Living a happy, healthy and satisfying life

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1   Introduction

Subjective well-being (SWB) refers to how people evaluate their lives, and includes variables such as life satisfaction and marital satisfaction, lack of depression and anxiety, and positive moods and emotions (Diener 1997). Assessing SWB in full not only requires the measurement of cognitive components such as feelings of happiness and satisfaction with life in general, but also more direct measures of the respondent's current state, including questions about both positive and negative mood (Huppert 2009). In addition, health directly contributes to the well-being of people. Health is a concept that largely depends on people's personal perception, their physical condition, and the opportunities offered by the physical and social environment to live a healthy life and feel healthy. A healthy lifestyle is not only a way to avoid risks, but also a chance to live well and happily (RIVM 2002, p. 253).

Starting from this point, Statistics Netherlands briefly examined the relation between subjective well-being (SWB), lifestyle and health. The results have been described in this article. Self-reported happiness and satisfaction with one's life were selected as indicators for SWB. These indicators were related to the lifestyle factors smoking, drinking and physical activity. Being overweight was the fourth lifestyle factor accounted for. Two subjective health variables were included in the analyses as factors influencing or interacting with SWB. These are mental health, as a measure for positive and negative emotions, and self perceived health.

The format of the article is as follows: section 2 describes the methods. Section 3 presents the relation between lifestyle and happiness respectively satisfaction with life. In section 4 a short impression of mental health in relation to lifestyle and SWB is given. The results of a multivariate analysis examining the relation between lifestyle factors, self-perceived health and well-being are described in section 5. The article ends with conclusions in section 6.

2   Methods

The results described in this paper are based on three rounds of the Dutch national health interview survey for the period 2006-2008, with a total of well over 23,000 respondents aged 12 years and older. The data of the three rounds have been combined to obtain sufficient mass for a breakdown into subgroups of respondents.

Self-reported happiness and satisfaction with life were distinguished as indicators for subjective well-being (SWB). The annex describes these indicators in more detail. These SWB indicators were compared with four lifestyle factors: smoking, alcohol consumption, physical activity, and being overweight. For each lifestyle factor a reference group was defined, with which the results for other respondents were compared. For physical activity, the Dutch Norm for Healthy Exercise (Kemper 2000) was used as a standard. People who get enough exercise according to this norm were compared with people who do not come up to this standard. With regard to alcohol consumption, the reference group was made up of moderate drinkers. They were compared with non-drinkers and heavy drinkers. The reference group for smoking consists of non-smokers, and the reference group for weight consists of people who are not overweight; they were compared with people who are moderately overweight and with people suffering from obesity.

First, the relation between lifestyle and SWB is analysed with the aid of bivariate analyses. To explore whether the relationship between lifestyles and well-being could be explained by perceived health, a multivariate analysis was applied. As background variables age and sex were included in the multivariate analysis.

3   Lifestyle and well-being

Table 1 includes the percentage of respondents who answered positively to the questions on happiness and satisfaction with life for different age groups and for men and women.

Table 1 Share of happy and satisfied people by age and sex

	% Happy			% Satisfied		
Age	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
12-24	93.4	93.5	93.2	93.2	94.1	92.3
25-44	90.4	90.1	90.7	87.7	87.7	87.6
45-64	87.1	88.4	85.7	86.4	87.3	85.5
65-plus	84.6	87.8	82.2	87.1	88.1	86.4
Total	**89.0**	**89.9**	**88.1**	**88.2**	**88.9**	**87.6**

Table 1 shows that nearly 90 percent of all people are happy and satisfied with their life in general. Young people score somewhat higher on average on both indicators than older people. The SWB of men is generally higher than that of women. The relatively large difference in self-reported happiness between men and women aged 65 years and older is probably caused by the higher average age of women in this group, which brings along its own happiness-reducing problems.

Table 2 presents the share of respondents in the reference groups who are happy and who are satisfied with their life.

