Initial Investigation on the Results of Quality of Life Survey FY 2011 (Online Survey)

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Content

1. Outline of the survey

(1) The purpose of the survey

This survey was conducted via the Internet to measure the proposed well-being indicators which were not included in the Quality of Life Survey using direct-visit and self-completion questionnaires (also conducted in March, 2012), such as the NEET-Hikikomori Scale and depression scale. Another purpose of this online survey was to investigate relationships between these indicators and subjective well-being.

Although online surveys using panel respondents have the advantage of being able to be implemented in a short-term period, deliberate consideration is required as it is questionable if their sample is representative of the population in terms of age, income, and jobs and whether this survey method is reliable (Honda & Motokawa, 2005[1]; Ohsumi & Maeda, 2008[2]; Cabinet Office, 2010[3]). It has also been pointed out that online surveys tend to obtain more critical responses (NHK Broadcasting Culture Research Institute, 2010). Therefore, in the following analysis, we compare the results from this online survey with ones from the Quality of Life Survey which used direct-visit and self-completion questionnaires, as well as other statistical surveys, and tentatively suggest limitations of this survey. We should also consider the differences in reliability between the sample under age 39 (in which more than 90% are internet users) and that of older generations when referring to the results from this survey. In fact, we observe differences in the results for various indicators between this online survey and the direct-visit and self-completion questionnaires (for details, please refer to the results of each indicator); however, it is not clear whether the differences were caused by its survey method or by its sampling. Further research is needed in this area. For the detailed analysis on sampling bias and more, please refer to the document titled "Comparison between the Quality of Life Survey results (online survey and direct-visit and self-completion questionnaires) and other survey results" which will be published separately.

(2) Survey items

①Subjective well-being, ②interdependent happiness, ③life satisfaction, ④affect balance, ⑤psychological well-being, ⑥satisfaction with various domains of life, ⑦anxiety, ⑧parenting experiences, ⑨trust in institutions, ⑩social trust, ⑪self-perceived usefulness, ⑫social support, ⑬NEET and Hikikomori, ⑭depression scale, etc.

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[1]Honda, Norie and Motokawa, Akira (2005) "Can internet surveys be used for social surveys?: Results of an experimental study-" (*Internet chosa ha shakai chosa ni riyou dekiru ka – jikkenn chosa ni yoru kenshou kekka-) .JILPT Research Report.*

[2]Ohsumi, Noboru and Maeda, Tadahiko (2008) "The challenges of internet surveys: Results of an experimental study" (*Internet chosa no kakaeru kadai –Jikken chosa kara mietekita koto-*) *Yoron*, *Journal of Japan Association for Public Opinion Research*, no.101, pp.79-94.

[3]Cabinet Office (2010) "The possibility to use internet surveys for opinion polls: Regarding lifestyle preferences" (*Yoron chosa ni okeru internet chosa no katsuyou kanousei ~Kokumin seikatsu ni kansuru ishiki ni tsuite~)*, June2009.

(3) Target population

①Coverage: Japanese nationals between the age of 15 and 69.

②Number of samples: 10,000

③Sampling: Invitation emails were sent to panel respondents. Respondents were asked to answer the prefecture they live in, their sex, age, and industry category of their job. Responses were sorted in chronological order according to region, sex, age groups (by 5 years), and industry categories of the Census. Responses were collected until they reached required numbers.

(4) Survey period

March 13th – March 16th, 2012

(5) Survey method

The online survey was conducted through a website created solely for the survey.

(6) Survey agency: INTAGE Inc.

Panel respondents: 1603000 (March, 2012) Male 45.8%, Female 54.2%

Age groups of Panel respondents

	Men	Women
15-19	2.2%	2.5%
20-29	17.2%	21.6%
30-39	29.0%	37.6%
40-49	28.2%	26.1%
50-59	15.1%	9.4%
60-69	8.3%	2.9%
Total	100%	100%

(7) Number of responses

①By age and sex

Number of responses by age and sex

	Number of responses		Ideal number of responses based on population rate in the 2010 census		Difference		Difference (%)	
	Men	Women	Men	Women	Men	Women	Men	Women
15-19	356	322	365	347	-9	-25	-2.4%	-7.1%
20-29	738	687	816	793	-78	-106	-9.6%	-13.4%
30-39	1,078	943	1,076	1,051	2	-108	0.2%	-10.3%
40-49	1,122	986	989	979	133	7	13.5%	0.7%
50-59	1,065	894	950	963	115	-69	12.1%	-7.2%
60-69	1,217	1,061	1,037	1,103	180	-42	17.3%	-3.8%

②Labour force status

Labour force status	Major industry groups	Ideal number of responses	Number of responses	Difference
Employees	Agriculture and forestry	203	113	-90
	Fisheries	20	5	-15
	Mining	3	5	2
	Construction	592	622	30
	Manufacturing	1,173	1,242	69
	Electricity, gas, heat supply and water	31	32	1
	Information and communications	182	190	8
	Transport	349	371	22
	Wholesale and retail trade	1,194	1,270	76
	Finance and insurance	172	187	15
	Real estate	83	90	7
	Accommodations, eating and drinking services	352	371	19
	Medical, health care and welfare	593	622	29
	Education, learning support	298	323	25
	Compound services	76	55	-21
	Services, not elsewhere classified.	956	1,005	49
	Government, except elsewhere classified	253	246	-7
	Unable to be classified	121	133	12
Unemployed		430	137	-293
Housewives/ Husbands		1,680	883	-797
Students		782	467	-315
Those not in the labor force		580	598	18
Unable to be classified			1,502	1,502
Total		10,000	10,469	469

* Ideal number of responses is based on the ratio calculated from the population between the ages of 15 and 69 by industry (major groups) in the 2010 census. The discrepancy between the questions used for sampling and those used for the survey resulted in the difference between the actual number of responses and the ideal number of responses for those non-employees. As the data from the survey results were prioritized and classified here, there were many respondents who were unable to be classified.

2. Summary results

(1) Subjective well-being

① Level of current happiness

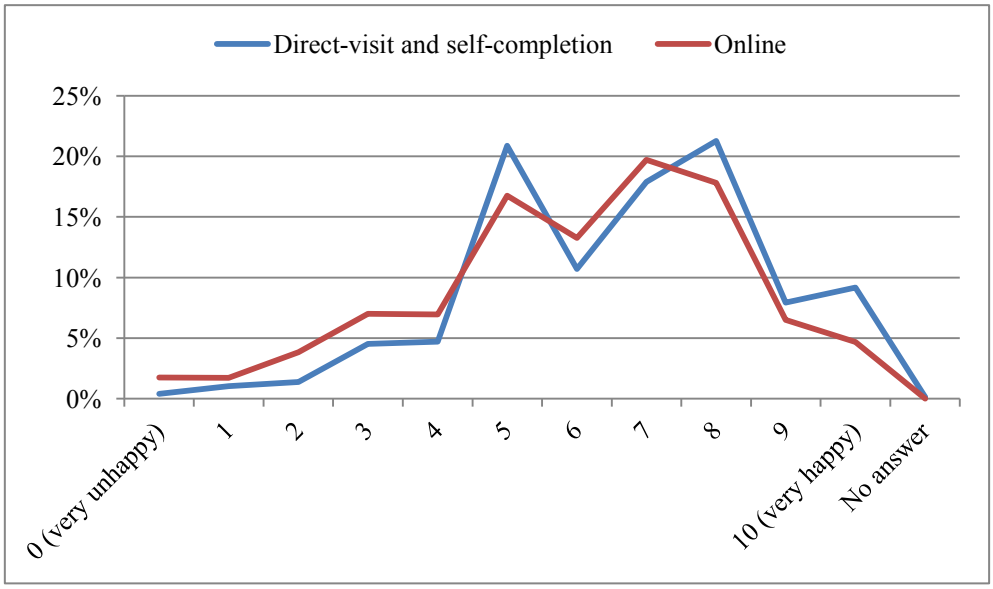
Respondents were asked to score subjective well-being between 10 (Very happy) and 0 (Very unhappy) and the average was 6.1. This score was relatively low, compared with the 6.6 average score of the direct-visit and self-completion questionnaires that were also conducted in March, 2012. Considering that the average score from the preliminary online survey of young people in December, 2011 was also low (6.2), sampling methods and survey methods may have a great impact on the results (See Table 1).

Table1　Comparison of Level of Current Happiness

Survey (period of the survey, survey method)	Average level of current happiness
Quality of Life Survey (March 2012, Online)	6.1
Quality of Life Survey (March 2012, Direct-visit and self-completion)	6.6
Preliminary survey of young people (December 2012, Online)	6.2

The frequency distribution curve of the responses (Graph 1) shows two peaks, at points five and seven. These peaks are relatively low and there are more responses at low points, compared to the direct-visit and self-completion questionnaires.

Graph1 Distribution Curve of Level of Current Happiness



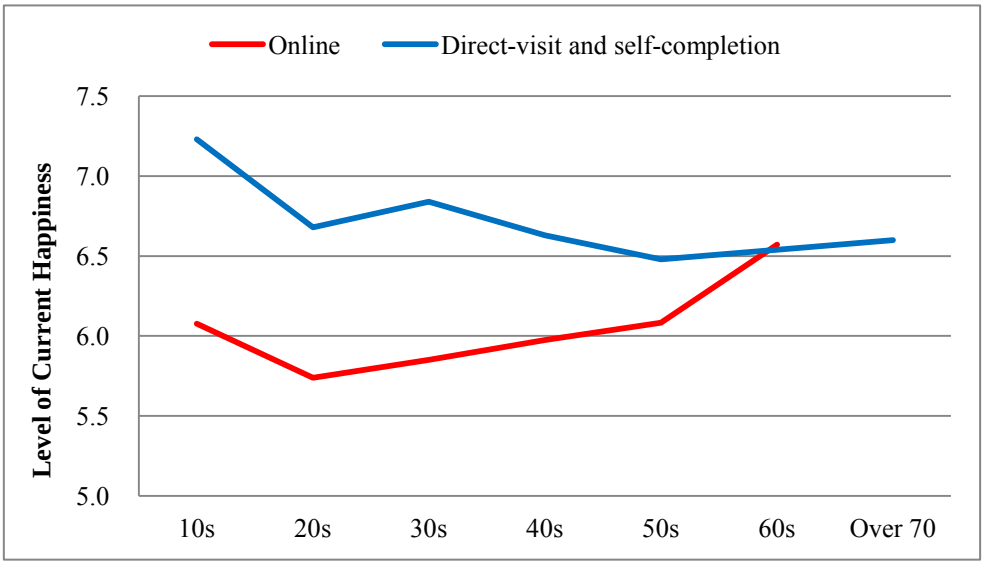
By sex, the women's average, 6.4 was higher than the men's average, 5.8 (Table 2). Gender differences were the same between the online survey and the direct-visit and self-completion questionnaires.

Table2 Average Level of Current Happiness by Sex

	Average	Standard deviation	Number of respondents	Average in direct-visit and self-completion questionnaires
Men	5.8	2.2	5,576	6.3
Women	6.4	2.2	4,893	6.9
Total	6.1	2.2	10,469	6.6

By age, the average score declined from the 10s and 20s, but increased with age among respondents over 20s. As a result, the entire curve is a "J-shape." (Graph 2)

Graph2 Level of Current Happiness by Age



To statistically examine the differences by surveys, a two-way analysis of variance (ANOVA) was performed (see chapter 1 in the appendix for the details of statistical test results). In this analysis, the dependent variable was subjective well-being, and independent variables (including interaction terms) were survey methods (direct-visit and self-completion questionnaires or online survey), sex (male or female) and age (6 categories from 10s to 60s). The main effect of survey methods, sex, and age were all significant. In particular, there was a strong main effect of survey methods, which suggests a need for careful interpretation of the online survey results. The interaction effect between survey methods and age also indicates that the effect of survey methods varied depending on age. While the interaction effect between sex and age was significant, the interaction effect between survey methods and sex was not significant.

By employment status (the sample size was 8,967, excluding respondents who were not unable to be classified in the online survey), the average level of current happiness among the unemployed was very low, 4.6 while the average among housewives/husbands was high, 6.8 (Graph 3). By industries, employees in Agriculture and Forestry had low level of current happiness and household

income. ANOVA and regression were performed to examine the effect of employment status, age, sex, and household income on the level of current happiness. As a result (see chapter 2 in the appendix), only Education and Learning Support was significant among industries.

Table3 Level of Current Happiness, Household Income (Index), and Average Age by Employment Status
(Except respondents who were unable to be classified)

	Level of current happiness	Household Income	Age
Unemployed	4.6	3.8	41.2
Housewives/husbands	6.8	6.0	50.3
Students	6.0	4.9	18.3
Those not in the labor force	6.2	4.5	60.6
Employees	5.9	6.3	44.0
Agriculture and forestry	5.4	5.3	45.1
(Fisheries)	6.6	4.8	48.8
(Mining)	6.8	5.0	50.6
Construction	5.7	6.3	46.0
Manufacturing	5.9	6.7	43.1
Electricity, gas, heat supply and water	5.7	6.5	44.2
Information and communications	5.6	6.2	39.8
Transport	5.7	5.9	44.3
Wholesale and retail trade	5.9	5.9	43.9
Finance and insurance	6.3	7.4	44.0
Real estate	6.0	7.6	49.8
Accommodations, eating and drinking services	5.7	5.3	41.8
Medical, health care and welfare	6.1	6.8	43.1
Education, learning support	6.4	6.9	45.2
Compound services	6.1	6.8	44.2
Services, not elsewhere classified	6.0	5.9	44.3
Government, except elsewhere classified	6.2	7.3	44.8
Industries unable to be classified	5.9	5.6	47.5
Total	6.0	6.1	44.4

*Household income indicators are calculated by assigning the number 1 if household income is less than 1,000,000 yen and 2 if household income is between 1,000,000 and 2,000,000 yen. When household income exceeds 10,000,000 yen, 11 is assigned if household income is between 10,000,000 and 12,000,000 yen, 12 is assigned if household income is 12,000,000 and 15,000,000 yen, 13 is assigned if household income is 15,000,000 and 20,000,000 yen, and 14 is assigned if household income is over 20,000,000 yen.

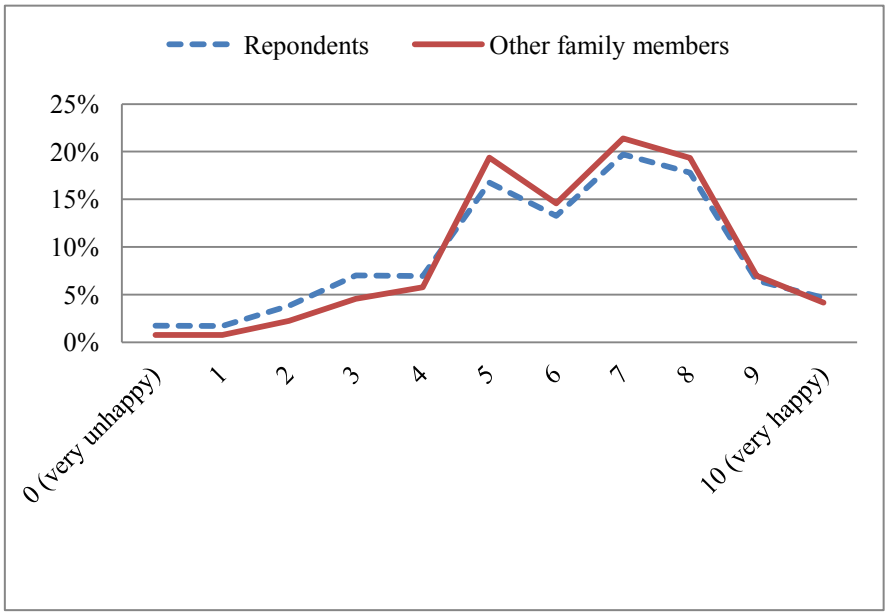
**The samples in fishery and mining were extremely small.

