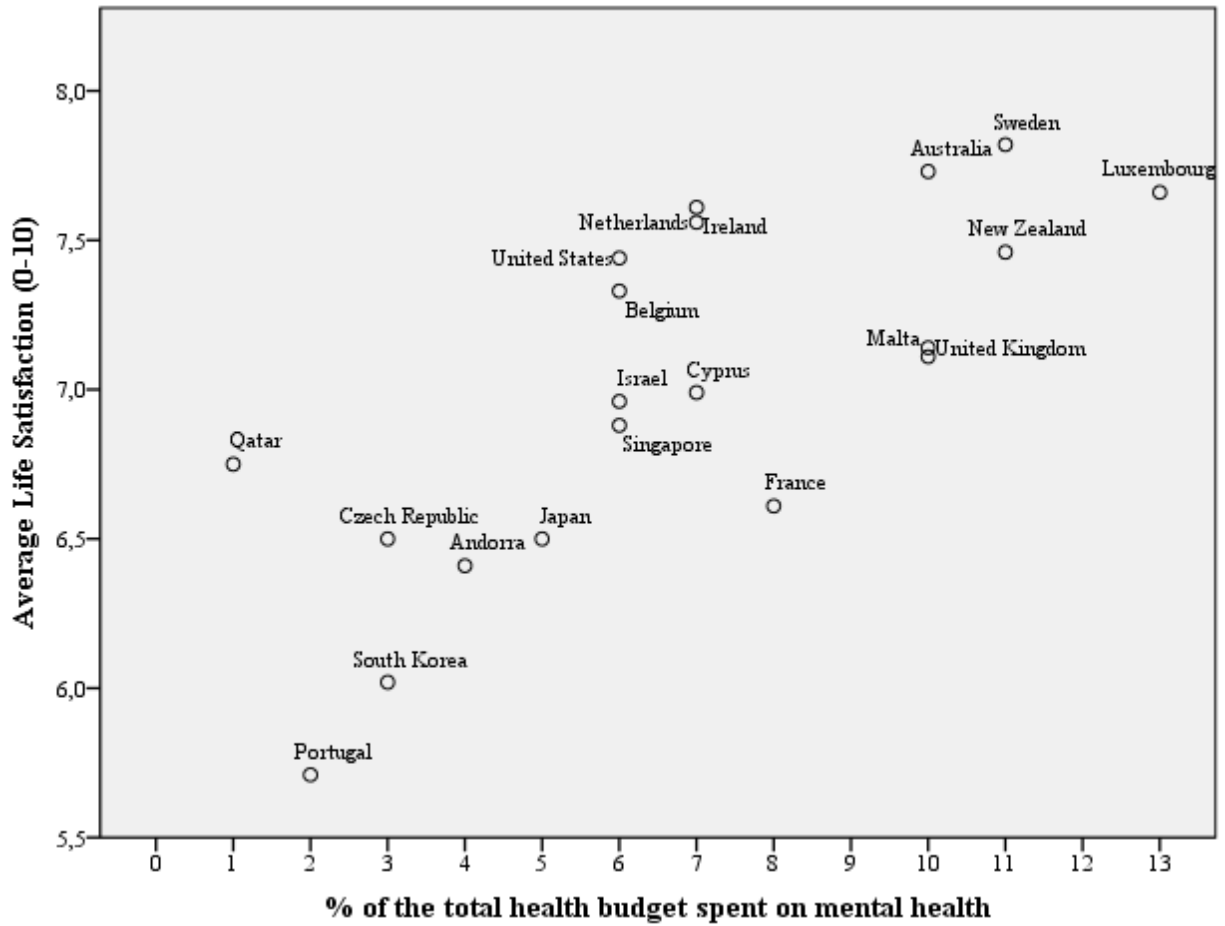


Figure 2
Happiness by share of mental health care in the total health budget
 in 20 very highly developed nations in 2005



APPENDIX**Variables used in the cross-national analysis and their descriptive statistics**

<i>Name</i>	<i>Code in data-file 'States of nations' (Veenhoven 2013d)</i>	<i>Source</i>	<i>N</i>	<i>Mean</i>	<i>Std. deviation</i>
2000-2009 0-10 Life Satisfaction completed with adjusted Best-Worst	HappinessLSBW_2000sb	(Veenhoven 2013a)	153	5.901	1.296
2005 Number of psychiatrists per 100,000 population	Psychiatrists_2005	(World Health Organization 2005b)	169	4.214	5.936
2005 Number of psychologists working in mental health care per 100,000 population	PsychologistsMH_care_2005	(World Health Organization 2005b)	95	11.456	21.460
2005 % of the total health budget spent on mental health	MentalHealthExpense_ShareHealthBudget_2005	(World Health Organization 2005b)	75	4.610	3.316
2009 Classes of human development	HDI_Class_2009	(UNDP 2011)	172	2.530	.988
2004 Public health expenditure in % GDP	HealthExpensePrivate_2004	(UNDP 2007)	165	3.611	2.084
2006 Government Effectiveness, Worldbank	GovEffectiveness_2006	(Kaufmann, Kraay, & Mastruzzi 2008)	171	.7262	.0664
2010 ISD index of gender equality	GenderEqualIndex5_2010	(ISS 2013)	175	-.0255	1.020