Table 2 Share of happy and satisfied people in the reference groups

Lifestyle	% Happy	% Satisfied
Gets enough physical exercise	90.8	90.3
Drinks moderately	91.1	89.7
Does not smoke	90.5	90.3
Is not overweight	89.5	88.6
Total for all lifestyles	**89.0**	**88.2**

The shares of happy and satisfied respondents in the reference groups are slightly higher than the average. The next question is how these shares change if people adopt other lifestyles than the reference groups. This is depicted in figure 1, which shows the difference in happiness and satisfaction, expressed in percentage points, between respondents in the non-reference groups and those in the reference groups.

Figure 1 Difference in happiness and satisfaction compared with respondents in the reference groups
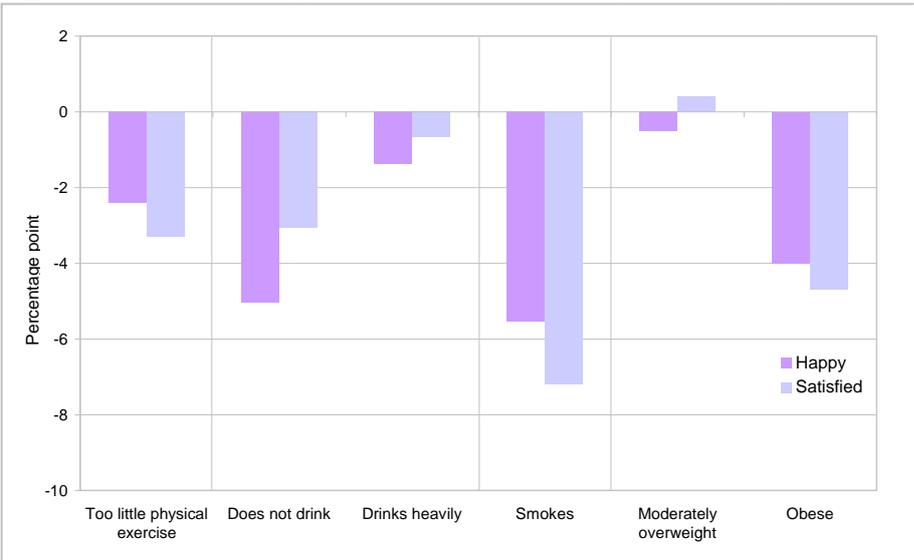
Figure 1 clearly shows that the largest share of happy and satisfied people can be found among people who do not smoke, drink moderately, do not suffer from obesity and get enough physical exercise. Smokers and non-smokers show the largest differences in SWB. On the other hand, people who are moderately overweight are equally happy and satisfied with their life compared to people who are not overweight. Also the differences in SWB between heavy drinkers and moderate drinkers are small.

Figure 1 does not give insight into the influence of lifestyle for the different age groups. However, there are some interesting differences. The SWB of younger people who get too little exercise, do not drink alcohol or drink heavily does not differ significantly from that of the reference groups in their age class. More than respondents in other age groups though, they feel unhappy and unsatisfied if they also suffer from obesity. The share of this group who feel satisfied is even more than ten percentage points lower than that of respondents in the same age class who are not obese. In other age classes, the share of happy and satisfied respondents among obese people is less than five percentage points lower than that of the reference group, and in the oldest age group even slightly higher. When age rises, the share of happy and satisfied people among those who get too little exercise decreases.

4 Happiness, satisfaction with life, lifestyle and mental health

An analysis was done to examine the extent to which mental health and lifestyle are related based on self-perceived happiness and satisfaction with life. The results are shown in figure 2. For each lifestyle factor, this figure depicts the 95% confidence intervals of the point estimates of mental health for the groups of respondents who feel unhappy and unsatisfied, either happy or satisfied, and both happy and satisfied. The higher the mental health score, the better a person's mental condition.

