INTERVIEW STUDY OF HUSBAND/WIFE PAIRS

REPORT B

THE VALIDITY OF PROXY RESPONSES

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EXECUTIVE SUMMARY

In a representative survey conducted in Britain in 1997, 397 married couples were interviewed at home. Information was collected separately from the wife and husband concerning demographic factors, smoking habits, ETS exposure, lifestyle and personality characteristics and health status. Information was also collected from the wife and husband concerning their spouse's smoking habits, ETS exposure and lifestyle characteristics.

In our first report (April 1998), attention was restricted to the information collected relating to the subjects themselves. The main focus of attention was whether health status was associated with incompatibility between husband and wife in respect of a variety of the risk factors studied. However, information was also presented on the prevalence of the risk factors studied and the association between the self-reported prevalence in the husband and wife.

The present report considers the information collected by the subjects about their spouses. The main objective was to investigate the validity of proxy (surrogate) responses by comparing smoking habits, ETS exposure and lifestyle characteristics as reported by the subject and by the spouse. For each of the variables studied the association between the responses reported by the subject and proxy was estimated using one of three indices; the Kappa statistic (used for 0/1 variables), the Weighted Kappa statistic (used for graded variables) or the Intraclass Correlation Coefficient (used for continuous or semi-continuous variables). For each index a value of 1 indicates perfect correlation between the responses of the husband and wife, while a value of 0 indicates no association. The extent of the association was classified in five categories; very good agreement (index $\geq$ 0.90 in both sexes), good agreement ($\geq$0.80 in both sexes, but not $\geq$0.90 in both sexes), average agreement (not in other four categories), poor agreement ($\leq$0.55 in both sexes, but not $\leq$0.45 in both), or very poor agreement ($\leq$0.45 in both sexes). Agreement tended to be more likely to be good or very good for questions concerning current, common and well-defined activities. It tended to be poor or very poor for questions relating to events in the past, especially where the proxy respondent might never have known the true facts (e.g. age of starting to smoke), to less common activities, to questions where one could not expect a precise answer (e.g. frequencies of consumption of many foods) or to questions where the answer is to some extent subjective (e.g. healthiness of diet). Table 11.1 of the report lists all those variables showing very good, good, poor or very poor agreement.

For each of the variables studied the statistical significance of the average difference in response reported by the subject and spouse was estimated using the McNemar test (0/1 variables), the Wilcoxon signed ranks test (graded variables) or the paired t-test (continuous or semi-continuous variables). Significant differences, indicative of bias, are summarized in Table 11.2. They could broadly be categorized into four classes:

1. Significant difference between proxy and subject response in both sexes in same direction. Compared to the subject's own response, the proxy was more likely to claim the subject was the sole/joint chief income earner, likely to report the subject had less "risky jobs" (i.e. involving potential exposure to lung carcinogens), and report the subject was of lower weight for height.

2. Significant difference between proxy and subject response in both sexes in opposite direction (i.e. difference in reporting by the two sexes). Compared to the response by the husband, the wife reported a higher frequency of biscuit and meat eating and a less healthy diet.

3. Significant difference between husband and wife in their reports on the wife's habits (but not in their reports on the husband's habits). Compared to the wife's self-report, the husband reported she had a lower frequency of fruit, vegetable and salad consumption and a higher frequency of consumption of chips, sausages and jam/honey/marmalade (despite claiming she had a more healthy diet). The husband also reported she had a lower frequency of beer drinking and a higher frequency of sherry drinking, and that she was taller and weighed less.

4. Significant difference between husband and wife in their reports on the husband's habits (but not in their reports on the wife's habits). Compared to the husband's self-report, the wife reported less often that he worked in various specific risky jobs, smoked cigarettes regularly, smoked pipes and cigars or was exposed to ETS.

A secondary objective was to study whether the extent of association between subject and proxy and/or the average difference in response varied significantly according to level of various covariates. The list of covariates included age, social class, employment status, meals taken together, apartness score, healthiness of diet, ever smoked cigarettes, alcohol status, ought to cut down on alcohol, neuroticism, extroversion, general health, limitation of activities, number of health problems in last month, number of illnesses ever and presence of a cardiorespiratory symptom. This involved a very large number of analyses (each combination of each variable and each covariate studied for each sex separately). In most of the analyses either no significant variations were seen in the extent of association or in the average difference in response, or significant variations were seen in one sex only. There were relatively few cases where significant and similar variations were seen in both sexes. While these cases are referred to in the main body of the report, no clear or generalizable patterns have emerged from the work done so far. While these results do not clearly show what factors affect the validity of proxy response, they do tend to suggest that analyses based on simplistic assumptions that errors in proxy responses are random may lead to misleading conclusions.

Overall, it can be concluded that the study has provided a useful database indicating the likely magnitude of proxy error in a range of common lifestyle risk factors.

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1. Introduction and objectives

A number of ETS/lung cancer studies have relied to a greater or lesser extent on data supplied by proxy (surrogate) respondents, often the spouse. In some of these studies (including Fontham et al (1994), Brownson et al (1992), Stockwell et al (1992), Humble et al (1987) and Correa et al (1983)), the proportion of responses from proxies has been much greater for cases and controls.

The recent report of the European Working Group (1996) pointed out that, for both US and non-US studies, relative risks tended to be higher in studies with at least some proxies, the report stating that "it is clear that surrogate bias has the potential for seriously biasing results and the available evidence tends to support the elevation of surrogate results. More research is required to clarify this issue." LeVois and Switzer (1998), and also Barry (1997), have shown by theoretical calculations that quite a modest degree of differential recall bias could explain the dose-response relationship observed by Fontham et al (1994) between lung cancer and extent of reported ETS exposure. However, the actual evidence that differential recall bias exists in relation to smoking habits and ETS exposure is very limited indeed.

The study analysed here, conducted in May and June 1997 in the UK, involved some 400 married couples interviewed at home. Information was collected separately from each of the husband and the wife on demographic factors, smoking habits, ETS exposure, "risk factors" (i.e. factors commonly considered as potential confounders in studies relating ETS to health), psychological variables and health status (respiratory and cardiovascular symptoms, history of various diseases and perception of overall health). Data on smoking habits, ETS exposure and "risk factors" were also collected from both husband and wife relevant to their spouse.

In a previous report (Report A, April 1998), attention was restricted to the information collected relating to the subjects themselves. Attention was focussed on whether health status was associated with incompatibility between husband and wife in respect of a variety of the risk factors studied. However, information was also presented

on the prevalence of the risk factors studied and the association between the self-reported prevalence in the husband and wife.

The present report (Report B) considers also the information collected by the subjects about their spouses. The main objective is to investigate the validity of proxy responses by comparing smoking habits, ETS exposure and lifestyle characteristics as reported by the subject and by the spouse. A secondary objective is to study whether any differences seen between responses reported by the subject and spouse vary according to health status or other relevant variables.

Though our analyses do not provide direct evidence relating to the validity of proxy reports in patients with lung cancer, they do provide valuable information on the magnitude of the difference between responses reported by subjects and their spouses, and insight into whether such differences are random or are associated with health status or other variables.

2. Study details

The survey, conducted by Research Services Ltd (RSL), aimed to interview a sample of 400 married couples throughout Great Britain, representative in terms of region and social grade, with at least one of the couples aged between 45 and 74 years. The interviewer made an appointment when both the husband and wife would be present. Each respondent was asked to fill in a self-completion questionnaire without reference to their spouse. The interviewer ensured that there was no collaboration between the spouses and rejected any interviews where this was not complied with. The interviewer was able to assist with the understanding of any specific questions if asked.

Of 1354 apparently eligible couples approached, successful interviews satisfying the study requirements were conducted with 397. Report A discusses response rates in more detail, shows the age distribution of the couples and presents evidence that the quotas with regard to region and social grade were adequately fulfilled.

The questionnaires used for husband and for wife are available in Report A. They included 10 sections; A - Personal details, B - General health, C - Height and weight, D - Food, E - Smoking, F - ETS exposure, G - Employment, H - Education, K - Alcohol and L - Personality. For sections A, B and L questions related only to the subjects whereas for other sections questions related to the subject and spouse.

3. Quantifying the extent of agreement between the subject and spouse

3.1 Introduction

In this section, we describe the methods used to quantify the extent of agreement between the subject (self-report) and spouse (proxy report), the first main objective of this report. Data for husbands and wives are analysed separately. The same methods are used for the few questions asked of both subjects about the household (e.g. who is the chief income earner, visitors smoking in the home). These analyses are presented with one subject (usually the wife) arbitrarily assigned as "self". We consider separately methods for 0/1 (presence/absence) variables, graded variables, and continuous or semi-continuous variables.

3.2 Statistics for 0/1 variables

The relevant data can be displayed as a 2x2 table giving the number of pairs where both subject and spouse agree the condition studied is present (a), the number where only the spouse considers the condition is present (b), the number where only the subject considers the condition is present (c), and the number where both agree it is absent (d).

		Subject (self)		
		Condition present	Condition absent	Total
Spouse (Proxy)	Condition Present	a	b	a+b
	Condition Absent	c	d	c+d
	Total	a+c	b+d	N

Based on these data, our statistical output presents the following summary statistics:

(a) N — The number of pairs with data available for subject and spouse

(b) Self % — The % frequency of the condition according to the subject = 100 (a+c)/N

(c) Proxy % — The % frequency of the condition according to the spouse = 100 (a+b)/N

(d) Agree % — the % of pairs who agree = 100 (a+d)/N

(e) FPos % The % of pairs who are false positives, taking the subject report as correct = 100 b/N

(f) FNeg % The % of pairs who are false negatives, taking the subject report as correct = 100 c/N

(g) McNP The probability values (coded) resulting from a McNemar test of the null hypothesis that the proportion of false positives is equal to the proportion of false negatives

(h) Kappa The Kappa statistic measuring the extent of agreement between the subject and spouse. $K = (P_O-P_E)/(1-P_E)$ where P_O is the observed proportion of agreement and P_E is the expected proportion of agreement assuming there is no association. Here $P_O = (a+d)/N$ and $P_E = (a+b)(a+c)/N + (c+d)(b+d)/N$

(i) KapSE The standard error of the Kappa statistic (see Fleiss et al (1969)).

(j) Kap P The probability value (coded) resulting from a test of the null hypothesis that K = 0 (see Fleiss et al (1969)).

Points to note are as follows:

(i) The difference between the proxy and self % can be estimated by Proxy % - Self % or by FPos % - FNeg %.

(ii) Sensitivity - the proportion of those with the condition according to the subject who are classified as such by the spouse = a/(a+c) = 1 - FNeg%/Self %

(iii) Specificity - the proportion of those without the condition according to the subject who are classified as such by the spouse = d/(b+d) = 1 - FPos %/(100 - Self %)

(iv) Kap P is a test of whether the two responses are associated, while McNP is a test of whether they differ on average.

(v) Probability values are coded as *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, (*) $p < 0.1$, NS $p \geq 0.1$.

(vi) Kappa was constructed to be analogous to a correlation coefficient, with a value of 1 indicating perfect agreement, and higher values indicating better agreement than lower values. Some properties of the Kappa statistic should be noted, however: (a) Kappa can only possibly equal 1 if Self % = Proxy %; (b) Kappa

cannot possibly be as low as -1; (c) Kappa = 0 indicates that the spouse and subject report are independent; and (d) for given values of FPos % and FNeg % the value of Kappa depends on the average frequency of the condition.

(vii) If either all subjects and all proxies, or no subjects and no proxies report the condition, no analysis is possible. If no subjects or no proxies report the condition, then the standard error of Kappa is undefined and the standard error and probability value are shown as X.

3.3 Statistics for graded variables

The relevant data can be displayed as an n x n table showing the joint distribution of the subject and spouse responses.

		Subject				
Spouse	Level	Level 1	2	. . .	n	Total
	1	X_{11}	X_{21}		X_{n1}	V_1
	2	X_{12}	X_{22}		X_{n2}	V_2
	.					
	.					
	.					
	n	X_{1n}	X_{2n}		X_{nn}	V_n
	Total	U_1	U_2		U_n	N

Here X_{ij} is the number of pairs where the subject reported level i and the spouse reported level j, U_i is the total number of pairs where the subject reported level i and V_j is the total number where the spouse reported level j. It is assumed that the data are measured on a monotonically increasing (or decreasing) scale.

Based on these data our statistical output presents the following summary statistics:

(a) N The number of pairs with data available for subject and spouse.

(b) Self % The % frequency of the condition occurring at or above some defined cut-point (c) in the subject = 100 (U_c+....U_n)

(c) Proxy % The % frequency of the condition occurring at or above the same cut-point in the spouse = 100 (V_c+....V_n)

(d) Agree % The % of pairs who agree exactly = $100\sum_{i=1}^{n} X_{ii}/N$

(e) High % The % of pairs where the spouse gives a higher response than the subject = $100\sum_{i=1}^{n}\sum_{j=i+1}^{n} X_{ij}/N$

(f) Low % The % of pairs where the spouse gives a lower response than the subject = 100 - Agree % - High %.

(g) WSRP The probability value (coded) resulting from a Wilcoxon signed ranks test of the difference between the responses for spouse and subject.

(h) KappaW The weighted Kappa statistic measuring the extent of agreement between the subject and spouse. $K_W = (P_{OW}-P_{EW})/(1-P_{EW})$where P_{OW} is the observed weighted proportion of agreement $P_{OW} = \sum_{i=1}^{n}\sum_{j=1}^{n} W_{ij}X_{ij}/N$and P_{EW} is the expected weighted proportion of agreement $P_{EW} = \sum_{i=1}^{n}\sum_{j=1}^{n} W_{ij}V_iU_j/N^2$and the weights represent seriousness of disagreement with $0 \leq W_{ij} \leq 1$ and $W_{ij} = W_{ji}$. In our analyses we set $W_{ij} = 1 - (i-j)^2 / (n-1)^2$.

(i) KapWSE The standard error of the weighted Kappa statistic (see Fleiss et al (1969)).

(j) KapWP The probability value (coded) resulting from a test of the null hypothesis that $K_w = 0$ (see Fleiss et al (1969)).

Points to note are as follows:

(i) KapWP is a test of whether the two responses are associated while WSRP is a test of whether they differ on average.

(ii) Probability values are coded as defined in section 3.2 (v).

(iii) Weighted Kappa is also in some ways similar to a correlation coefficient.

3.4 Statistics for semi-continuous or continuous variables

Here the relevant data can be presented as a scatter plot with the subject response on the x-axis and the spouse response on the y-axis, each individual point corresponding to a husband/wife pair.

Our statistical output presents the following summary statistics:

(a)	N	The number of pairs with data available for subject and spouse.
(b)	Mean self	The mean response of the subject.
(c)	Mean proxy	The mean response of the spouse.
(d)	Mean diff	The mean difference = mean proxy - mean self
(e)	SDev diff	The standard deviation of the mean difference.
(f)	PTP	The probability value (coded) resulting from a paired t-test.
(g)	Kappa W	The weighted Kappa statistic as described in section 3.3. This is included to demonstrate that values are similar to the following statistic, ICC
(h)	ICC	The intraclass correlation coefficient = (MSP-MSE)/(MSP+MSE) where MSP is the mean square between pairs and MSE is the mean square of the within-pair difference, based on an analysis of variance of the 2N observations.
(i)	ICCSE	The standard error of the intraclass correlation coefficient (see Donner and Wells, 1986).
(j)	ICCP	The probability value (coded) resulting from a test of the null hypothesis that ICC = 0, equivalent to the usual analysis of variance F test.

Points to note are as follows:

(i) ICCP is a test of whether the two responses are associated, while PTP is a test of whether they differ on average.

(ii) Probability values are defined as in section 3.2 (v).

(iii) The intraclass correlation coefficient cannot exceed 1 (perfect agreement between husband and wife) with a value of 0 indicating no association.

(iv) The statistical tests depend on an underlying assumption of normality. If this is in doubt, the methods in section 3.3 can be used.

3.5 Presenting results of the analyses in this report

The main results of the statistical analyses are presented in sections 5 (smoking), 6 (ETS), 7 (diet), 8 (occupation, employment, social class), 9 (alcohol) and 10 (other risk

factors). Results relating to agreement between husband and wife are typically presented in the first sub-section, e.g. section 5.1 for smoking, with the actual analyses being shown in a table numbered the same as the section number, e.g. Table 5.1 for smoking. Exceptionally, for ETS exposure results are presented in two sub-sections, the first (6.1) relating to analyses carried out on the whole population and the second (6.2) relating to analyses carried out on never smokers (according to self-report). The Tables present the statistics described in sections 3.2-3.4 above in full for each variable analysed, considering 0/1 variables first, then graded variables, then continuous variables.

4. Looking for variations in agreement by level of a covariate

4.1 Introduction

We now describe the methods used to test whether the extent of agreement between the subject and spouse varies by a covariate, such as the age or health status of the subject or the spouse. In all the analyses, the population studied is divided into a small number (n) of levels by the covariate in question, and the full statistical output consists of:

(a) summary statistics for each level, and overall, using the methods as described in section 3, and

(b) results of between-level comparisons of

  (i) the response reported by the subject,

  (ii) the difference in response reported by the spouse and the subject, and

  (iii) the association of the responses reported by the spouse and the subject.

Comparisons are made between each level of the covariate and the first level (two-group comparisons) and between all levels simultaneously (n-group comparison)

The methods used for comparisons between levels of the covariate are described in the sections that follow:

4.2 Between-level comparisons for 0/1 variables

(a)	ChiP (comparison of response)	The responses according to the subject are compared over levels of the covariate using a chisquared test.
(b)	Chi2P (comparison of differences in response)	The relative frequency of false positives and false negatives are compared over levels of the covariate using a chisquared test. This tests whether the difference in responses between spouse and subject varies by level.

(c)	Kap2P (comparison of associations)	The Kappa statistics are compared using methods described in Fleiss (1981). This tests whether the associations between spouse and subject vary by level.

4.3 Between-level comparisons for graded variables

(a)	KWP (comparison of responses)	The responses according to the subject are compared over levels of the covariate using the Kruskal-Wallis non-parametric rank test.
(b)	KW2P (comparison of differences in response)	The differences in response between spouse and subject are compared over levels of the covariate using the Kruskal-Wallis non-parametric rank test.
(c)	KapW2P (comparison of associations)	The weighted Kappa statistics are compared over levels of the covariate using methods described in Fleiss (1981).

4.4 Between-level comparisons for semi-continuous or continuous variables

(a)	AVP (comparison of responses)	The responses according to the subject are compared over levels of the covariate using one-way analysis of variance.
(b)	AV2P (comparison of differences in response)	The differences in response between spouse and subject are compared over levels of the covariate using one-way analysis of variance.
(c)	ICC2P (comparison of associations)	The intraclass correlations are compared over levels of the covariate using methods described in Donner (1998).

Alternatively, the methods described in section 4.3 can be used.

For all the 9 statistics described in sections 4.2-4.4, the output are probability values, coded as +++, ---, *** $p<0.001$; ++, --, ** $p<0.01$; +, -, * $p<0.05$; (+), (-),

(*) $p<0.1$; and N.S. $p\geq 0.1$. Plus (minus) signs are used for pairwise comparisons to indicate the direction of the difference, while asterisks are used for overall between-group comparisons, which are non-directional. Where a test cannot be carried out, the probability is coded as NS3.

4.5. Covariates used

Nineteen covariates were chosen to investigate various potential sources of variability in the reliability of answers. These were: demographic variables; health variables; variables measuring how much time the couple spend together which might affect their level of knowledge about each other's habits (e.g. employment status, meals taken together); variables where the respondent's own habits might affect their opinion (e.g. smoking, alcohol); variables where the respondents were asked to make a judgement, possibly critical, (e.g. healthiness of diet, ought to cut down on alcohol).

More specifically, the covariates used were as follows:

(i) For the subject and the spouse separately, using the reports by the subject and by the spouse respectively:

Employment status	(Full time work, Part time work, Retired, Housekeeping [wives only], Other)
Ever smoked cigarettes regularly	(Yes, No)
Alcohol status	(Total abstainer/very occasional, Light, Moderate/heavy)

(ii) For the subject only, based on self report only:

Age	(<50, 50-59, 60+)
General health assessment	(Excellent, Good, Fair/poor)
Activities limited (due to illness/disability)	(Yes, No)
Number of ailments or conditions ever suffered from	(0, 1-2, 3+)*
Number of problems suffered from in the last month	(0, 1-2, 3-5, 6+)*
Any cardiorespiratory symptom	(Yes, No)

*See our first report for details on the types of ailments or conditions ever suffered from and the number of problems suffered from in the last month.

