Happiness in Rotterdam
Analysis of 7 city surveys in Rotterdam from 1997 to 2009

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Abstract

Rotterdam is a large city in the Netherlands, characterized by an economic focus on its port and industry, and by a large number of migrants and workers in its population.

Every two years a survey is conducted on the Rotterdam population in which they are asked a wide variety of questions, including a question on their happiness. In the present study, the effects of living in certain districts of the city, of ethnicity, of deprivation, of income, education and household situation on happiness were explored, and happiness differences over time and between age groups were analyzed.

Inhabitants of Rotterdam tend to answer the happiness question generally positive, though not as positive as the general population of the Netherlands. The slightly lesser happiness of people in a big city like Rotterdam is mainly an effect of the differences in population composition between the city and the rest of the Netherlands. Average happiness has changed slightly between 1997 and 2009 and follows the economic tide.

Happiness differs markedly across districts in the city and most of these differences can be explained by ethnic composition and socio-economic status. Happiness differs across social strata.

1   THE CITY OF ROTTERDAM

Rotterdam is, with more than 600.000 inhabitants, the second largest city of the Netherlands. During the past decades major changes have taken place in the composition and size of the population of Rotterdam. Although the city has been an immigrant town since the beginning of the Industrial Revolution, it was originally a white working class town.

From the 1960s onwards an influx of migrants from every corner of the world has changed the character of the city drastically. This development was accelerated when the more prosperous indigenous Rotterdammers began to move from the city to its surrounding satellite towns, while the have-nots, i.e. the jobless, foreign newcomers and poor pensioners did not have the possibilities to move. Hence, the transition from a typical 'dockworkers town' to a more service and education oriented economy has also had its effects on the size and composition of the population.

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The typical social outline of Rotterdam today is that it is a multi-ethnic city with a relatively poorly educated population, and as a result it is coping with a high unemployment rate.

2   HAPPINESS

Happiness in the present survey has to do with the appreciation of life, with the extent to which one is enjoying life altogether. Happiness is therefore defined as the degree to which one judges positively about one's life-as-whole (cf. Veenhoven 1984).

Thus defined, happiness is something that people have in mind and consequently it can be measured by simply asking people. In the Rotterdam survey people were asked: "Taking all things together, how happy would you say you are - very happy, happy, not too happy or not happy at all?" (Andrews & Withey 1976).

Validation studies have revealed that the answers to questions on happiness produce valid outcomes (Veenhoven 1984). The reliability of happiness items in general is not too good (see Veenhoven 1984), but this is only a problem in small samples. The rate of 'don't know' answers is typically less than 1% (Veenhoven 1984, ch.3).

Yet reliability is not too good, since the difference between 'very happy' and 'happy' is not easy to see and because responses can be tilted by things such as the place of the item in the questionnaire and the weather in de day of the interview. (see Veenhoven 1984). Such random variations balance out in big samples, so reliability is not a problem in this study.

3   POLICY RELEVANCE

Is there any purpose in measuring happiness other than scientific, i.e. is there any relevance for local policy? If so, the next question is whether happiness can be created or improved. Can happiness be influenced i.e. be ameliorated, or is it congenital and more or less fixed for life?

If happiness is a fixed trait, it would make no sense for local politicians and other policy makers trying to influence it by providing optimal societal conditions to stimulate the happiness of people. From several studies (Argyle 2001, Diener 2000, Eysenck 1990) we know that happiness is indeed embedded in certain character traits, but that it also can be influenced by external factors, and hence the happiness of people can be promoted by creating favorable conditions. For instance, people in rich nations are on average happier than those in poor nations (Veenhoven 2007), and people in democratic countries are happier than those in totalitarian states (Ott 2000, Welsch 2002).

Hence, societal conditions have their impact on the happiness of people. The local government can promote happiness by improving the living environment of cities and their inhabitants.

## 4	DATA

The Rotterdam figures are derived from the leisure and general surveys which are carried out every two years by the Research Institute of the Community of Rotterdam (OBI). A sample of the Rotterdam population is interviewed about their leisure activities and their opinions about life in Rotterdam. A weight variable is used to correct for the underrepresentation of certain districts in the sample.

Respondents are selected at random from the Rotterdam population registry database. In advance of sending the written questionnaires to the respondents they receive an announcement signed by the mayor of Rotterdam. The response rate for all waves is around the 50 % mark which is very good for these kinds of surveys (see Leeuw & Hox 1997 and Kaplovitz et al. 2004).

To interpret the results,demographic and social-economic data from the population registry have also been added to our database. In the present study, data from 1997 to 2009 were obtained from seven successive survey waves. Apart from cross-sectional analysis, the longitudinal effects of the economic recession of 2001 were also analyzed.

## 5	DISTRIBUTION OF HAPPINESS IN ROTTERDAM

### 5.1	How happy are Rotterdam people?

On average the Rotterdammers feel reasonably happy. The average happiness level in 2009 was 3.12, keeping in mind that a score of 3 corresponds with 'happy'. This was also the modal answer; more than 64% of the Rotterdammers report they are 'happy', and more than 24% of the sample is 'very happy', while 10% is 'not too happy'. A relatively small portion of the sample, 1.3%, indicated that they are 'unhappy'.

Figure 1
Distribution of happiness in Rotterdam 2009
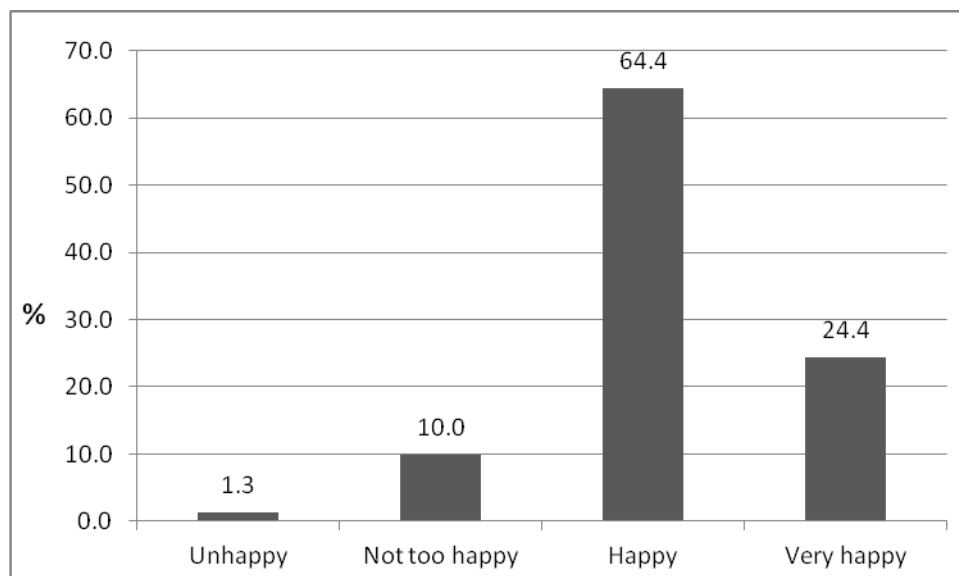
Also across time the picture is similar: In general, inhabitants from Rotterdam are fairly happy. What is interesting is how happy the Rotterdam population is compared to the rest of the Netherlands and to the populations of the other big cities. For this purpose another database was used[3] with a slightly different happiness question and a 5-point rating:

To what extent do you consider yourself a happy person....?