Figure 2 95% MHI-5 confidence intervals for SWB and lifestyle
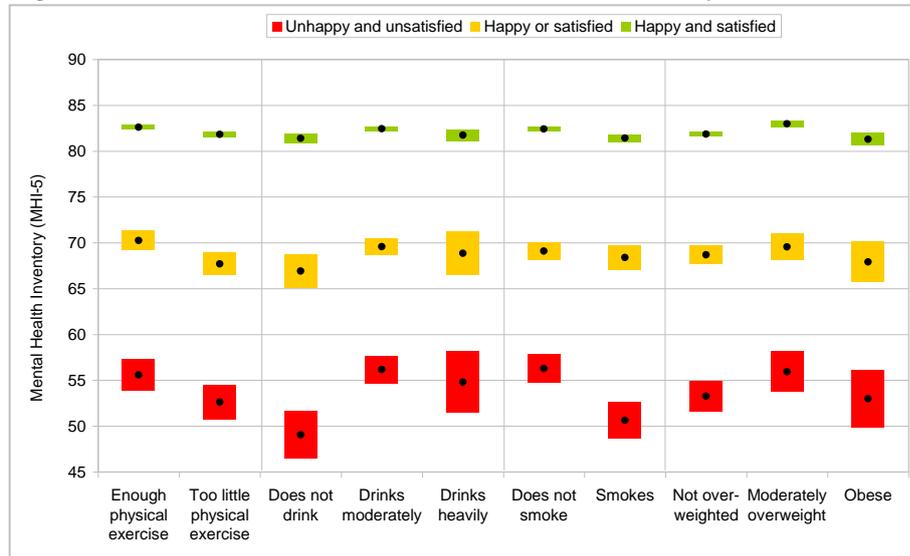
What figure 2 makes visible is that the mental health of people who are unhappy and unsatisfied is lowest on average, followed by people who feel either satisfied or happy. Within each of the three SWB-categories some significant relations can be found between lifestyle factors and mental health. For most lifestyle factors the mental health of people in the reference group is higher than that of others. This is most noticeable for non-drinkers and smokers who feel both unhappy and unsatisfied with their life. Their mental health is poorer than that of moderate drinkers and non-smokers who feel both unhappy and unsatisfied. Another remarkable result is the one for happy and satisfied people who are moderately overweight. Their mental health score is higher than that of people who are not overweight.

5 A multivariate exploration of SWB, lifestyle and self perceived health

Lifestyles are related to both well-being and health. Smokers, for example, are generally less happy and less satisfied with their life than non-smokers. They also feel less healthy than people who do not smoke. Moreover, well-being and health are interrelated. People who are positive about their health are also happier and more satisfied with their life than people who feel less healthy. So, the way people perceive their health influences their SWB. As a result, the relation between smoking and SWB may be influenced by perceived health. As smokers feel less healthy than non-smokers, and less healthy people feel less happy and less satisfied, the relation between smoking and SWB may be totally or partly explained by perceived health.

This section explores whether lifestyles are related to SWB, and whether these associations can be explained by age and by perceived health. To do this, we conducted a multivariate logistic regression analysis. Happiness and satisfaction with life were analysed separately as indicators of SWB. Each regression is executed in three steps. In the first step, the four lifestyle factors (physical exercise, drinking, smoking and being overweight) are regressed simultaneously on SWB. To correct for possible differences caused by age, this variable is included in the analyses in the second step. In the third step, perceived health is added as an extra independent variable in the analysis. The effect of the additional variables can be interpreted as follows: if the relation between, for example, smoking and happiness decreases when health is included in the analysis, the relation between smoking and happiness is partly explained by perceived health. If the relation between smoking and happiness disappears, then it is totally explained by perceived health. The analyses are executed for men and women separately. The results of the logistic regression of the men are presented in table 3. For women, the results are in general similar to those of men. The few differences between men and women are described in the text.

Table 3 Results of the multivariate exploration of SWB and lifestyle expressed in odds ratio's (OR) of men

Men	step 1	step 2	step 3	step 1	step 2	step 3
	OR happiness			*OR satisfaction with life*		
Physical exercise						
Too little physical exercise	0,8 *	0,8 **	0,8 *	0,7 **	0,7 **	0,8 **
Enough physical exercise	Ref[1]	Ref	Ref	Ref	Ref	Ref
Drinking						
Drinks moderately	Ref	Ref	Ref	Ref	Ref	Ref
Does not drink	0,5 **	0,4 **	0,6 **	0,6 **	0,5 **	0,7 **
Drinks heavily	1,0	0,9	0,9	1,1	1,0	1,0
Smoking						
Does not smoke	Ref	Ref	Ref	Ref	Ref	Ref
Smokes	0,5 **	0,6 **	0,6 **	0,5 **	0,5 **	0,6 **
Overweight						
Not overweight	Ref	Ref	Ref	Ref	Ref	Ref
Moderately overweight	1,0	1,1	1,2 *	1,0	1,2 *	1,2 *
Obese	0,8 *	1,0	1,3	0,7 **	0,8	1,1
Age						
12-24 years		3,1 **	1,6 **		3,5 **	1,8 **
25-44 years		1,5 **	0,9		1,1	0,6 **
45-64 years		1,1	0,9		1,0	0,8 *
65 year and older		Ref	Ref		Ref	Ref
Perceived health						
Not good			Ref			Ref
Good			5,7 **			5,1 **