(iii) For the couple, based on report by either subject (depending on the specific analysis):

Social class	(AB, C1, C2, D)
Meals taken together weekdays	(0-1, 2, 3+)
Apartness**	(Yes/No)

(iv) For the subject only, based on self-report x spouse report (always 4 levels; neither, self only, spouse only, self and spouse):

Healthiness of diet	(Good/excellent, Poor/fair)
Ought to cut down alcohol	(Yes, No)

(v) For the couple, based on wife self-report x husband self-report (always 4 levels; neither, husband only, wife only, both):

Neuroticism	(10+, <10)
Extroversion	(13+, <13)

The distribution of subjects by the covariates is shown in Table 4 although individual analyses may be based on fewer subjects due to missing data or restriction of the analysis to some specific subgroup such as current or never smokers.

4.6 Presenting results of the analyses in this report

As noted in section 3.5, the main results of the statistical analyses are presented in sections, 5 to 10, relating to the main groups of risk factors in turn. Within each section the second sub-section usually relates to the results of the analyses looking for variations in agreement by levels of the covariates studied. Here two tables summarize the main significant results, the first (e.g. Table 5.2 for smoking) concerning significant variations in the extent of the association, the second (e.g. Table 5.3) concerning significant variations in difference in response. Points to note are as follows:

(i) The full statistical output, from which these tables were derived, is too extensive to present, but is available for inspection.

(ii) Results are not summarized comparing the responses according to the subject over levels of the covariate (ChiP, KWP and AVP). Not surprisingly, many significant variations were seen, but this evidence is not crucial to the objectives of this report.

**Less than half of free time or holidays or no meals taken with spouse.

(iii) For the results comparing the associations over level, the summary tables for the semi-continuous or continuous variables are based on analyses using the method of section 4.3 (with a few continuous variables regraded as 50 levels if necessary). Results (for both husband and wife) are only shown for a variable/covariate combination if the relevant statistic (Kap2P or KapW2P) is significant ($p<0.05$) in one or both sexes. The results shown are the association statistics (Kappa or weighted Kappa) for each covariate level and overall and the coded p value of the test comparing the associations over level.

(iv) For the results comparing the differences in response over level, results (for both husband and wife) are only shown for a variable/covariate combination if the relevant statistic (Chi2P, KW2P, AV2P) is significant ($p<0.05$) in one or both sexes. The results shown, by covariate level and overall, are the % false positives/% false negatives for 0/1 variables, % higher/% lower for graded variables and the mean difference for continuous variables, together with the coded p value of the test comparing the differences in response over level.

(v) Analyses are not presented for ETS exposure for the whole population, since ETS exposure for never smokers is of more relevance. Also analyses are not presented for childhood ETS exposure, with don't know answers coded as not exposed, as earlier analysis suggested these analyses were not meaningful. Analyses are also not presented for individual food frequencies, individual risky jobs and individual alcohol consumptions.

(vi) For the few questions asked of both subjects about the household, analyses are presented twice - firstly using the wife's report as "self" together with the wife's covariate values, and secondly using the husband's report as "self" together with his covariate values. (For the 3 covariate pairs based on subject and spouse separately, this leads to analyses being repeated in reverse.)

5. Smoking

5.1 Agreement between husband and wife

Table 5.1 gives agreement statistics for 13 smoking indices. 8 of these are 0/1 variables, 1 a graded variable and 4 continuous or semi-continuous variables.

Cigarette smoking status The table below shows the agreement between husband and wife with regard to the major 3 level category: never; ex; current.

Reported by spouse	Smoking by the wife: Reported by subject				Smoking by the husband: Reported by subject			
	Never	Ex	Current	Total	Never	Ex	Current	Total
Never	169	4	1	174	103	11	0	114
Ex	8	102	1	111	5	173	1	179
Current	1	5	96	102	0	2	93	95
Total	178	111	98	387	108	186	94	388

The Kappa statistics were high, 0.90 or greater, whether one considered the three level category (Table 5.1B), or the two other commonly used smoking statistics, current (vs non-current) or ever (vs never) (Table 5.1A). There was no significant tendency for the spouse to over or understate the subject's smoking. Severe disagreements (current vs never) were rare, with less severe disagreements more common. The most common disagreement was between ex and never smoking. One might have expected the subject to have reported ex smoking more commonly in this situation (the spouse perhaps not always having ever known whether the subject smoked in the distant past), but this was not consistently the situation. In fact, it was men who tended to report ex vs never smoking more often, both for themselves (11 vs 5) and for their spouse (8 vs 4), but this was not significant even when the data for smoking by both sexes were combined.

Number of cigarettes smoked Three indices of amount smoked were examined, whether the subject had ever smoked 20 or more cigarettes a day (Table 5.1A), most cigarettes smoked (analysis restricted to ever smokers) and current cigarettes smoked (restricted to current smokers) (Table 5.1C). Not surprisingly the association statistics were lower than

for cigarette smoking status, with Kappa in both sexes about 0.8 for ever regularly smoked 20+ cigarettes a day and ICC in the range 0.56-0.80 for the continuous variables. For smoking by the wife the average amount smoked was similar for subject and proxy report. For smoking by the husband, however, there was some evidence of lesser reporting by the wife. This was significant ($p<0.05$) for ever regularly smoked 20+ cigarettes a day and almost so ($p<0.1$) for most cigarettes smoked. Although the mean difference in amount smoked reported by spouse and subject was not that large, the standard deviation was much larger, being 10.6 cigs/day for most cigarettes smoked by the husband. This potential for possible large discrepancies between husband and wife is further illustrated in the table overleaf. Thus, for instance, for husbands who reported smoking 20 cigarettes, their wives' reports ranged from 10 to 60.

Timing of smoking Table 5.1 includes results for age started smoking (among ever cigarette smokers) (Table 5.1C), years since smoked cigarettes (among ex-smokers) (Table 5.1B) and smoked cigarettes regularly in last 10 years (Table 5.1A). While the Kappa statistic for smoked cigarettes regularly in last 10 years was quite high (0.93 wife, 0.95 husband), the ICC for age started smoking was relatively low (0.53 wife, 0.47 husband) consistent with data tending to be less reliable the longer ago they relate to and particularly for events generally occurring before the marriage. However, there was no significant difference between subject and spouse in average response for any of the three variables considered.

Pipe and cigar smoking As expected, very few women reported, or were reported by their spouse as, ever having regularly smoked pipes or cigars (Table 5.1A). Agreement was not very good (Kappa = 0.57) in the few cases where it was reported in women. For men, the association between subject and spouse reports was clearly lower for ever regular pipe and cigar smoking (Kappa = 0.72) than it was for ever regular cigarette smoking (Kappa = 0.98). Notably the wife significantly ($p<0.01$) under-reported her husband's pipe and cigar smoking.

	Most cigarettes smoked											
Smoked by the wife		Reported by subject										
	Reported by the spouse	1-9	10	11-19	20	21-29	30	31-39	40	50	60	80
	1-9	11	3	2	3							
	10	7	9	2	4							
	11-19		3	6	6		1					
	20		4	11	45	1	5		4		1	
	21-29				2		2					
	30		1	1	3	2	6		1			
	31-39							1				
	40						2		1			
	50								1		1	
	60								3			
Smoked by the husband												
	1-9	3	2	2								
	10	2	11	4	2				1	1		
	11-19		1	4	9		1					
	20		2	3	50	9	5	1	7	2	1	
	21-29			1	7	4	1		1			
	30			1	4	3	6		3	1		
	31-39				1							
	40						1	1	10		2	
	50								1	2		
	60				2		1		3		4	
	80								1			1

Any product Conclusions for the smoking of any product (cigarettes, pipes and cigars) (Table 5.1A) were very similar to those for cigarette smoking, with high Kappas (>0.90) and no significant bias between subject and spouse report.

Smoking indoors at home For current regular smokers of any product, questions were asked about smoking indoors (Table 5.1A). In both sexes over 90% of smokers reported, or were reported by their spouse, as smoking indoors. Disagreement rates were rather higher than for smoking at all, possibly because of a lack of clear definition of "indoors."

For all the smoking variables considered, the only two where there was a significant ($p<0.05$) difference on average between subject and spouse reports were that the wife was less likely to report ever pipe and cigar smoking ($p<0.01$) and ever heavy cigarette smoking ($p<0.05$) by the husband. However, for amount smoked, age starting to smoke and years since smoking, differences between responses reported by subject and spouse were frequently quite substantial (see standard deviations of differences in Table 5.1C).

5.2 Variation in extent of agreement between husband and wife by level of various covariates

Table 5.2 summarizes results where significant variation was seen by level of covariate in the extent of the association between self and proxy reports, while Table 5.3 summarizes results where significant variation was seen by level of covariate in the difference in response reported by the subject and the spouse.

Considering the results in Table 5.2 first, there was considerable evidence, for many of the covariates studied, of significant variation in the extent of the association between subject and spouse reports for amount and timing of smoking:

Age started smoking cigarettes regularly The association between subject and spouse reports varied significantly for at least one sex for 13 of the 19 covariates studied. However, for many of these covariates, the pattern of variation differed for the husband and wife, and/or did not show a clear trend over covariate level. For example, for social class, there was a near significant ($p<0.1$) pattern of stronger agreement for the wife's age of starting to smoke in lower rather than higher social classes, whereas for the husband, the difference between social classes was significant ($p<0.05$) but showed no clear trend, with the weakest agreement in the lowest social class. Some consistent relationships were seen, usually only significant in one sex, with association weaker in :

(i) older than in younger subjects;

(ii) in those whose spouses smoke;

(iii) in full-time workers and the retired than in others, significant in both sexes;

(iv) in those assessing health as good rather than either excellent or fair/poor.

Years since smoked (for ex smokers) The association between subject and spouse report varied significantly ($p<0.05$) by level of covariate for wives or husbands for 9 of the covariates studied, but only for one, number of illnesses ever, was this significant for both wives and husbands. However, associations were consistently weaker than average in social class D, in those with employment (of spouse) classified as other, in ever smokers of cigarettes (of spouse), in those with more illnesses ever.

Number of cigarettes smoked (if >0) Associations varied by level of covariate for wives or husbands for 8 covariates for current amount smoked, for 6 covariates for most amount smoked, and for 5 covariates for ever smoked 20+ cigarettes. Associations were consistently weaker when the spouse smoked, and when the subject had any cardiorespiratory symptoms. For husbands only, associations were weaker in retired subjects, similar to the relationship seen for age of starting to smoke.

For other smoking variables, significant variations in association seen were relatively rarely reported. The only three cases where significance at $p<0.001$ was achieved were:

(i) agreement on whether the husband had ever smoked pipes or cigars regularly was weaker if he had ever smoked cigarettes;

(ii) agreement on whether the wife had ever smoked any product was weaker if she had ever smoked cigarettes; and

(iii) agreement on whether the husband had ever regularly smoked 20+ cigarettes was weaker if the wife was an abstainer or very occasional alcohol drinker.

In summary, most associations seen were only weakly significant, not consistent over husbands and wives, or showed no trend over levels of the covariate. There was however some weak evidence that association was weaker (i) when the spouse was a smoker, and (ii) when the subject reported more symptoms/history of illness, but not where the subject assessed his health as poor/limiting.

We now turn to the results in Table 5.3, which does not include results for 12 covariates where no significant variation was seen for either sex for any smoking variable.

Few significant differences were seen, with none highly significant ($p<0.001$) and none significant in both sexes. There were however consistent differences for husbands and wives (i) for ever smoked cigarettes, which was more commonly over-reported by the spouse (more false positives) for subjects working part-time, and (ii) for most cigarettes smoked, where the spouse under-reported the amount if the spouse worked part-time, was retired or kept house, but over-reported if the spouse worked full-time (or other).

6. ETS exposure

6.1 Agreement between husband and wife - based on whole population

Table 6.1 gives agreement statistics for 14 indices of ETS exposure based on the whole population studied (who provided relevant information). Ten of these are 0/1 variables and four are graded variables.

Smoking by the spouse The results included for current and ever regular cigarette smoking by the spouse are based on the same data considered in Table 5.1 for current and ever regular cigarette smoking by the subject (Table 6.1A). While self % and proxy %, and Fpos % and Fneg % are swapped round, the Kappa statistics, which are high, remain the same.

Other household smoking The husband and wife were each asked whether anyone else in the household (other than the couple themselves) smoked regularly and whether they smoked indoors. The proportion answering yes for both questions was similar for husband and wife, and the Kappa statistics (0.79 for smoking, 0.71 for smoking indoors) reasonably high. The husband and wife were also each asked, on a five point scale (never, less often than a few times a month, few times a month, few times a week, most days) how often they had visitors who smoked in the home. Again, there was no systematic difference between the two answers (Table 6.1B). On 60% of occasions the husband and wife agreed exactly (Kappa = 0.74).

Workplace ETS exposure The husband and wife were each asked about their own and their spouse's exposure to other people's smoke at work using the same five point scale but with an additional category for not working outside the home. In analyses excluding this category (but including other subjects who elsewhere stated they did not work) the weighted Kappa was not so high (wife's exposure 0.57, husband's exposure 0.59), and there was a clear tendency for the spouse to report higher exposure than the subject, though this was significant ($p<0.05$) only for the wife's exposure. Presumably, in many couples, the spouse may not actually be aware of the subject's exposure at work.

Other ETS exposure Using the same five point scale, the husband and wife were each asked about their own and their spouse's exposure apart from at home and at work. The weighted Kappa statistics were lower than those for workplace ETS exposure (wife's exposure 0.44, husband's exposure 0.51). There was no significant difference between average levels reported by the subject and the spouse.

Total ETS exposure Here the husband and the wife were each asked about their own and their spouse's exposure using the five point scale (hardly at all, less than 15 minutes a day, 15 minutes - 1 hour, 1-4 hours a day, more than 4 hours a day). The weighted Kappa statistics were 0.55 for wife's exposure and 0.60 for husband's exposure. Again there was no significant difference between average levels reported by the subject and the spouse.

Childhood ETS exposure While the exposure indices discussed above (apart from spouse ever smoked) relate to current ETS exposure, questions were also asked relevant to ETS exposure in childhood (Table 6.1A). Both subject and spouse were asked about regular smoking by the father, mother and other household members when the subject was a child. Step and adoptive parents were included. Answers were coded as yes, no, don't know or not applicable (e.g. father not living in household). Not applicables were combined with no's in analysis (since not living in a household implies no source of ETS), with comparison being of the percentage reporting exposure either ignoring don't knows or counting don't knows as no. When don't knows were counted as no, Kappas were relatively low and there was always a significant tendency for the subject to report higher responses (because don't knows were unsurprisingly much higher for the spouse than the subject). When analysis was restricted to those who specifically reported yes or no/not applicable, Kappas were higher, being about 0.8 for mother smoking, about 0.7 for father smoking, and about 0.5 for other household member smoking, and there was no significant evidence of bias.

6.2 Agreement between husband and wife - never smokers only

Table 6.2 gives agreement statistics for the same 14 indices of ETS exposure as in Table 6.1, but based only on subjects who described themselves as never smokers.

Smoking by the spouse Agreement between husband and wife as regards current regular smoking by the spouse was very high in never smokers (Kappa = 0.96). There was total agreement with two exceptions. In one of the 180 women the husband did not report current regular cigarette smoking reported by the wife, and in one of the 109 men the wife reported current regular cigarette smoking that the husband did not. Current regular cigarette smoking by the spouse was only reported by 9% of never smoking wives and by 12% of never smoking husbands.

Agreement as regards ever smoking was also high in never smokers (Kappa = 0.90 in women, = 0.94 in men). There was a small number of discrepancies in both directions, but no significant evidence of bias.

Other household smoking Kappa statistics were higher for other household member smokes (0.88 for women, 0.85 for men) than for other household member smokes indoors (0.72 for women, 0.79 for men) or for visitors smoke in the home (0.64 for women, 0.55 for men). There was no evidence of significant disagreement in the proportion answering yes for any of these three exposure indices.

Workplace ETS exposure Kappa statistics were about 0.6 in both sexes, similar to those seen in the analyses based on the whole population. Unlike those analyses, however, there was no evidence of a systematic difference between self- and proxy-response.

Other ETS exposure Kappa statistics, about 0.4 in both sexes, were quite low. For exposure of the husband, the proxy report by the wife was significantly ($p<0.01$) lower than the self report.

Total ETS exposure Kappa statistics, about 0.65 in both sexes, were relatively modest. Again the proxy report by the wife was significantly ($p<0.05$) lower than the self report of the husband.

Childhood ETS exposure As found in section 6.1 for all subjects, there was a tendency for the subject to report higher responses when analysis was conducted counting don't know as no exposure. This was more clearly evident for smoking by the father than for smoking by the mother or by other household members in childhood. In the more appropriate analysis, restricting attention to those who specifically reported yes or no, there was no significant evidence of bias. Kappas were higher for mother smoking (0.90 in wives, 0.86 in husbands) than for father smoking (0.68 in wives, 0.70 in husbands) or for other household smokers in childhood (0.61 in wives, 0.65 in husbands).

6.3 Variation in extent of agreement between husband and wife by level of various covariates

Table 6.3 summarizes results where significant variation was seen by level of covariate in the extent of association between self and proxy reports among never smokers, and Table 6.4 similarly summarizes results relating to variation in the difference in response. In these analyses, "don't know" answers are excluded. The covariate "subject ever smoked cigarettes" is omitted, since only never smokers are considered.

Table 6.3 does not include results for 8 of the covariates (employment of spouse, meals together, alcohol status of subject, extroversion, general health, activities limited, number of problems in last month, number of illnesses ever) as no significant variation was seen for either sex for any ETS variable. Similarly, as there was no significant variation for any covariate for spouse smoking, or for mother smoked during childhood, no results for these two ETS variables appear in Table 6.3.

As was found for the active smoking variables, the pattern of variations in association generally differed for husbands and wives, and/or did not show a clear trend over covariate level. However some consistent patterns were seen. Of the current ETS exposure variables, the association was weaker:

(i) for whether other household members smoke indoors when the subject is in full-time employment;

(ii) for how often visitors smoke if the spouse is a non-smoker.

In addition, for both wives and husbands, where the wife rated the diet as healthy but the husband rated it as unhealthy, the association was weak for total ETS, but conversely was strong for ETS at work.

Of the childhood ETS variables, only smoking by other household members showed consistent patterns of variation in association for husbands and wives, with the association weaker (i) for subjects in high social class (AB), (ii) where the spouse is a non-drinker, and (iii) where the subject has no cardiorespiratory symptoms.

A consistent pattern also emerged for the covariate neuroticism. For all four of the variables for which a significant variation was seen, the association, for both husband and wife, was weakest in couples where the husband but not the wife was neurotic.

In summary, no significant variation in association was seen among never smokers for spouse smoking or mother smoking, and no clear patterns of association emerged for other measures of ETS.

In Table 6.4, few significant differences in level of response were seen, with none highly significant ($p<0.001$), and none significant and showing the same pattern of difference in both sexes.

7. Diet

7.1 Agreement between husband and wife

Table 7.1 gives agreement statistics for 50 dietary indices. Six of these are 0/1 variables, 38 are graded variables and six continuous or semi-continuous variables.

Time to first meal Subjects were asked how soon they and their spouse have something to eat after getting up, using a four point scale (1 = within half an hour, 2 = half to 1 hour, 3 = 1 to 2 hours and 4 = more than 2 hours) (Table 7.1B). In wives, weighted Kappa was 0.66 and there was no significant evidence of bias. In husbands, however, though weighted Kappa was higher, at 0.78, there was a tendency for the time reported to be shorter by wives ($p<0.05$).

Regularity of meals Kappas were quite low (wives 0.39, husbands 0.51) in relation to having meals "at roughly the same time each day" but there was no evidence of bias (Table 7.1A). The low Kappa may be related to the lack of precision of the question asked.

Bread For the type of bread mostly eaten (excluding those who ate continental or diet breads, and those who erroneously ticked more than one category), Kappas were relatively high, about 0.8, for eating brown bread vs. white, and there was no evidence of bias (Table 7.1A).

Questions were also asked in relation to the number of slices/pieces/rolls per day (Table 7.1C). The ICC was about 0.6 in both sexes. There was no evidence of bias for bread eaten by wives, but for bread eaten by husbands the amount reported by wives was significantly ($p<0.01$) less than that self-reported by the husband.

Spreads For each of butter/hard margarine, soft margarine, reduced/low fat spread and jam/honey/marmalade answers on frequency were recorded on a six point scale (never, less than once a week, once or twice a week, most days, once a day, more than once a day) (Table 7.1B). Weighted Kappas were in the range 0.55-0.73. There was no significant evidence of bias for frequency of use by the husband. For frequency of use by the wife, however, husbands reported significantly higher frequencies than the wife for

jam/honey/marmalade ($p<0.05$) and almost significantly higher frequencies for soft margarine and low fat spread ($p<0.1$).

Coffee and tea For both coffee and tea, questions were asked on frequency of drinking (from never to more than five times daily) (Table 7.1B). Weighted kappas were high (ranging from 0.83-0.90) and there was no evidence of bias.

Sugar in coffee and tea Kappa was quite high (wives 0.81, husbands 0.82) for taking sugar in coffee or tea, and there was no evidence of bias (Table 7.1A).