②Perceived level of happiness among other family members

When asked about the level of happiness of other family members living together (9,303 respondents live with other family members), respondents answered 6.4 on average, which is slightly higher than their own level of happiness (Graph 3). Both men and women marked higher scores for the level of happiness of other family members than their own happiness (Table 4). In comparison to the results from direct-visit and self-completion questionnaires, the difference between the level of their own happiness and that of their family member was slightly large. In Graph 4, which shows the score of family member's happiness compared to the score of their own happiness, respondents who marked 0 as their own happiness answered 3 on average for their family member's happiness. Respondents whose level of happiness was low tended to mark higher scores for the level of happiness among other family members. When looking at the difference in happiness among family members (family member's happiness - their own happiness) by age, the difference peaks in the 30s and the curve is an "inverted U-shape" (Graph 5). ANOVA was conducted after combining the data from direct-visit and self-completion questionnaires (only under age 69). In this analysis, the dependent variable was the respondents' own happiness, and independent variables are family member's happiness, sex (male or female), age (6 categories from 10s to 60s), and survey methods (direct-visit and self-completion questionnaires or online survey). As a result, family member's happiness, sex, and age were significant. Moreover, the interaction effects between family member's happiness and age, family member's happiness and survey methods, sex and age, and age and survey methods were significant.

When regression analysis was performed to examine the effect of the difference in happiness, sex, age, and survey methods on respondents' own happiness, all of the independent variables were significant (see chapter 4 in the appendix). The result shows that the level of current happiness decreased as the difference in happiness of their own and their family member increased. However, it can be inferred from the relationship between current happiness and the difference in happiness that there is endogeneity (an independent variable is correlated with the error term) in this regression model. After the difference in happiness was controlled in the generalized method of moments (GMM), the correlation coefficient of the difference in happiness became smaller than -6, which means that the level of current happiness decreases by more than 6 when the difference in happiness increases by 1. This result indicates that the difference in happiness among family members has a very strong effect on respondents' own happiness. Although interpretations need careful consideration because estimators can be different depending on estimation methods and this equation is not very accurate, this suggests the importance of detailed analysis on the difference in happiness among family members. In this survey, however, the difference in happiness among family members was measured using respondents' perceptions (evaluation of their own happiness and their family member's happiness). It implies that household surveys are needed to explore the difference in happiness among family members.

Graph3 Distribution of Level of Happiness of Other Family Members and Respondents

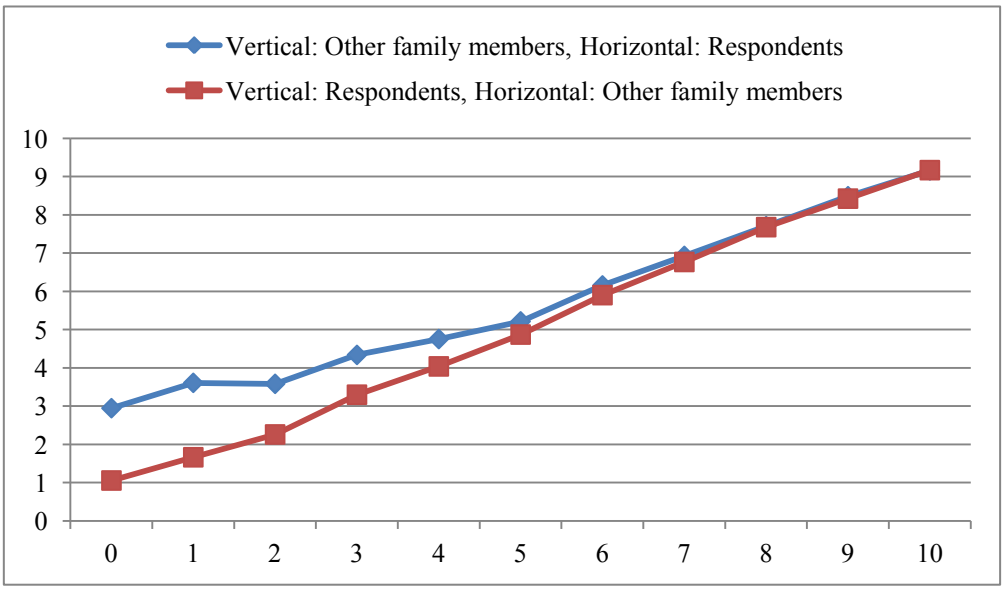


(Note: Distribution of level of happiness among other family members excludes respondents who do not live with any family member)

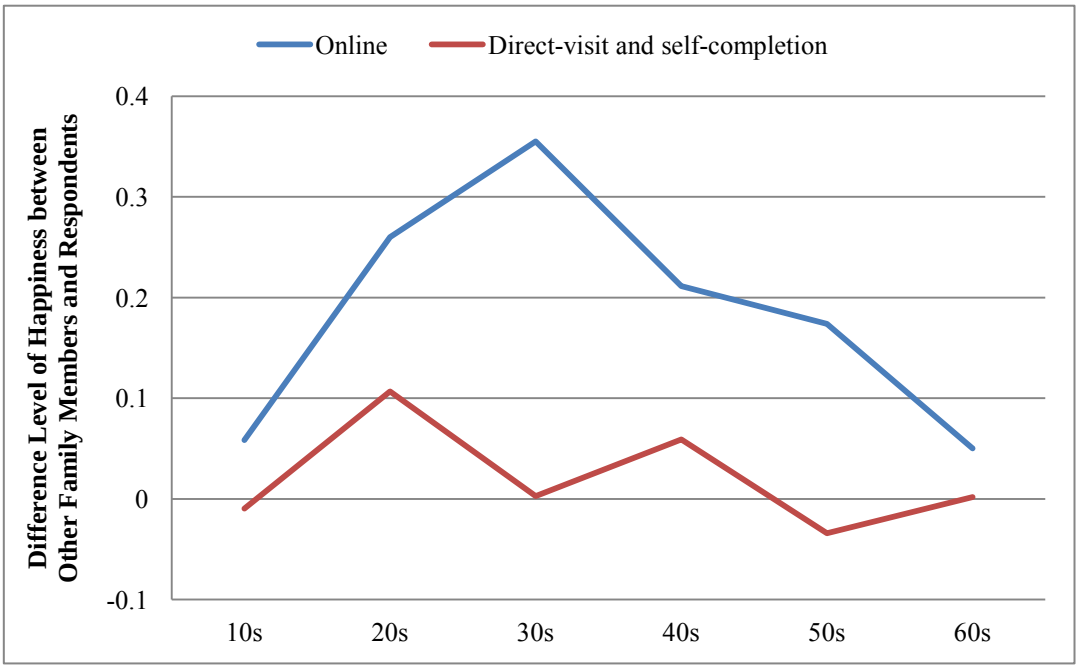
Table4 Difference in Level of Happiness between Other Family Members and Respondents By Sex

	Average	Standard deviation	Number of Respondents
Men	0.21	1.39	4,919
Women	0.17	1.46	4,384
Total	0.19	1.42	9,303

Graph4 Relationship between Respondents' and Their Family Members' Happiness



Graph5 Difference in Level of Happiness between Other Family Members and Respondents ByAge



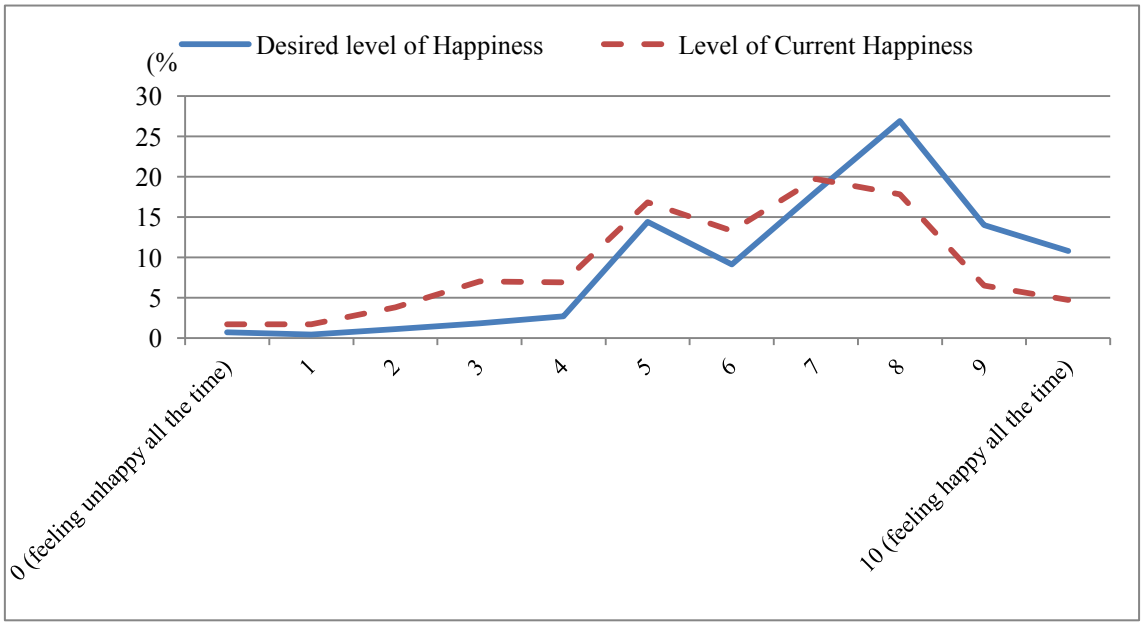
③Desired level of happiness

To the question: “What is your desired condition when 0 is “feeling unhappy all the time”, 5 is “feeling unhappy half of your time, and feeling happy for half of your time”, and 10 is “feeling happy all the time”, the average score was 7.2, which was 1.1 higher than the average of level of current happiness (Table 5, Graph 6). The result was different from that of direct-visit and self-completion questionnaires in that the desired level of happiness increased with age (Graph 7). By age, in the online survey, the correlation coefficients between the level of current happiness and desired level of happiness were significant at 1% significance level in all age groups (10s 0.36; 20s 0.44; 30s 0.43; 40s 0.43; 50s 0.48; 60s 0.46). When regression analysis was performed to examine the effect of survey methods (direct-visit and self-completion questionnaires or online survey), sex (male or female) and age (6 categories from 10s to 60s) on the level of current happiness, the main effect of desired level of happiness, age, and survey methods were significant while the main effect of sex was not significant (see chapter 5 in the appendix). The interaction effects between the desired level of happiness and sex, age, and survey methods were significant. For interaction effects between three variables, sex, age, and survey methods were significant.

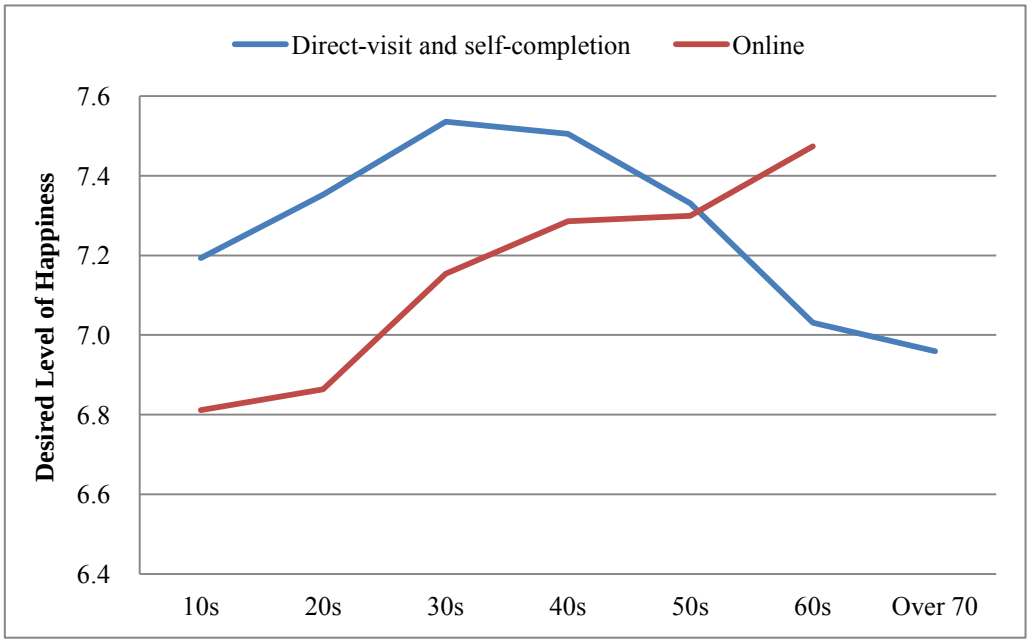
Table5 Average Scores of Desired Level of Happiness and Level of Current Happiness

	Online			Direct-visit and self-completion		
	Desired	Current	Gap	Desired	Current	Gap
Men	7.0	5.8	1.2	7.0	6.3	0.7
Women	7.4	6.4	1.1	7.5	6.9	0.5
Total	7.2	6.1	1.1	7.2	6.6	0.6

Graph6 Distribution of Desired Level of Happiness and Level of Current Happiness



Graph7 Desired Level of Happiness By Age



When regression analysis was conducted to determine the effect of the difference between the desired level of happiness and the level of current happiness, sex, age and survey methods on the level of current happiness, all of the independent variables were significant (see chapter 6 in the appendix). This result suggests that the level of current happiness decreased as the gap between the desired level and current level increased. It can be inferred from the difference between the desired level of happiness and the level of current happiness, however, that there is endogeneity (an independent variable is correlated with the error term) in this regression model. After the difference between the desired level of happiness and the level of current happiness was controlled in the generalized method of moments, the correlation coefficient of the difference in happiness became -1.86, which means that the level of current happiness decreases by almost 2 when the difference in happiness increases by 1. This result indicates that the difference between the desired level of happiness and the level of current happiness has a very strong effect on the level of current happiness. Although interpretations need careful consideration because estimators can be different depending on estimation methods and this equation is not very accurate, similar to the difference in happiness among family members, this suggests the importance of detailed analysis on the difference between the desired level of happiness and the level of current happiness.