5 very happy
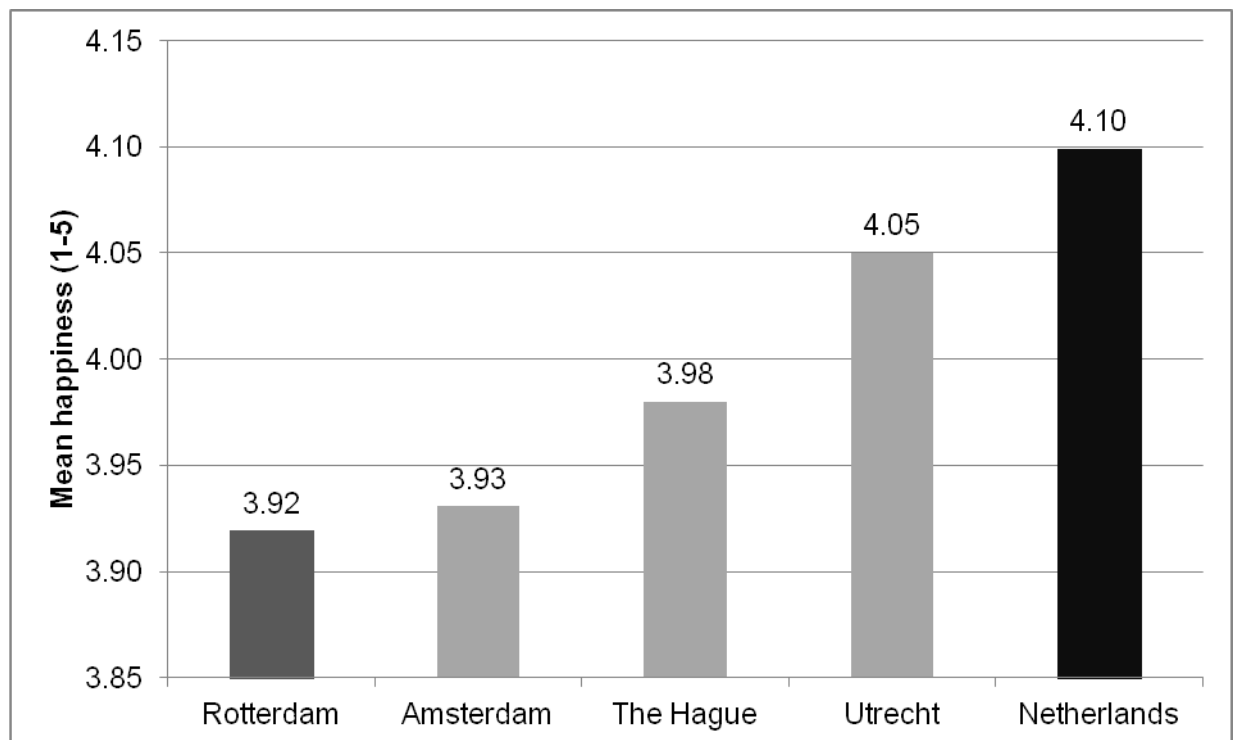4 happy
3 neither happy nor unhappy
2 not very happy
1 unhappy

When compared to the rest of the Netherlands the Rotterdam score of 3.92 is significantly lower than the Dutch average of 4.10. This difference is also seen in the percentage of happy people. While in Rotterdam 80% of the population happy, in the rest of the Netherlands 89% is happy.

Is this specific for the case of Rotterdam or has it to do with big city problems in general? To examine this, the average happiness scores of the other three large Dutch cities (Amsterdam, The Hague, and Utrecht), were compared with those of Rotterdam (see fig. 2). As can be seen the inhabitants of Amsterdam, Rotterdam and The Hague report about equal happiness levels. Only Utrecht stands out with a mean happiness score of 4.05. This university town differs markedly in it's demographic composition compared to Amsterdam, Rotterdam and the Hague.

Figure 2
Populations of the 4 largest cities less happy than the Netherlands at large

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[3] POLS 2009 and 2010

Big city dwellers in general are less happy than the Dutch average of 4.10. In Indications for the lower happiness levels in big cities can be found in the composition of the population: big cities host more immigrants, more singles as well as unemployed and poor people.

5.2 Happiness in Rotterdam over time

In this paragraph the stability of average happiness in Rotterdam is analyzed, especially if people's happiness is affected by the economical tide. In other studies on the effect of economic growth and decline on average happiness in western nations almost no relation was found (see e.g.Veenhoven1989, Diener 2000, Chin-Hon-Foei 1989). To find out if the recession following September 11th 2001 affected the well being of the inhabitants of Rotterdam, the average happiness scores of the seven waves were compared (see fig. 3).

Average happiness in Rotterdam has increased slightly, be it with ups and downs. See the bold line in Figure 3. In search for an explanation of the variations we inspected the co-variance with economic tide. Economic tide is indicated by the percentage of unemployed.

Until 1999 unemployment rates descended and happiness rose, from 1999 on the average happiness level slowly descended while from 2001 on the unemployment rate rose sharply from 6 % to 10.6% in 2005. While the unemployment rate diminished from 10.6 % in 2005 to 7.2 % in 2007, happiness showed an upward tendency in the same period. After the economic crash of 2008 unemployment levels went upwards while happiness remained constant till 2009. Due to the limited number of years the correlation of r = - 0.73 (p<.01) between unemployment and mean happiness should be considered only indicative. With the necessary caution one may draw the conclusion that happiness is affected by changes in the economic tide. It is likely that individual happiness is directly influenced by developments like growing unemployment and job insecurity (for unemployment effects see also Ouweneel 2002).

Besides these factors, world events of a completely different nature like the terrorist threat and insecurity after September 11th may have influenced the average level of happiness.

Figure 3
**Happiness and economic tide through time in Rotterdam**

5.3 Happiness differences between the various city districts

How about differences in happiness within the city of Rotterdam? The ideal situation is that the Rotterdammers are not only happy, but that this happiness is also equally distributed across the various districts of the city.
How big the gap between this ideal and reality is can be seen in figure 4.

In the older 19th century public housing areas around the center of the city people are on average the least happy while the happiest districts are to be found in the suburbs. A more detailed analysis of these differences will be explored in a later section of this article.