*   Significant at the level of 5 percent, ** Significant at the level of 1 percent, [1] Reference category in the logistic regression

Table 3 shows strong associations between lifestyle and SWB in the first step of the analyses. Men who do not exercise enough, non-drinkers, smokers and obese men are less happy and less satisfied than their counterparts who have more healthy lifestyles. Only heavy drinkers and men who are moderately overweight are equally happy and satisfied as moderate drinkers and men who are not overweight respectively.

Apart from being obese, the associations that are visible in the first step hold after the inclusion of age in the second step. The disappearance of the association between being obese and SWB in this step corresponds with the previous observation that in particular obese young people are less happy and satisfied than others. Men who are moderately overweight are more often satisfied with their life in step 2. Probably there is an interaction effect between age and lifestyle. This interaction effect will be examined in more detail in the near future.

The inclusion of age in the analysis (step 2) shows that compared with men over-65 younger men (up to 44 years) are more often happy, but only teenagers and adults in their early twenties appear to be more satisfied. Surprisingly, after the introduction of perceived health in step 3, the results for the males aged 25-44 years are reversed: the association with happiness disappears, whereas an association with satisfaction with life becomes visible. Thus, when they take their health into account, men aged 25-44 years are equally happy as older men, but they are less often satisfied. Also men aged 45-64 years are less often satisfied with their life than men over-65 after the inclusion of health in the analysis.

After the inclusion of perceived health in step 3 of the analysis, the associations between physical exercise, non-drinkers and smokers on the one hand and SWB on the other remain significant. Thus, for men, perceived health does not explain the relation between these lifestyles and SWB. However, when perceived health is included in the analysis, men who are moderately overweight appear to be happier and more satisfied with their life than men who are not overweight.

Finally, the analysis shows that the relationship between perceived health and SWB is very strong. Not surprisingly, men who feel healthy are far more often happy and satisfied than men who do not feel healthy, irrespective of lifestyle or age.

Generally, women show the same results as men. There are four exceptions. First, the relation between physical exercise and non-drinkers weakens or disappears after the inclusion of perceived health in the analysis. This implies that perceived health explains the relation between these lifestyles and SWB partly or totally. Secondly, the only significant association between moderate overweight and SWB is visible in the first step of the analysis on happiness. Apart from this association, women who are moderately overweight are equally happy and satisfied compared to women who do not have overweight. Thirdly, for women the relation between age and happiness is stronger compared to men. Generally, younger women are happier than older women, also when health is included in the analysis. Finally, on the contrary, the relation between age and satisfaction with life is less strong compared to men. Only women of the youngest age group are more satisfied than women over-65. This relation disappears when health is included in the analysis.

6   Conclusions

Starting point for the article was the fact that a healthy lifestyle is a chance to live well and happily. The latter is a subjective evaluation of ones life, including both cognitive and affective components.

An overall conclusion that can be drawn is that there indeed is a relation between SWB and lifestyle. People who adopt a healthy lifestyle are on average happier and more often satisfied with their life than others: the largest share of happy and satisfied people can be found among people who do not smoke, drink moderately, are not obese and get enough physical exercise. Of course, this is not a causal relation. It is also conceivable that happy and satisfied people are more likely to adopt a healthy lifestyle than unhappy and unsatisfied people.

Most remarkable is that where being overweight is considered a health risk, the largest share of satisfied men is among those being moderately overweight. This becomes even more pronounced if self-perceived health is included as explanatory variable. Also, the mental health of this group is somewhat higher than that of others. Furthermore it is remarkable that heavy drinkers are as happy and satisfied as those drinking moderately.