Milk Daily milk consumption was recorded as none, less than a third of a pint, a third to one pint and more than one pint (Table 7.1C). Weighted Kappa was 0.57 in wives and 0.58 in husbands, with no evidence of bias.

For those who drank milk and excluding those who drank other than full fat, skimmed or semi-skimmed or who erroneously ticked more than one category, answers relating to whether skimmed or semi-skimmed milk was usually drunk showed good consistency, with Kappa almost 0.9 in both sexes, and no significant evidence of bias (Table 7.1A).

Fatty or fried food Questions were asked about ever trying to cut down on fatty and fried food, answers being recorded as yes, no and never eaten fatty food (Table 7.1A). In both sexes around 97% of subjects reported, or were reported as, ever eating fatty food, with no evidence of bias. Among those who had ever eaten fatty food, 87% of wives and 77% of husbands claimed to have ever tried to cut down. Kappa was not very high (about 0.5) but there was no evidence of bias.

Healthiness of diet Subjects classified healthiness of diet as poor, fair, good and excellent (Table 7.1B). Weighted Kappas were relatively low (0.39 in wives, 0.46 in husbands) and there was highly significant evidence of bias. For healthiness of diet of both husbands and wives, there was a highly significant ($p<0.001$) tendency for the diet as

reported by the husband to be healthier than as reported by the wife. This is illustrated in the table below.

Reported by spouse	Self-reported by wife				Self-reported by husband			
	Poor	Fair	Good	Excellent	Poor	Fair	Good	Excellent
Poor	3	3	1	0	4	13	3	1
Fair	3	52	39	1	3	78	62	4
Good	3	58	173	14	0	34	157	14
Excellent	0	5	29	8	0	1	12	6

For both the wives' and the husbands' diet, the number of cases where the husband reported a higher grade than the wife (98 for wives' diet, 97 for husbands' diet) substantially exceed the number where the husband reported a lower grade (58 for wives' diet, 50 for husbands' diet).

Food frequency questions For 29 food items, questions were asked about food frequency using the same frequency scale as for spreads. Based on the answers, scores were computed (as described by Thornton et al, 1994) for fruit, vegetable, salad, sweet food and fatty food consumption. Treating these as continuous variables (Table 7.1C), ICC values were in the range 0.43 to 0.77, being lowest for vegetable score. For scores related to the husbands' food frequency there was no evidence of bias. For scores related to the wives' food frequency, highly significant ($p<0.001$) evidence of bias was noted for fruit, vegetable and salad consumption. In each case this was because the frequency proxy-reported by the husband was lower than that self-reported by the wife. There was, however, no evidence of bias for wives' sweet food or fatty food score.

For the 29 food items considered individually (Table 7.1B), weighted Kappas were generally modest, in the range 0.4-0.7, though some were as high as 0.81 (breakfast cereal in husbands) and as low as 0.31 (peas and beans, and other vegetables in husbands). Significant ($p<0.05$) biases were noted for quite a number of these dietary components. These are summarized below:

(i) Wife's diet - husband reports higher frequency

chips ($p<0.05$), sausages, pasties ($p<0.05$).

(ii) Wife's diet - husband reports lower frequency

fresh fruit in summer ($p<0.001$), fresh fruit in winter ($p<0.001$), salad/raw veg in summer ($p<0.001$), salad/raw veg in winter ($p<0.001$), potatoes (not chips) ($p<0.001$), green vegetables ($p<0.001$), other vegetables ($p<0.001$), breakfast cereals ($p<0.01$), biscuits ($p<0.01$), pure fruit juice ($p<0.001$), cheese ($p<0.001$), eggs ($p<0.01$), meat ($p<0.05$).

(iii) Husband's diet - wife reports higher frequency

biscuits ($p<0.01$), cakes ($p<0.01$), meat ($p<0.001$).

(iv) Husband's diet - wife reports lower frequency

tinned fruit ($p<0.001$).

7.2 Variation in extent of agreement between husband and wife by level of various covariates

Table 7.2 summarizes results where significant variation was seen by level of covariate in the extent of association between self and proxy reports and Table 7.3 similarly summarizes evidence relating to significant variations in differences in response. It should be noted that analyses were not carried out for the individual food frequencies (graded variables on second and third pages of Table 7.1), it being felt that it was sufficient to look for variations for the summary scores for fruit, vegetable, salad, sweet food and fatty food consumption. Analyses were conducted for the 19 covariates, but as no significant variations were seen for any of the dietary variables, no results appear in Table 7.2 for subject or spouse ever smoked cigarettes, or in Table 7.3 for subject ever smoked cigarettes or limited activities.

As can be seen from Table 7.2, most of the significant variations in associations seen were significant in one sex only, with no similar relationship seen in the other sex. The dietary variable showing most evidence of a tendency for the extent of association

between self and proxy reports to vary similarly in each sex by level of covariate was "ever eaten fatty food". Here one can see relatively low kappa values in each sex in those

(i) aged 50-59,
(ii) in social classes AB and D,
(iii) with apartness scores >0,
(iv) where both subject and spouse considered their diet unhealthy,
(v) where both subject and spouse had high Neuroticism scores,
(vi) whose general health was regarded as excellent,
(vii) whose activities were limited,
(viii) with 3-5 problems last month,
(ix) with 3+ illnesses ever, and in those
(x) with any cardiorespiratory symptoms.

In 4 of these 10 cases, the variation was significant ($p<0.05$) in both males and females separately.

For other dietary variables, such evidence of a consistent variation in the association between subject and proxy reports was much less commonly seen. The following perhaps merit comment:

Time to first meal : The association was weaker in both sexes in those with 3 or more illnesses ever.

Eats meals at regular times : The association was weaker in both sexes in those with 6+ problems last month.

Eats brown bread (vs white) : Weaker associations were seen in those aged 50-59.

Frequency of use of butter/hard margarine : Weaker associations were seen in social class D and stronger associations in those with 2 meals together on weekdays.

Frequency of use of soft margarine : Stronger associations were seen in those couples both of whom had high extroversion scores.

Vegetable score : Stronger associations were seen in those couples both of whom considered they ought to cut down alcohol.

Salad score: Weaker associations were seen in those with positive apartness scores.

Table 7.3 shows that most of the significant variations in difference in response between self and proxy were seen in one sex only. There were two cases where a very highly significant ($p<0.001$) variation was seen in one sex only, with no significant variation in the other:-

(i) Coffee consumption of the husband: The proxy response was higher where 2 or more meals were taken together and lower where 0 or 1 meal was taken together.

(ii) Fatty food score of the wife: The proxy response was lower if the apartness score was >0, but not otherwise.

8. Occupation, employment, social class

8.1 Agreement between husband and wife

Table 8.1 gives agreement statistics for various indices of occupation, employment and social class.

Chief income earner Near the start of the interview, subjects were asked who they thought was the chief income earner (self, spouse or other) and what was the employment status, occupation and income of the chief income earner. No household members other than the husband and wife were given, but a number of respondents used the "other" category to show husband and wife as joint chief income earners. There was considerable disagreement over who the husband and wife thought the chief income earner was, as shown in the table below:

	Based on answer by the husband		
Based on answer by the wife	Husband	Wife	Equal
Husband	244	76	12
Wife	9	25	4
Equal	1	2	3

The proportion where the wife was the sole or joint income earner was only 12% according to the wife, but 32% according to the husband ($p<0.001$) (Table 8.1A). Similarly the proportion where the husband was the sole or joint income earner was 73% according to the husband, but 90% according to the wife.

Working status of chief income earner Even including those couples where it was not agreed who was the sole chief income earner, there was good agreement as to whether the chief income earner was working full time (30+ hours per week), working part time (8-29 hours per week), working part time (<8 hours per week), or retired or not other working (weighted Kappa = 0.89) (Table 8.1B).

Social class Based on the stated occupation of the chief income earner, social class was classified as A, B, C1, C2, or D (Table 8.1B). (Social class was not determined if the chief income earner was not working, see section 2 of Report A.) While agreement was good, based on weighted Kappa (0.95), there was a significant ($p<0.05$) tendency for husbands to report higher social class, as illustrated in the table below.

Based on answers by the wife	Based on answers by the husband				
	A	B	C1	C2	D
A	6	1	0	0	0
B	1	29	0	0	0
C1	0	4	73	1	0
C2	0	1	1	43	2
D	0	0	2	3	46

Thus there were only 4 cases where the wife reported a higher social class (upper right diagonal of the table - note A is the highest social class) as against 12 where the wife reported a lower social class).

Income of chief income earner

The net annual income of the chief income earner was recorded in 12 categories, ranging from under £2,500 to over £35,000. There was good agreement (weighted Kappa = 0.87) based on all answers or based on analyses restricted to those couples who agreed who the sole chief income earner was. However, in both these analyses, there was evidence that the husband estimated significantly ($p<0.01$) higher income than the wife.

Employment status

Later in the questionnaire, subjects were asked questions relating to their own employment and that of their spouse.

About 50% of subjects of both sexes reported, or were reported as, being in full or part time employment (Table 8.1A). Kappa statistics were high (wives 0.94, husbands 0.96), with no significant evidence of bias.

For those not currently in paid employment, all husbands had, both by self and proxy report, previously had a paid job. About 5% of wives had never worked. Agreement was moderate (Kappa 0.65) with no evidence of bias.

Years since last worked For those currently not in paid employment, questions were asked about time since last in paid employment, answers being recorded as less than a year, 1 to 4 years, 5 to 9 years, 10 to 19 years or 20+ years (Table 8.1B). There was a high level of agreement (weighted Kappa 0.89 for wives' employment, 0.86 for husbands' employment) with no evidence of bias.

Shifts and working unsocial hours 29% of wives and 62% of husbands reported that they had worked on shift work or unsocial hours since the marriage (Table 8.1A). Agreement was moderately good between self-report and spouse-report (Kappa 0.74 for wives and 0.73 for husbands) with no evidence of bias.

For those who stated they had worked shifts or unsocial hours, further questions were asked as to whether this involved changing shift patterns, early morning shifts, late evening shifts or overnight shifts. Agreement was moderate between self-report and spouse report, better for wives' working patterns (range of Kappa 0.51 to 0.72) than for husbands' working patterns (range of Kappa 0.34 to 0.47), but there was no evidence of bias.

Specific occupations involving possible risk of lung cancer Subjects were asked whether they or their spouse had ever worked in any of 33 specific jobs or industrial processes involving a possible risk of lung cancer. Agreement statistics are shown for ever working in any of the jobs or processes (Table 8.1A), for the number worked in (Table 8.1B), and for each specific job or process (Table 8.1A).

Subjects were more likely than proxies to report having worked in any of the jobs (significant ($p<0.001$ for husbands, near significant ($p<0.1$) for wives) and to report more jobs ($p<0.001$ for husbands, $p<0.01$ for wives). This was particularly marked for husbands, where four subjects reported 7-9 jobs, one subject 11 jobs and one subject 15 jobs, while no proxies reported more than 6 jobs.

For the specific occupations, the proportion reporting, or reported as, ever having worked was generally very low, particularly for the wives and one for any husbands. Eleven of the jobs were not reported (either self or proxy) for any wives and one for any husbands. For the more commonly reported jobs, where self-reported frequency exceeded 5.0%, Kappas were typically of order 0.6 to 0.7. There were a number of specific occupations where, for husband working, the wife proxy-report was significantly ($p<0.05$) lower than the husband self-report. These were: welder ($p<0.001$), construction industry ($p<0.001$), haulier or truck/bus driver ($p<0.05$), rubber industry ($p<0.05$) and butcher ($p<0.05$). Near significant ($p<0.1$) differences were also noted for service station or garage, printing industry and iron and steel foundry. For the rarely reported jobs there was poor agreement. For instance, for jobs either self- or proxy-reported by 1-4 subjects (0.25%-1.01%) there was complete lack of agreement in 9 out of the 18 jobs for husbands, and for 12 out of the 15 jobs for wives, and complete agreement for only 1 job for husbands (chimney sweep) and 1 job for wives (in a coke plant).

8.2 Variation in extent of agreement between husband and wife by level of various covariates

Table 8.2 summarizes results where significant variation was seen by level of covariate in the extent of association between self and proxy reports and Table 8.3 similarly summarizes evidence relating to significant variations in differences in response. It should be noted that analyses were not carried out for the individual risky jobs, attention being restricted to the 10 0/1 variables considered at the start of Table 8.1A and to the 6 graded variables considered in Table 8.1B. Analyses were conducted for all covariates, but as no significant variations were seen for any of the occupation/employment variables considered, no results appear in Table 8.2 for neuroticism or in Table 8.3 for employment of subject, ever smoked cigarettes (subject or spouse), neuroticism, extroversion, activities limited or cardiorespiratory symptoms.

As can be seen from Table 8.2, most of the significant variations in associations seen were significant in one sex only, with no similar relationship seen in the other sex. Indeed there were quite a number of cases where the variation was highly significant ($p<0.001$) in one sex, with no real evidence at all of such a difference in the other. For example, while Kappa statistics were consistently about 0.5 for number of risky jobs worked by husband for all levels of the covariate employment of the spouse (wife), for number of risky jobs worked by the wife, the Kappa statistics varied markedly by employment of the husband, showing no evidence of an association at all for part-time workers.

However some evidence of a consistent association was seen in both sexes in some analyses. The following perhaps merit comment:

Working status of chief income earner: The association was stronger in both sexes in those with social class AB, though the social classes in which it was notably weaker differed for the wife (C2) and husband (C1 and D). The association was almost perfect in light drinkers (self or spouse) but weaker in abstainers/occasional drinkers and in moderate/heavy drinkers.

Income of chief income earner: In both sexes the association was stronger in social classes C2 and D than in social classes AB and C1.

Shifts and working unsocial hours: The association was, in both sexes, weaker in cigarette smokers (self or spouse) than in nonsmokers of cigarettes.

Risky jobs: The association was stronger, in both sexes, in regard to both ever had risky job and number of risky jobs, in couples both of whom were extrovert. The association in regard to number of risky jobs was, in both sexes, stronger in moderate and heavy alcohol drinkers.

As can be seen from Table 7.3, nearly all of the significant variations in differences in response between self and proxy reports were seen in one sex only, and were

of relatively marginal statistical significance ($0.01<p<0.05$). Even where some statistical evidence of variation was seen in each sex, the actual pattern of variation tended to differ.

9. Alcohol consumption

9.1 Agreement between husband and wife

Table 9.1 gives agreement statistics related to alcohol consumption.

Alcohol status Subjects were asked to define their own alcohol status, and that of their spouse, as total abstainer, very occasional drinker, light drinker, moderate drinker or heavy drinker (Table 9.1B). There was quite good agreement (weighted Kappa 0.78 for wives, 0.77 for husbands) and no significant evidence of bias.

Alcohol quantity For each of seven types of alcohol commonly drunk (shandy, beer, premium beer, sherry/vermouth/port, wines, spirits and liqueurs) subjects were asked to record the amount they drank in a typical week and the amount their spouse drank (Table 9.1C). They could also give amounts of other types of alcohol drunk, which they had to specify - cider was the only type mentioned.

For the more commonly drunk types of alcohol (beer by husband, wines and spirits by husband and wife), ICC values were in the range 0.60 to 0.84. For other types of alcohol they were more variable, though (apart from premium beers where ICC values were low) also generally in this range. For some of the types of alcohol there were marginally significant ($p<0.05$) discrepancies between self and proxy report:

(i) beer drinking by wife - proxy report lower
(ii) sherry/vermouth/port drinking by wife - proxy report higher
(iii) spirit drinking by husband - proxy report lower.

Although subjects were asked to record types of alcohol not drunk as zero, there were about a quarter of questionnaires where answers were left blank. The analyses shown in Table 9.1A assume that blank is equivalent to zero. Alternative answers omitting blanks (results not shown) showed similar ICC values and similar conclusions regarding bias (though of course, mean levels of consumption were higher).

Based on the combined answers, and counting blanks as zero (except for those respondents who gave some zero replies), an estimate was made of total alcohol

consumption in units/week. There was a reasonable agreement between the self and proxy reports (ICC = 0.77 for wife, 0.78 for husband). There was no evidence of bias for wives. For husband's alcohol consumption, proxy-reports were somewhat lower than self-report though this was not quite significant ($0.05<p<0.1$).

Heavier drinking in the past There was not very good agreement (Kappa = 0.41 for wives, 0.47 for husbands) regarding having drunk more heavily in the past (Table 9.1A). Though there was no bias for drinking by the wife, proxy report of heavier drinking by the husband was significantly ($p<0.05$) lower than self report.

Ought to cut down on drinking Subjects were asked whether, since the marriage, they had ever felt that they or their spouse should cut down on drinking (Table 9.1A). Kappas were quite low (0.33 for wives, 0.50 for husbands). Though there was no significant evidence of bias for drinking by the husband, proxy reports were significantly ($p<0.05$) lower for drinking by the wife.

9.2 Variation in extent of agreement between husband and wife by level of various covariates

Table 9.2 summarizes results where significant variation was seen by level of covariate in the extent of association between self and proxy reports and Table 9.3 similarly summarizes evidence relating to significant variations in differences in response. It should be noted that analyses were not conducted for the individual types of alcohol, analyses being restricted to the four alcohol indices: self-defined status, combined alcohol consumption, ought to cut down alcohol and has drunk more heavily in the past. Although analyses were conducted for the same list of covariates as in previous sections, there were quite a number where no significant variations were seen, no results therefore appearing in the Tables.

As can be seen from Table 9.2, virtually all the significant variations in associations were significant in one sex only, with no similar relationship seen in the other sex. This was sometimes true where the variation in association was highly significant ($p<0.001$) in one sex. The only case where the pattern varied similarly and significantly

in both sexes was for "has drunk more heavily in the past," where the Kappa statistics were relatively high if both subject and spouse answered no to the question as to whether the subject ought to cut down on alcohol and relatively low if only the subject answered yes.

As Table 9.3 shows, there were a few cases where there were significant, or near significant, variations in differences in response between self and proxy reports and where the pattern of variation was similar in the two sexes. Three of these cases were in relation to the alcohol variable "has drunk more heavily in the past." In both sexes there was a tendency for false positives to outweigh false negatives in those aged under 50, in those couples where the proxy respondent but not the subject was neurotic and in those couples where the proxy respondent but not the subject thought they ought to cut down on alcohol. In contrast, there was a tendency for false negatives to outweigh false positives in those aged 50 or over, in those couples where the subject but not the proxy respondent was neurotic and in those couples where the subject but not the proxy respondent thought they ought to cut down on alcohol.

10. Other factors

10.1 Agreement between husband and wife

Table 10.1 gives agreement statistics for various other factors asked about in the questionnaire.

Number of other adults living in household Interestingly, the level of agreement between husbands' and wives' reports of the number of other adults (aged 16 years or more) in the household apart from the couple themselves was not all that high (weighted Kappa = 0.84) (Table 10.1B). Perhaps there was misunderstanding, despite the apparent clarity of the question, regarding whether the subject should count him or herself or the spouse. Alternatively, there may have been difference of opinion on the meaning of "household," for instance whether to count lodgers or students temporarily away from home. There was, however, no evidence of bias.

Number of children living in household There was a high level of agreement (weighted Kappa = 0.96) between husbands' and wives' reports of the number of children aged 15 years or under living in the household. There was no evidence of bias between the two reports.

Closeness of marriage Three questions were asked in relation to closeness of the marriage (Table 10.1B), one relating to the proportion of time spent with the spouse when neither of the couple were at work, and two relating to the number of meals taken together (i) on weekdays and (ii) at weekends. There was a moderate level of agreement between husband and wife for all these questions (weighted Kappa 0.58 to 0.67) with no evidence of bias.

(A further question on taking holidays with the spouse is not considered in this report, since the answers would not be equivalent in couples taking some holidays separately.)

Height and weight There was quite good agreement regarding the height, weight and calculated body mass index (BMI) of the husband, with ICC values about 0.90 and no evidence of bias (Table 10.1C). Agreement was less good regarding the height, weight and BMI of the wife. Though the ICC value was similar for weight and BMI as it was for the husband, it was lower for height (ICC = 0.76). Furthermore there was evidence of bias for all three variables. Compared to the self-report by the wife, the proxy-report by the husband significantly ($p<0.01$) overstated height by about 0.3 inches, significantly ($p<0.05$) understated weight by about 1.5 lbs, so significantly ($p<0.01$) understating BMI by about 0.4 units.

Subjects were asked whether, for their height, they thought they or their spouse were too light, about the right weight or too heavy (Table 10.1B). Though the weighted Kappa statistics were reasonably high (about 0.7) for both husband and wife, there was evidence in both sexes that proxy-report tended to produce lower (i.e. less heavy) responses than self-report. This was highly significant ($p<0.001$) for wives' weight, and nearly significant ($p<0.05$) for husbands' weight.