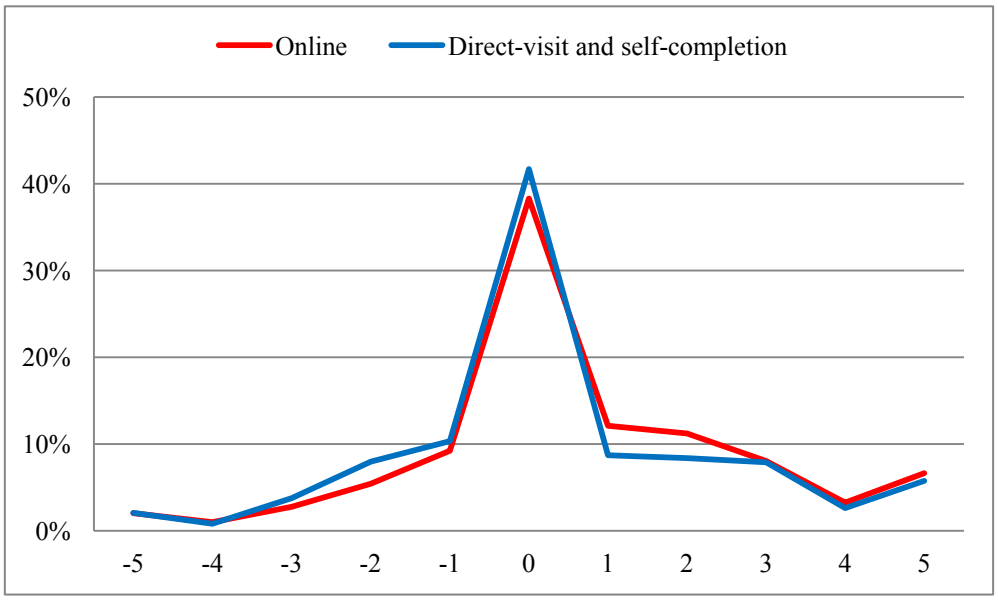
④Expected level of happiness in the future

When asked the expected level of happiness in 5 years with 0 being same happiness level as now, 5 being happier than now, and -5 being less happy than now, the average was 0.6. When regression analysis was performed to examine the effects of survey methods (direct-visit and self-completion questionnaires or online survey), sex (male or female) and age (6 categories from 10s to 60s) on the expected level of happiness (see chapter 7 in the appendix), the main effect of sex was significant and women's expected level of happiness was significantly higher than that of men (see the online survey results in Table 6). Because the interaction effect of sex and survey methods was not significant, the difference by sex did not depend on survey methods. Also, there was no difference between the direct-visit and self-completion questionnaires and online survey in the expected level of happiness in the future (Graph 8). The main effect of age and the interaction effect between age and survey methods were both significant. In the online survey, respondents in their 10s and 20s answered +1 and the score decreased with age (Graph 9). In comparison to the results from direct-visit and self-completion questionnaires, the effect of age was smaller.

Table6 Average Scores of Expected Level of Happiness in 5 years (increase from current level)

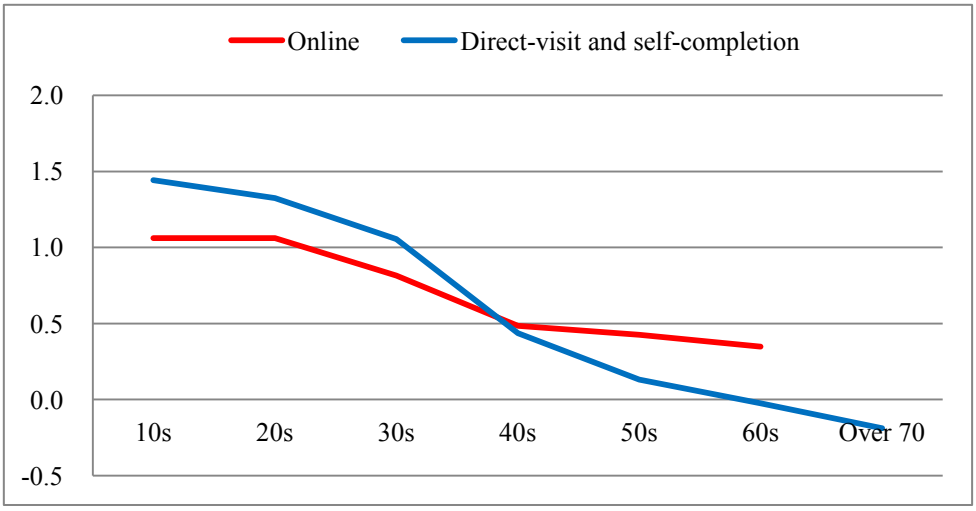
	Online	Direct-visit and self-completion
Men	0.5	0.3
Women	0.8	0.5
Total	0.6	0.4

Graph8 Distribution of Respondents (Expected Level of Happiness in 5 years)



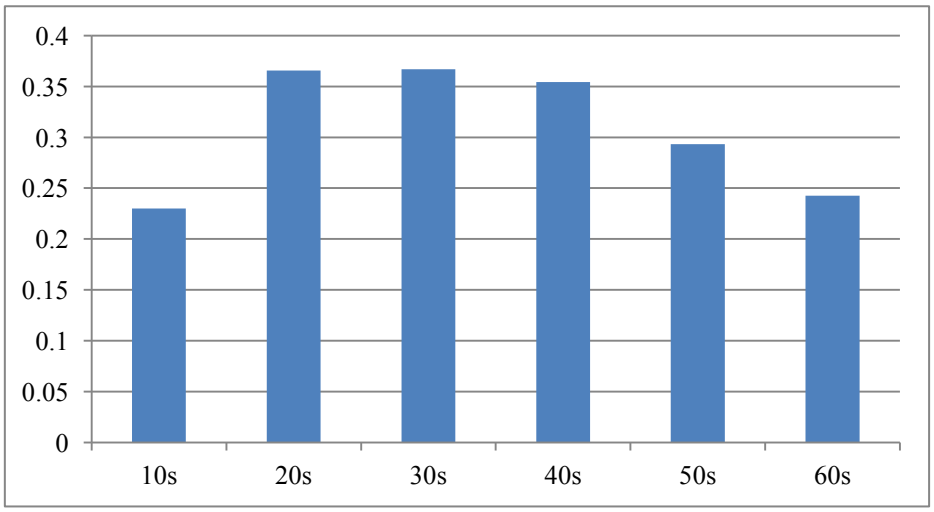
Graph9 Expected Level of Happiness By Age

(Vertical axis stands for average level of expected increase in happiness in 5 years)



In this online survey, the correlation coefficients between the expected level of happiness and the level of current happiness were 0.23 for 10s, 0.37 for 20s and 30s, 0.35 for 40s, 0.29 for 50s, and 0.24 for 60s (all of them were significant at the 1% significant level). When the level of current happiness was higher, the expected level of happiness in the future tended to be more positive. This was also proven by regression analysis in which the dependent variable was the level of current happiness and the independent variables were survey methods, sex, and age. In addition, generalized method of moment (GMM) estimation suggests that the expected level of happiness was more correlated to the level of current happiness after controlling the expected level of happiness (See Chapter 8 in Appendix).

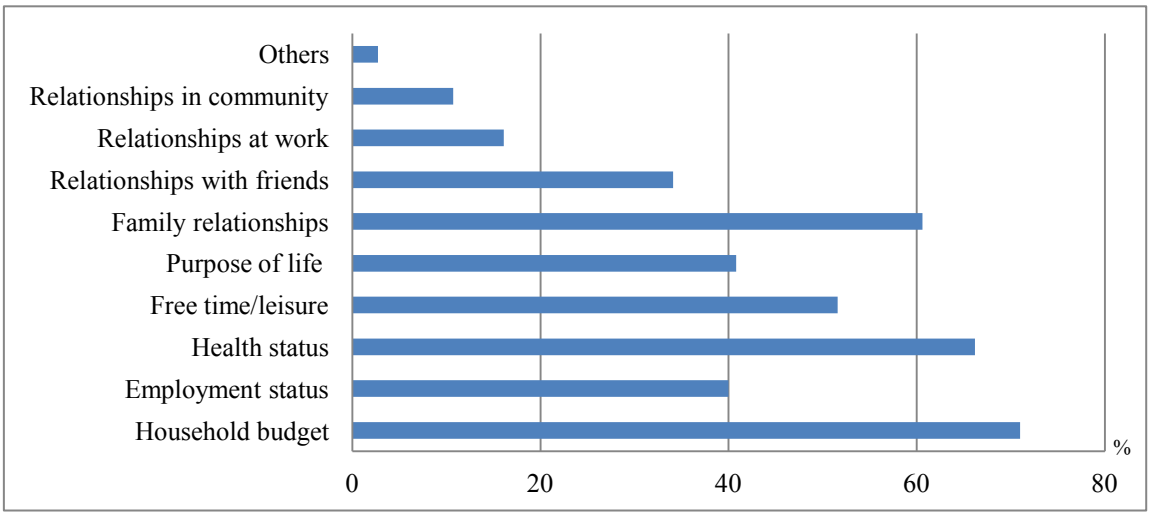
Graph10 Correlation Coefficients between Expected Level of Happiness and Level of Current Happiness



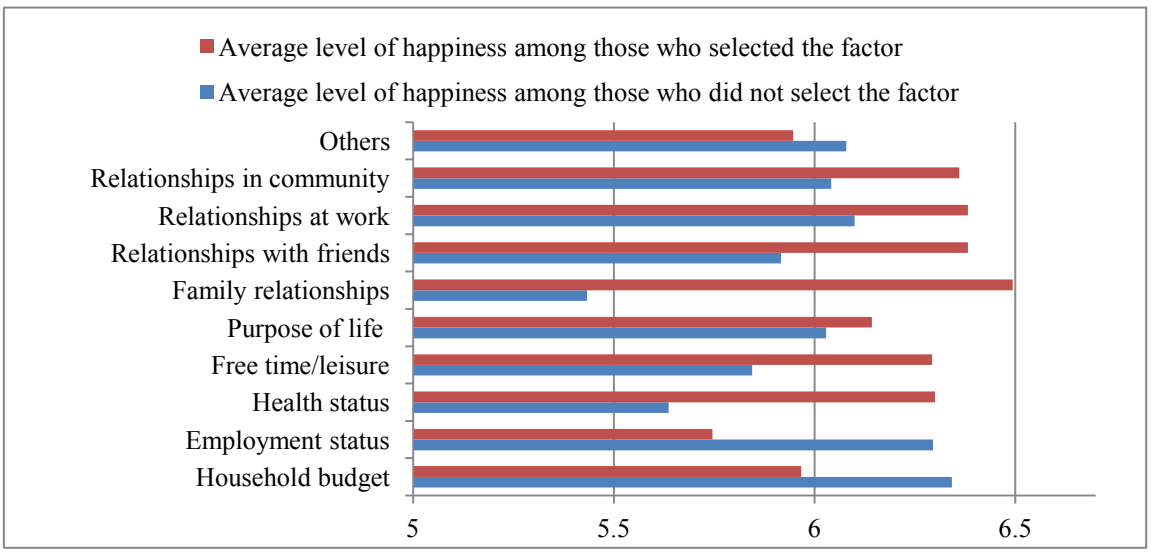
⑤Factors considered important to determine happiness

When asked about factors that are considered important to determine happiness (multiple answers were allowed), “household budget”, “health status”, and “family relationships” were the top three answers chosen by respondents (Graph 11). Comparing the level of current happiness among those who selected each factor and those who did not, the level of current happiness among respondents who selected “household budget” and “employment status” was low while the level of current happiness among those who selected “family relationships”, “health status”, and “free time/leisure” was high. This difference was statistically significant (the 5% significance level was used only for “purpose of life (job, hobby and social contribution)”, and the 1% significance level was used for the other factors; except “others”)(Graph 12).

Graph11 Factors Considered Important to Determine Happiness



Graph12 Average Level of Current Happiness by Factors



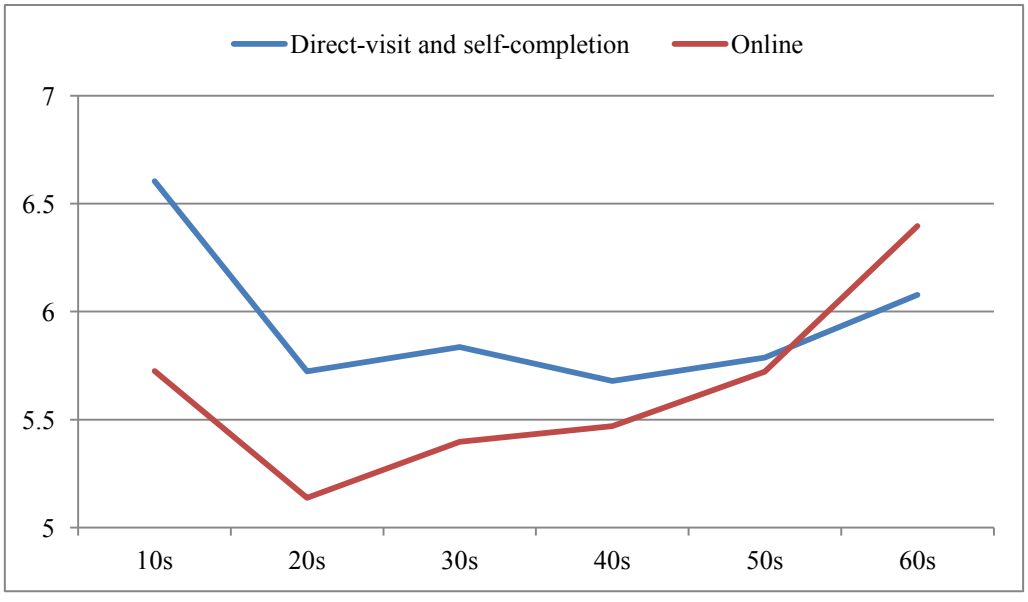
⑥Life satisfaction

To the question: “All things considered, how satisfied are you with your life as a whole these days? Please score your satisfaction between 0 (completely dissatisfied) and 10 (completely satisfied)”, there were not many people who responded with high scores and the average score was 5.7, which was lower than the level of current happiness. When t-test was conducted to examine the average scores of the level of current happiness and life satisfaction, these average scores were significantly different (see chapter 9 in the appendix). The difference in the average scores was larger in the online survey than in the direct-visit and self-completion questionnaires. By age, life satisfaction was lower among young respondents while it was higher among older respondents in the online survey, compared with the result from direct-visit and self-completion questionnaires (Graph 13). On the other hand, the frequency distribution of responses to life satisfaction in the online survey was similar not only to that in the direct-visit and self-completion questionnaires, but also to the frequency distribution of responses to the level of current happiness in the online survey (Graph 14). The correlation coefficients of the level of current happiness and life satisfaction in the online survey were very high, 0.71 for 10s, 0.75 for 20s, 0.76 for 30s, 0.79 for 40s, 0.79 for 50s, 0.75 for 60s (all of them were significant at the 1% significance level).