Figure 4
The happiest and unhappiest districts in Rotterdam
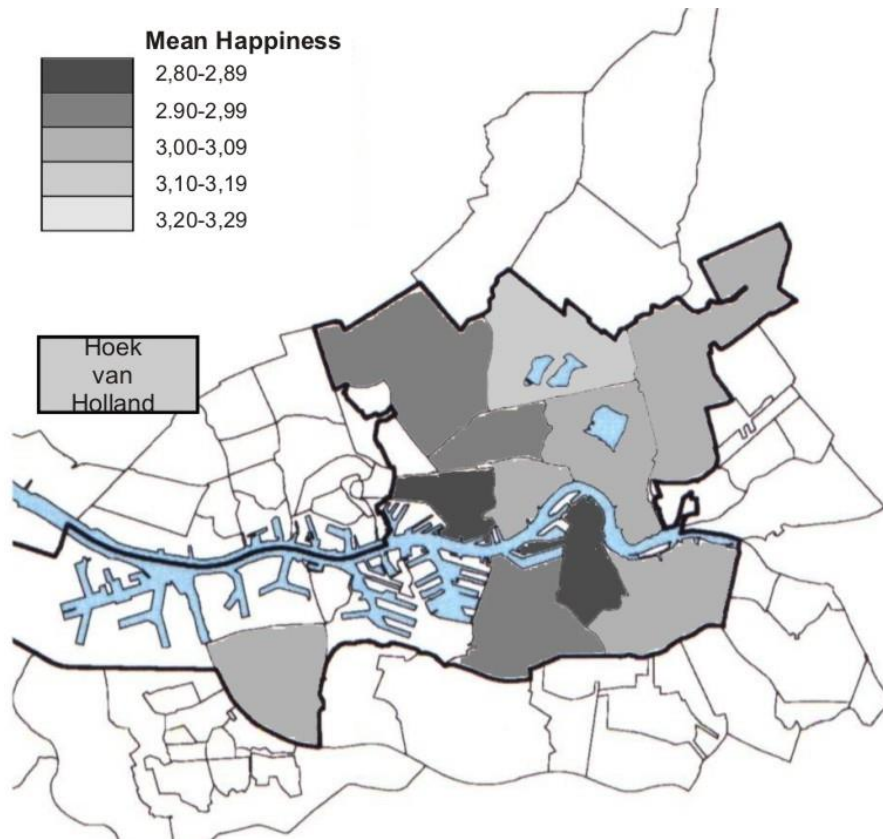
The happiest districts Nesselande, Kralingen-Oost and Terbregge are also the wealthiest districts in town. They are mainly located in the outskirts of Rotterdam. The average happiness of it's inhabitants is 3.35 while the average in the unhappiest districts Oud Crooswijk, Tussendijken and Bospolder is 2.95. These are also the poorest districts located in the 19th century ring around the center of town. The unequality in happiness in these districts is at the same time larger than in the happiest and more homogenous districts.

6   DETERMINANTS OF HAPPINESS IN ROTTERDAM

The simple answer to the question why not all people of Rotterdam are equally happy would be that there are a lot of differences between the people: physical differences like sex, age and ethnicity, psychological differences, cultural differences, social differences and economic differences; and to that can be added the different living conditions of people, their household status, marital status, the size of their home, the area in which they live, type of housing are a few. In this section we will explore the effect that some of these factors have on the happiness and the happiness differences between people.

6.1   Immigrants and ethnicity

In general immigrants are less happy than native born Rotterdammers. On a 1-4 scale mean happiness of all immigrants is 2.99 while natives score significantly higher with an average of 3.14. And happiness is also geographically unequally distributed over Rotterdam, in the old housing areas around the centre of Rotterdam people are the least happy. These cheap housing districts are also those with the highest number of nonwestern immigrants.

To explore these differences in more detail, the percentages of native Dutch in the various Rotterdam neighborhoods were calculated (see fig. 4). When this map is compared to that for the distribution of happiness in Rotterdam (fig. 3) it is striking that the districts with the lowest percentage of Dutch natives are also the least happy in Rotterdam.

Figure 5
Ethnic composition in city districts

Native Dutch as a % of the total population

60 or more
40 - 59
20 - 39
0 - 19
No data
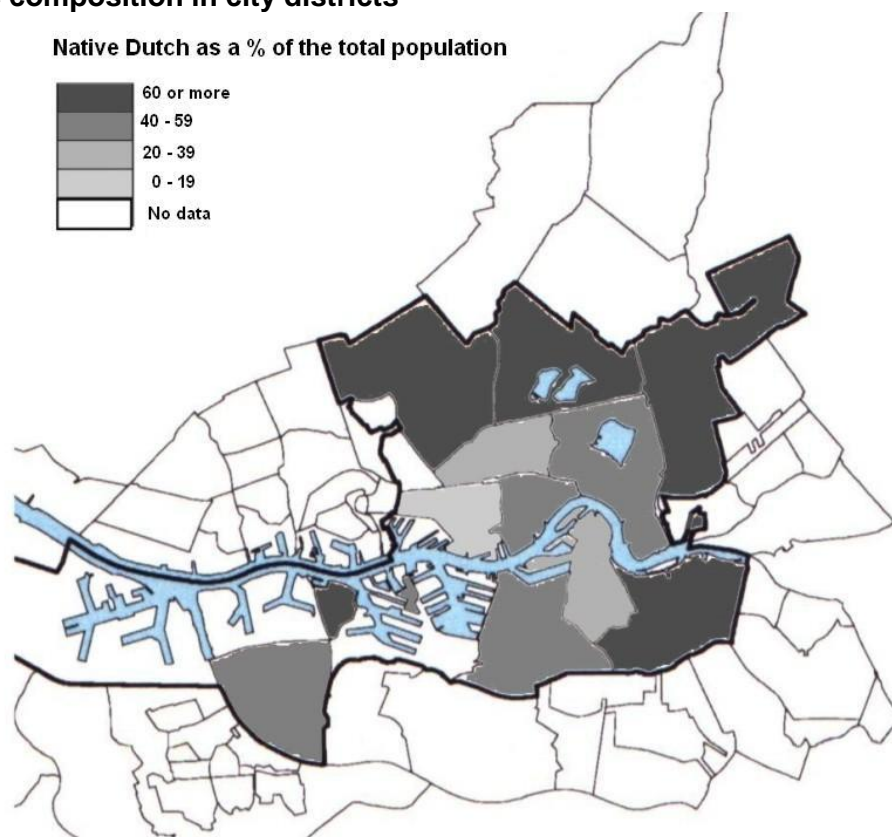
One could reason that the few remaining native Dutch Rotterdammers in these high immigrant districts are extra unhappy. This argument is however not confirmed by the data. In the western largely black community of Spangen the remaining native population is, with an average of 3.18, a relatively happy lot, not only compared to their fellow citizens in other parts of town, but also to the other ethnic groups in Spangen. The question is how big these differences are and to what extent do the various ethnic groups differ in average happiness?

The Rotterdam population consists of about 160 nationalities, with immigrants comprising nearly half of the total population. Most of them immigrated to Rotterdam or the Netherlands less than three decades ago. Of the non-western immigrants six ethnic groups predominate by numbers: Turks, Surinamese, Moroccans, Antilleans, Cape Verdians and Southern Europeans. The Surinamese and Antilleans originate from the (former) Dutch colonies in Latin America. The first of the Turks and Moroccans, as well as Southern Europeans (Spaniards, Italians, and Greeks) arrived in the sixties and seventies of the past century when the demand for industrial laborers became bigger than the native supply could fill.

In the research literature on happiness, immigrants always appear to be less happy than the native population (see references below). However, most of the differences in happiness compared to the native population can be accounted for by the lower socio-economic status of immigrants. For instance, Cummins (2003) reported slightly lower wellbeing levels for Australian immigrants compared to those born Australians. In the reports of Beals (1985), Palis (1985) and Stutzer (2003) the differences found almost disappeared when controlled for socio-economic variables.

To verify whether the same trend can be observed among the Rotterdam population the sample was split among the six major different immigrant groups compared to the Dutch native Rotterdammers (see figure 6). The difference between ethnic groups is striking. All immigrant groups are on average less happy than the native Dutch. Most outstanding are the North Meditteraneans (Greece, Spain, Italy) and the Antilleans, who score around 2.91 and 2.93 on the 1-4 happiness scale compared to 3.15 for the Dutch native Rotterdammers. Coincidence or not, the Antilleans are also the most problematic ethnic group in the Rotterdam community, e.g. with a higher unemployment rate and a higher crime rate than any other ethnic group.