Age left school or sixth form college There was quite good agreement regarding age left school or sixth form college (answers being recorded as <14, 14, 15, 16, 17, 18, or 19+), with weighted Kappa about 0.85 in both sexes and no significant evidence of bias (Table 10.1B).

Educational qualifications Answers were recorded in 20 categories but analysed in four categories, equivalent broadly to none, O level, A level or degree/professional qualification (Table 10.1B). In both sexes weighted Kappa was 0.81 and there was no significant evidence of bias. Results for the simpler variable "any educational qualifications" were similar, with Kappa almost 0.8 in both sexes.

Enough exercise There was quite a substantial level of disagreement between subject and spouse, in both sexes (Kappa about 0.55), as to whether the subject got enough exercise (Table 10.1A). Though there was a tendency for adequacy of exercise to be more

often reported by the husband than by the wife, both as regards husband's exercise and wife's exercise, this was not statistically significant.

Physical activity Subjects were asked whether, compared to other people of the same age, they thought they or their spouse were a lot more active, a little more active, about average, a little less active or a lot less active. Agreement was only modest between self- and proxy-report, with weighted Kappa about 0.6. There was no significant evidence of bias.

10.2 Variation in extent of agreement between husband and wife by level of various covariates

Table 10.2 summarizes results where significant variation was seen by level of covariate in the extent of association between self and proxy reports and Table 10.3 similarly summarizes evidence relating to significant variations in differences in response. Analyses were conducted for all the covariates but as no significant variations were seen for any of the variables considered, no results appear in Table 10.2 for apartness, or in Table 10.3 for employment of the subject, alcohol status (self or spouse) and limited activities.

As can be seen from Table 10.2, many of the significant variations in associations seen were significant (sometimes highly significant) in one sex only, with no similar relationship seen in the other sex. There were, however, some cases where evidence of a consistent association was seen in both sexes in some analyses. The following perhaps merit comment:

Meals together at weekends: In both sexes, associations between self and proxy reports were weaker than average where two meals were taken together on weekdays, and stronger than average in light drinkers (self or spouse) and in those with no problems in the last month.

Free time: In both sexes, associations were stronger than average in those with no problems in the last month.

Age left school: In both sexes, the strength of the association increased with increasing social class.

Qualifications: For the four category classification, the strength of the association was stronger than average if the couple were both not neurotic.

The results in Table 10.3 show that there were only five cases where a significant or near significant variation was seen in each sex in the differences in response between self and proxy reports and where the pattern of difference was similar in the two sexes. These were:

Body mass index: In both sexes proxies reported lower BMI than did subjects in social classes AB and C1, but higher BMI in social class D.

Gets enough exercise: In both sexes, false negatives outweighed false positives in those couples where only the subject reported a healthy diet, with false positives outweighing false negatives in those couples where only the proxy respondent reported a healthy diet.

Physical activity: In both sexes, proxy responses were lower than subject responses in those couples where only the subject was extrovert, but were higher than subject responses in those couples where only the proxy respondent was extrovert.

Meals together weekdays and meals together weekends: In both sexes false positives exceeded false negatives where only the proxy respondent was extrovert, and false negatives exceeded false positives where only the subject was extrovert.

Note that results for meals together weekdays for the covariate “subject ever smoked” are the reverse of the results for “spouse ever smoked,” as explained in section 4.6 (vi).

11. Summary and discussion of main findings

For each of the 146 variables considered in tables 5.1, 6.2, 7.1, 8.1, 9.1 and 10.1 an attempt was made to classify the extent of the association between subject and proxy report into one of five categories:

Very good agreement	-	index $\geq$0.90 in both sexes
Good agreement	-	index $\geq$0.80 in both sexes, but not $\geq$0.90 in both
Average agreement	-	not in other four categories
Poor agreement	-	index $\leq$0.55 in both sexes but not $\leq$0.45 in both
Very poor agreement	-	index $\leq$0.45 in both sexes

where the index considered was the Kappa statistic for 0/1 variables, or the Weighted Kappa statistic for graded and continuous variables.

For half (50.7%) agreement was classified as average, with the index usually in the range 0.55 to 0.80.

Table 11.1 lists those variables where the extent of agreement was classified as very good, good, poor or very poor. It is evident from consideration of this table that agreement tends to be good or very good, as would be expected, for questions concerning current, common and well-defined activities. It tends to be poor or very poor for questions relating to events in the past, where the proxy respondent might never have known the true facts (e.g. age started smoking and certain jobs), to less common activities, to questions where one could not expect a precise answer (e.g. food frequencies) or to questions where the answer is to some extent subjective (e.g. healthiness of diet). Exceptionally very good agreement may be seen for events that are very rare, where the subject and spouse happened to agree (e.g. working as a chimney sweep).

It is also evident from this table that, for the variables studied, agreement tends to be stronger for smoking and ETS (with 46% good or very good and 8% poor or very poor) than for diet (with 8% and 38%), occupation (15% and 39%) or alcohol (17% and 25% respectively.

It is of interest to gain some insight into the effect the various levels of agreement would have on observed relative risk for a disease. In the simplest situation we consider a 0/1 variable in which the true frequency of exposure is p and the associated relative risk of disease is R. Let us assume that subjects report exposure accurately, that spouses report it without bias, but that spouses report it with an error indicated by the Kappa statistic, K. In this situation (see Appendix A) it is relatively easy to estimate the expected observed relative risk, based on spousal report.

The following table gives some examples of how relative risks are underestimated in this situation.

		Kappa				
True RR	p	1	0.9	0.80	0.55	0.45
10	0.9	10	5.48	3.75	2.07	1.74
	0.75	10	5.84	4.06	2.23	1.86
	0.50	10	6.59	4.79	2.64	2.17
	0.25	10	7.61	5.97	3.46	2.81
	0.1	10	8.43	7.10	4.52	3.82
5	0.9	5	3.65	2.86	1.84	1.60
	0.75	5	3.77	3.00	1.94	1.68
	0.50	5	4.00	3.29	2.16	1.86
	0.25	5	4.27	3.67	2.52	2.16
	0.1	5	4.46	3.96	2.86	2.48
2	0.9	2	1.83	1.68	1.39	1.30
	0.75	2	1.84	1.70	1.41	1.32
	0.50	2	1.86	1.73	1.45	1.35
	0.25	2	1.88	1.76	1.49	1.40
	0.1	2	1.89	1.78	1.53	1.43

It can be seen that when a variable is inaccurately measured, as indicated by a low Kappa statistic, the observed relative risk can be substantially less than the true relative risk, especially when exposure is common.

For an exposure with a frequency 50%, say, an observed relative risk of 2.0 is consistent both with true relative risks slightly above 2 and a high Kappa (e.g. R=2.5, K=0.79), higher relative risks and moderate Kappa (e.g. R=5.0, K=0.50) or very high relative risks and low Kappas (e.g. R=20.0, K=0.37, or R=100.0, K=0.34).

While random error will tend to underestimate the true relative risk, systematic error may bias it in either direction.

Table 11.2 summarizes the evidence for those variables where there was a significant difference in the average response as reported by the proxy and by the subject. Though there are quite a number of variables where significant differences were seen, it is notable that there are relatively few where significant differences were seen for both sexes. The results in Table 11.2 could broadly be categorized into four classes:

(i) The first category is where, in each sex, the proxy response was significantly different from the response by the subject and the difference was in the same direction for both sexes. The clearest examples were for the proxy respondent to be more likely than the subject to claim the subject was the sole/joint chief income earner, and to be likely to report the subject had less risky jobs than did the subject. There was also a tendency for the proxy respondent to report lower weight for height than did the subject, though this was clearer in respect of the wife's weight for height.

(ii) The second category is where, in each sex, the proxy response was significantly different from that reported by the subject, but in opposite directions in the two sexes. This is equivalent to the two sexes reporting differently, regardless of which member of the couple was being considered. The three examples of this were healthiness of diet, where the wife thought the diet less healthy, and biscuit and meat eating, where the wife estimated a higher frequency.

(iii) The third category is where the husband and wife differed in their reports on the wife's habits. It was interesting that the husband reported his wife ate fruit,

vegetables and salads less often and chips, sausages and jam/honey/marmalade more often than the wife reported she did, despite the husband rating her diet higher on the healthiness scale. It was also interesting that the husband reported his wife drank less beer and more sherry than the wife did herself - perhaps in line with an older image of women drinking sherry and not beer. There was also a clear tendency for the husband to report his wife was taller and weighed less than she reported herself, perhaps a difference between optimism and reality!

(iv) The final category is where the husband and wife differed in their reports on the husband's habits. The main examples of these were the wife reporting less often than did the husband his working in a variety of risky jobs (probably due to lack of detailed knowledge), and the wife reporting less regular cigarette smoking, less pipe and cigar smoking and less ETS exposure than the husband reported himself.

Assessment of bias due to invalid proxy response is complicated further if the extent of the association between subject and proxy response or the magnitude of the difference between subject and proxy response varies according to the level of one or more covariates. In this report an attempt to study this is described. Although analyses were conducted for a large number of response variable/covariate combinations, these did not reveal any clear or generalizable patterns. Significant variations tended to be evident in one sex, with similar variations not evident in the other. However, there are some exceptions, discussed in the main body of the report. While these results do not, at least on the basis of the analysis so far conducted, clearly show what factors affect the validity of proxy response, they do tend to suggest that analyses based on simplistic assumptions that errors in proxy responses are random may lead to misleading conclusions.

Overall the study has provided a useful database indicating the likely magnitude of proxy error in a range of common lifestyle risk factors.

In this report no attempt has been made to compare the findings with those of other studies. This will be looked at later in 1999 when we attempt to summarize the findings for publication.

12. References

Barry D. The assessment of exposure to environmental tobacco smoke. *Environment International* 1997;**23**:17-31.

Brownson RC, Chang JC, Davis JR. Gender and histologic type variations in smoking-related risk of lung cancer. *Epidemiology* 1992;**3**:61-4.

Correa P, Pickle LW, Fontham E, Lin Y, Haenszel W. Passive smoking and lung cancer. *Lancet* 1983;**2**:595-7.

Donner A, Wells G. A comparison of confidence interval methods for the intraclass correlation coefficient. *Biometrics* 1986;**42**:401-12.

Donner A. Sample size requirements for the comparison of two or more coefficients of inter-observer agreement. *Stat Med* 1998;**17**:1157-68.

European Working Group. *Environmental tobacco smoke and lung cancer: an evaluation of the risk.* 1996.

Fontham ETH, Correa P, Reynolds P, Wu-Williams A, Buffler PA, Greenberg RS, *et al*. Environmental tobacco smoke and lung cancer in nonsmoking women. A multicenter study. *JAMA* 1994;**271**:1752-9.

Fleiss JL, Cohen J, Everitt BS. Large sample standard errors of kappa and weighted kappa. *Psychol Bull* 1969;**72**:323-7.

Fleiss JL. The measurement of interrater agreement. *Statistical methods for rates and proportions*. New York: John Wiley & Sons; 1981. Ch 13: p. 212-36.

Humble CG, Samet JM, Pathak DR. Marriage to a smoker and lung cancer risk. *Am J Public Health* 1987;**77**:598-602.

Lee PN, Forey BA. *Interview study of husband/wife pairs - Report A. Incompatibility between husbands and wives as a predictor of adverse health.* Internal report; 1998 April.

LeVois M, Switzer P. Differential exposure misclassification in case-control studies of environmental tobacco smoke and lung cancer. *J Clin Epidemiol* 1998;**51**:37-54.

Stockwell HG, Goldman AL, Lyman GH, Noss CI, Armstrong AW, Pinkham PA, *et al*. Environmental tobacco smoke and lung cancer in nonsmoking women. *J Natl Cancer Inst* 1992;**84**:1417-22.

Thornton A, Lee P, Fry J. Differences between smokers, ex-smokers, passive smokers and non-smokers. *J Clin Epidemiol* 1994;**47**:1143-62.

Table 4

Distribution of subjects by covariates

Age (self report)		<50	50-59	60+	Total	
	Wife	170	105	122	397	
	Husband	124	110	163	397	
Social class		AB	C1	C2	D	Total
	Wife's report	37	82	48	52	219
	Husband's report	42	79	47	49	217
Employment (self report)		Full-time	Part-time	Retired	House-keeping	Other	Total
	Wife	80	108	107	76	22	393
	Husband	185	17	137	0	56	395
Meals together weekdays		0-1	2	3+	Total	
	Wife's report	139	95	142	376	
	Husband's report	139	96	145	380	
Apartness score (combined from wife's and husband's reports)		0	>0	Total		
		327	63	390		
Healthiness of diet (self x proxy report)[1]		Both -	Self-proxy+	Self+ proxy-	Both +	Total
	Wife's diet	61	66	41	224	392
	Husband's diet	98	35	70	189	392
Ever smoked cigarettes (self report)		Yes	No	Total		
	Wife	209	181	390		
	Husband	283	112	395		

[1] + indicates Good/Excellent, - indicates Poor/Fair

Table 4 (Continued)

Alcohol status (self report)		Abstainer/ very occasional	Light	Moder-ate/ heavy	Total	
	Wife	215	94	87	396	
	Husband	126	116	154	396	
Ought to cut down on alcohol (self x proxy report)		Both N	SelfN proxyY	SelfY proxyN	Both Y	Total
	Wife's alcohol	308	15	30	15	368
	Husband's alcohol	283	29	28	42	382
Neuroticism (self report)[1]		Both -	W- H+	W+ H-	Both +	Total
		96	39	116	78	329
Extroversion (self report)[2]		Both -	W- H+	W+ H-	Both +	Total
		116	64	69	57	306
General health (self report)		Excellent	Good	Fair/ Poor	Total	
	Wife	81	218	97	396	
	Husband	71	228	97	396	
Activities limited by illness/disability (self report)		Yes	No	Total		
	Wife	68	329	397		
	Husband	84	313	397		
N problems in last month (self report)		0	1-2	3-5	6+	Total
	Wife	49	154	135	59	397
	Husband	81	176	102	38	397

[1] + indicates $\geq$10, - indicates <10

[2] + indicates $\geq$13, - indicates <13

Table 4 (Continued 2)

N illnesses ever (self report)		0	1-2	3+	Total
	Wife	77	189	131	397
	Husband	84	199	114	397
Any cardiorespiratory symptom (self report)		Yes	No	Total	
	Wife	153	244	397	
	Husband	161	236	397	

Table 5.1
Agreement between husband and wife - Smoking

5.1A 0/1 variables		N	Self%	Proxy%	Agree%	FPos%	FNeg%	McN P	Kappa	KapSE	Kap P
Current regular cigarette smoker	Wife	387	25.32	26.36	97.93	1.55	0.52	N.S.	0.95	0.02	***
	Husband	388	24.23	24.48	99.23	0.52	0.26	N.S.	0.98	0.01	***
Ever smoked cigarettes regularly	Wife	387	54.01	55.04	96.38	2.33	1.29	N.S.	0.93	0.02	***
	Husband	388	72.16	70.62	95.88	1.29	2.84	N.S.	0.90	0.02	***
Ever regularly smoked 20+ cigarettes	Wife	333	28.53	29.43	90.69	5.11	4.20	N.S.	0.77	0.04	***
	Husband	306	50.98	46.41	90.85	2.29	6.86	-	0.82	0.03	***
Smoked cigarettes regularly in last 10 years	Wife	364	36.54	35.71	96.98	1.10	1.92	N.S.	0.93	0.02	***
	Husband	357	36.97	37.82	97.48	1.68	0.84	N.S.	0.95	0.02	***
Ever smoked pipe or cigars regularly	Wife	330	0.91	1.21	99.09	0.61	0.30	N.S.	0.57	0.23	***
	Husband	372	31.72	26.88	88.17	3.49	8.33	--	0.72	0.04	***
Ever smoked any product	Wife	387	54.26	55.30	96.38	2.33	1.29	N.S.	0.93	0.02	***
	Husband	388	74.74	73.97	96.65	1.29	2.06	N.S.	0.91	0.02	***
Current smoker any product	Wife	387	25.58	26.36	97.67	1.55	0.78	N.S.	0.94	0.02	***
	Husband	388	27.32	27.32	97.94	1.03	1.03	N.S.	0.95	0.02	***
Smokes indoors at home (current regular smokers)	Wife	92	94.57	94.57	97.83	1.09	1.09	N.S.	0.79	0.15	***
	Husband	93	90.32	92.47	95.70	3.23	1.08	N.S.	0.73	0.13	***

5.1B Graded variables		N	Self%	Proxy%	Agree%	High%	Low%	WSR P	KappaW	KapWSE	KapW P
Cigarette smoking status (3 cats[1])	Wife	387	54.01	55.04	94.83	3.62	1.55	N.S.	0.95	0.01	***
	Husband	388	72.16	70.62	95.10	1.80	3.09	N.S.	0.95	0.01	***

5.1C Continuous variables		N	Mean self	Mean proxy	Mean diff	St.Dev diff	PT P	KappaW	ICC	ICCSE	ICC P
Most cigarettes smoked	Wife	154	19.40	19.00	-0.40	7.67	N.S.	0.74	0.72	0.04	+++
	Husband	185	25.55	24.15	-1.40	10.63	(-)	0.69	0.68	0.04	+++
Current cigarettes smoked	Wife	87	16.26	16.20	-0.07	7.94	N.S.	0.63	0.56	0.07	+++
	Husband	81	19.58	18.42	-1.16	6.46	N.S.	0.78	0.80	0.04	+++
Years since smoked cigarettes (ex smokers)	Wife	86	13.15	13.55	0.40	5.50	N.S.	0.80	0.80	0.04	+++
	Husband	149	17.48	16.70	-0.78	5.60	(-)	0.87	0.87	0.02	+++
Age started smoking (ever smoked)	Wife	122	18.27	18.67	0.40	5.49	N.S.	0.53	0.53	0.07	+++
	Husband	169	16.29	16.38	0.09	3.57	N.S.	0.46	0.47	0.06	+++

[1] Cut point: Ex smoker

Table 5.2
Significant variation in extent of association - Smoking

Covariate	Smoking variable	Subject	Association statistics						
AGE			<50	50-59	60+	Total			
	Age started smoking cigarettes regularly	Wife	0.80	0.23	0.34	0.53	**		
		Husband	0.67	0.49	0.36	0.46	N.S.		
	Most cigarettes smoked (>0)	Wife	0.71	0.72	0.77	0.74	N.S.		
		Husband	0.58	0.85	0.64	0.69	*		
	Years since smoked (ex smoker)	Wife	0.78	0.72	0.85	0.80	N.S.		
		Husband	0.96	0.75	0.87	0.87	*		
SOCIAL CLASS			AB	C1	C2	D	Total		
	Ever smoked pipe or cigars regularly	Wife	X	X	X	1.00	1.00	NS3	
		Husband	0.87	0.88	0.78	0.40	0.75	*	
	Age started smoking cigarettes regularly	Wife	0.02	0.29	0.65	0.79	0.52	(*)	
		Husband	0.62	0.50	0.80	0.15	0.42	*	
	Most cigarettes smoked (>0)	Wife	0.52	0.82	0.94	0.65	0.75	*	
		Husband	0.86	0.59	0.71	0.85	0.76	N.S.	
	Current cigarettes smoked (>0)	Wife	0.70	0.83	0.90	0.44	0.71	*	
		Husband	0.95	0.71	0.22	0.89	0.82	*	
	Years since smoked (ex smoker)	Wife	0.97	0.78	0.98	0.51	0.77	N.S.	
		Husband	0.95	0.88	0.98	0.50	0.84	*	
EMPLOYMENT - SELF			Full	Part	Retir-ed	Hse-keep	Other	Total	
	Age started smoking cigarettes regularly	Wife	0.23	0.69	0.38	0.75	0.80	0.53	**
		Husband	0.40	0.92	0.35		0.84	0.46	***
	Most cigarettes smoked (>0)	Wife	0.73	0.70	0.78	0.63	0.81	0.74	N.S.
		Husband	0.74	0.97	0.60		0.66	0.69	***
	Current cigarettes smoked (>0)	Wife	0.63	0.78	0.84	0.69	0.14	0.62	N.S.
		Husband	0.83	0.97	0.48		0.81	0.78	**
	Years since smoked (ex smoker)	Wife	0.65	0.55	0.91	0.75	0.95	0.80	N.S.
		Husband	0.80	1.00	0.86		0.93	0.87	**
EMPLOYMENT - SPOUSE			Full	Part	Retir-ed	Hse-keep	Other	Total	
	Ever regularly smoked 20+ cigarettes	Wife	0.87	0.29	0.67		0.78	0.77	*
		Husband	0.83	0.95	0.69	0.86	0.63	0.82	*
	Smokes indoors at home (regular smokers only)	Wife	0.66	X	0.78		X	0.74	N.S.
		Husband	1.00	0.65	0.63	-0.05	X	0.73	*
	Age started smoking cigarettes regularly	Wife	0.49	0.07	0.46		0.91	0.53	***
		Husband	0.52	0.51	0.25	0.83	0.71	0.46	*

/cont

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 5.2 (Continued)

EMPLOYMENT - SPOUSE (continued)			Full	Part	Retir-ed	Hse-keep	Other	Total	
	Most cigarettes smoked (>0)	Wife	0.76	0.46	0.64		0.85	0.74	N.S.
		Husband	0.54	0.82	0.56	0.74	0.95	0.69	**
	Current cigarettes smoked (>0)	Wife	0.75	0.91	0.81		0.11	0.61	*
		Husband	0.68	0.73	0.63	0.83	0.93	0.78	N.S.
	Years since smoked (ex smoker)	Wife	0.83	0.78	0.87		0.28	0.80	N.S.
		Husband	0.98	0.70	0.92	0.97	-0.09	0.87	***
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	Age started smoking cigarettes regularly	Wife	0.28	0.55	0.71	0.54	(*)		
		Husband	0.41	0.82	0.38	0.47	**		
APARTNESS			0	>0	Total				
	Cigarette smoking status (3 cats)	Wife	0.94	0.99	0.95	*			
		Husband	0.95	0.97	0.95	N.S.			
	Years since smoked (ex smoker)	Wife	0.81	0.73	0.79	N.S.			
		Husband	0.86	0.97	0.87	*			
HEALTHINESS OF DIET			Both-	Self-pr+	Self+ pr-	Both +	Total		
	Ever regularly smoked 20+ cigarettes	Wife	0.80	0.92	0.66	0.70	0.77	*	
		Husband	0.81	1.00	0.87	0.76	0.82	N.S.	
	Ever smoked pipe or cigars regularly	Wife	0.66	X	X	0.50	0.57	N.S.	
		Husband	0.57	0.93	0.79	0.73	0.72	*	
	Age started smoking cigarettes regularly	Wife	0.85	0.92	0.02	0.52	0.52	***	
		Husband	0.34	0.75	0.29	0.68	0.46	N.S.	
EVER SMOKED CIGARETTES - SELF			Yes	No	Total				
	Ever smoked pipe or cigars regularly	Wife	0.39	1.00	0.57	NS3			
		Husband	0.66	0.95	0.72	***			
	Current regular smoker any product	Wife	0.93	-0.01	0.94	***			
		Husband	0.96	0.39	0.95	*			
EVER SMOKED CIGARETTES - SPOUSE			Yes	No	Total				
	Ever regularly smoked 20+ cigarettes	Wife	0.73	0.89	0.77	*			
		Husband	0.79	0.82	0.82	N.S.			
	Age started smoking cigarettes regularly	Wife	0.52	0.65	0.53	N.S.			
		Husband	0.38	0.76	0.47	*			
	Current cigarettes smoked (>0)	Wife	0.59	0.89	0.63	*			
		Husband	0.74	0.97	0.78	**			
	Years since smoked (ex smoker)	Wife	0.78	0.98	0.80	*			
		Husband	0.81	0.93	0.87	N.S.			