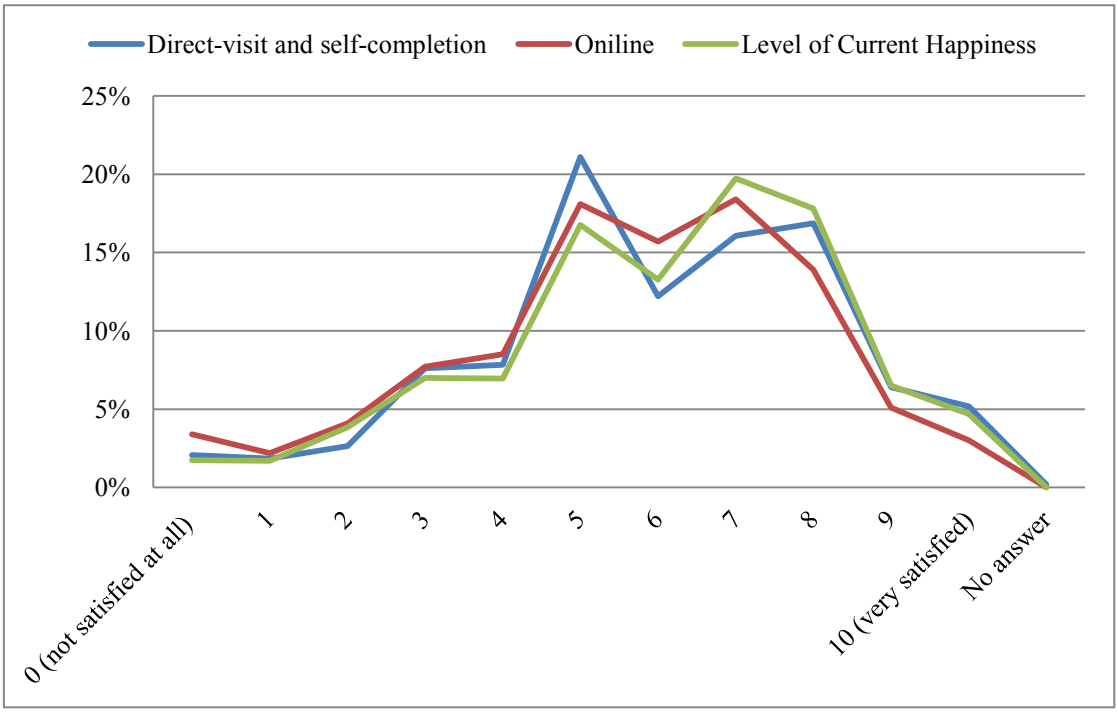
Table7 Life Satisfaction

	Online	Direct-visit and self-completion
Men	5.4	5.6
Women	6.0	6.3
Total	5.7	6.0

Graph13 Life Satisfaction By Age and Surveys



Graph14 Distribution of Life Satisfaction and Level of Current Happiness



⑦Interdependent happiness

When asked nine questions, including three components of "cooperative relativity," "moderateness," and "sense of being ordinary," on a 0-10 scale, respondents answered 5.4 on average. Scores were higher to the question "Although it is quite average, I live a stable life," while scores were lower to the question "I do not have any major concerns or anxieties." By sex, women's scores were higher, as they were for other questions regarding happiness.

Table8 Average Scores of Interdependent Happiness Scale

	Men	Women	Total
I believe that I and those around me are happy	5.1	5.6	5.3
I do not have any major concerns or anxieties	4.8	5.0	4.9
I believe that things are going well for me in general, as they are for others around me	4.9	5.4	5.1
I feel I am being positively evaluated by others around me	4.9	5.3	5.1
Although it is quite average, I live a stable life	5.7	6.3	6.0
I believe that my life is just as happy as that of others around me	5.1	5.7	5.3
I make significant others happy	5.2	5.8	5.5
I believe I have achieved the same standard of living as those around me	5.2	5.7	5.4
I can do what I want without causing problems for others	5.6	6.0	5.8
Interdependent happiness scale	5.1	5.6	5.4

Table 9 shows the distribution of responses to each question. Compared with the level of current happiness, more people answered 5 to the statements in Interdependent Happiness Scale.

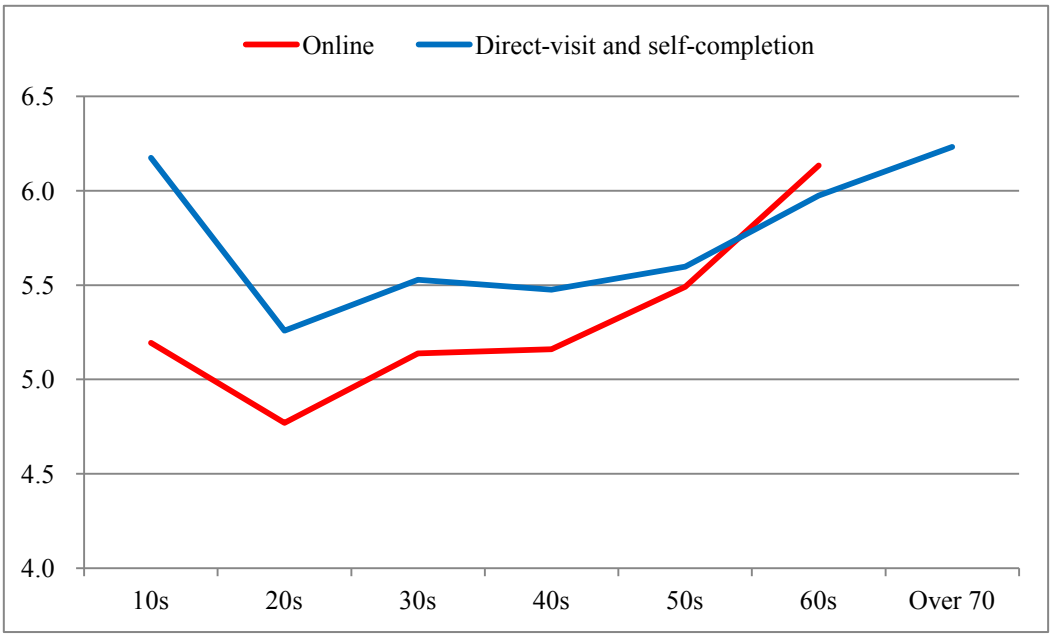
Table9 Distribution of Respondents to Interdependent Happiness Scale (%)

	0	1	2	3	4	5	6	7	8	9	10
I believe that I and those around me are happy	3.5	1.6	3.6	7.6	8.5	33.0	14.6	14.2	9.0	2.2	2.4
I do not have any major concerns or anxieties	10.1	4.0	7.9	11.1	8.8	16.8	9.8	11.2	10.9	4.7	4.7
I believe that things are going well for me in general, as they are for others around me	5.4	2.8	6.0	8.5	9.5	27.2	11.7	13.2	9.7	3.4	2.5
I feel I am being positively evaluated by others around me	5.3	2.5	5.5	8.0	8.8	29.4	13.2	12.6	9.4	3.2	2.1
Although it is quite average, I live a stable life	3.3	2.2	4.2	5.8	7.8	19.1	12.9	14.9	14.8	7.3	7.8
I believe that my life is just as happy as that of others around me	5.1	2.9	5.3	7.6	8.4	25.7	11.8	13.2	11.8	4.5	4.0
I make significant others happy	6.2	2.8	4.8	6.3	8.1	23.1	12.1	13.1	12.8	6.3	4.5
I believe I have achieved the same standard of living as those around me	6.0	3.1	5.1	7.0	9.1	22.3	11.9	12.4	12.1	5.5	5.6
I can do what I want without causing problems for others	4.9	2.5	3.7	5.9	7.4	21.5	13.2	14.2	13.4	7.5	5.9
Interdependent happiness scale	1.7	2.7	4.8	7.2	12.2	24.3	17.3	14.9	10.1	3.7	1.2

*Interdependent happiness scale was calculated for each respondent as average scores to all of the nine questions. Rounded scores of interdependent happiness scale were sorted to fit a 0-10 scale.

When ANOVA was performed to determine the effect of survey methods (direct-visit and self-completion questionnaires or online survey), sex (male or female), age (6 categories from 10s to 60) on interdependent happiness, the main effect of survey methods was significant at the 1% significance level and the score in the direct-visit and self-completion questionnaires was significantly higher (the average score was 5.67 in the direct-visit and self-completion questionnaires). By age, the curve is J-shaped with those in their 20s at the bottom as in the direct-visit and self-completion questionnaires, but the level of interdependent happiness of young respondents were lower in the online survey (Graph 15). Thus, the interaction effect between age and survey methods was significant.

Graph15 Average Level of Interdependent Happiness By Age



In addition, Table 10 shows the correlation coefficients between all of the indicators regarding happiness (only for the online survey). Although all of them were significant at the 1% significance level, interdependent happiness was more correlated to life satisfaction than to the level of current happiness.

Table10 Correlation Coefficients between Happiness Indicators

	1	2	3	4	5	6
1 Level of current happiness	1.00					
2 Perceived level of other family member's happiness	0.77	1.00				
3 Desired level of happiness	0.44	0.47	1.00			
4 Expected level of happiness	0.30	0.29	0.22	1.00		
5 Life satisfaction	0.76	0.68	0.41	0.27	1.00	
6 Interdependent happiness	0.69	0.65	0.38	0.29	0.77	1.00

⑧Affects experienced yesterday

When asked positive affects or feelings such as “happiness” and “contentment” and negative affects such as “anger” and “sadness” experienced yesterday on a 0-10 scale, the average scores for “happiness” and “contentment” were both 5.5 (Table 11). There was not a difference in the scores for “happiness” and “contentment”, which implies that these two variables had similar meaning to respondents (the correlation coefficient was 0.92). On the other hand, “anger” and “sadness” were distinguished and the correlation coefficient was 0.65. ANOVA and Regression analysis were performed to examine the effect of sex (male or female) and age (6 categories from 10s to 60s) on positive and negative affect (see chapter 11 in the appendix). In this analysis, the average score of “happiness” and “contentment” was used as positive affect score and the average score of “anger” and “sadness” was used as negative affect score. As a result, less respondents experienced negative affects than positive affects (Table 12), and this tendency was seen particularly in women. The main effect of age was also significant, and the curve for positive affects is J-shaped with those in their 20s at the bottom while the curve for negative affects was stable until it decreases among those in their 60s. When looking at “anger” and “sadness” separately, the average score for “anger” stayed the same except for respondents in their 60s while the average score of “sadness” decreased with age (Graph 16). When affect balance score was calculated from subtracting negative affect score from positive affect score, the average score was 2.1, which means that respondents experienced positive affects more than negative effects. By sex, women experienced positive affects more than men. By age, the curve is J-shaped with those in their 20s at the bottom (Graph 17). The correlation coefficients between the level of current happiness and positive affect were 0.54 for 10s, 0.65 for 20s, 0.65 for 30s, 0.69 for 40s, 0.67 for 50s, and 0.62 for 60s; the correlation coefficients between the level of current happiness and negative affect were -0.16 for 10s, 0.19 for 20s, -0.24 for 30s, -0.24 for 40s, -0.13 for 50s, -0.27 for 60s; the correlation coefficients between the level of current happiness and affect balance were 0.48 for 10s, 0.62 for 20s, 0.60 for 30s, 0.62 for 40s, 0.60 for 50s, 0.54 for 60s (all of them were significant at the 1% significance level). These results indicate that the level of current happiness and positive affects experienced yesterday were strongly correlated.

Table11 Average Scores of Affects Experienced Yesterday

	Happiness	Contentment	Anger	Sadness
Men	5.1	5.2	3.7	3.3
Women	5.9	5.9	3.5	3.2
Total	5.5	5.5	3.6	3.3

Table12 Distribution of Scores of Affects Experienced Yesterday

	0	1	2	3	4	5	6	7	8	9	10
Overall, how happy did you feel yesterday?	5.4	2.5	4.5	7.3	7.0	23.8	13.1	14.5	12.2	4.8	5.0
Overall, how contented did you feel yesterday?	5.1	2.4	4.6	7.0	7.3	23.2	13.6	14.1	12.7	5.0	4.9
Overall, how angry did you feel yesterday?	15.5	11.8	12.9	10.9	8.6	17.9	8.2	6.1	4.4	1.4	2.4
Overall, how sad did you feel yesterday?	21.3	11.9	12.0	10.2	8.0	18.1	6.3	4.8	3.4	1.5	2.4

Graph16 Average Scores of Affects Experienced Yesterday By Age

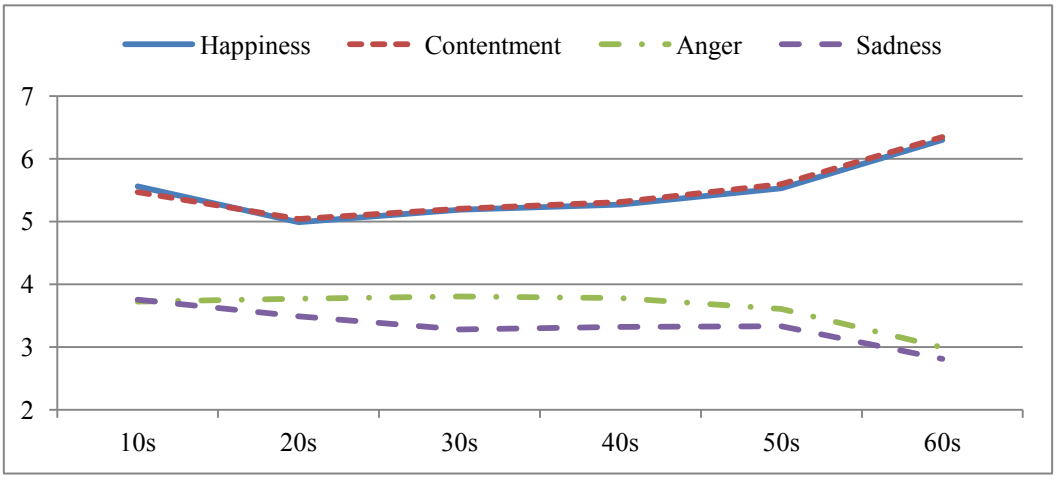
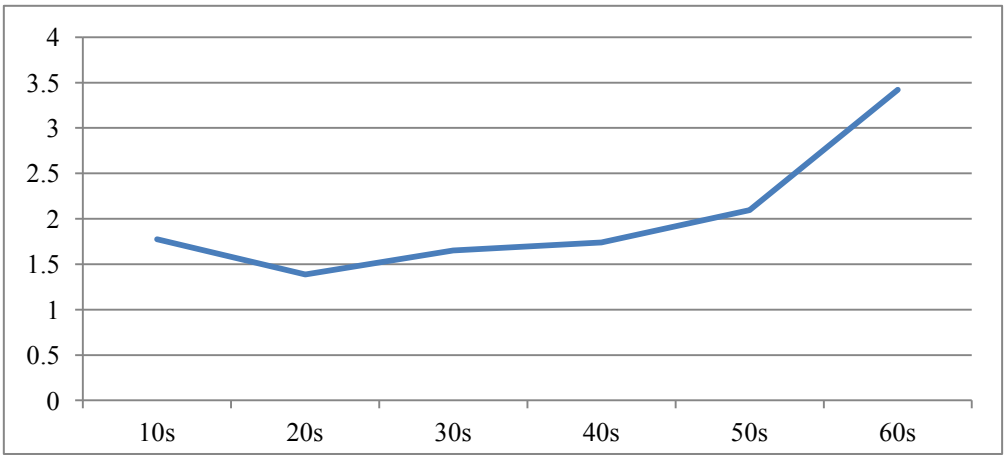


Table13 Affect Balance of Yesterday

(Difference in average scores of positive and negative affects)

Men	1.7
Women	2.6
Total	2.1

Graph17 Affect Balance of Yesterday By Age



⑨Affects experienced during past few weeks

To the question on frequency of various affects or feelings experienced in the past few weeks, many respondents indicated “calm” “sympathy” and ”kindness” as positive affects experienced often while they chose “stress” “anxiety” and “anger” as negative affects experienced often (Table 14). To perform factor analysis (principal factor analysis, orthogonal rotation) including the data from the direct-visit and self-completion questionnaires, indexes of affects were constructed for each question as follows: “none” =0, “rarely” =1, “sometimes”=2, and “often”=3 (see chapter 12 in the appendix). As a result, two factors were extracted (as listed in the descending order of factor loading, negative affects: hopeless, sadness, fear, guilt, anxiety, shame, stress, anger, frustration, jealousy, ego; positive affects: kindness, sympathy, intimacy, generosity, peacefulness, fulfillment, satisfaction, proudness; these factor loadings range from .37 to .81). Based on this result, the average scores for positive affects and for negative affects were calculated. ANOVA and regression analysis were performed to explore the effect of survey methods (direct-visit and self-completion questionnaires or online survey), sex (male or female), age (6 categories from 10s to 60) on affects (positive and negative, respectively). According to ANOVA, the main effects of survey methods, sex, and age were significant for positive affects. Combined with the result from regression analysis, it was found that positive affects were experienced more often in the direct-visit and self-completion questionnaires, among women, and among older respondents. For negative affects, the main effects of sex and survey methods were not significant, and the interaction effects between sex and age and between survey methods and age were significant, according to ANOVA. Regression analysis indicated that negative affect score was higher in the direct-visit and self-completion questionnaires, among men, and among young respondents. When affect balance score was calculated, the average score for the whole sample was 0.5, which means that they experienced positive affects more than negative affects (Table 15). By sex, women marked higher scores for affect balance during the past few weeks than men. Also, the average scores of affect balance for men and women in the online survey was not very different from those in the direct-visit and self-completion questionnaires. By age, the curve of affect balance is J-shaped with those in their 20s at the bottom, and the score among younger respondents was lower in the online survey than in the direct-visit and self-completion questionnaires (Graph 19). The correlation coefficients between the level of current happiness and affect balance were high in the online survey as follows: 0.48 for 10s, 0.61 for 20s, 0.59 for 30s, 0.61 for 40s, 0.59 for 50s, and 0.81 for 60s.