Does social economic status explain these differences? In a regression analysis happiness was controlled for income, education and having work. The standardized residuals of the happiness variable were saved. The results are presented in table 1.
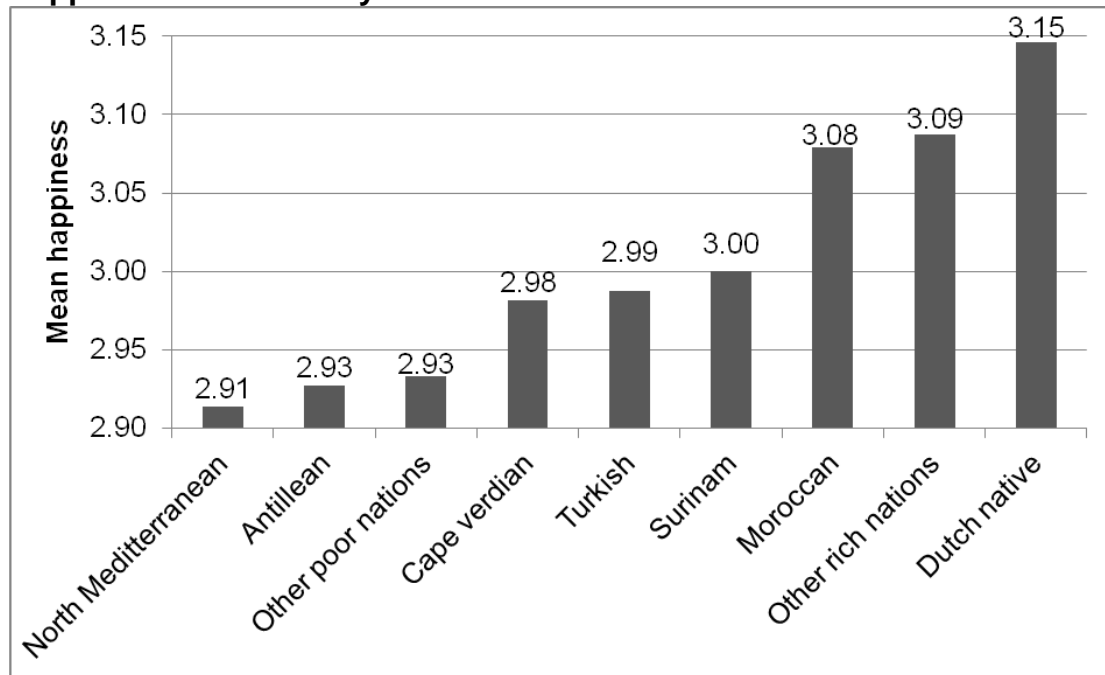
Figure 6
Happiness and ethnicity in Rotterdam

Table 1
Ethnic difference in happiness when controlled for socio-economic status

Ethnicity	Happiness Ranking	Standardized residual
Dutch native	1	0.08
Moroccan	2	0.03
Turkish	3	-0.12
Surinam	4	-0.15
Cape Verdian	5	-0.22
Antillean	6	-0.28
South European	7	-0.33

It is evident that the differences in average happiness between ethnic groups remain when socio-economic status is kept constant. Differences in socio-economic status do not explain the differences in happiness between ethnic groups: immigrants are less happy than indigenous Rotterdammers. Is it inherent to some cultures that they are less happy than others? Do cultural characteristics contribute to happiness differences? To examine this, the Rotterdam figures of the Moroccan and Turkish population were compared to the Word Value Survey 2000 figures for happiness of the national populations of Morocco and Turkey.

The average happiness of the population of Morocco, with a score of 3.04, almost equals that of the Rotterdammers of Moroccan descent. The average happiness of the Turkish community in Rotterdam is significantly higher at 3.05 than the mean happiness of the population of Turkey which is around the 2.90 mark. So far we may conclude that for these two groups

culture does not play a role in the sense that one can speak of typically 'unhappy' cultures. For some of the immigrant groups who descent from rural communities with a strong social cohesion the transfer to an anonymous city life might explain the lower happiness levels. However, in other studies (e.g. Cantril 1965, Moller 1983, Ormel 1980) no relation has been found between happiness and urban vs. rural dwelling. Could integration and acculturation problems account for the lesser happiness of nonwestern immigrants?
First results point in that direction (see figure 7). In the first place, the average happiness of western immigrants with less cultural differences is much higher than that of nonwestern immigrants.

In the second place second generation nonwestern immigrants are in general happier than first generation immigrants, they are about equally happy as western immigrants.

The preliminary conclusion is that lesser wellbeing i.e. happiness of nonwestern immigrants is largely a matter of acculturation problems.

Figure 7
Happiness of 1st and 2nd generation nonwestern immigrants compared
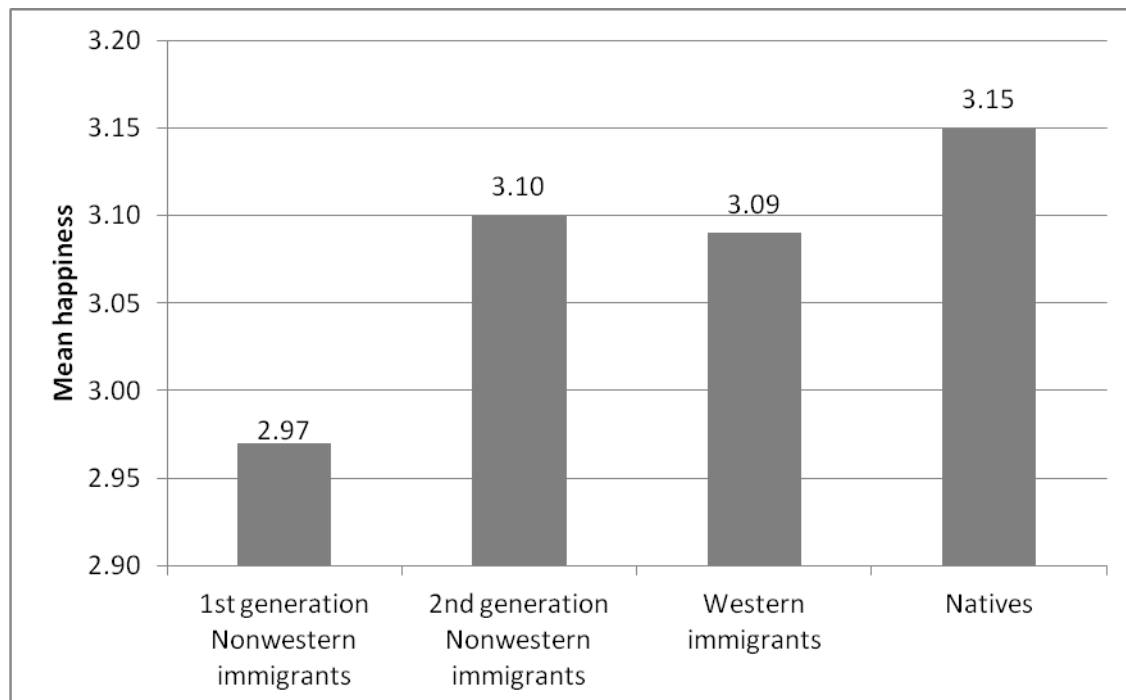
6.2 Happiness and work
Rotterdam has a reputation of work mindedness. How does work affect the happiness of its inhabitants?