The SWB of smokers and non-drinkers is lowest of all people. The relation between smoking and SWB is very strong and can neither be explained by age nor by health.

Satisfaction with life of non-drinkers however, turns out to be explained by self-perceived health, whereas this is not true for happiness. People who abstain from alcohol are less often happy than people who drink moderately. With regard to non-drinkers, men and women show different patterns: male non-drinkers remain less happy and less satisfied than moderate drinkers after the addition of age and health. For female non-drinkers, the relation with happiness and satisfaction disappears when perceived health is taken into account. Similarly, the relation between physical exercise and SWB disappears after the inclusion of health in the analysis. Thus, for women the relation between physical exercise and non-drinkers on the one hand and SWB on the other can be explained by health, while this is not the case for men.

To summarize: people who do not exercise enough, who are obese, who don't drink and who smoke are less happy and satisfied with their life than others. Thus, the assumption that smoking makes people feel satisfied is outdated. Contrarily, heavy drinkers are just as happy and satisfied as people being moderately overweight. For future research it is of interest to study the interaction between sex, age and lifestyle and the relation between mental health and SWB in more detail.

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Annex Definitions

Subjective well-being

The outcomes for <u>happiness</u> are based on the survey question: "To what extent do you think you are a happy person?" The response options vary on a 5-point scale: "very happy", "happy", "neither happy nor unhappy", "not so happy" and "unhappy". Respondents answering options 1 and 2 were qualified as happy, the others as unhappy.

For <u>satisfaction with life</u>, respondents were asked "To what extent are you satisfied with your present life?" with response options on a 5-point scale: "extremely satisfied", "very satisfied", "satisfied", "quite satisfied", and "not so satisfied". Options 1 to 3 were classified as satisfied, and 4 and 5 as unsatisfied.

Mental health

As a measure for <u>mental health</u>, the mental health inventory MHI-5 was used. The MHI-5 measures general mental health (Berwick 1991) and is part of the Short Form Health Survey (SF-36), a questionnaire for measuring health-related quality of life (Ware 1992). The MHI-5 is derived from the answers to five questions about feelings over the past four weeks, with response options on a 6-points scale, varying from "All the time" to "Never". The respondents are asked: "In the past four weeks, did you feel 1) very nervous, 2) so depressed that nothing could cheer you up, 3) calm and peaceful, 4) depressed and dejected, 5) happy?" For each question, respondents score a maximum of 5 points: 0 points for the most negative answer and 5 for the most positive answer. For each person the scores of the 5 questions are added and multiplied by 4. Thus, the MHI-5 has a score of 0 to 100, where a score of 100 represents optimal mental health.

Self-perceived health

How respondents perceive their own health is based on the question "How is your health in general?" The response options vary on a 5-point scale: "very good", "good", "neither good nor bad", "poor", and "very poor". The first two options were considered to correspond with feeling healthy, the others with feeling unhealthy.

Lifestyles

The Dutch Norm for Healthy Exercise (Kemper 2000) is used as a standard for <u>physical activity</u>. This norm primarily aims at lowering the risk of chronic disease and extending life expectation. According to this norm, children aged up to 18 years should undertake at least one hour of moderate-intensity physical activity every day. For adults this is reduced to half an hour on at least five days of the week, and preferably every day. The reference group consists of those that meet this norm.

With regard to <u>alcohol consumption</u>, three groups were distinguished: non-drinkers, moderate drinkers and heavy drinkers. According to the definition of Statistics Netherlands, heavy drinkers drink 6 or more units of alcohol on at least one day a week (Garretsen 1982). As moderate drinkers generally have a better health than non-drinkers and heavy drinkers, moderate drinkers are distinguished as the reference group.

Non-smoking respondents are considered as reference group for the factor <u>smoking</u>.

For <u>being overweight</u>, the body mass index (BMI) is used as a proxy and calculated by dividing the body mass in kilograms by the body length in metres squared. Respondents with a BMI below 25 are not overweight. They make up the reference group and are compared with respondents who are moderately overweight (BMI between 25 and 30) and those suffering from obesity (BMI of 30 or more).