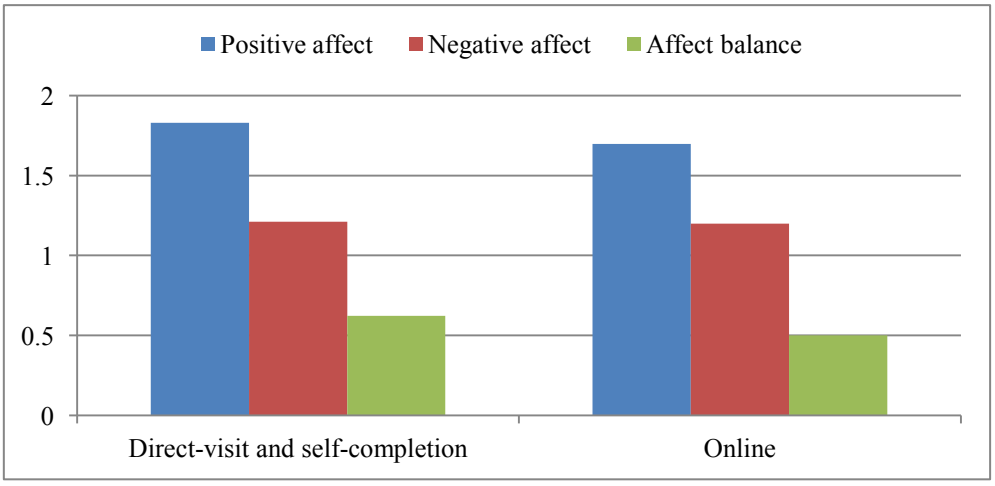
Table14 Distribution of Responses to Affects Experienced during Past Few Weeks (%)

	Often	Sometimes	Rarely	None
Proudness	25.6	42.9	26.9	4.6
Calm	4.9	24.8	46.1	24.1
Sympathy	4.2	25.3	51.0	19.5
Generosity	6.2	31.1	47.5	15.3
Peacefulness	7.4	29.0	44.6	19.1
Kindness	4.2	25.0	51.7	19.2
Intimacy	5.0	25.7	49.8	19.5
Fulfillment	9.9	32.2	41.8	16.1
Satisfaction	10.3	32.6	41.7	15.4
Indebtness	23.1	44.0	21.3	11.7
Hopeless	27.9	41.3	19.5	11.4
Sadness	18.4	48.1	24.6	8.8
Stress	7.9	33.6	32.1	26.5
Fear	37.7	40.5	16.1	5.7
Anxiety	7.4	38.7	34.2	19.7
Shame	28.4	47.1	19.1	5.4
Anger	13.6	44.8	30.3	11.2
Guilt	34.3	42.9	17.0	5.7
Ego	24.3	51.0	20.7	4.0
Jealousy	39.4	41.0	15.2	4.4
Frustration	22.8	43.7	23.3	10.3

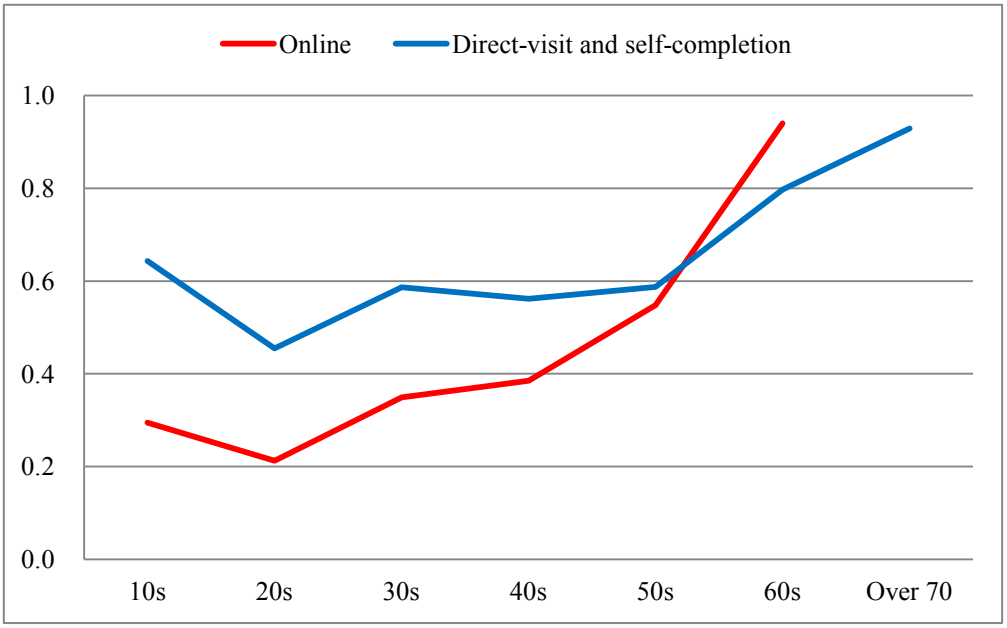
Table15 Affect Balance of Past Few Weeks

	Online			Direct-visit and self-completion		
	Positive affect	Negative affect	Affect balance	Positive affect	Negative affect	Affect balance
Men	1.6	1.2	0.4	1.8	1.2	0.6
Women	1.8	1.2	0.6	1.9	1.1	0.8
Total	1.7	1.2	0.5	1.8	1.2	0.7

Graph18 Differences in Affect By Survey (Excluding the data of respondents in their 70s)



Graph19 Affect Balance of Past Few Weeks



⑩Different aspects of psychological functioning

When asked different aspects of psychological functioning related to happiness such as positiveness and optimism, freedom in way of living, psychological resilience, belief in values of their own behaviors, and sense of accomplishment on a 0-10 scale, the average scores were relatively higher to the statement "When things go wrong in my life it generally takes me a long time to get back to normal" while lower on the statement regarding sense of accomplishment (Table 16). By sex, women marked higher scores than men. By age, the curve is J-shaped except for the statement "I am free to decide for myself how to live my life" (Graph 15). The OECD (Organization for Economic Co-operation and Development) recommends countries to ask these questions in their surveys, independently from those concerning the level of current happiness, life satisfaction, and affects, as an index that measures eudaimonia (derived from the Greek word equating happiness as the utmost human good, defined by Greek philosopher Aristotle, and it points to happiness in which values are strongly reflected). When factor analysis was performed with other variables related to happiness and affects, the factor with high loadings among questions about eudaimonia was different from the level of current happiness, life satisfaction, and affects, which suggests that what the questions concerning eudaimonia measure is to some extent independent from that of happiness and affects (see chapter 14 in the appendix).

Table16 Average Scores: Different Aspects of Psychological Functioning

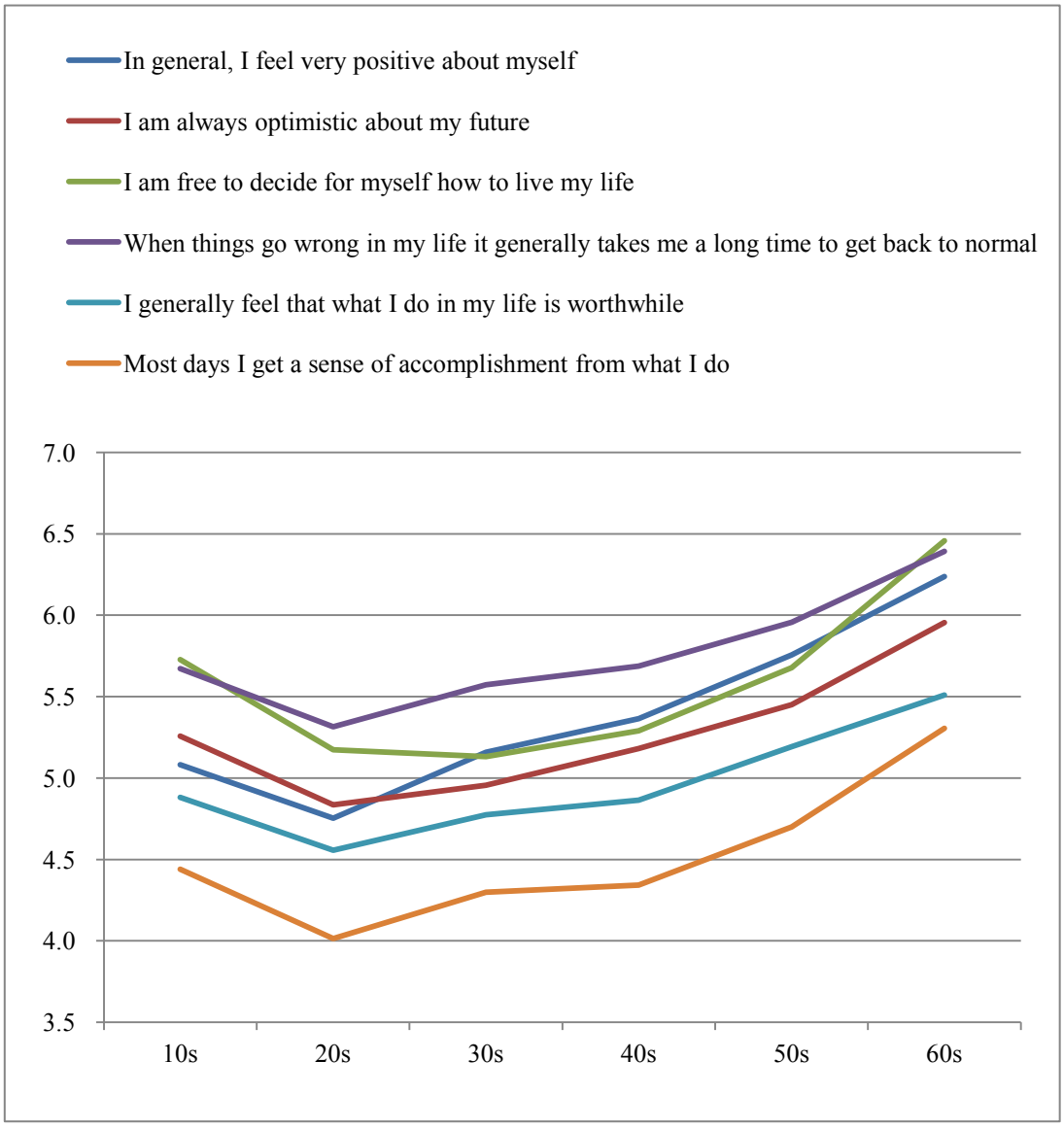
	Men	Women	Total
In general, I feel very positive about myself	5.3	5.7	5.5
I am always optimistic about my future	5.2	5.4	5.3
I am free to decide for myself how to live my life	5.5	5.7	5.6
When things go wrong in my life it generally takes me a long time to get back to normal	5.7	6.0	5.8
I generally feel that what I do in my life is worthwhile	4.9	5.1	5.0
Most days I get a sense of accomplishment from what I do	4.5	4.7	4.6

Table17 Distribution of Respondents: Different Aspects of Psychological Functioning (%)

Point	0	1	2	3	4	5	6	7	8	9	10
In general, I feel very positive about myself	4.0	2.7	5.3	8.9	8.8	21.6	13.6	13.3	10.8	4.6	6.3
I am always optimistic about my future	4.8	3.1	5.8	8.9	10.1	20.6	14.4	13.0	10.4	4.2	4.9
I am free to decide for myself how to live my life	3.9	2.7	5.0	7.2	8.3	22.2	14.4	13.4	11.3	5.5	6.2

When things go wrong in my life it generally takes me a long time to get back to normal	2.9	2.1	3.8	5.8	7.5	22.9	15.6	15.7	12.4	5.6	5.7
I generally feel that what I do in my life is worthwhile	4.9	3.2	6.1	8.6	10.1	29.2	13.9	10.7	7.4	3.0	2.9
Most days I get a sense of accomplishment from what I do	6.0	5.7	7.9	11.1	12.2	25.3	12.5	9.3	5.8	2.3	2.1

Graph20 Different Aspects of Psychological Functioning By Age



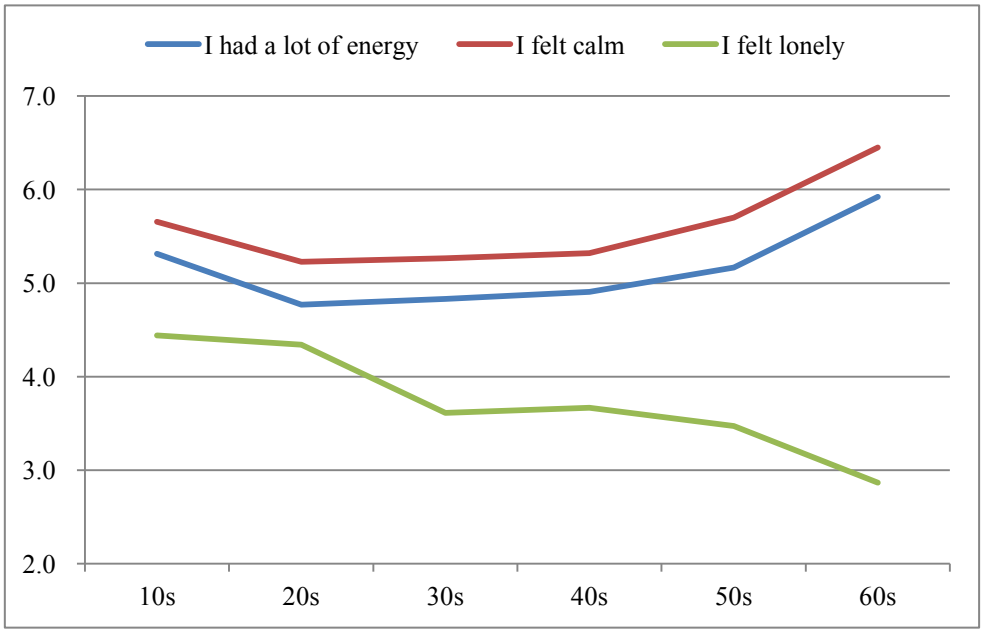
⑪Feelings experienced during the past week

When asked the frequency of feelings, such as energy, calm, and loneliness, experienced during the past week, people responded with higher scores for positive feelings, such as “I had a lot of energy” and “I felt calm” than for negative feelings such as “I felt lonely”. The OECD also recommends measuring this item as one aspect of eudaimonia. As the factor analysis in Chapter 14 in the appendix suggests, loneliness was highly correlated to negative affects. By age, similar to other variables, the curve for positive feelings hit bottom in the 20s while the average score for negative feelings, that is loneliness, was the highest among respondents in their 10s. Yet, the age difference may be caused by sampling bias, and further consideration will be needed in the future.