Happiness and unemployment
Previous research suggests that happiness is much reduced by unemployment (see for example Stutzer and Frey 2010, Kassenboehmer and Haisken-DeNew 2009, Boehnke and Kohler 2007 and DiTella, MacCullough and Oswald 2001). These findings are confirmed by the Rotterdam surveys: in Rotterdam the average happiness of respondents having work is 3.16

compared to 2.18 for unemployed respondents. The unemployed respondents do not include housewives, students and pensioners.
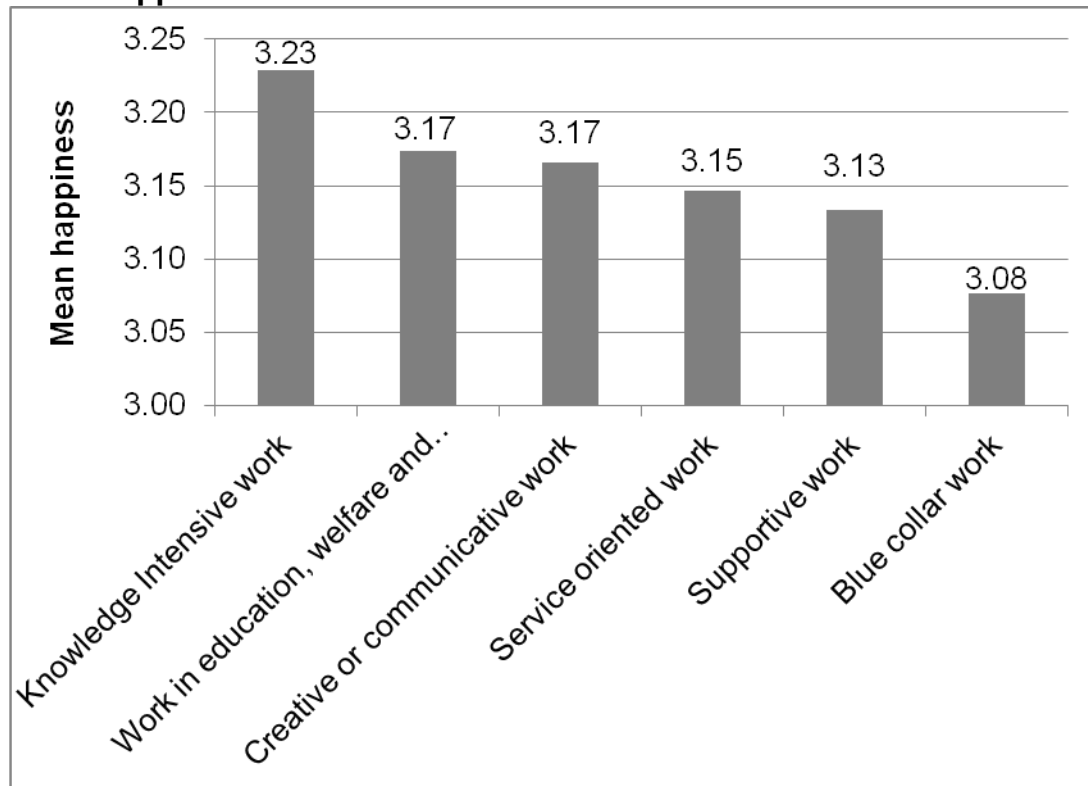
Happiness and kind of work
Paid work is an important area in our lives. Not only because we spent a lot of our time at work but also because work adds meaning to life. However, some people are happier at work than others. And it appears that some jobs give more satisfaction than others. Warr (2007) argues that "people at work are happier if their jobs contain features that are generally desirable". From other research (e.g. Wood 2008) support is found that well-being is positively related to job control. The lower on the socio-economic ladder the less job control and the less desirable most work is.

In the present survey this is confirmed when the level of happiness is linked to the kind of work respondents have (see figure 8). One of the survey questions was "What kind of work do you have?" With six possible answer categories: 1. Knowledge intensive work, 2. Work in education, welfare and health care, 3. Creative or communicative work, 4. Service oriented work, 5. Supportive work and 6. Blue-collar work. The happiest respondents are those who have knowledge intensive work, where one can exploit one's talents at a maximum and where one has in general most job control. Least happy respondents are those with blue collar jobs that generally do not have 'desirable characteristics' and give the least job control.

Figure 8
Mean happiness and kind of work

Happiness and hours of work
Research on happiness and work hours has produced mixed results. Some studies found greater happiness among part-time workers and other studies among full-time workers (Veenhoven 2014b). What are the findings in Rotterdam? Figure 9 shows that in this city more work hours per week coincidee with greater happiness.

Figure 9
**Mean happiness and work hours per week**
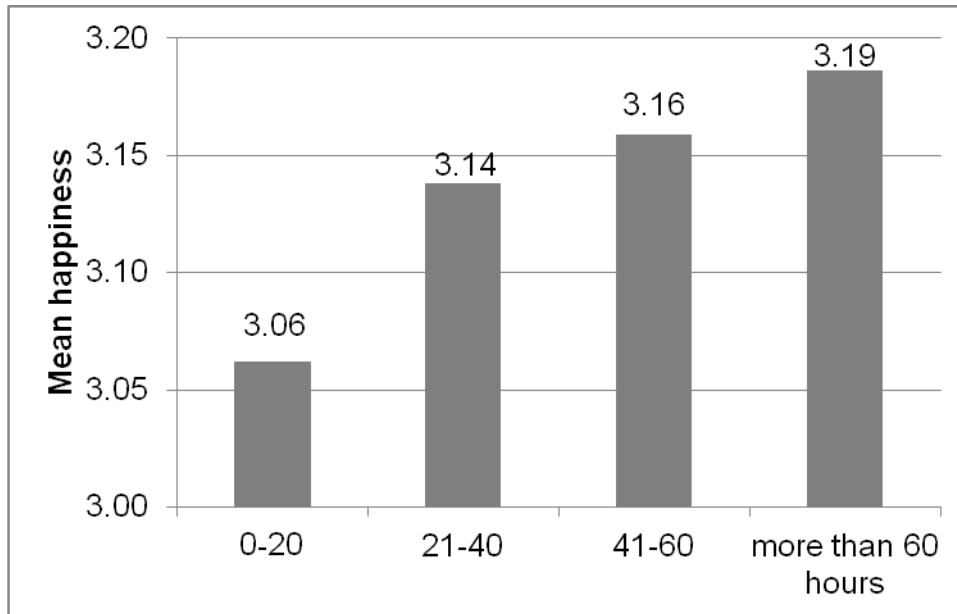
6.3 Standard of living
Are inhabitants of the deprived quarters of the city less happy than citizens who live in the more exclusive residential areas? One of the causes of the difference in levels of happiness could be the less favorable characteristics and circumstances of people living in a specific neighborhood. To find out an answer a deprivation index was constructed consisting of the average education level of people in an area, the percentage of people living on social security, geographic mobility, mean income, mean housing value, the mortality rate and the unemployment rate of the neighborhood. The neighborhoods were grouped in four levels of deprivation: those with a high level of deprivation, neighborhoods with some deprivation, neighborhoods with more favorable conditions and neighborhoods with a highest level of favorable conditions. This distribution was based on averages, indicating that it is quite possible that in the most deprived districts some people are living at a high prosperity level and in the districts with a high prosperity level individuals are living with a high deprivation score.

Computing average levels of happiness corresponding to the four deprivation levels gives us figure 10. As can be seen happiness is lowest in the neighborhoods with a high deprivation level, averaging 2.92. Happiest are the neighborhoods with the lowest level of deprivation, i.e. with a high level of prosperity with happiness averaging 3.16.