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 5.2 (Continued 2)

ALCOHOL - SELF			Abs/ vocc	Light	Mod/ heavy	Total		
	Age started smoking cigarettes regularly	Wife	0.50	0.86	0.37	0.53	*	
		Husband	0.84	0.17	0.55	0.46	***	
ALCOHOL - SPOUSE			Abs/ vocc	Light	Mod/ heavy	Total		
	Ever smoked cigarettes regularly	Wife	0.93	0.87	0.96	0.93	N.S.	
		Husband	0.86	0.98	0.88	0.90	*	
	Ever regularly smoked 20+ cigarettes	Wife	0.80	0.76	0.77	0.77	N.S.	
		Husband	0.72	0.97	0.85	0.82	***	
	Ever smoked any product regularly	Wife	0.93	0.87	0.96	0.93	N.S.	
		Husband	0.93	0.98	0.75	0.91	*	
	Cigarette smoking status (3 cats)	Wife	0.96	0.89	0.98	0.95	(*)	
		Husband	0.94	0.99	0.94	0.95	**	
OUGHT TO CUT DOWN ALCOHOL			Both N	SelfN prY	SelfY prN	Both Y		
	Ever smoked pipe or cigars regularly	Wife	0.50	X	0.65	X	0.57	N.S.
		Husband	0.74	0.86	0.64	0.36	0.71	*
	Age started smoking cigarettes regularly	Wife	0.62	-0.49	0.14	0.61	0.55	***
		Husband	0.57	0.56	0.83	-0.08	0.45	***
NEUROTICISM			Both-	Self- pr+	Self+ pr-	Both +	Total	
	Age started smoking cigarettes regularly	Wife	0.34	0.92	0.42	0.24	0.49	***
		Husband	0.48	0.40	0.49	0.63	0.50	N.S.
	Most cigarettes smoked (>0)	Wife	0.71	0.94	0.62	0.73	0.72	***
		Husband	0.65	0.66	0.77	0.73	0.70	N.S.
	Current cigarettes smoked (>0)	Wife	0.88	-0.59	0.80	0.70	0.65	***
		Husband	0.89	0.85	0.70	0.75	0.81	N.S.
EXTROVERSION			Both-	Self- pr+	Self+ pr-	Both +	Total	
	Age started smoking cigarettes regularly	Wife	0.09	0.32	0.84	0.20	0.34	***
		Husband	0.33	0.72	0.64	0.38	0.48	N.S.
	Years since smoked (ex smoker)	Wife	0.94	0.95	0.79	0.71	0.85	N.S.
		Husband	0.77	0.75	0.99	0.85	0.84	*
GENERAL HEALTH			Excel lent	Good	Fair/P oor	Total		
	Cigarette smoking status (3 cats)	Wife	0.92	0.95	0.97	0.95	N.S.	
		Husband	0.94	0.94	0.99	0.95	*	
	Age started smoking cigarettes regularly	Wife	0.95	0.26	0.87	0.53	***	
		Husband	0.62	0.36	0.55	0.46	N.S.	

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 5.2 (Continued 3)

ACTIVITIES LIMITED			Yes	No	Total		
	Years since smoked (ex smoker)	Wife	0.96	0.77	0.80	*	
		Husband	0.83	0.88	0.87	N.S.	
N PROBLEMS LAST MONTH			0	1-2	3-5	6+	Total
	Most cigarettes smoked (>0)	Wife	0.90	0.73	0.78	0.53	0.74	*
		Husband	0.75	0.64	0.68	0.81	0.69	N.S.
	Current cigarettes smoked (>0)	Wife	0.92	0.80	0.40	0.60	0.63	**
		Husband	0.85	0.78	0.71	0.80	0.78	N.S.
N ILLNESSES EVER			0	1-2	3+	Total	
	Age started smoking cigarettes regularly	Wife	0.89	0.65	0.33	0.53	**
		Husband	0.22	0.71	0.34	0.46	(*)
	Most cigarettes smoked (>0)	Wife	0.86	0.82	0.55	0.74	*
		Husband	0.73	0.67	0.70	0.69	N.S.
	Years since smoked (ex smoker)	Wife	0.98	0.69	0.82	0.80	*
		Husband	0.98	0.87	0.85	0.87	*
ANY CARDIORESPIRATORY SYMPTOM			Yes	No	Total		
	Ever regularly smoked 20+ cigarettes	Wife	0.67	0.85	0.77	*	
		Husband	0.70	0.87	0.82	*	
	Ever smoked pipe or cigars regularly	Wife	1.00	0.39	0.57	NS3	
		Husband	0.62	0.79	0.72	*	
	Most cigarettes smoked (>0)	Wife	0.69	0.78	0.74	N.S.	
		Husband	0.59	0.84	0.69	**	

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 5.3
Significant variation in difference in response - Smoking

Covariate	Smoking Variable	Subject	Statistics on difference in response						
SOCIAL CLASS			AB	C1	C2	D	Total		
	Ever smoked cigarettes regularly	Wife	0/0	6/0	0/9	4/0	3/2	**	
		Husband	3/5	0/4	0/0	2/6	1/4	N.S.	
	Ever smoked any product regularly	Wife	0/0	6/0	0/9	4/0	3/2	**	
		Husband	0/3	0/3	2/0	0/4	0/2	N.S.	
	Cigarette smoking status (3 cats)	Wife	0/0	8/0	0/9	4/0	4/2	**	
		Husband	5/5	0/5	0/0	4/6	2/4	N.S.	
EMPLOYMENT - SELF			Full	Part	Retired	Housekeep	Other	Total	
	Ever smoked cigarettes regularly	Wife	1/3	6/0	2/0	0/3	0/0	2/1	(*)
		Husband	0/4	12/0	2/2		0/2	1/3	*
	Ever regularly smoked 20+ cigarettes	Wife	3/1	4/7	3/8	9/0	11/0	5/4	*
		Husband	1/4	7/7	2/8		5/14	2/7	N.S.
EMPLOYMENT - SPOUSE			Full	Part	Retired	Housekeep	Other	Total	
	Age started smoking cigarettes regularly	Wife	1.57	-9.00	-0.40		0.11	0.40	**
		Husband	-0.76	-0.28	1.02	0.30	-0.46	0.08	N.S.
	Most cigarettes smoked (>0)	Wife	0.00	-2.00	-2.49		2.82	-0.40	*
		Husband	1.17	-0.77	-2.35	-4.18	0.42	-1.38	N.S.
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	Age started smoking cigarettes regularly	Wife	1.44	-0.35	0.28	0.57	N.S.		
		Husband	-0.95	0.19	0.73	0.02	*		
ALCOHOL - SELF			Abs/vocc	Light	Mod/heavy	Total			
	Age started smoking cigarettes regularly	Wife	0.02	0.67	0.89	0.40	N.S.		
		Husband	-0.08	1.20	-0.48	0.09	*		
ALCOHOL - SPOUSE			Abs/vocc	Light	Mod/heavy	Total			
	Ever smoked pipe or cigars regularly	Wife	0/0	1/0	1/1	1/0	N.S.		
		Husband	2/10	6/3	5/10	3/8	*		
	Age started smoking cigarettes regularly	Wife	0.21	-0.68	1.46	0.40	N.S.		
		Husband	0.68	-0.28	-1.03	0.09	*		
ACTIVITIES LIMITED			Yes	No	Total				
	Current cigarettes smoked (>0)	Wife	-3.71	0.81	-0.07	*			
		Husband	-0.80	-1.28	-1.16	N.S.			

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables; mean difference for continuous variables

TABLE 6.1
Agreement between husband and wife - ETS - based on whole population

6.1A 0/1 variables		N	Self%	Proxy%	Agree%	FPos%	FNeg %	McN P	Kappa	KapSE	Kap P
Spouse current regular cigarette smoker	Wife	388	24.48	24.23	99.23	0.26	0.52	N.S.	0.98	0.01	***
	Husband	387	26.36	25.32	97.93	0.52	1.55	N.S.	0.95	0.02	***
Spouse ever regular cigarette smoker	Wife	388	70.62	72.16	95.88	2.84	1.29	N.S.	0.90	0.02	***
	Husband	387	55.04	54.01	96.38	1.29	2.33	N.S.	0.93	0.02	***
Other household member smokes[1]		378	9.26	9.79	96.30	2.12	1.59	N.S.	0.79	0.06	***
Other household member smokes indoors[1]		378	6.61	7.14	96.30	2.12	1.59	N.S.	0.71	0.07	***
Father smoked (excl DK)	Wife	297	78.45	79.12	89.90	5.39	4.71	N.S.	0.70	0.05	***
	Husband	280	81.43	77.86	91.43	2.50	6.07	(-)	0.74	0.05	***
Father smoked (DK as No)	Wife	394	73.35	60.15	77.66	4.57	17.77	---	0.51	0.04	***
	Husband	391	78.01	56.27	73.66	2.30	24.04	---	0.43	0.04	***
Mother smoked (excl DK)	Wife	326	36.50	38.04	91.72	4.91	3.37	N.S.	0.82	0.03	***
	Husband	318	40.25	39.31	92.14	3.46	4.40	N.S.	0.84	0.03	***
Mother smoked (DK as No)	Wife	393	36.39	31.55	87.02	4.07	8.91	-	0.71	0.04	***
	Husband	393	38.93	32.32	86.77	3.31	9.92	---	0.71	0.04	***
Other household smoker during childhood (excl DK)	Wife	284	17.96	18.66	84.51	8.10	7.39	N.S.	0.48	0.07	***
	Husband	257	22.96	25.29	81.32	10.51	8.17	N.S.	0.49	0.06	***
Other household smoker during childhood (DK as No)	Wife	392	20.15	13.52	81.63	5.87	12.50	--	0.35	0.06	***
	Husband	390	25.13	17.18	77.18	7.44	15.38	--	0.32	0.06	***

6.1B Graded variables		N	Self%	Proxy%	Agree%	High%	Low%	WSR P	KappaW	KapWSE	KapW P
Visitors smoke in home[1] (5 cats[2])		388	18.56	18.30	59.54	20.62	19.85	N.S.	0.74	0.03	***
ETS at work (5 cats[2])	Wife	206	23.30	27.18	57.28	27.18	15.53	+	0.57	0.06	***
	Husband	191	41.36	45.55	55.50	25.13	19.37	N.S.	0.59	0.06	***
Other ETS (5 cats[2])	Wife	358	24.86	28.77	41.06	30.17	28.77	N.S.	0.44	0.05	***
	Husband	344	39.24	36.34	42.15	24.13	33.72	(-)	0.51	0.05	***
Total ETS (5 cats[3])	Wife	361	21.05	21.33	53.74	26.32	19.94	N.S.	0.55	0.05	***
	Husband	349	24.07	30.66	51.58	22.06	26.36	N.S.	0.60	0.04	***

[1] Wife's report treated as "self" report
[2] Cut point: Few times a week
[3] Cut point: 1 hour per day

TABLE 6.2
Agreement between husband and wife - ETS - based on never smokers

6.2A 0/1 variables		N	Self%	Proxy%	Agree%	FPos%	FNeg%	McN P	Kappa	KapSE	Kap P
Spouse current regular cigarette smoker	Wife	180	8.89	8.33	99.44	0.00	0.56	N.S.	0.96	0.04	***
	Husband	109	11.93	12.84	99.08	0.92	0.00	N.S.	0.96	0.04	***
Spouse ever regular cigarette smoker	Wife	180	58.33	58.89	95.00	2.78	2.22	N.S.	0.90	0.03	***
	Husband	109	31.19	32.11	97.25	1.83	0.92	N.S.	0.94	0.04	***
Other household member smokes	Wife[1]	181	7.18	7.73	98.34	1.10	0.55	N.S.	0.88	0.07	***
	Husband[2]	110	6.36	6.36	98.18	0.91	0.91	N.S.	0.85	0.11	***
Other household member smokes indoors	Wife[1]	181	2.76	3.31	98.34	1.10	0.55	N.S.	0.72	0.16	***
	Husband[2]	80	3.75	2.50	98.75	0.00	1.25	N.S.	0.79	0.20	***
Father smoked (excl DK)	Wife	138	73.91	74.64	87.68	6.52	5.80	N.S.	0.68	0.07	***
	Husband	85	71.76	65.88	87.06	3.53	9.41	N.S.	0.70	0.08	***
Father smoked (incl DK as No)	Wife	185	67.03	56.22	78.38	5.41	16.22	--	0.55	0.06	***
	Husband	113	69.03	49.56	75.22	2.65	22.12	---	0.51	0.07	***
Mother smoked (excl DK)	Wife	161	29.19	32.30	95.65	3.73	0.62	N.S.	0.90	0.04	***
	Husband	94	37.23	32.98	93.62	1.06	5.32	N.S.	0.86	0.05	***
Mother smoked (incl DK as No)	Wife	185	29.19	28.11	92.43	3.24	4.32	N.S.	0.81	0.05	***
	Husband	113	35.40	27.43	90.27	0.88	8.85	-	0.78	0.06	***
Other household smokers during childhood (excl DK)	Wife	140	13.57	14.29	90.71	5.00	4.29	N.S.	0.61	0.10	***
	Husband	82	10.98	17.07	91.46	7.32	1.22	N.S.	0.65	0.12	***
Other household smokers during childhood (incl DK as No)	Wife	184	14.67	10.87	88.59	3.80	7.61	N.S.	0.49	0.10	***
	Husband	113	15.93	13.27	84.96	6.19	8.85	N.S.	0.40	0.12	***

6.2B Graded variables		N	Self%	Proxy%	Agree%	High%	Low%	WSR P	KappaW	KapWSE	KapW P
Visitors smoke in home (5 cats[3])	Wife[1]	186	10.22	9.68	59.68	18.28	22.04	N.S.	0.64	0.06	***
	Husband[2]	113	5.31	6.19	55.75	23.89	20.35	N.S.	0.55	0.07	***
ETS at work (5 cats[3])	Wife	103	21.36	21.36	63.11	20.39	16.50	N.S.	0.60	0.09	***
	Husband	63	33.33	34.92	52.38	25.40	22.22	N.S.	0.64	0.09	***
Other ETS (5 cats[3])	Wife	167	14.97	17.37	41.32	28.14	30.54	N.S.	0.45	0.06	***
	Husband	95	33.68	20.00	41.05	16.84	42.11	--	0.36	0.12	***
Total ETS (5 cats[4])	Wife	173	15.61	12.72	61.85	20.23	17.92	N.S.	0.63	0.07	***
	Husband	101	13.86	17.82	50.50	14.85	34.65	-	0.67	0.08	***

[1] Wife's report treated as "self" report. Wife never smoker
[2] Husband's report treated as "self" report. Husband never smoker
[3] Cut point: Few times a week
[4] Cut point: 1-4 hours per day

Table 6.3
Significant variation in extent of association - ETS - based on never smokers

Covariate	ETS variable	Subject	Association statistics						
AGE			<50	50-59	60+	Total			
	ETS at work (5 cats)	Wife	0.61	0.51	0.88	0.60	*		
		Husband	0.80	0.26	0.38	0.64	(*)		
	Total ETS (5 cats)	Wife	0.63	0.45	0.85	0.63	*		
		Husband	0.78	0.57	0.55	0.67	N.S.		
SOCIAL CLASS			AB	C1	C2	D	Total		
	Other household smoker childhood	Wife	-0.06	0.79	0.76	0.62	0.63	***	
		Husband	0.00	0.83	1.00	1.00	0.74	NS3	
	Visitors smoke in home (5 cats)	Wife	0.52	0.40	0.27	0.64	0.52	N.S.	
		Husband	0.73	0.36	0.80	0.33	0.60	*	
EMPLOYMENT - SELF			Full	Part	Retir-ed	Hse-keep	Other	Total	
	Other household member smokes indoors	Wife[1]	-0.02	0.79	1.00	1.00	X	0.72	***
		Husband[2]	0.00	X	1.00		X	0.79	NS3
	ETS at work (5 cats)[3]	Wife	0.62	0.51	0.96	-0.03	1.00	0.60	N.S.
		Husband	0.73	0.00	-0.45		X	0.68	**
	Other ETS (5 cats)	Wife	0.45	0.16	0.65	0.49	-0.67	0.45	***
		Husband	0.48	0.00	0.14		0.26	0.36	N.S.
	Total ETS (5 cats)	Wife	0.66	0.40	0.81	0.57	0.78	0.63	N.S.
		Husband	0.74	0.00	0.21		0.94	0.67	***
	Visitors smoke in home (5 cats)	Wife[1]	0.48	0.55	0.69	0.78	0.00	0.65	N.S.
		Husband[2]	0.64	0.00	0.38		0.80	0.56	*
APARTNESS			0	>0	Total				
	ETS at work (5 cats)	Wife	0.54	0.88	0.59	**			
		Husband	0.70	0.38	0.64	N.S.			
	Other ETS (5 cats)	Wife	0.45	0.42	0.45	N.S.			
		Husband	0.24	0.74	0.36	**			
HEALTHINESS OF DIET			Both-	Self-pr+	Self+pr-	Both+	Total		
	Other household smoker childhood	Wife	0.49	0.44	1.00	0.55	0.59	N.S.	
		Husband	0.64	-0.12	0.00	0.92	0.69	***	
	ETS at work (5 cats)	Wife	0.30	0.49	0.97	0.63	0.59	***	
		Husband	0.70	0.96	0.53	0.54	0.64	**	
	Total ETS (5 cats)	Wife	0.78	0.68	0.38	0.63	0.63	N.S.	
		Husband	0.63	0.36	0.91	0.57	0.66	*	
	Visitors smoke in home (5 cats)	Wife[1]	0.83	0.53	0.62	0.59	0.62	N.S.	
		Husband[2]	0.60	0.22	0.66	0.59	0.57	*	

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

[1] Wife's report treated as "self" report. Wife never smoker. Wife's covariate values

[2] Husband's report treated as "self" report. Husband never smoker. Husband's covariate values

[3] The test of significance for ETS at work is between fulltime and parttime work only, since the number of subjects in the other categories is very small

Table 6.3 (Continued)

EVER SMOKED CIGARETTES - SPOUSE			Yes	No	Total			
	Visitors smoke in home (5 cats)	Wife[1]	0.71	0.42	0.64	*		
		Husband[2]	0.71	0.34	0.53	**		
ALCOHOL - SPOUSE			Abs/ vocc	Light	Mod/hea vy	Total		
	Other household smoker childhood	Wife	0.37	0.73	0.66	0.61	N.S.	
		Husband	0.33	1.00	0.85	0.65	*	
OUGHT TO CUT DOWN ALCOHOL			BothN	SelfN prY	SelfY prN	BothY		
	ETS at work (5 cats)	Wife	0.58	0.00	1.00	0.67	0.58	N.S.
		Husband	0.56	0.88	0.80	0.97	0.64	**
	Other ETS (5 cats)	Wife	0.44	0.00	0.00	1.00	0.45	(*)
		Husband	0.29	0.71	0.13	0.50	0.35	***
	Total ETS (5 cats)	Wife	0.59	1.00	0.65	0.82	0.63	*
		Husband	0.60	0.77	0.67	0.90	0.67	(*)
	Visitors smoke in home (5 cats)	Wife[1]	0.57	1.00	0.85	1.00	0.64	*
		Husband[2]	0.57	0.28	0.29	0.80	0.55	*
NEUROTICISM			Both-	Self-pr+	Self+pr-	Both+	Total	
	Father smoked	Wife	0.60	0.39	0.73	1.00	0.69	N.S.
		Husband	0.80	0.67	-0.12	0.62	0.68	***
	ETS at work (5 cats)	Wife	0.75	0.02	0.67	0.70	0.61	***
		Husband	0.63	0.65	0.02	0.87	0.63	*
	Other ETS (5 cats)	Wife	0.35	0.19	0.44	0.62	0.45	N.S.
		Husband	0.34	0.66	-0.12	0.00	0.40	***
	Total ETS (5 cats)	Wife	0.40	-0.12	0.67	0.79	0.63	***
		Husband	0.61	0.79	-0.03	0.87	0.72	**
ANY CARDIORESPIRATORY SYMPTOM			Yes	No	Total			
	Father smoked	Wife	0.93	0.58	0.68	**		
		Husband	0.00	0.69	0.70	NS3		
	Other household smoker childhood	Wife	0.89	0.50	0.61	*		
		Husband	0.83	0.53	0.65	N.S.		
	Other ETS (5 cats)	Wife	0.72	0.32	0.45	***		
		Husband	0.40	0.35	0.36	N.S.		