Table18 Feelings Experienced During The Past Week

	I had a lot of energy	I felt calm	I felt lonely
Men	5.0	5.5	4.0
Women	5.4	5.7	3.2
Total	5.2	5.6	3.6

Graph21 Feelings Experienced During the Past Week By Age



(2) Miscellaneous aspects of well-being

⑫Satisfaction with various aspects of life

To the question on satisfaction with various aspects of life on a 0-10 scale, people responded with relatively higher scores in “the amount of time you have to do the things that you like doing” and “health” while lower scores in “future security” “what you are achieving in life” and ”feeling part of your community” (Table 19). When looking at the relationship between the average scores for the level of current happiness and satisfaction with each aspect of life, it is clear that the level of current happiness increased as satisfaction with each aspect of life increased (Graph 22). This suggests that the level of current happiness was strongly correlated to satisfaction with aspects of life, in particular with “how safe you feel”.

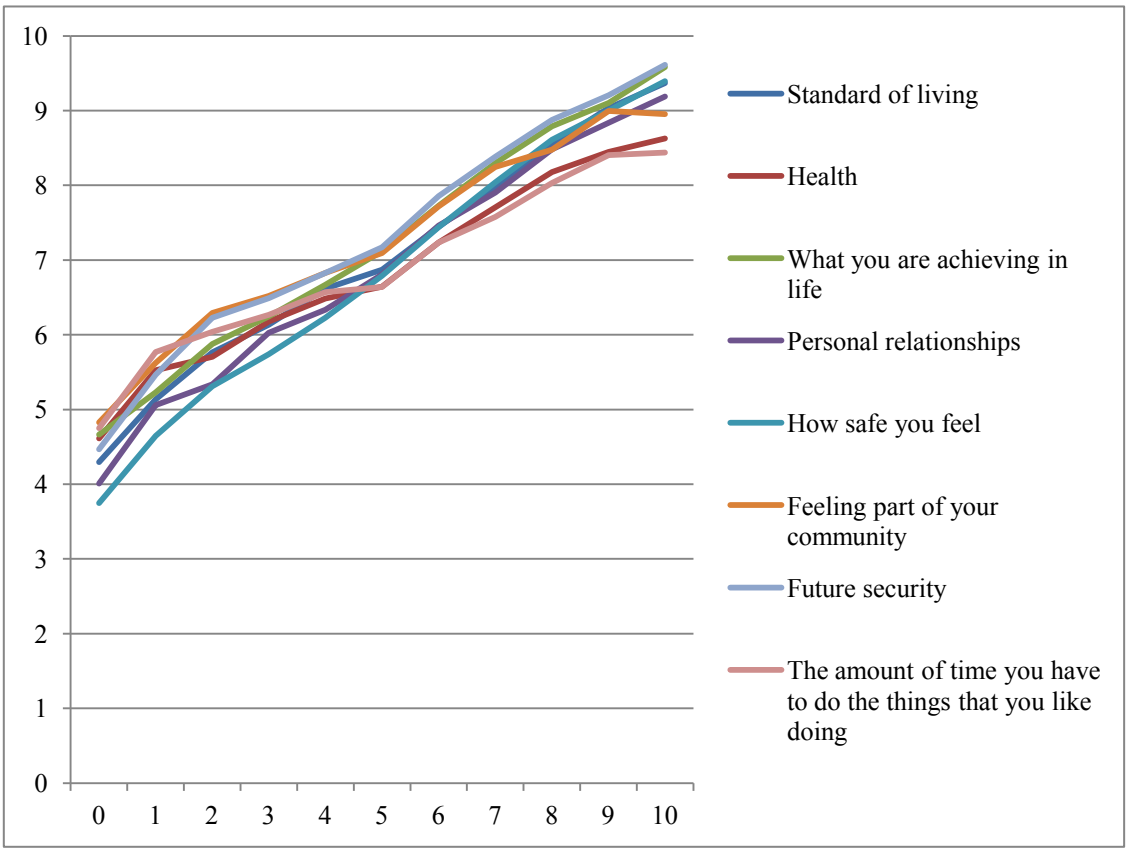
Table19 Satisfaction with Various Aspects of Life

	Men			Women			Total			
	Ave.	S.D.	No.	Ave.	S.D.	No.	Ave.	S.D	No.	R
Standard of living	4.9	2.5	5,576	5.4	2.5	4,893	5.2	2.6	10,469	0.57
Health	5.4	2.5	5,576	5.8	2.5	4,893	5.6	2.5	10,469	0.45
What you are achieving in life	4.6	2.4	5,576	4.9	2.4	4,893	4.7	2.4	10,469	0.54
Personal relationships	5.1	2.3	5,576	5.7	2.4	4,893	5.4	2.4	10,469	0.54
How safe you feel	5.2	2.5	5,576	5.7	2.5	4,893	5.4	2.5	10,469	0.63
Feeling part of your community	4.5	2.3	5,576	4.8	2.3	4,893	4.7	2.3	10,469	0.43
Future security	4.4	2.5	5,576	4.7	2.6	4,893	4.5	2.5	10,469	0.56
The amount of time you have to do the things that you like doing	5.4	2.6	5,576	5.9	2.7	4,893	5.6	2.7	10,469	0.42

*Ave.=Average, S.D.=Standard deviation, No.=Number of respondents,

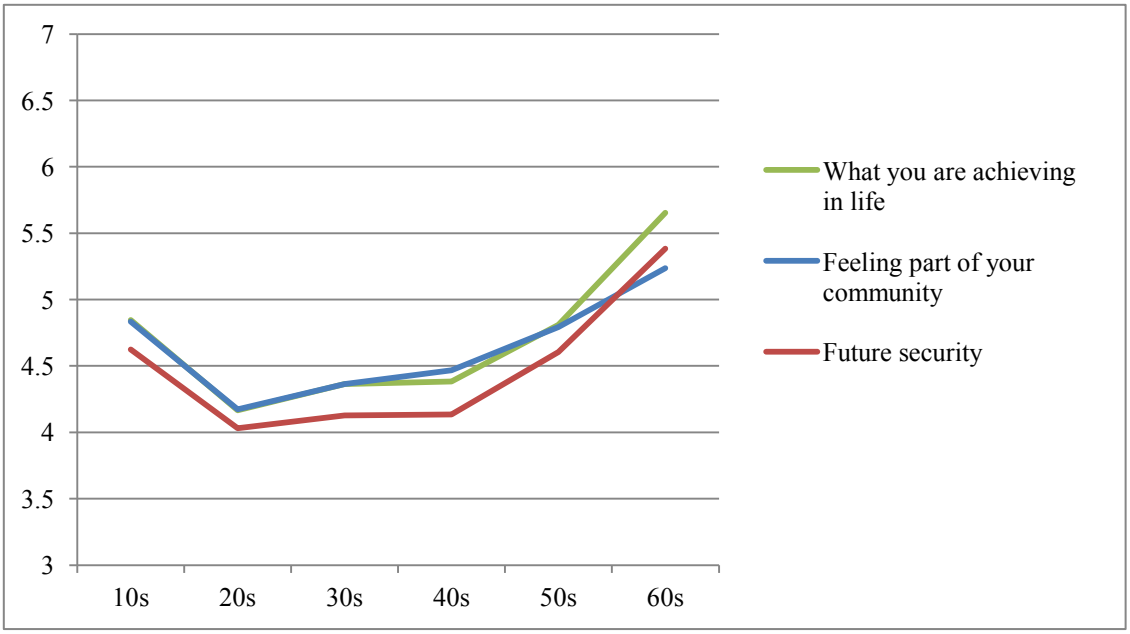
R=Correlation coefficients between the level of current happiness and satisfaction

Graph22 Relationship between the Level of Current Happiness and Satisfaction with Various Aspects of Life (Horizontal axis)

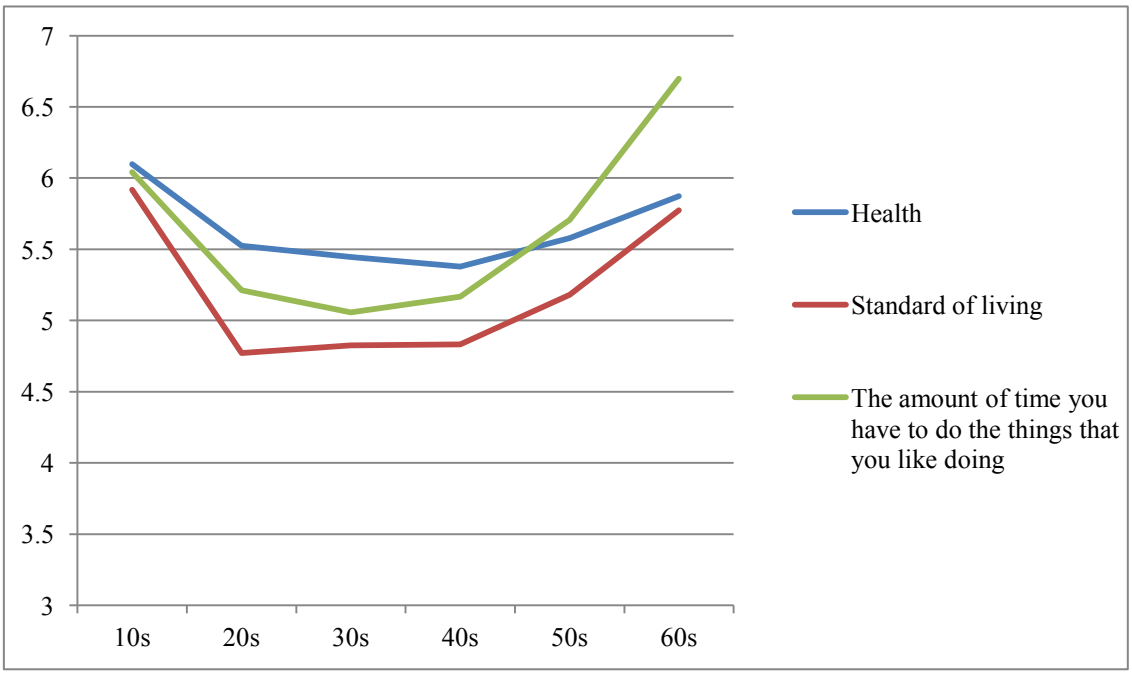


Based on factor analysis, aspects of life listed in this question were divided into three categories. The following three graphs show the relationship between age and each of these three categories. Satisfaction with "what you are achieving in life" "feeling part of your community" and "future security" were low, but they increased with age except for those in their 10s. On the other hand, the curves for "health" "standard of living" and "the amount of time you have to do the things that you like doing" were U-shaped with working generations at the bottom. The curves for "personal relationships" and "how safe you feel" were W-shaped.

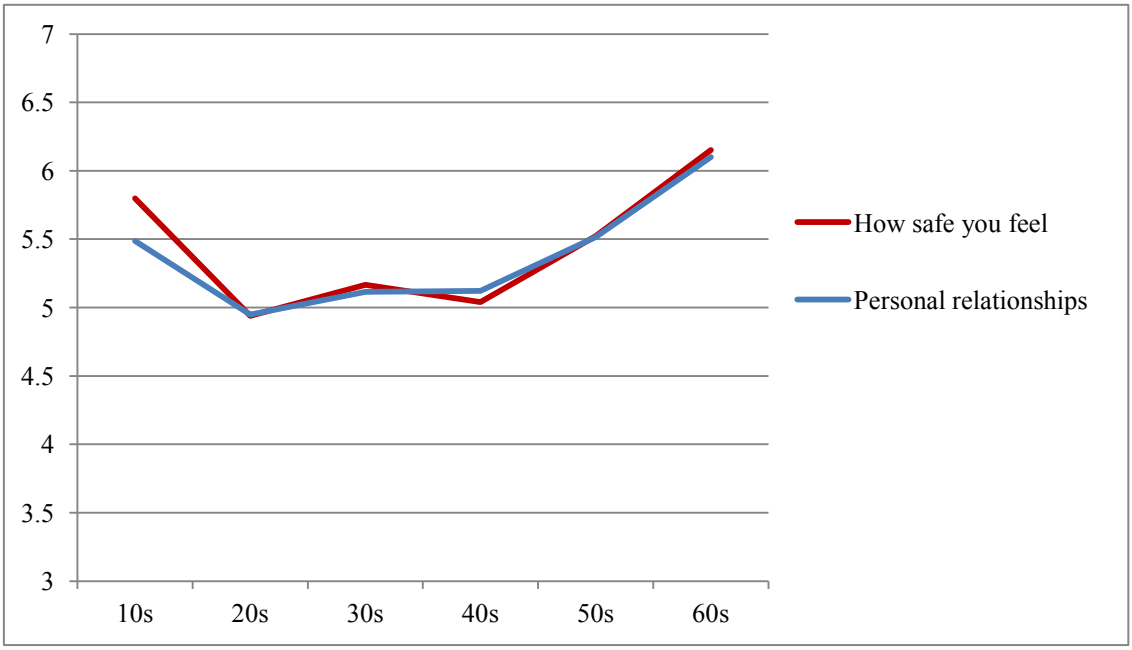
Graph23 ①Satisfaction with Various Aspects of Life By Age (What you are achieving in life, Feeling part of your community, Future security)



Graph23 ②Satisfaction with Various Aspects of Life By Age (Standard of living, Health, The amount of time you have to do the things that you like doing)



Graph23 ③Satisfaction with Various Aspects of Life By Age (How safe you feel, Personal relationships)



⑬Anxiety

When asked about the degree of anxiety over various issues which people are likely to feel anxious about, for example lonely death, safety, natural disasters, and living expenses for later in life, many respondents answered that they always feel anxious about living expenses for later in life, natural disasters, and radioactive pollution (Table 20①). Compared with the results from direct-visit and self-completion questionnaires, the level of anxiety was lower in the online survey, which is contrary to the results of level of current happiness (Table 20②).