Figure 10
Mean happiness and deprivation level of the neighborhood [4]
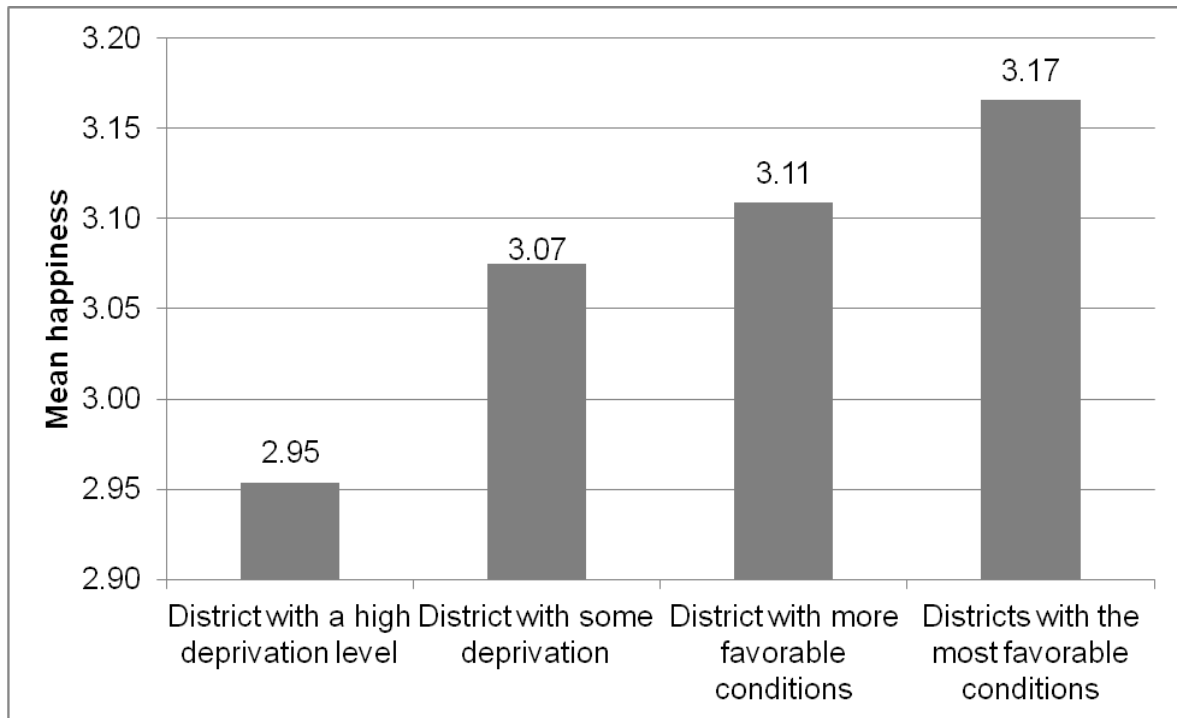
However, when we consider the other levels, the law of the diminishing returns comes into play: the difference in happiness between neighborhoods with high deprivation and low deprivation is 0.12, while the differences in happiness between the following deprivation levels become smaller and smaller. The Pearson correlation between happiness and deprivation is only -0.03 and not significant, partly because the relationship as described is nonlinear, but also because there is a difference between aggregated data and individual data.

6.5 Self-perceived health and happiness
Healthy people are happy and happy people are healthy one could argue. In the Rotterdam survey self-perceived health was measured with 2 survey questions: The first of these reads: "How do you experience your health?" The 5 answering categories were as follows: 1.bad, 2.moderate, 3.Good, 4.Very good, 5. Excellent. The correlation with happiness was moderate with r = +.31 (p<.001).

The second survey-item stated: "My health is excellent". The 5 ratings varied from 'completely wrong' via 'don't know' to 'completely right'. Correlation with happiness was in the same range with r=+.35 (p<.001).The correlation between the two health items was strong with r=+.60 (p<.01).

In other studies we find about the same figures. For instance in a national sample of the Netherlands we find exactly the same correlation of r=+.31 (see Boelhouwer 2002). In a sample of 18 nations Ball en Chernova (2008) found a beta of +.32 controlling various social and demographic indicators. In States of Nations analyzing 29 nations the average correlation

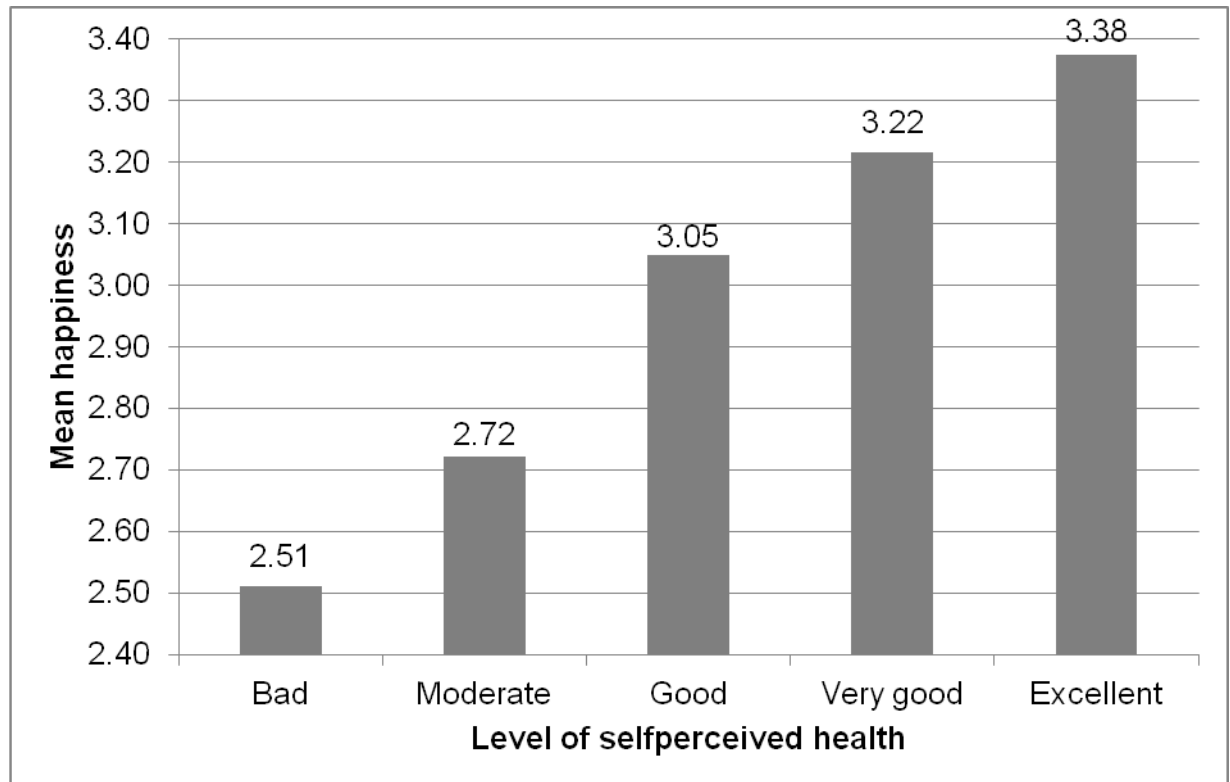[4] Aggregated file 1997-2005

between self perceived health and happiness was r=+.27. So in general the Rotterdam data are similar to the findings of other studies.