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

[1] Wife's report treated as "self" report. Wife never smoker. Wife's covariate values

[2] Husband's report treated as "self" report. Husband never smoker. Husband's covariate values

Table 6.4
Significant variation in difference in response - ETS - based on never smokers

Covariate	ETS variate	Subject	Statistics on difference in response						
EMPLOYMENT - SELF			Full	Part	Retired	Housekeep	Other	Total	
	Other household smoker childhood	Wife	3/6	11/0	5/0	0/15	0/0	5/4	*
		Husband	6/0	0/0	13/5		0/0	7/1	N.S.
EMPLOYMENT - SPOUSE			Full	Part	Retired	Housekeep	Other	Total	
	Total ETS (5 cats)	Wife	24/15	29/14	11/21		28/22	20/18	N.S.
		Husband	13/53	15/26	23/23	0/37	67/0	15/35	*
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	ETS at work (5 cats)	Wife	14/21	34/6	13/22	21/16	*		
		Husband	21/27	24/12	56/11	27/20	N.S.		
NEUROTICISM			Both -	Self- pr+	Self+ pr-	Both +	Total		
	Mother smoked	Wife	0/0	13/0	10/0	0/3	4/1	*	
		Husband	3/8	0/0	0/9	0/10	1/6	N.S.	
	ETS at work (5 cats)	Wife	16/20	55/0	13/26	4/16	16/18	**	
		Husband	32/16	25/19	20/40	0/43	24/24	N.S.	
	Visitors smoke in home (5 cats)	Wife[1]	12/31	33/6	21/23	22/17	20/22	*	
		Husband[2]	28/12	32/19	0/36	8/33	23/20	*	
GENERAL HEALTH			Excellent	Good	Fair/Poor	Total			
	Other household smoker childhood	Wife	6/6	5/5	4/0	5/4	N.S.		
		Husband	15/0	6/0	0/13	7/1	*		
	Other ETS (5 cats)	Wife	45/19	22/32	22/44	28/31	**		
		Husband	19/41	17/40	10/60	17/42	N.S.		
	Total ETS (5 cats)	Wife	41/17	13/18	14/18	20/18	*		
		Husband	21/34	11/34	20/40	15/35	N.S.		
N PROBLEMS LAST MONTH			0	1-2	3-5	6+	Total		
	Other household smoker childhood	Wife	7/0	4/6	6/6	0/0	5/4	N.S.	
		Husband	14/0	6/0	0/5	0/0	7/1	*	
	Visitors smoke in home (5 cats)	Wife[1]	23/19	14/23	27/20	5/27	18/22	N.S.	
		Husband[2]	26/21	32/9	11/37	0/40	24/20	**	
N ILLNESSES EVER			0	1-2	3+	Total			
	Visitors smoke in home (5 cats)	Wife[1]	21/28	18/15	17/29	18/22	N.S.		
		Husband[2]	23/26	31/11	5/35	24/20	*		

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables

[1] Wife's report treated as "self" report. Wife never smoker. Wife's covariate values

[2] Husband's report treated as "self" report. Husband never smoker. Husband's covariate values

TABLE 7.1
Agreement between husband and wife - Diet

7.1A 0/1 variables		N	Self%	Proxy%	Agree%	FPos%	FNeg%	McN P	Kappa	KapSE	Kap P
Eats meals at regular times	Wife	385	85.19	84.68	84.42	7.53	8.05	N.S.	0.39	0.06	***
	Husband	384	83.59	83.07	86.46	6.51	7.03	N.S.	0.51	0.06	***
Eats brown bread (vs white)	Wife	269	40.89	39.78	89.22	4.83	5.95	N.S.	0.78	0.04	***
	Husband	305	33.44	34.43	93.77	3.61	2.62	N.S.	0.86	0.03	***
Ever eaten fatty food	Wife	389	96.40	96.66	95.63	2.31	2.06	N.S.	0.35	0.12	***
	Husband	385	97.66	96.62	96.88	1.04	2.08	N.S.	0.44	0.13	***
Ever cut down on fatty food	Wife	367	87.47	86.10	88.28	5.18	6.54	N.S.	0.49	0.07	***
	Husband	368	76.63	76.36	82.88	8.42	8.70	N.S.	0.52	0.05	***
Sugar in tea or coffee	Wife	384	30.99	31.25	91.93	4.17	3.91	N.S.	0.81	0.03	***
	Husband	386	48.45	48.45	91.19	4.40	4.40	N.S.	0.82	0.03	***
Drinks semi/skimmed milk (vs full cream)	Wife	335	79.10	78.51	96.42	1.49	2.09	N.S.	0.89	0.03	***
	Husband	344	72.97	74.42	95.06	3.20	1.74	N.S.	0.87	0.03	***

7.1B Graded variables		N	Self%	Proxy%	Agree%	High%	Low%	WSR P	KappaW	KapWSE	KapW P
Time to first meal (4 cats[1])	Wife	385	41.30	47.27	65.45	19.74	14.81	N.S.	0.66	0.04	***
	Husband	389	44.99	43.19	70.69	11.57	17.74	-	0.78	0.03	***
Frequency of use of butter/hard margarine (6 cats[2])	Wife	273	44.32	42.12	52.01	24.91	23.08	N.S.	0.63	0.05	***
	Husband	277	46.93	47.65	56.68	22.02	21.30	N.S.	0.63	0.04	***
Frequency of use of soft margarine (6 cats[2])	Wife	236	36.86	41.10	55.08	26.69	18.22	(+)	0.59	0.05	***
	Husband	255	43.14	43.14	53.33	21.57	25.10	N.S.	0.55	0.05	***
Frequency of use of low fat spread (6 cats[2])	Wife	259	47.10	50.19	52.51	27.80	19.69	(+)	0.60	0.05	***
	Husband	243	47.74	47.74	61.32	19.34	19.34	N.S.	0.67	0.05	***
Frequency of use of jam/honey/marmalade (6 cats[2])	Wife	349	27.79	27.51	51.29	28.65	20.06	+	0.63	0.04	***
	Husband	358	30.17	31.84	54.19	22.35	23.46	N.S.	0.73	0.03	***
Tea consumption daily (6 cats[3])	Wife	394	57.87	57.61	66.75	16.50	16.75	N.S.	0.90	0.01	***
	Husband	390	53.33	54.87	61.79	19.23	18.97	N.S.	0.87	0.02	***
Coffee consumption daily (6 cats[3])	Wife	389	32.90	31.36	64.01	16.20	19.79	N.S.	0.85	0.02	***
	Husband	391	41.18	41.69	63.43	17.65	18.93	N.S.	0.83	0.02	***
Amount of milk (4 cats[4])	Wife	388	57.47	54.38	63.66	16.75	19.59	N.S.	0.57	0.04	***
	Husband	389	66.07	65.30	64.01	16.97	19.02	N.S.	0.58	0.04	***
Healthiness of diet (4 cats[5])	Wife	392	67.60	73.98	60.20	25.00	14.80	+++	0.39	0.05	***
	Husband	392	66.07	57.14	62.50	12.76	24.74	---	0.46	0.05	***

[1] Cut point: ½ to 1 hour
[2] Cut point: Once per day
[3] Cut point: 3-5 times per day
[4] Cut point: Third to one pint per day
[5] Cut point: Good

7.1B Graded variables (continued)		N	Self%	Proxy%	Agree%	High%	Low%	WSR P	KappaW	KapWSE	KapW P
Fresh fruit in summer (6 cats)	Wife	387	54.52	44.44	43.67	17.05	39.28	---	0.60	0.04	***
	Husband	384	40.10	43.49	39.84	27.60	32.55	N.S.	0.65	0.03	***
Fresh fruit in winter (6 cats)	Wife	359	46.24	35.93	39.55	19.22	41.23	---	0.61	0.04	***
	Husband	353	35.13	37.11	41.36	24.36	34.28	N.S.	0.69	0.03	***
Salad/raw veg in summer (6 cats)	Wife	359	36.77	18.66	42.90	16.16	40.95	---	0.45	0.04	***
	Husband	347	17.87	17.29	51.59	20.75	27.67	(-)	0.58	0.04	***
Salad/raw veg in winter (6 cats)	Wife	346	19.65	8.67	44.80	24.86	30.35	---	0.50	0.04	***
	Husband	330	7.27	10.00	46.97	26.06	26.97	N.S.	0.58	0.04	***
Tinned fruit (6 cats)	Wife	341	1.47	0.59	51.61	26.98	21.41	N.S.	0.44	0.05	***
	Husband	338	1.48	1.78	58.58	13.91	27.51	---	0.54	0.04	***
Chips (6 cats)	Wife	363	1.65	0.83	63.91	22.31	13.77	+	0.56	0.05	***
	Husband	364	1.65	1.92	65.93	14.84	19.23	N.S.	0.56	0.04	***
Potatoes (not chips) (6 cats)	Wife	368	25.54	10.87	46.20	17.39	36.41	---	0.40	0.04	***
	Husband	362	17.96	22.93	51.66	24.31	24.03	N.S.	0.46	0.05	***
Root vegetables (6 cats)	Wife	368	17.93	7.61	43.21	24.46	32.34	(-)	0.35	0.06	***
	Husband	360	11.11	14.72	43.33	27.50	29.17	N.S.	0.40	0.04	***
Peas and beans (6 cats)	Wife	375	11.47	5.87	48.27	24.27	27.47	N.S.	0.39	0.05	***
	Husband	374	7.75	9.09	48.93	21.12	29.95	N.S.	0.31	0.06	***
Green veg (6 cats)	Wife	363	24.24	11.02	50.96	19.56	29.48	---	0.42	0.05	***
	Husband	370	11.08	16.22	49.46	27.03	23.51	N.S.	0.45	0.05	***
Other veg (6 cats)	Wife	361	15.79	4.16	43.49	17.45	39.06	---	0.32	0.05	***
	Husband	369	6.78	11.38	47.43	29.81	22.76	(+)	0.31	0.06	***
Nuts (6 cats)	Wife	327	2.14	0.92	55.35	19.57	25.08	N.S.	0.44	0.05	***
	Husband	317	2.21	1.26	60.25	17.35	22.40	(-)	0.55	0.06	***
Crisps and snacks (6 cats)	Wife	360	8.61	4.72	48.33	24.44	27.22	(-)	0.55	0.05	***
	Husband	352	6.53	7.95	55.97	24.15	19.89	N.S.	0.67	0.04	***
Sweets and chocolates (6 cats)	Wife	354	8.47	6.50	50.85	23.73	25.42	N.S.	0.61	0.04	***
	Husband	354	4.80	9.04	50.28	26.27	23.45	N.S.	0.62	0.03	***
Pasta and rice (6 cats)	Wife	355	4.23	1.69	62.82	17.75	19.44	N.S.	0.59	0.04	***
	Husband	356	1.12	2.25	63.76	16.57	19.66	N.S.	0.60	0.05	***
Breakfast cereals (6 cats)	Wife	356	42.13	30.90	55.62	17.70	26.69	--	0.72	0.04	***
	Husband	358	37.71	41.06	62.85	20.11	17.04	N.S.	0.81	0.03	***
Biscuits (6 cats)	Wife	353	18.41	9.35	41.08	24.36	34.56	--	0.58	0.04	***
	Husband	356	13.20	20.79	46.07	30.62	23.31	++	0.60	0.04	***
Cakes (6 cats)	Wife	352	5.11	3.69	56.53	21.02	22.44	N.S.	0.58	0.04	***
	Husband	351	4.84	9.40	53.85	28.49	17.66	++	0.60	0.04	***

Cut points for all graded variables on this page: Once per day

7.1B Graded variables (continued)		N	Self%	Proxy%	Agree%	High%	Low%	WSR P	KappaW	KapWSE	KapW P
Puddings (6 cats)	Wife	353	4.53	1.98	50.99	27.48	21.53	N.S.	0.47	0.05	***
	Husband	345	3.19	6.96	49.57	25.22	25.22	N.S.	0.50	0.05	***
Ice cream, yoghurt (6 cats)	Wife	365	13.15	8.77	48.77	23.29	27.95	N.S.	0.46	0.05	***
	Husband	360	6.39	9.72	51.11	26.11	22.78	N.S.	0.54	0.05	***
Soft drinks (6 cats)	Wife	350	17.14	13.43	45.14	30.86	24.00	N.S.	0.65	0.04	***
	Husband	350	14.57	15.14	46.29	22.86	30.86	(-)	0.65	0.04	***
Pure fruit juice (6 cats)	Wife	343	21.57	16.91	47.23	20.70	32.07	---	0.62	0.04	***
	Husband	330	16.97	17.88	53.94	21.82	24.24	N.S.	0.72	0.04	***
Cheese (6 cats)	Wife	370	13.24	6.22	47.84	18.65	33.51	---	0.51	0.05	***
	Husband	371	10.78	13.21	56.06	24.80	19.14	(+)	0.63	0.04	***
Eggs (6 cats)	Wife	375	4.27	1.60	57.07	18.40	24.53	--	0.45	0.05	***
	Husband	378	4.50	4.50	58.73	18.52	22.75	N.S.	0.57	0.05	***
Cream (6 cats)	Wife	352	0.57	0.57	60.23	21.88	17.90	(+)	0.51	0.06	***
	Husband	338	1.48	1.18	60.95	17.75	21.30	N.S.	0.51	0.07	***
Fish (6 cats)	Wife	376	1.33	1.06	61.17	18.62	20.21	N.S.	0.47	0.05	***
	Husband	374	1.07	0.53	66.58	16.84	16.58	N.S.	0.41	0.06	***
Poultry (6 cats)	Wife	353	1.70	0.85	65.44	17.00	17.56	N.S.	0.46	0.06	***
	Husband	349	1.43	1.15	66.19	18.34	15.47	N.S.	0.40	0.08	***
Sausages, pasties (6 cats)	Wife	355	1.41	0.56	52.39	28.73	18.87	+	0.50	0.04	***
	Husband	350	1.71	2.00	55.71	22.29	22.00	N.S.	0.44	0.06	***
Meat (6 cats)	Wife	378	9.52	4.50	56.88	18.52	24.60	-	0.55	0.05	***
	Husband	375	5.07	10.67	49.33	32.27	18.40	+++	0.42	0.06	***

7.1C Continuous variables		N	Mean self	Mean proxy	Mean diff	St.Dev diff	PT P	KappaW	ICC	ICCSE	ICC P
Fruit score (max 15)	Wife	326	8.94	8.01	-0.93	2.51	---	0.66	0.66	0.03	+++
	Husband	309	7.70	7.55	-0.15	2.40	N.S.	0.77	0.77	0.02	+++
Veg score (max 20)	Wife	331	10.04	9.33	-0.71	2.88	---	0.44	0.43	0.04	+++
	Husband	334	9.47	9.59	0.12	2.80	N.S.	0.46	0.46	0.04	+++
Salad score (max 10)	Wife	337	5.21	4.55	-0.66	2.11	---	0.53	0.52	0.04	+++
	Husband	320	4.10	4.04	-0.07	1.87	N.S.	0.63	0.63	0.03	+++
Sweet food score (max 30)	Wife	282	9.92	9.62	-0.29	3.29	N.S.	0.67	0.67	0.03	+++
	Husband	281	9.68	9.89	0.21	3.24	N.S.	0.66	0.66	0.03	+++
Fatty food score (max 20)	Wife	321	6.15	6.13	-0.02	2.13	N.S.	0.60	0.60	0.04	+++
	Husband	310	6.92	6.74	-0.18	1.97	N.S.	0.62	0.62	0.04	+++
Amount of bread	Wife	369	3.07	3.11	0.04	1.48	N.S.	0.57	0.57	0.04	+++
	Husband	388	4.43	4.19	-0.24	1.67	--	0.63	0.63	0.03	+++

Cut points for all graded variables on this page: Once per day

Table 7.2
Significant variation in extent of association - Diet

Covariate	Diet variable	Subject	Association statistics						
AGE			<50	50-59	60+	Total			
	Eats brown bread (vs white)	Wife	0.76	0.69	0.89	0.78	(*)		
		Husband	0.97	0.76	0.86	0.86	**		
	Ever eaten fatty food	Wife	0.41	-0.02	0.43	0.35	**		
		Husband	0.38	-0.01	0.66	0.44	***		
	Time to first meal (4 cats)	Wife	0.75	0.54	0.55	0.66	(*)		
		Husband	0.83	0.83	0.57	0.78	*		
	Frequency use jam/honey/marmalade (6 cat	Wife	0.52	0.64	0.78	0.63	**		
		Husband	0.71	0.70	0.75	0.73	N.S.		
	Amount of bread	Wife	0.51	0.48	0.66	0.57	N.S.		
		Husband	0.74	0.70	0.46	0.63	**		
SOCIAL CLASS			AB	C1	C2	D	Total		
	Ever eaten fatty food	Wife	-0.04	0.39	0.64	0.00	0.38	**	
		Husband	0.00	0.39	0.79	-0.02	0.44	***	
	Ever cut down fatty food (exc never eaten)	Wife	0.36	0.34	-0.06	0.46	0.34	***	
		Husband	0.76	0.36	0.43	0.68	0.53	N.S.	
	Time to first meal (4 cats)	Wife	0.59	0.74	0.65	0.68	0.69	N.S.	
		Husband	0.64	0.79	0.96	0.78	0.81	***	
	Frequency use butter/hard marg (6 cats)	Wife	0.59	0.66	0.85	0.46	0.64	*	
		Husband	0.69	0.58	0.90	0.42	0.66	**	
EMPLOYMENT - SELF			Full	Part	Retir-ed	Hse-keep	Other	Total	
	Ever eaten fatty food	Wife	0.41	-0.01	0.39	0.55	-0.06	0.36	*
		Husband	0.38	0.63	0.66		0.00	0.44	N.S.
	Tea consumption daily (6 cats)	Wife	0.91	0.90	0.92	0.85	0.96	0.90	N.S.
		Husband	0.87	0.97	0.88		0.86	0.87	*
	Amount of bread	Wife	0.62	0.51	0.67	0.46	0.53	0.57	N.S.
		Husband	0.74	0.66	0.43		0.67	0.63	**

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 7.2 (Continued)