Table20 ① Percentage of Respondents Who Feel Anxiety (%)

	Always feel anxious	Sometimes feel anxious	Neither anxious nor unconcerned	Normally do not feel anxiety	Do not feel anxious at all
Karoshi (death by overwork)	2.9	11.7	17.7	33.7	34.1
Lonely death	8.5	20.7	20.0	28.0	22.9
Unemployment	12.7	21.4	23.5	21.9	20.6
Food safety	8.7	28.7	30.8	22.7	9.1
Future for children	14.2	26.1	25.3	12.2	22.2
Safety	6.9	30.5	30.8	22.8	8.9
Natural disasters	23.2	40.5	21.1	11.0	4.2
Radioactive pollution	15.0	33.0	25.3	17.8	8.8
Living expenses for later in life (after retirement)	33.1	35.0	16.9	10.5	4.6

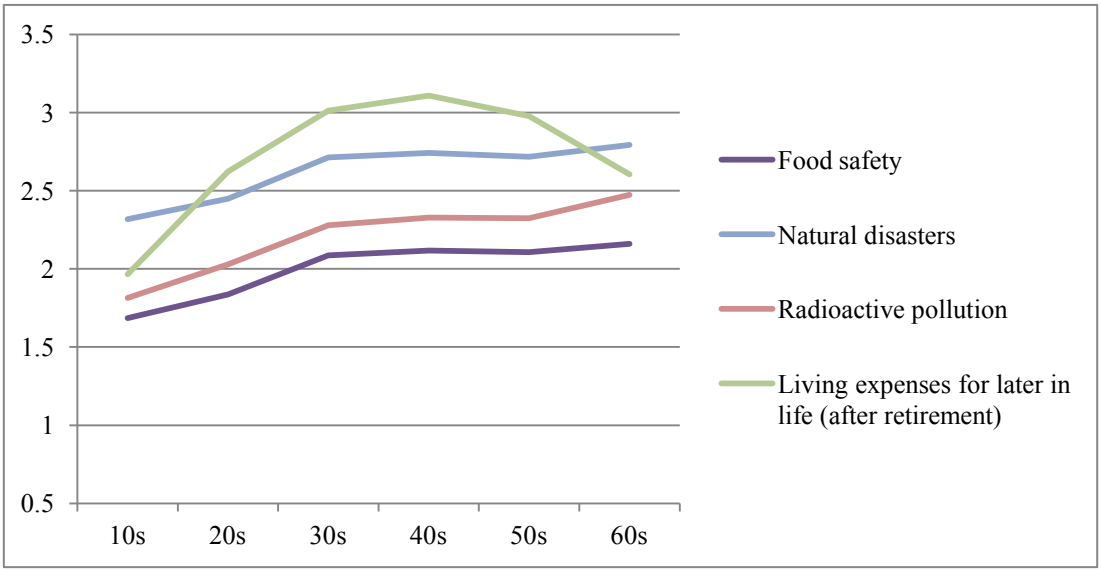
Table 20② Comparison with the Results from Direct-Visit and Self-Completion Questionnaires (%)

	Online		Direct-visit and self-completion		Gap	
	Feel anxious	Do not feel anxious	Feel anxious	Do not feel anxious	Feel anxious	Do not feel anxious
Karoshi (death by overwork)	14.5	67.8	23.4	52.6	-8.8	15.2
Lonely death	29.1	50.9	30.8	46.9	-1.6	4.0
Unemployment	34.1	42.4	34.7	41.2	-0.6	1.2
Food safety	37.4	31.8	47.0	28.9	-9.6	2.9
Future for children	40.3	34.4	52.6	22.0	-12.3	12.4
Safety	37.5	31.7	40.2	30.3	-2.7	1.5
Natural disasters	63.7	15.2	68.9	14.6	-5.2	0.5
Radioactive pollution	48.0	26.7	53.3	26.4	-5.2	0.3
Living expenses for later in life (after retirement)	68.1	15.0	72.3	13.4	-4.2	1.6

To examine the age difference in anxiety, indexes of anxiety were constructed for each question as follows: “do not feel anxious at all” =0, “normally do not feel anxious” =1, “neither anxious nor unconcerned”=2, “sometimes feel anxious”=3, and “always feel anxious”=4. Graph 24 illustrates the average scores of each index of anxiety by age. Anxiety over living expenses for later in life, which had the highest average score, peaked for those in their 40s. Anxiety over natural disasters, radioactive pollution, food safety, future for children, and safety increased with age.

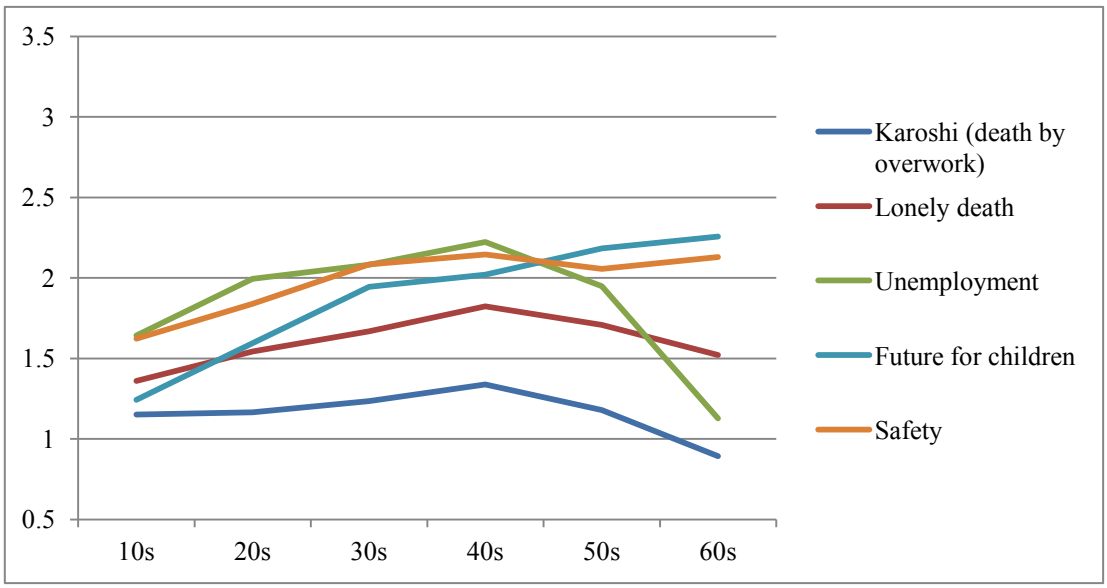
Graph24 ①Index of Anxiety By Age

(Four highest-scored items: Living expenses for later in life (after retirement) etc.)



Graph24 ②Index of Anxiety By Age

(Five lowest-scored items: Safety etc.)



In this survey, 698 respondents answered that they have received a disaster victim certificate or that they are currently taking refuge. Those who answered yes to at least one of these questions are classified here as victims of the Great East Japan Earthquake, in order to determine if there is a difference in anxiety scores between victims and non-victims. As a result, the differences in scores for radioactive pollution, natural disasters, future for children, and food safety were significant based on t-test, which implies that victims feel more anxious over these issues[4].

Table21 Differences in Anxiety between Victims and Non-Victims

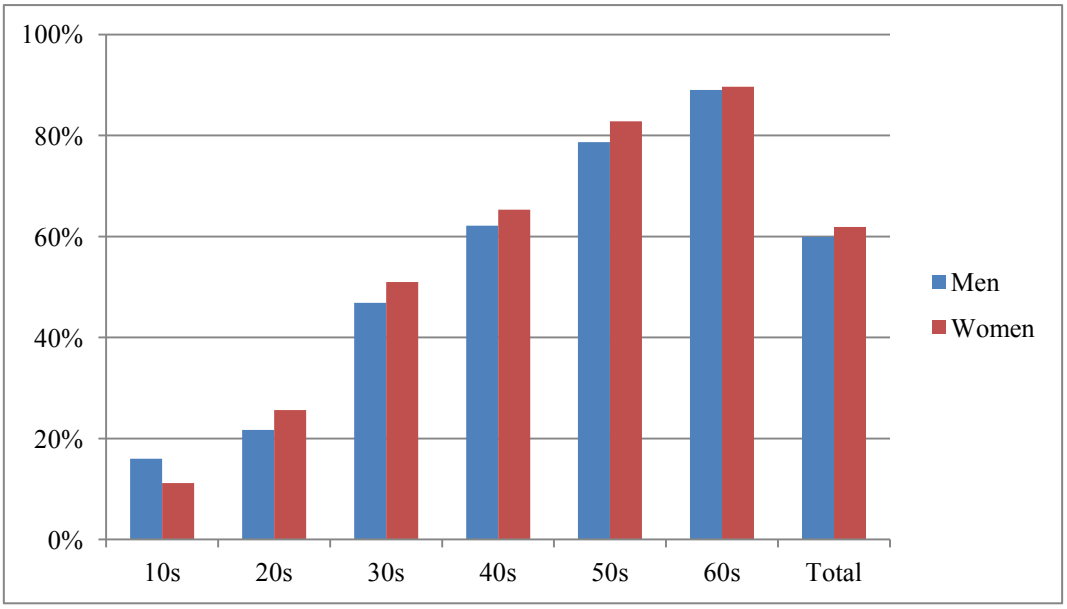
	Victims	Non-victims	Difference	Statistical Significance
Karoshi (death by overwork)	1.22	1.15	0.07	
Lonely death	1.56	1.64	-0.08	
Unemployment	1.86	1.84	0.02	
Food safety	2.18	2.04	0.14	Significant at 1% significance level
Future for children	2.16	1.97	0.19	Significant at 1% significance level
Safety	2.00	2.04	-0.04	
Natural disasters	2.93	2.66	0.27	Significant at 1% significance level
Radioactive pollution	2.76	2.24	0.52	Significant at 1% significance level
Living expenses for later in life (after retirement)	2.89	2.81	0.07	
Total	698	9,771		

[4] The differences in average scores for level of current happiness, perceived level of happiness among other family members, desired level of happiness, expected level of happiness in the future, life satisfaction, affects were not statistically significant based on t-test.

⑭Parenting experiences

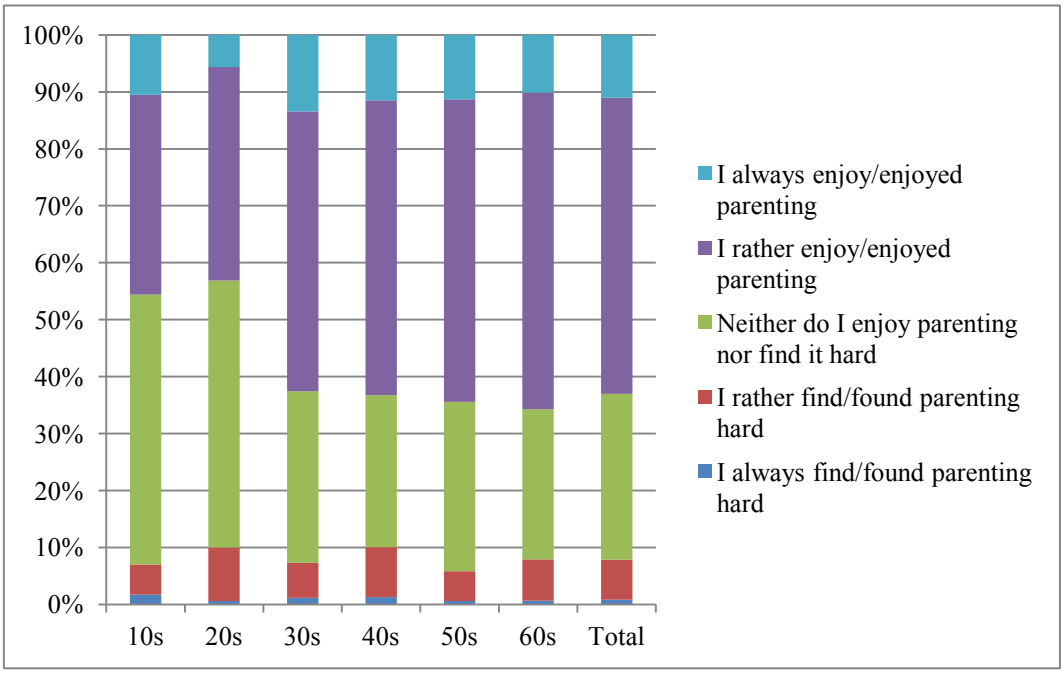
When asked about experiences in parenting, approximately 60% of respondents have experience in parenting. The percentage of this population increased with age. Among those who have experience in parenting, more than half answered that they enjoy/enjoyed parenting while 6% responded that they find/found parenting hard. By sex and age (Graph 25), many respondents in their 10s and 20s answered that they find/found parenting hard or that they neither enjoy parenting nor find it hard. Satisfaction with parenting was closely correlated to the level of current happiness. The average score for the level of current happiness among respondents who always enjoy/enjoyed parenting was above 7 while the average score among those who always find/found parenting hard was 3, which is very low (Graph 27). Indexes of parenting experiences were constructed as follows: "I always find/found parenting hard"=1, "I rather find/found parenting hard"=2, "Neither do I enjoy parenting nor find it hard"=3, "I rather enjoy/enjoyed parenting"=4, and "I always enjoy/enjoyed parenting"=5. The correlation coefficient between parenting experiences and the level of current happiness was significant at 0.32 (with a sample size of 6,368).

Graph25 Percentages of Respondents Who Have Experience in Parenting By Sex And Age