In figure 11 for each of the health categories the average happiness levels are presented.

Figure11
Mean happiness and self-perceived health level

Although the correlation between health and happiness may be moderate, the average happiness of respondents reporting 'excellent health' is with 3.38 almost 1 point higher on a scale from 1-4 than those reporting their health as bad.

In figure 12 ratings of the 2nd health item with their correspondent happiness levels are presented. The results are about the same as in the previous figure. The happiness difference between the lowest health rating and the highest health rating is again more than 2 points.

Figure 12
**Mean happiness and subjective health**

6.6 Happiness and household income

Can money buy happiness? Though the relationship might not be of a one-way causality, on average people in the highest income class are happier than all other income classes. Biggest difference is between respondents living on the social minimum and those one step higher: the last category is 0,11 point happier on a 1-4 scale. The effect of a higher income on happiness becomes lesser with each income-step higher. However, when looking at the Pearson's correlation, there is no relation between happiness and income with r=+0.01 (ns).

Figure13
Happiness and household income
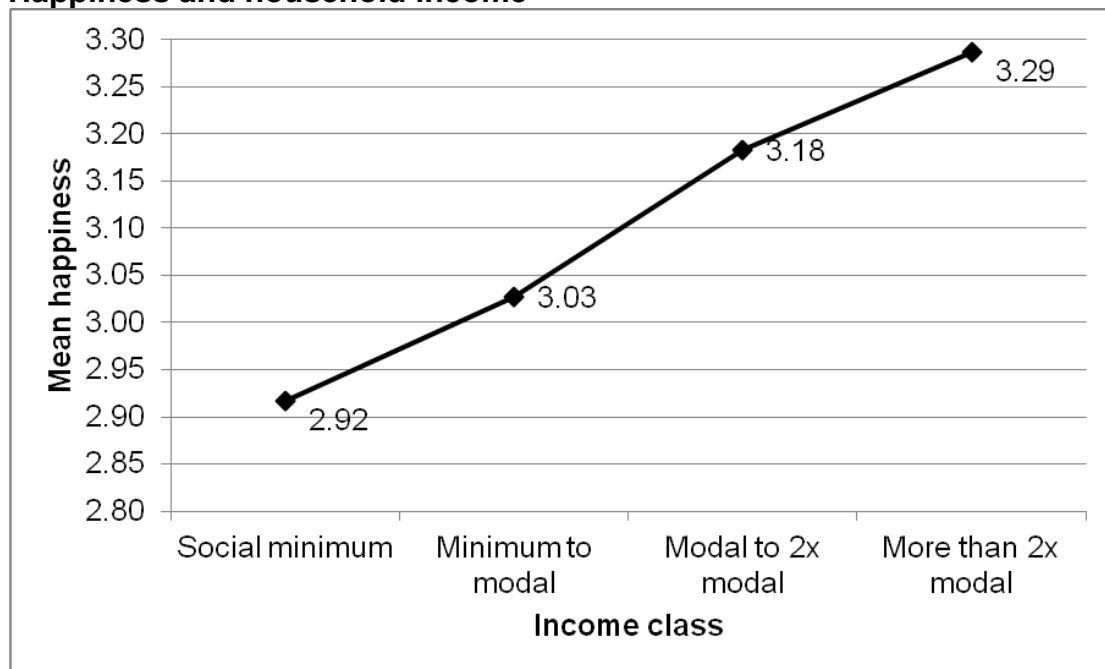
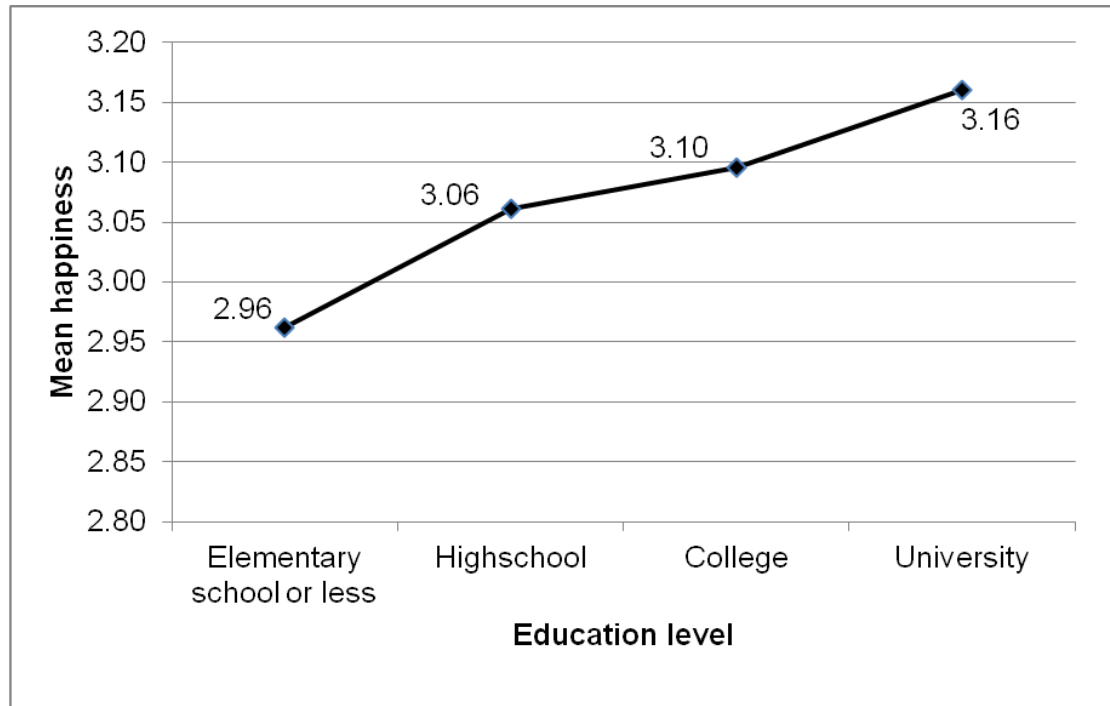Difference of means T-test significance is p<.001

6.7 Happiness and education level

There is of course a high level of collinearity between education level and income so the affect of education level on happiness is similar as the affect of income level, see fig.14.