EMPLOYMENT - SPOUSE			Full	Part	Retir-ed	Hse-keep	Other	Total	
	Eats brown bread (vs white)	Wife	0.70	0.67	0.91		0.74	0.78	*
		Husband	0.82	0.84	0.89	0.89	0.77	0.86	N.S.
	Ever eaten fatty food	Wife	0.38	1.00	0.28		0.00	0.35	N.S.
		Husband	0.38	-0.01	0.66	0.65	0.00	0.46	***
	Ever cut down fatty food (exc never eaten)	Wife	0.35	-0.10	0.62		0.66	0.49	***
		Husband	0.53	0.44	0.54	0.56	0.66	0.52	N.S.
	Veg score (max 20)	Wife	0.55	0.27	0.41		0.19	0.44	*
		Husband	0.42	0.42	0.52	0.38	0.59	0.47	N.S.
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	Frequency use butter/hard marg (6 cats)	Wife	0.64	0.81	0.49	0.63	**		
		Husband	0.54	0.88	0.57	0.64	***		
	Frequency use low fat spread (6 cats)	Wife	0.61	0.57	0.56	0.59	N.S.		
		Husband	0.60	0.85	0.53	0.66	**		
	Fruit score (max 15)	Wife	0.64	0.66	0.71	0.67	N.S.		
		Husband	0.74	0.86	0.69	0.77	**		
	Veg score (max 20)	Wife	0.57	0.17	0.45	0.46	*		
		Husband	0.37	0.35	0.55	0.46	N.S.		
	Amount of bread	Wife	0.64	0.36	0.53	0.54	(*)		
		Husband	0.64	0.77	0.46	0.60	**		
APARTNESS			0	>0	Total				
	Sugar in tea or coffee	Wife	0.78	0.93	0.81	*			
		Husband	0.82	0.80	0.82	N.S.			
	Ever eaten fatty food	Wife	0.41	-0.02	0.35	**			
		Husband	0.54	0.00	0.44	NS3			
	Coffee consumption daily (6 cats)	Wife	0.87	0.76	0.85	(*)			
		Husband	0.81	0.90	0.83	*			
	Healthiness of diet (4 cats)	Wife	0.37	0.38	0.38	N.S.			
		Husband	0.50	0.18	0.44	*			
	Fruit score (max 15)	Wife	0.67	0.63	0.66	N.S.			
		Husband	0.79	0.60	0.77	*			
	Salad score (max 10)	Wife	0.57	0.35	0.53	(*)			
		Husband	0.66	0.44	0.64	*			

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 7.2 (Continued 2)

HEALTHINESS OF DIET			Both-	Self-pr+	Self+ pr-	Both+	Total	
	Sugar in tea or coffee	Wife	0.86	0.80	1.00	0.75	0.81	N.S.
		Husband	0.67	0.68	0.85	0.92	0.83	**
	Ever eaten fatty food	Wife	-0.02	-0.05	X	0.51	0.35	***
		Husband	0.00	X	0.31	0.55	0.44	N.S.
	Ever cut down fatty food (exc never eaten)	Wife	0.31	0.50	0.42	0.55	0.49	N.S.
		Husband	0.20	0.63	0.66	0.61	0.52	**
	Frequency use jam/honey/marmalade (6 cats)	Wife	0.52	0.51	0.60	0.71	0.63	N.S.
		Husband	0.63	0.42	0.71	0.84	0.73	**
	Vegetable score (max 20)	Wife	0.58	0.35	0.50	0.37	0.43	N.S.
		Husband	0.39	0.74	0.34	0.49	0.47	*
ALCOHOL - SELF			Abs/ vocc	Light	Mod/hea vy	Total		
	Eats meals at regular times	Wife	0.48	0.44	0.12	0.39	*	
		Husband	0.64	0.47	0.44	0.51	N.S.	
	Fatty food score (max 20)	Wife	0.66	0.53	0.56	0.60	N.S.	
		Husband	0.46	0.76	0.61	0.62	**	
ALCOHOL - SPOUSE			Abs/ vocc	Light	Mod/hea vy	Total		
	Eats meals at regular times	Wife	0.40	0.47	0.33	0.39	N.S.	
		Husband	0.52	0.73	0.30	0.51	*	
	Drinks semi/skimmed milk (vs full)	Wife	0.90	0.92	0.87	0.89	N.S.	
		Husband	0.97	0.75	0.70	0.87	**	
	Tea consumption daily (6 cats)	Wife	0.88	0.91	0.91	0.90	N.S.	
		Husband	0.82	0.94	0.86	0.87	**	
	Frequency use jam/honey/marmalade (6 cats)	Wife	0.72	0.72	0.48	0.63	*	
		Husband	0.77	0.76	0.61	0.73	N.S.	
	Sweet food score (max 30)	Wife	0.50	0.68	0.76	0.67	*	
		Husband	0.66	0.63	0.70	0.66	N.S.	
	Fatty food score (max 20)	Wife	0.50	0.76	0.58	0.60	**	
		Husband	0.67	0.48	0.66	0.62	N.S.	

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 7.2 (Continued 3)

OUGHT TO CUT DOWN ALCOHOL			BothN	SelfN prY	SelfY prN	BothY		
	Eats meals at regular times	Wife	0.46	-0.11	0.44	-0.32	0.39	***
		Husband	0.48	0.71	0.78	0.34	0.49	N.S.
	Time to first meal (4 cats)	Wife	0.66	0.30	0.88	0.58	0.66	**
		Husband	0.77	0.88	0.79	0.71	0.79	N.S.
	Coffee consumption daily (6 cats)	Wife	0.83	0.80	0.92	0.95	0.84	**
		Husband	0.84	0.75	0.76	0.82	0.83	N.S.
	Frequency use soft marg(6 cats)	Wife	0.57	0.56	0.72	0.48	0.58	N.S.
		Husband	0.50	0.84	0.67	0.63	0.56	**
	Frequency use jam/honey/marmalade (6 cats)	Wife	0.65	0.07	0.60	0.85	0.63	**
		Husband	0.72	0.86	0.69	0.70	0.73	N.S.
	Vegetable score (max 20)	Wife	0.38	0.46	0.27	0.81	0.40	***
		Husband	0.44	0.25	0.44	0.58	0.45	N.S.
	Amount of bread	Wife	0.59	0.39	0.49	0.32	0.57	N.S.
		Husband	0.66	0.77	0.47	0.45	0.64	*
NEUROTICISM			Both-	Self-pr+	Self+ pr-	Both+	Total	
	Sugar in tea or coffee	Wife	0.89	0.86	0.79	0.76	0.82	N.S.
		Husband	0.96	0.86	0.50	0.82	0.84	**
	Ever eaten fatty food	Wife	0.32	0.65	0.56	-0.02	0.38	**
		Husband	0.37	0.80	0.65	0.00	0.46	N.S.
	Time to first meal (4 cats)	Wife	0.83	0.67	0.54	0.69	0.68	*
		Husband	0.87	0.80	0.49	0.84	0.80	N.S.
	Salad score (max 10)	Wife	0.59	0.46	0.48	0.55	0.54	N.S.
		Husband	0.77	0.57	0.43	0.64	0.64	*
	Sweet food score (max 30)	Wife	0.64	0.68	0.60	0.69	0.64	N.S.
		Husband	0.57	0.62	0.50	0.80	0.65	*
EXTROVERSION			Both-	Self-pr+	Self+ pr-	Both+	Total	
	Ever cut down fatty food (exc never eaten)	Wife	0.44	0.57	0.55	-0.06	0.45	***
		Husband	0.41	0.61	0.59	0.55	0.51	N.S.
	Frequency use soft marg(6 cats)	Wife	0.43	0.54	0.57	0.80	0.56	*
		Husband	0.36	0.56	0.55	0.78	0.52	*
	Amount of bread	Wife	0.57	0.70	0.56	0.20	0.55	***
		Husband	0.53	0.57	0.77	0.62	0.61	*

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 7.2 (Continued 4)

GENERAL HEALTH			Excellent	Good	Fair/Poor	Total		
	Sugar in tea or coffee	Wife	0.87	0.79	0.81	0.81	N.S.	
		Husband	0.94	0.84	0.69	0.82	*	
	Ever eaten fatty food	Wife	0.18	0.49	0.31	0.35	N.S.	
		Husband	0.00	0.66	-0.02	0.44	***	
	Tea consumption daily (6 cats)	Wife	0.94	0.88	0.89	0.90	(*)	
		Husband	0.93	0.87	0.82	0.87	*	
	Fatty food score (max 20)	Wife	0.68	0.56	0.62	0.61	N.S.	
		Husband	0.76	0.53	0.62	0.62	*	
ACTIVITIES LIMITED			Yes	No	Total			
	Ever eaten fatty food	Wife	-0.02	0.39	0.35	**		
		Husband	-0.02	0.51	0.44	***		
	Ever cut down fatty food (exc never eaten)	Wife	0.74	0.43	0.49	*		
		Husband	0.58	0.51	0.52	N.S.		
	Frequency use low fat spread (6 cats)	Wife	0.81	0.57	0.60	*		
		Husband	0.62	0.69	0.67	N.S.		
	Amount of milk (4 cats)	Wife	0.54	0.56	0.57	N.S.		
		Husband	0.77	0.50	0.58	***		
N PROBLEMS LAST MONTH			0	1-2	3-5	6+	Total	
	Eats meals at regular times	Wife	0.55	0.44	0.35	0.25	0.39	N.S.
		Husband	0.44	0.56	0.63	0.04	0.51	*
	Eats brown bread (vs white)	Wife	0.95	0.74	0.68	0.88	0.78	*
		Husband	0.80	0.90	0.82	0.92	0.86	N.S.
	Sugar in tea or coffee	Wife	0.83	0.86	0.80	0.70	0.81	N.S.
		Husband	0.95	0.81	0.74	0.83	0.82	*
	Drinks semi/skimmed milk (vs full)	Wife	0.93	0.88	0.88	0.90	0.89	N.S.
		Husband	0.77	0.86	0.97	0.89	0.87	*
	Ever eaten fatty food	Wife	0.64	0.23	-0.01	0.25	0.35	**
		Husband	0.65	0.43	-0.02	0.65	0.44	***
	Ever cut down fatty food (exc never eaten)	Wife	0.69	0.40	0.53	0.39	0.49	N.S.
		Husband	0.76	0.48	0.39	0.51	0.52	*
	Coffee consumption daily (6 cats)	Wife	0.81	0.83	0.85	0.94	0.85	**
		Husband	0.81	0.82	0.83	0.87	0.83	N.S.
	Frequency use butter/hard marg (6 cats)	Wife	0.80	0.63	0.49	0.76	0.63	*
		Husband	0.85	0.66	0.58	0.25	0.63	**
	Frequency use soft marg (6 cats)	Wife	0.57	0.59	0.58	0.64	0.59	N.S.
		Husband	0.76	0.41	0.54	0.68	0.55	*

/cont

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 7.2 (Continued 5)

N PROBLEMS LAST MONTH (continued)			0	1-2	3-5	6+	Total	
	Healthiness of diet (4 cats)	Wife	0.35	0.30	0.45	0.37	0.39	N.S.
		Husband	0.46	0.37	0.38	0.76	0.46	***
N ILLNESSES EVER			0	1-2	3+	Total		
	Sugar in tea or coffee	Wife	0.81	0.84	0.74	0.81	N.S.	
		Husband	0.90	0.87	0.69	0.82	*	
	Ever eaten fatty food	Wife	0.65	0.31	-0.02	0.35	***	
		Husband	0.49	0.53	0.27	0.44	N.S.	
	Time to first meal (4 cats)	Wife	0.69	0.71	0.57	0.66	N.S.	
		Husband	0.89	0.82	0.59	0.78	**	
	Frequency use jam/honey/marmalade (6 cats)	Wife	0.67	0.63	0.61	0.63	N.S.	
		Husband	0.69	0.82	0.61	0.73	*	
ANY CARDIORESPIRATORY SYMPTOMS			Yes	No	Total			
	Sugar in tea or coffee	Wife	0.79	0.83	0.81	N.S.		
		Husband	0.70	0.90	0.82	**		
	Ever eaten fatty food	Wife	-0.01	0.41	0.35	**		
		Husband	0.27	0.52	0.44	N.S.		
	Frequency use low fat spread (6 cats)	Wife	0.52	0.65	0.60	N.S.		
		Husband	0.54	0.76	0.67	*		
	Fatty food score (max 20)	Wife	0.61	0.59	0.60	N.S.		
		Husband	0.52	0.70	0.62	*		
	Amount of bread	Wife	0.58	0.56	0.57	N.S.		
		Husband	0.52	0.71	0.63	*		

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 7.3
Significant variation in difference in response - Diet

Covariate	Diet variable	Subject	Statistics on difference in response						
AGE			<50	50-59	60+	Total			
	Eats meals at regular times	Wife	11/11	7/6	3/6	8/8	N.S.		
		Husband	9/11	3/9	7/3	7/7	*		
	Coffee consumption daily (6 cats)	Wife	15/21	13/31	21/9	16/20	**		
		Husband	20/23	16/21	17/14	18/19	N.S.		
	Tinned fruit (6 cats)	Wife	23/20	26/29	35/16	27/21	*		
		Husband	16/31	13/23	13/29	14/28	N.S.		
	Chips (6 cats)	Wife	25/13	14/20	25/10	22/14	*		
		Husband	14/20	16/15	15/22	15/19	N.S.		
	Crisps and snacks (6 cats)	Wife	21/34	22/29	33/15	24/27	**		
		Husband	30/25	27/17	17/18	24/20	N.S.		
	Soft drinks (6 cats)	Wife	32/24	24/34	36/15	31/24	**		
		Husband	25/29	26/32	19/31	23/31	N.S.		
	Fatty food score (max 20)	Wife	-0.17	-0.30	0.50	-0.02	*		
		Husband	-0.24	0.09	-0.34	-0.18	N.S.		
SOCIAL CLASS			AB	C1	C2	D	Total		
	Sugar in tea or coffee	Wife	3/0	3/8	0/7	8/0	3/4	*	
		Husband	5/5	4/3	2/4	4/4	4/4	N.S.	
EMPLOYMENT - SELF			Full	Part	Retired	Housekeep	Other	Total	
	Time to first meal (4 cats)	Wife	25/13	11/17	23/13	24/11	11/37	19/15	*
		Husband	9/18	19/19	14/18		11/15	11/18	N.S.
	Sweet food score (max 30)	Wife	0.22	-0.70	0.60	-1.19	-0.33	-0.29	*
		Husband	0.00	1.00	0.35		0.46	0.21	N.S.
EMPLOYMENT - SPOUSE			Full	Part	Retired	Housekeep	Other	Total	
	Ever eaten fatty food	Wife	3/2	0/0	0/4		5/0	2/2	*
		Husband	3/1	1/1	1/1	0/3	0/9	1/2	N.S.
	Salad score (max 10)	Wife	-0.65	-0.27	-0.52		-1.07	-0.65	N.S.
		Husband	-0.21	-0.38	0.37	0.25	-0.73	-0.06	*
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	Coffee consumption daily (6 cats)	Wife	16/24	14/17	16/19	16/20	N.S.		
		Husband	14/32	24/11	18/13	18/19	***		
	Frequency use soft marg(6 cats)	Wife	29/14	20/27	28/15	26/18	*		
		Husband	23/25	23/24	20/24	22/25	N.S.		

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables; mean difference for continuous variables.

Table 7.3 (Continued)

APARTNESS			0	>0	Total			
	Fatty food score (max 20)	Wife	0.16	-0.88	-0.03	***		
		Husband	-0.22	-0.02	-0.18	N.S.		
	Healthiness of diet (4 cats)	Wife	24/15	29/18	25/15	N.S.		
		Husband	14/22	10/38	13/25	**		
HEALTHINESS OF DIET			Both +	Self- pr+	Self+ pr-	Both +	Total	
	Eats brown bread (vs white)	Wife	5/3	11/0	3/11	3/7	5/6	*
		Husband	3/1	3/3	4/5	4/2	4/4	N.S.
	Veg score (max 20)	Wife	0.17	-0.59	-0.29	-1.05	-0.71	*
		Husband	-0.18	-0.03	0.09	0.24	0.08	N.S.
	Salad score (max 10)	Wife	-0.62	-0.45	-1.28	-0.62	-0.66	N.S.
		Husband	-0.46	0.81	-0.31	0.05	-0.08	**
EVER SMOKED CIGARETTES - SPOUSE			Yes	No	Total			
	Ever cut down fatty food (exc never eaten)	Wife	4/8	9/3	5/7	*		
		Husband	11/8	5/9	8/8	N.S.		
	Tea consumption daily (6 cats)	Wife	14/17	23/17	17/17	N.S.		
		Husband	25/17	13/22	19/19	*		
	Healthiness of diet (4 cats)	Wife	24/15	29/13	25/15	N.S.		
		Husband	11/30	15/19	13/25	*		
ALCOHOL - SELF			Abs/vocc	Light	Mod/heavy	Total		
	Eats brown bread (vs white)	Wife	3/4	8/6	6/10	5/6	N.S.	
		Husband	3/0	8/1	1/6	3/3	**	
	Sugar in tea or coffee	Wife	6/4	2/2	1/5	4/4	N.S.	
		Husband	7/3	1/6	5/4	4/4	*	
ALCOHOL - SPOUSE			Abs/vocc	Light	Mod/heavy	Total		
	Time to first meal (4 cats)	Wife	19/7	19/17	21/19	20/15	N.S.	
		Husband	14/14	5/24	13/21	12/18	*	
	Amount of milk (4 cats)	Wife	24/12	16/19	11/26	17/20	**	
		Husband	18/19	16/19	15/19	17/19	N.S.	
	Fruit score (max 15)	Wife	-1.53	-0.70	-0.63	-0.92	*	
		Husband	-0.28	0.04	-0.06	-0.15	N.S.	

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables; mean difference for continuous variables.

Table 7.3 (Continued 2)

OUGHT TO CUT DOWN ALCOHOL			BothN	SelfN prY	SelfY prN	BothY	Total	
	Time to first meal (4 cats)	Wife	19/14	13/40	7/13	43/7	19/15	*
		Husband	9/17	21/14	14/25	12/22	11/18	N.S.
	Frequency use jam/honey/ marmalade (6 cats)	Wife	28/18	8/54	35/31	46/0	25/20	**
		Husband	23/23	23/23	25/21	18/26	23/23	N.S.
	Fruit score (max 15)	Wife	-0.92	-1.38	0.24	-2.17	-0.89	*
		Husband	-0.09	-0.29	0.55	-0.91	-0.15	N.S.
NEUROTICISM			Both -	Self- pr+	Self+ pr-	Both +	Total	
	Amount of milk (4 cats)	Wife	17/23	8/31	23/13	12/18	17/19	*
		Husband	13/19	17/21	15/10	19/19	16/19	N.S.
EXTROVERSION			Both -	Self- pr+	Self+ pr-	Both +	Total	
	Salad score (max 10)	Wife	-0.53	-0.24	-0.65	-1.35	-0.66	*
		Husband	-0.04	-0.05	-0.04	-0.13	-0.06	N.S.
GENERAL HEALTH			Excellent	Good	Fair/Poor	Total		
	Tea consumption daily (6 cats)	Wife	10/26	19/16	18/11	17/17	*	
		Husband	17/20	20/13	19/32	19/19	*	
	Crisps and snacks (6 cats)	Wife	18/36	23/28	34/18	25/27	*	
		Husband	28/15	22/22	25/19	24/20	N.S.	
	Soft drinks (6 cats)	Wife	27/22	29/27	39/18	31/24	N.S.	
		Husband	31/30	16/35	32/21	23/31	*	
	Sausages, pasties (6 cats)	Wife	34/14	30/19	20/23	29/19	(*)	
		Husband	33/15	17/26	25/18	22/22	*	
	Amount of bread	Wife	-0.45	0.22	0.06	0.04	**	
		Husband	-0.32	-0.20	-0.29	-0.25	N.S.	
N PROBLEMS LAST MONTH			0	1-2	3-5	6+	Total	
	Sweet food score (max 30)	Wife	-0.40	-0.37	-0.14	-0.35	-0.29	N.S.
		Husband	-0.05	0.14	0.97	-1.08	0.21	*
N ILLNESSES EVER			0	1-2	3+	Total		
	Tea consumption daily (6 cats)	Wife	14/19	20/13	13/20	17/17	*	
		Husband	18/18	18/17	21/23	19/19	N.S.	
ANY CARDIORESPIRATORY SYMPTOM				No	Total			
	Veg score (max 20)	Wife	-0.76	-0.68	-0.71	N.S.		
		Husband	0.50	-0.14	0.12	*		

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables; mean difference for continuous variables.