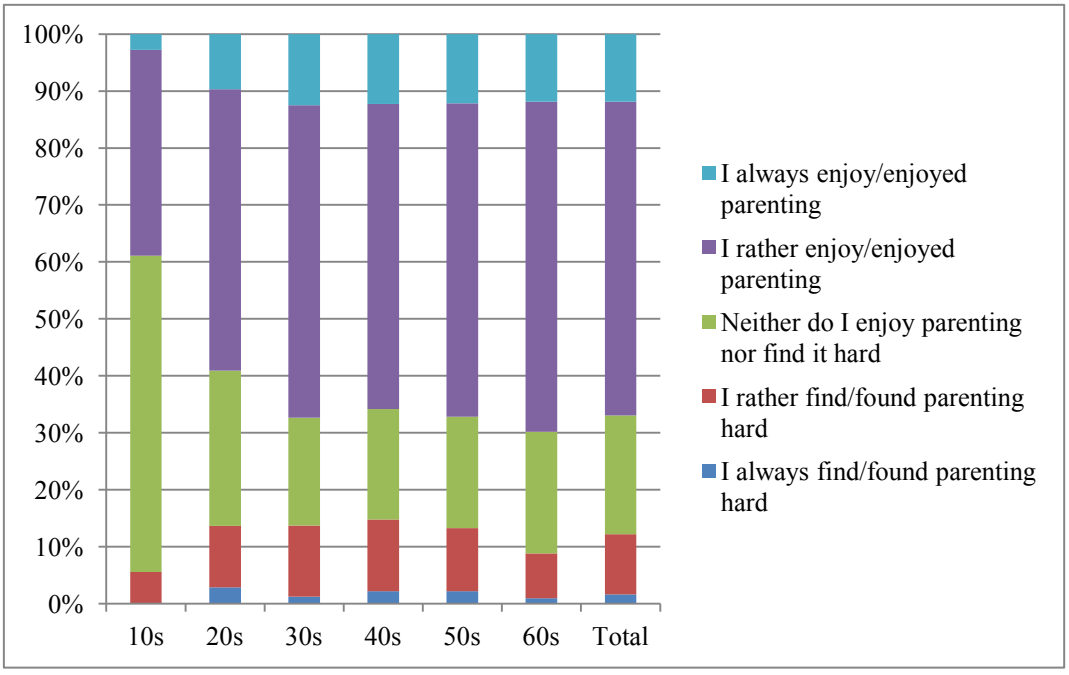


Graph26 Parenting Experiences By Sex and Age

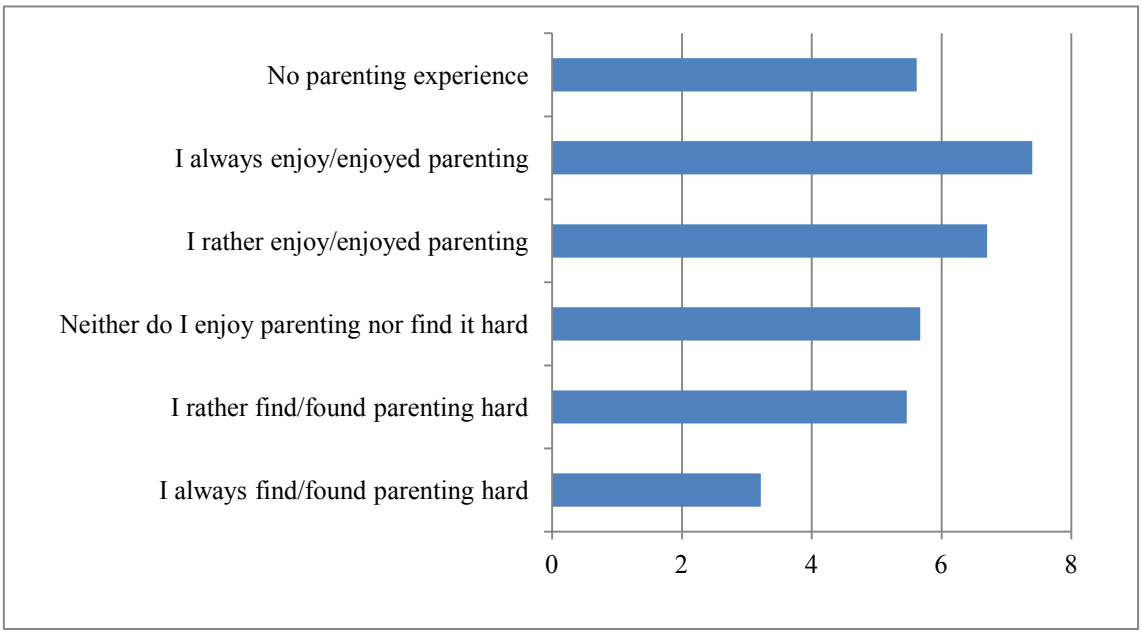
①Men



②Women



Graph27 Satisfaction with Parenting and Level of Current Happiness



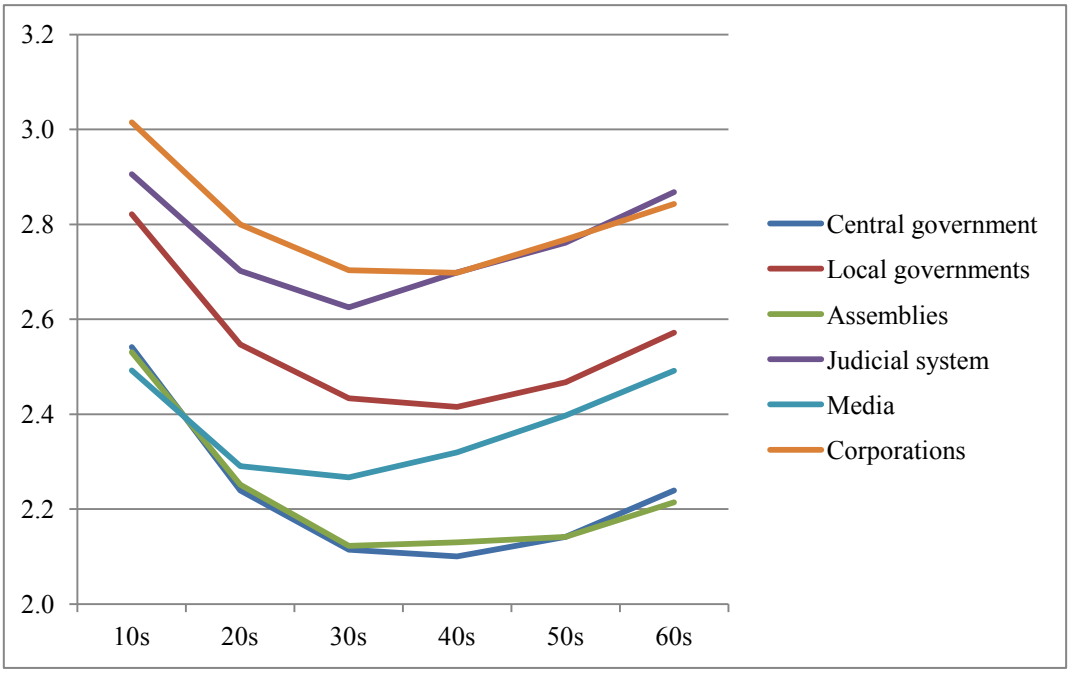
⑮Trust in institutions

When asked their degree of trust in institutions such as central and local governments, more than half of the respondents answered that they do not believe in the central government, assemblies, and media (Table 22). To examine age differences, indexes of trust in institutions were constructed as follows: “Cannot be trusted at all”=1, “cannot very be trusted”=2, “neither can nor cannot be trusted”=3, “can be trusted somewhat”=4, and “can be trusted”=5. Graph 28 illustrates indexes of trust in institutions by age, and the curve is U-shaped with those in their 30s and 40s at the bottom. When contrasting the level of current happiness with the scores for trust in institutions, results suggest that the level of current happiness is high among those who strongly trust in institutions (Graph 29). The correlation coefficients between the level of current happiness and trust in institutions were all significant at the 1% significance level: 0.1488 for central government, 0.1848 for local governments, 0.1436 for assemblies, 0.1978 for judicial system, 0.1268 for media, and 0.2081 for corporations.

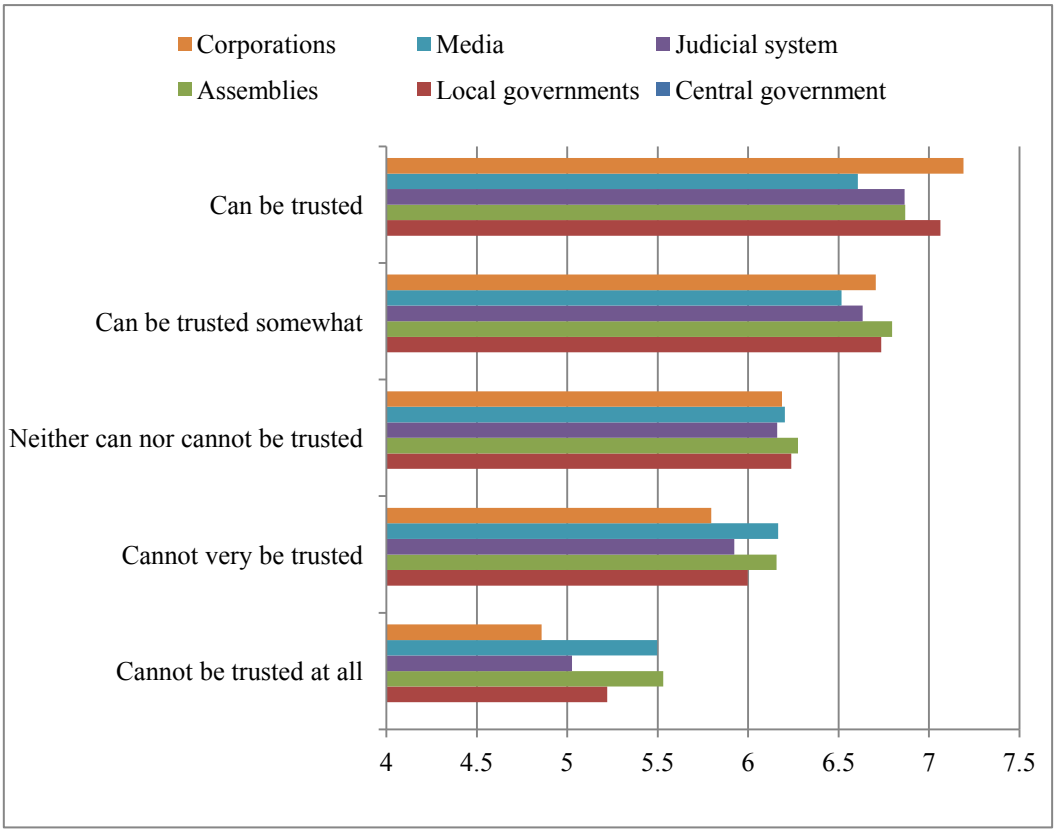
Table22 Trust in Institutions (%)

	Cannot be trusted at all	Cannot very be trusted	Neither can nor cannot be trusted	Can be trusted somewhat	Can be trusted	Cannot be trusted	Can be trusted
Central government	26.1	36.9	29.5	7.1	0.4	63.0	7.5
Local governments	14.9	33.9	37.5	13.1	0.6	48.8	13.7
Assemblies	24.8	37.1	32.7	5.1	0.4	61.9	5.4
Judicial system	11.8	25.6	40.4	20.6	1.6	37.4	22.2
Media	21.3	31.8	36.3	10.1	0.5	53.0	10.7
Corporations	8.6	22.8	51.6	16.3	0.8	31.4	17.1

Graph28 Trust in Institutions By Age



Graph29 Trust in Institutions and Level of Current Happiness



⑯Trust in society (social trust)

When asked their degree of social trust, more respondents disagreed than agreed with the statement “almost everyone is basically honest” (Table 23). On the other hand, more respondents agreed than disagreed with the statement “almost everyone is basically good-natured and kind.” More than half of the respondents agreed with the statement “I see myself as one who tends to trust people” and the statement “most people trust others if the others trust them.”

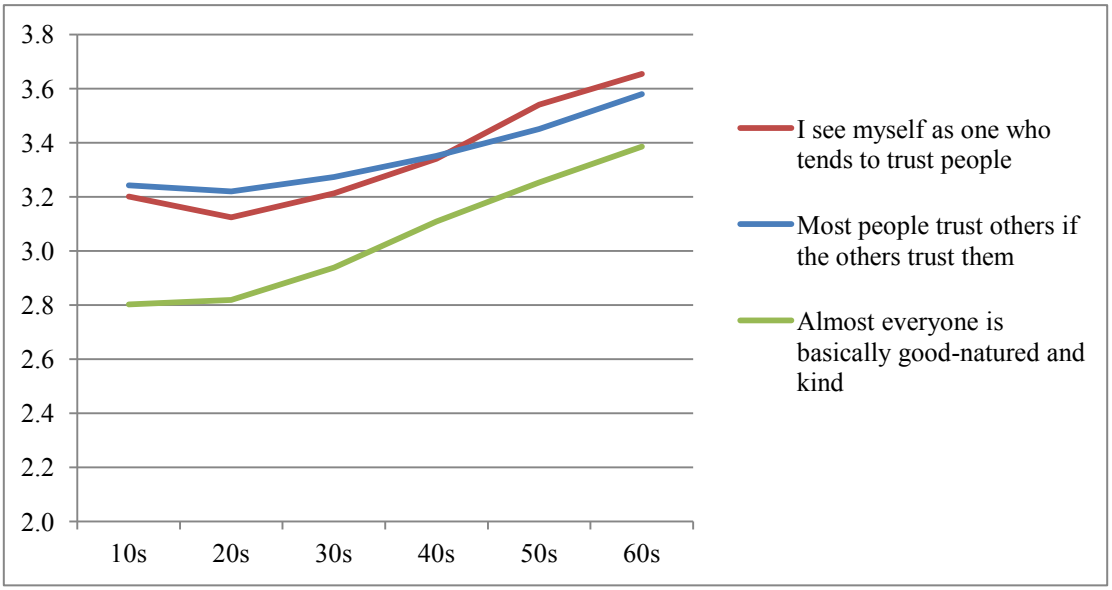
Table23 Social Trust

	Strongly disagree	Normally disagree	Neither agree nor disagree	Normally agree	Strongly agree	Agree	Disagree
Almost everyone is basically honest	10.0	25.2	33.7	29.9	1.2	35.2	31.1
I see myself as one who tends to trust people	4.6	12.8	28.5	48.2	6.0	17.3	54.2
Almost everyone is basically good-natured and kind	6.4	17.4	37.5	36.9	1.8	23.8	38.7
Almost everyone trust in others	6.5	22.8	43.9	25.8	1.1	29.3	26.9
Almost everyone can be trusted	10.2	25.0	41.7	22.0	1.0	35.2	23.1
Most people trust others if the others trust them	4.2	11.1	33.1	45.8	5.8	15.3	51.6
There are many hypocrites in society	2.3	15.0	49.3	24.7	8.8	17.3	33.5

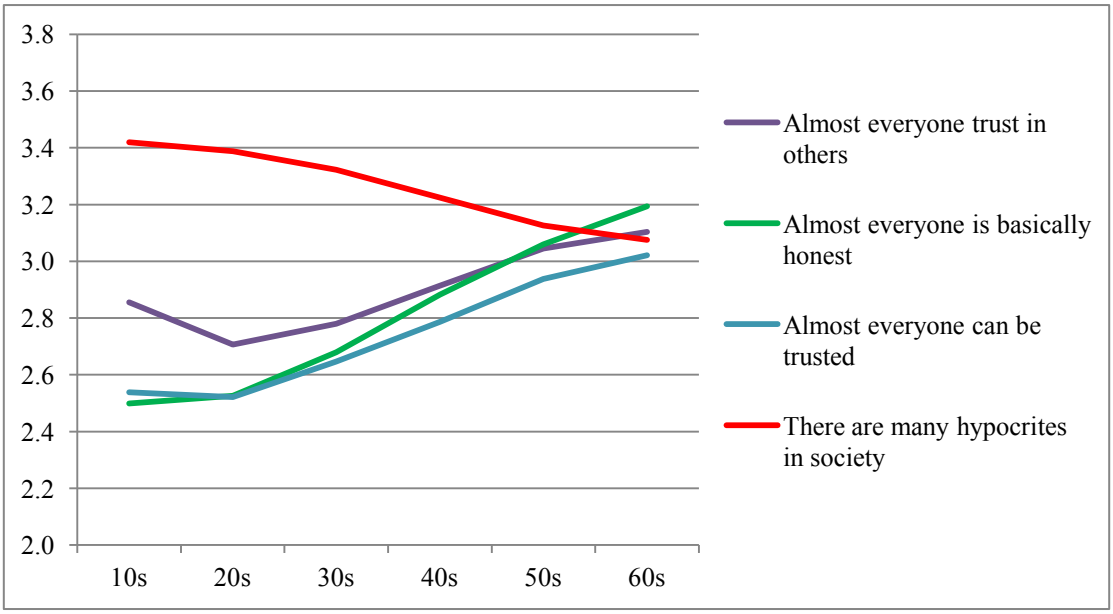
To examine age differences, indexes of social trust were constructed as follows: “Strongly disagree”=1, “normally disagree”=2, “neither agree nor disagree”=3, “normally agree”=4, and “strongly agree”=5. It indicates that social trust generally increases with age, except the negative question “there are many hypocrites in society.”

Graph30 Index of Social Trust By Age

①Three highest-scored items



②Four lowest-scored items



When looking at the level of current happiness contrasted with the degree of social trust, Graph 31 indicates that social trust is correlated to the level of current happiness, except when it comes to the statement "there are many hypocrites in society." The correlation coefficients between each question about social trust and the level of current happiness were all significant (at the 1% significance level) and ranged from 0.23 to 0.27, except for the statement "there are many hypocrites in society." The correlation coefficient between this question and the level of current happiness was -0.15.

Graph31 Social Trust and Level of Current Happiness