The biggest difference in happiness is between the two lowest education levels. However, when looking at the Pearson's correlation, there is no relation between happiness and education level with r = - 0.01 (ns).
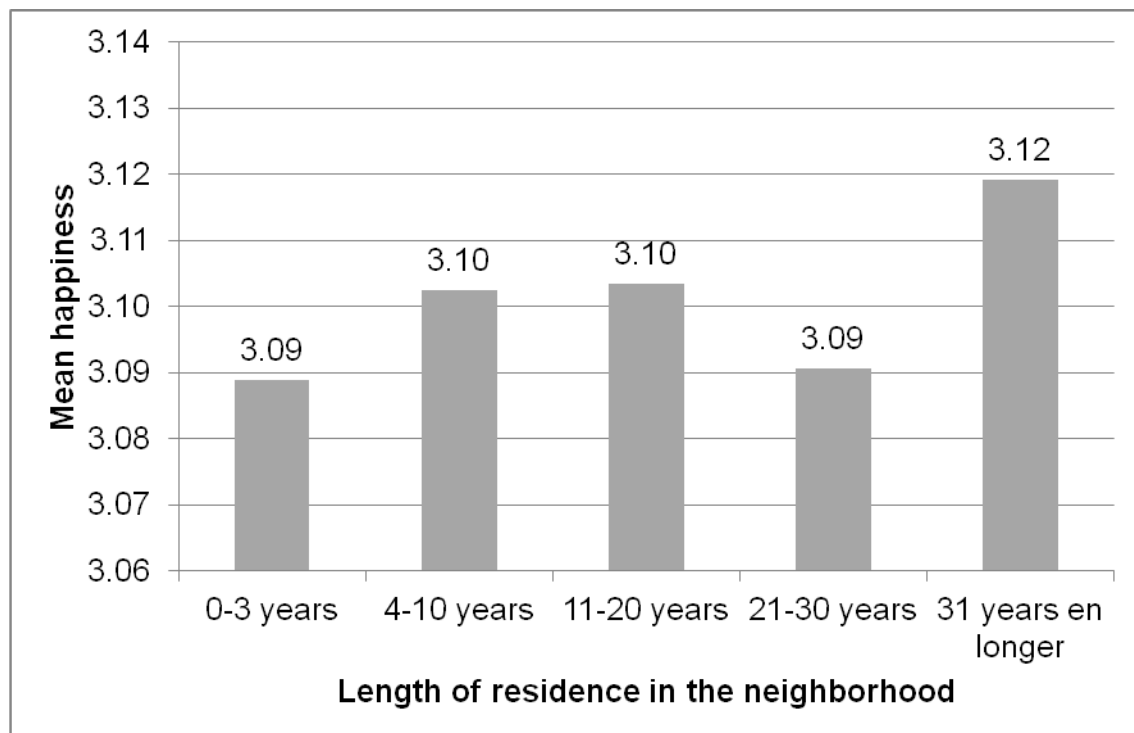
Figure14
Happiness and education level

Difference of means T-test significance p<.001

6.8 Happiness and length of residence

The longer respondents live in their neighborhood the happier they are generally (see fig.15). Although the differences are small they are significant. Explanation could be that the longer one lives in an area the closer the social relations become and the stronger the social bond with the area. A second explanation is that people that like their neighborhood are not apt to move to another district. However, when looking at the Pearson's correlation, there is no relation between happiness and length of residence with r =+0.02 (ns). The length of living in Rotterdam does not bear any relation with happiness, there is no consistent pattern observable.

Figure 15
**Happiness and length of residence in the neighborhood**

Difference of means T-test significance p<.001

6.9 Happiness and household size

With household sizes the heads of the household are interviewed. Looking at figure 16 one might apt to conclude that there is no consistent relation between household size and happiness. However, it is clear that one person households, singles, are significantly unhappier with an average of 2.90 than all other household sizes. And further, that 2-person households, mostly couples without children, are most happy with an average of 3.18. Remarkably, 3-person households are on average less happy than 4-person households, i.e. families with one child are less happy than families with 2 children. And finally, when households become larger than 5 persons they become gradually less happy.

Figure 16
Happiness and household size
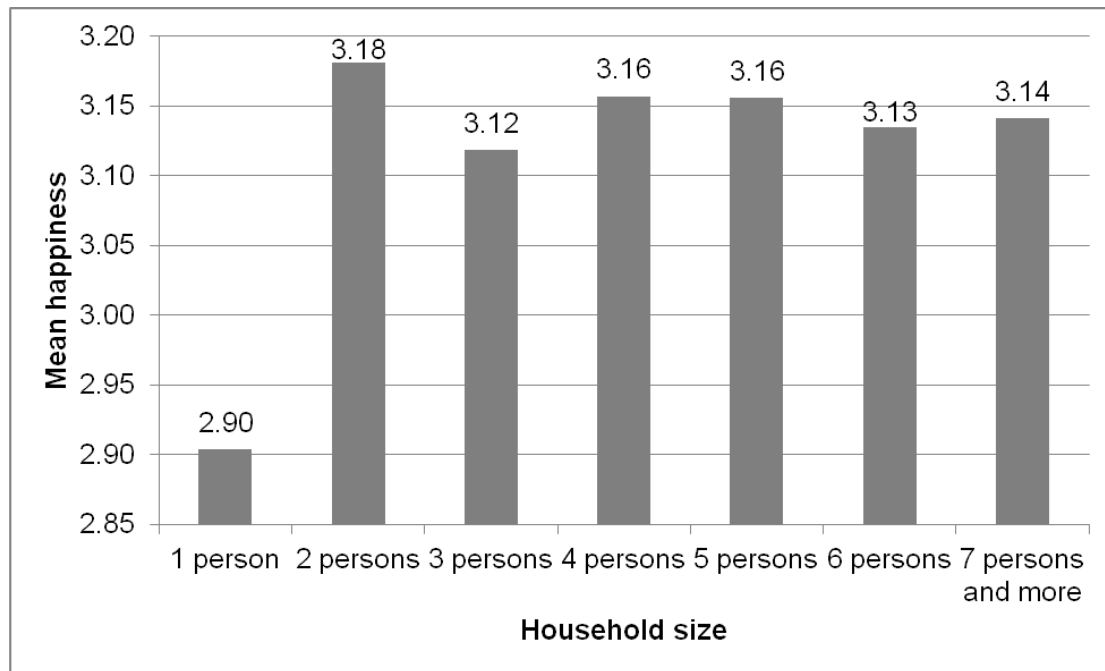
6.10 A multiple regression analysis of happiness determinants

In the previous sections the determinants of happiness were presented as separate entities. These variables are of course inter-related and this begs the question of their independent relation with happiness. We explored that in a regression analysis in which we entered all variables at the same time. See Table 2.

This analysis suggests that an individual's happiness depends in the first place on health followed by income. The other variables in the regression were not significant and close to zero, not only the other individual characteristics, but also the neighborhood deprivation.

Table 2
Regression analysis, individual happiness dependent

	Beta
Unemployment	0
Deprivation of neighborhood	0
Health (self perceived)	+ *
Income (net household)	+ *
Education level	0
Household size	0
Immigrant (nonwestern)	0

*p<.001

7   DISCUSSION

In a utopian situation Rotterdammers would be maximally happy and the happiness would be equally distributed, all the people would share the same level of happiness. As we have seen from the results of the present study this not the case, and probably never will be. Some differences in happiness are ingrained and will not be changed easily, such as the differences related to religion or to the economic tide, but others can be improved.

Happiness differences between ethnic groups have, to some extent, their origins in housing facilities, education levels and employability, for another part in acculturation problems. These conditions can be improved by concentrating special policies on problematic groups. The housing for the deprived can be improved by renovation projects and a redistribution of housing types, i.e. building a mix of more expensive owner occupied houses plus communal housing instead of only communal housing. In this respect Rotterdam policy makers are taking on a pioneer role that seems to work. Special education programs for immigrants should facilitate acculturation and integration into Dutch society.

That education and the higher income connected to this cause higher happiness levels is demonstrated by the second and third generation immigrants, many of whom are rather successful in the Rotterdam society. The immigration of deprived /underprivileged newcomers is a challenge for the promotion of happiness by the local government, and the promotion of happiness should be a policy goal to improve the livability of society.

8   CONCLUSION

Inhabitants of Rotterdam are fairly happy at the beginning of the 21st century, the average score on a 1-4 scale being 3.1. Yet they are not as happy as the average inhabitant of the Netherlands, these differences in happiness are linked to social divisions and acculturation problems. More important than neighborhood characteristics as happiness indicator are two personal characteristics: health and income.

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