Table 8.1
Agreement between husband and wife - Occupation, Employment and Social Class

8.1A 0/1 variables		N	Self%	Proxy%	Agree%	FPos%	FNeg%	McN P	Kappa	KapSE	Kap P
Wife is sole/joint CIE[1]		376	11.70	32.45	73.94	23.40	2.66	+++	0.29	0.05	***
Husband is sole/joint CIE[2]		376	72.61	89.89	75.80	20.74	3.46	+++	0.24	0.05	***
In paid employment (full or part time)	Wife	388	47.94	47.94	96.91	1.55	1.55	N.S.	0.94	0.02	***
	Husband	390	51.54	52.05	97.95	1.28	0.77	N.S.	0.96	0.01	***
Ever had regular job (not currently working)	Wife	172	95.35	95.93	97.09	1.74	1.16	N.S.	0.65	0.15	***
	Husband	174	100.00	100.00							
Worked shifts/unsocial hours (since marriage)	Wife	311	28.62	31.83	89.07	7.07	3.86	N.S.	0.74	0.04	***
	Husband	359	61.84	58.77	86.91	5.01	8.08	N.S.	0.73	0.04	***
Has worked changing shift pattern	Wife	74	32.43	40.54	78.38	14.86	6.76	N.S.	0.54	0.10	***
	Husband	187	67.91	65.78	76.47	10.70	12.83	N.S.	0.47	0.07	***
Has worked early shifts	Wife	74	29.73	28.38	82.43	8.11	9.46	N.S.	0.57	0.11	***
	Husband	187	45.45	46.52	68.98	16.04	14.97	N.S.	0.38	0.07	***
Has worked evening shifts	Wife	74	50.00	50.00	75.68	12.16	12.16	N.S.	0.51	0.10	***
	Husband	187	50.80	49.73	66.84	16.04	17.11	N.S.	0.34	0.07	***
Has worked overnight shifts	Wife	74	40.54	40.54	86.49	6.76	6.76	N.S.	0.72	0.08	***
	Husband	187	54.55	54.01	67.38	16.04	16.58	N.S.	0.34	0.07	***
Ever had risky job	Wife	397	13.10	10.08	90.43	3.27	6.30	(-)	0.53	0.07	***
	Husband	397	53.90	43.58	83.12	3.27	13.60	---	0.67	0.04	***
Has worked in production of arsenic based pesticides	Wife	397	0.25	0.00	99.75	0.00	0.25	N.S.	0.00	X	X
	Husband	397	0.76	0.25	98.99	0.25	0.76	N.S.	-0.00	0.00	N.S.
Has worked in application of arsenic based pesticides	Wife	397	0.25	0.00	99.75	0.00	0.25	N.S.	0.00	X	X
	Husband	397	1.51	0.50	97.98	0.50	1.51	N.S.	-0.01	0.00	N.S.
Has worked in production of any other pesticides	Wife	397	0.25	0.00	99.75	0.00	0.25	N.S.	0.00	X	X
	Husband	397	0.50	0.00	99.50	0.00	0.50	N.S.	0.00	X	X
Has worked in application of any other pesticide	Wife	397	0.25	0.00	99.75	0.00	0.25	N.S.	0.00	X	X
	Husband	397	1.26	0.76	98.49	0.50	1.01	N.S.	0.24	0.20	***
Has worked as roofer or asphalt worker	Wife	397	0.00	0.00							
	Husband	397	4.03	3.53	95.47	2.02	2.52	N.S.	0.38	0.12	***
Has worked in beryllium refining plant	Wife	397	0.00	0.00							
	Husband	397	0.50	0.50	99.50	0.25	0.25	N.S.	0.50	0.31	***
Has worked in coke plant	Wife	397	0.25	0.25	100.00	0.00	0.00	N.S.	1.00	X	***
	Husband	397	2.27	1.76	97.98	0.76	1.26	N.S.	0.49	0.16	***
Has worked as a painter	Wife	397	1.01	0.25	99.24	0.00	0.76	N.S.	0.40	0.28	***
	Husband	397	7.56	6.05	95.47	1.51	3.02	N.S.	0.64	0.08	***

[1] Wife's report treated as "self" report
[2] Husband's report treated as "self" report

Table 8.1 (Continued)

8.1A 0/1 variables (continued)		N	Self%	Proxy%	Agree%	FPos%	FNeg%	McN P	Kappa	KapSE	Kap P
Has worked in asbestos production industry	Wife	397	0.00	0.00							
	Husband	397	0.50	0.25	99.24	0.25	0.50	N.S.	-0.00	0.00	N.S.
Has worked as welder	Wife	397	0.50	0.00	99.50	0.00	0.50	N.S.	0.00	X	X
	Husband	397	10.08	6.30	95.21	0.50	4.28	---	0.68	0.07	***
Has worked as gas worker	Wife	397	0.00	0.00							
	Husband	397	2.27	2.52	98.74	0.76	0.50	N.S.	0.73	0.12	***
Has worked in construction industry	Wife	397	0.50	0.00	99.50	0.00	0.50	N.S.	0.00	X	X
	Husband	397	14.86	9.82	94.46	0.25	5.29	---	0.75	0.05	***
Has worked as a miner	Wife	397	0.00	0.00							
	Husband	397	6.05	5.29	98.74	0.25	1.01	N.S.	0.88	0.05	***
Has worked as a haulier or truck/bus driver	Wife	397	0.25	0.25	99.50	0.25	0.25	N.S.	-0.00	0.00	N.S.
	Husband	397	9.82	6.55	94.21	1.26	4.53	-	0.62	0.07	***
Has worked in service station or garage	Wife	397	3.02	1.51	97.98	0.25	1.76	(-)	0.55	0.14	***
	Husband	397	5.29	3.53	96.73	0.76	2.52	(-)	0.61	0.10	***
Has worked in production of BCME	Wife	397	0.25	0.00	99.75	0.00	0.25	N.S.	0.00	X	X
	Husband	397	0.25	0.00	99.75	0.00	0.25	N.S.	0.00	X	X
Has worked in printing industry	Wife	397	2.27	1.51	98.74	0.25	1.01	N.S.	0.66	0.14	***
	Husband	397	4.53	2.77	97.23	0.50	2.27	(-)	0.61	0.11	***
Has worked in production of chromate pigments	Wife	397	0.00	0.25	99.75	0.25	0.00	N.S.	0.00	X	X
	Husband	397	1.26	0.25	98.99	0.00	1.01	N.S.	0.33	0.25	***
Has worked in rubber industry	Wife	397	0.50	0.50	99.50	0.25	0.25	N.S.	0.50	0.31	***
	Husband	397	3.27	1.51	98.24	0.00	1.76	-	0.62	0.13	***
Has worked in leather industry	Wife	397	0.50	0.25	99.24	0.25	0.50	N.S.	-0.00	0.00	N.S.
	Husband	397	0.76	0.50	99.75	0.00	0.25	N.S.	0.80	0.20	***
Has worked in battery manufacturing	Wife	397	0.00	0.25	99.75	0.25	0.00	N.S.	0.00	X	X
	Husband	397	0.50	0.00	99.50	0.00	0.50	N.S.	0.00	X	X
Has worked in chromium plating	Wife	397	0.00	0.00							
	Husband	397	1.76	0.76	98.49	0.25	1.26	N.S.	0.39	0.20	***
Has worked in cadmium smelting process	Wife	397	0.00	0.00							
	Husband	397	0.50	0.00	99.50	0.00	0.50	N.S.	0.00	X	X
Has worked in copper smelting process	Wife	397	0.00	0.00							
	Husband	397	1.01	0.76	99.24	0.25	0.50	N.S.	0.57	0.22	***
Has worked in laundry or dry cleaning company	Wife	397	4.03	3.78	97.73	1.01	1.26	N.S.	0.70	0.10	***
	Husband	397	1.51	1.26	98.24	0.76	1.01	N.S.	0.35	0.19	***
Has worked in ferro-chromium production	Wife	397	0.00	0.00							
	Husband	397	0.25	0.00	99.75	0.00	0.25	N.S.	0.00	X	X

Table 8.1 (Continued 2)

8.1A 0/1 variables (continued)		N	Self%	Proxy%	Agree%	FPos%	FNeg%	McN P	Kappa	KapSE	Kap P
Has worked in production of artificial mineral fibres	Wife	397	0.50	0.25	99.75	0.00	0.25	N.S.	0.67	0.31	***
	Husband	397	1.26	0.50	98.74	0.25	1.01	N.S.	0.28	0.22	***
Has worked in iron and steel foundry	Wife	397	0.76	0.76	98.99	0.50	0.50	N.S.	0.33	0.25	***
	Husband	397	11.08	8.56	93.45	2.02	4.53	(-)	0.63	0.07	***
Has worked in production of aluminium	Wife	397	0.00	0.25	99.75	0.25	0.00	N.S.	0.00	X	X
	Husband	397	1.26	0.76	98.99	0.25	0.76	N.S.	0.50	0.22	***
Has worked in nickel refining	Wife	397	0.25	0.00	99.75	0.00	0.25	N.S.	0.00	X	X
	Husband	397	0.25	0.00	99.75	0.00	0.25	N.S.	0.00	X	X
Has worked in production of mustard gas	Wife	397	0.00	0.00							
	Husband	397	0.00	0.00							
Has worked as butcher	Wife	397	1.26	1.01	99.24	0.25	0.50	N.S.	0.66	0.18	***
	Husband	397	5.04	3.02	97.48	0.25	2.27	-	0.68	0.10	***
Has worked as chimney sweep	Wife	397	0.00	0.00							
	Husband	397	0.25	0.25	100.00	0.00	0.00	N.S.	1.00	X	***

8.1B Graded variables		N	Self%	Proxy%	Agree%	High%	Low%	WSR P	KappaW	KapWSE	KapW P
Working status of CIE[1] (4 cats[2])		396	43.94	44.44	93.18	3.79	3.03	N.S.	0.89	0.03	***
Working status of CIE (agree who)[1] (4 cats[2])		269	40.15	39.78	94.05	2.97	2.97	N.S.	0.91	0.04	***
Social class[1] (4 cats[3])		213	46.01	44.60	92.49	1.88	5.63	-	0.95	0.01	***
Income of CIE[1] (12 cats[4])		278	48.92	50.72	58.99	24.46	16.55	++	0.87	0.03	***
Income of CIE (agree who)[1] (12 cats[4])		187	53.48	55.61	58.29	25.13	16.58	++	0.87	0.03	***
Years since last worked (5 cats[5])	Wife	144	70.14	71.53	78.47	13.19	8.33	N.S.	0.89	0.04	***
	Husband	149	65.10	64.43	77.85	8.72	13.42	N.S.	0.86	0.03	***
Number of risky jobs[6]	Wife	397	2.52	0.76	89.42	3.27	7.30	--	0.57	0.09	***
	Husband	397	22.67	16.12	68.51	7.56	23.93	---	0.48	0.10	***

[1] Wife's report treated as "self"report
[2] Cut point: Retired/not working
[3] Cut point: C2
[4] Cut point: £13500-£15499
[5] Cut point: 5-9 years
[6] Cut point: 2. Maximum 15 for husbands, 4 for wives

Table 8.2
Significant variation in extent of association - Occupation, Employment and Social Class

Covariate	Occupation variable	Subject	Association statistics						
AGE			<50	50-59	60+	Total			
	Has worked early shifts	Wife	0.53	0.83	0.43	0.57	N.S.		
		Husband	0.29	0.65	0.25	0.38	*		
	Income of CIE (agree who) (12 cats)	Wife[1]	0.78	0.96	0.79	0.87	**		
		Husband[2]	0.73	0.85	0.89	0.87	N.S.		
SOCIAL CLASS			AB	C1	C2	D	Total		
	Has worked early shifts	Wife	X	0.19	1.00	0.71	0.57	*	
		Husband	0.79	0.30	0.56	0.46	0.49	N.S.	
	Working status of CIE (4 cats)	Wife[1]	0.78	0.71	0.11	0.74	0.64	***	
		Husband[2]	0.78	0.05	0.48	0.13	0.14	***	
	Working status of CIE (agree who)(4 cats)	Wife[1]	0.78	0.76	0.11	0.89	0.65	***	
		Husband[2]	0.78	0.04	0.47	0.08	0.11	***	
	Income of CIE (12 cats)	Wife[1]	0.58	0.56	0.91	0.86	0.83	*	
		Husband[2]	0.59	0.48	0.91	0.86	0.81	*	
EMPLOYMENT - SELF			Full	Part	Retir-ed	Hse-keep	Other	Total	
	Is sole/joint CIE	Wife[1]	0.51	0.28	0.14	-0.03	0.17	0.29	***
		Husband[2]	0.11	0.00	0.32		0.43	0.24	*
	Working status of CIE (4 cats)	Wife[1]	0.90	0.95	0.74	0.86	0.86	0.91	N.S.
		Husband[2]	0.02	0.13	0.69		0.86	0.90	***
	Working status of CIE (agree who)(4 cats)	Wife[1]	0.63	0.95	0.98	0.86	1.00	0.93	N.S.
		Husband[2]	0.02	0.06	0.87		0.93	0.91	***
	Number of risky jobs	Wife	0.73	0.48	0.48	0.72	0.38	0.57	N.S.
		Husband	0.58	0.27	0.35		0.55	0.48	*
EMPLOYMENT - SPOUSE			Full	Part	Retir-ed	Hse-keep	Other	Total	
	Is sole/joint CIE	Wife[1]	0.20	0.00	0.24		0.49	0.28	(*)
		Husband[2]	0.38	0.24	0.06	0.00	-0.07	0.24	***
	Ever had risky job	Wife	0.53	-0.10	0.57		0.62	0.53	***
		Husband	0.59	0.71	0.67	0.66	0.56	0.66	N.S.
	Has worked early shifts	Wife	0.67	X	0.61		0.00	0.57	N.S.
		Husband	0.49	0.52	0.55	0.02	-0.03	0.37	*
	Working status of CIE (4 cats)	Wife[1]	0.02	0.13	0.69		0.86	0.90	***
		Husband[2]	0.90	0.95	0.74	0.86	0.86	0.91	N.S.
	Working status of CIE (agree who)(4 cats)	Wife[1]	0.02	0.06	0.87		0.93	0.91	***
		Husband[2]	0.63	0.95	0.98	0.86	1.00	0.93	N.S.
	Number of risky jobs	Wife	0.48	-0.10	0.64		0.62	0.57	***
		Husband	0.35	0.46	0.62	0.64	0.55	0.48	N.S.

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 8.2 (Continued)

MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total		
	Working status of CIE (4 cats)	Wife[1]	0.87	0.97	0.81	0.90	*	
		Husband[2]	0.84	0.91	0.83	0.89	N.S.	
APARTNESS			0	>0	Total			
	Number of risky jobs	Wife	0.63	0.25	0.57	*		
		Husband	0.58	0.54	0.57	N.S.		
HEALTHINESS OF DIET			Both-	Self-pr+	Self+pr-	Both+	Total	
	Has worked changing shift patterns	Wife	0.40	0.59	0.35	0.61	0.53	N.S.
		Husband	0.17	0.48	0.32	0.68	0.47	*
EVER SMOKED CIGARETTES - SELF			Yes	No	Total			
	Worked shifts/unsocial hours	Wife	0.67	0.83	0.74	*		
		Husband	0.65	0.90	0.73	***		
	Years since last worked (5 cats)	Wife	0.89	0.88	0.89	N.S.		
		Husband	0.83	0.95	0.86	*		
EVER SMOKED CIGARETTES - SPOUSE			Yes	No	Total			
	Has worked changing shift patterns	Wife	0.37	0.85	0.56	**		
		Husband	0.30	0.72	0.47	**		
	Has worked early shifts	Wife	0.41	0.84	0.60	*		
		Husband	0.32	0.45	0.38	N.S.		
	Has worked evening shifts	Wife	0.52	0.51	0.53	N.S.		
		Husband	0.23	0.51	0.35	*		
	Number of risky jobs	Wife	0.57	0.51	0.57	N.S.		
		Husband	0.64	0.34	0.48	*		
ALCOHOL - SELF			Abs/ vocc	Light	Mod/hea vy	Total		
	Has worked changing shift patterns	Wife	0.69	0.57	-0.02	0.53	*	
		Husband	0.35	0.50	0.54	0.47	N.S.	
	Has worked evening shifts	Wife	0.59	0.66	0.07	0.51	N.S.	
		Husband	0.23	0.20	0.55	0.34	*	
	Working status of CIE (4 cats)	Wife[1]	0.86	0.99	0.85	0.89	*	
		Husband[2]	0.85	0.98	0.88	0.89	*	
	Number of risky jobs	Wife	0.48	0.39	0.80	0.57	*	
		Husband	0.43	0.25	0.66	0.48	*	

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 8.2 (Continued 2)

ALCOHOL - SPOUSE			Abs/ vocc	Light	Mod/hea vy	Total		
	Has worked changing shift patterns	Wife	0.62	0.26	0.59	0.54	N.S.	
		Husband	0.34	0.75	0.50	0.47	*	
	Has worked evening shifts	Wife	0.55	0.00	0.70	0.51	(*)	
		Husband	0.27	0.76	0.02	0.33	***	
	Has worked overnight shifts	Wife	0.78	0.81	0.63	0.72	N.S.	
		Husband	0.31	0.72	-0.04	0.34	***	
	Working status of CIE (4 cats)	Wife[1]	0.85	0.98	0.88	0.89	*	
		Husband[2]	0.86	0.99	0.85	0.89	*	
OUGHT TO CUT DOWN ALCOHOL			BothN	SelfN prY	SelfY prN	BothY		
	Income of CIE (12 cats)	Wife[1]	0.85	0.86	0.86	0.91	0.86	N.S.
		Husband[2]	0.84	0.96	0.84	0.93	0.86	*
	Income of CIE (agree who) (12 cats)	Wife[1]	0.84	0.86	0.97	0.89	0.87	*
		Husband[2]	0.85	0.97	0.81	0.92	0.87	*
EXTROVERSION			Both-	Self-pr+	Self+pr-	Both+	Total	
	Ever had risky job	Wife	0.25	0.53	0.49	0.74	0.48	N.S.
		Husband	0.59	0.59	0.57	0.86	0.64	*
	Income of CIE (agree who) (12 cats)	Wife[1]	0.78	0.93	0.88	0.97	0.87	*
		Husband[2]	0.78	0.88	0.93	0.97	0.87	*
	Number of risky jobs	Wife	0.43	0.44	0.41	0.82	0.50	(*)
		Husband	0.44	0.18	0.54	0.75	0.45	**
GENERAL HEALTH			Excellen t	Good	Fair/Poo r	Total		
	Has worked overnight shifts	Wife	0.63	0.71	0.86	0.72	N.S.	
		Husband	0.03	0.51	0.23	0.34	*	
ACTIVITIES LIMITED			Yes	No	Total			
	Is sole/joint CIE	Wife[1]	0.09	0.32	0.29	*		
		Husband[2]	0.36	0.19	0.24	N.S.		
	Working status of CIE (agree who)(4 cats)	Wife[1]	0.99	0.89	0.91	*		
		Husband[2]	0.93	0.89	0.91	N.S.		
N PROBLEMS LAST MONTH			0	1-2	3-5	6+	Total	
	Is sole/joint CIE	Wife[1]	0.22	0.31	0.30	0.20	0.29	N.S.
		Husband[2]	0.04	0.23	0.17	0.75	0.24	***
	Income of CIE (12 cats)	Wife[1]	0.79	0.90	0.92	0.67	0.87	(*)
		Husband[2]	0.74	0.81	0.95	0.91	0.87	*
	Income of CIE (agree who) (12 cats)	Wife[1]	0.78	0.93	0.93	0.63	0.87	N.S.
		Husband[2]	0.80	0.79	0.95	0.91	0.87	*
	Number of risky jobs	Wife	0.79	0.50	0.55	0.64	0.57	N.S.
		Husband	0.62	0.65	0.62	0.02	0.48	***

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 8.2 (Continued 3)

N ILLNESSES EVER			0	1-2	3+	Total	
	Is sole/joint CIE	Wife[1]	0.11	0.38	0.24	0.29	(*)
		Husband[2]	0.09	0.18	0.48	0.24	*
	Number of risky jobs	Wife	0.51	0.41	0.64	0.57	N.S.
		Husband	0.47	0.69	0.34	0.48	*
ANY CARDIORESPIRATORY SYMPTOM			Yes	No	Total		
	Number of risky jobs	Wife	0.51	0.62	0.57	N.S.	
		Husband	0.35	0.63	0.48	*	

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 8.3
Significant variation in difference in response - Occupation, Employment and Social Class

Covariate	Occupation variable	Subject	Statistics on difference in response						
AGE			<50	50-59	60+	Total			
	Years since last worked (5 cats)	Wife	19/0	17/3	10/13	13/8	*		
		Husband	15/15	12/15	7/13	9/13	N.S.		
SOCIAL CLASS			AB	C1	C2	D	Total		
	Number of risky jobs	Wife	3/8	0/4	4/4	6/13	3/7	N.S.	
		Husband	5/21	10/15	9/28	4/39	7/24	*	
	Has worked evening shifts	Wife	0/0	12/24	0/9	7/7	8/16	N.S.	
		Husband	0/0	32/11	10/10	7/30	14/15	*	
EMPLOYMENT - SPOUSE				Part	Retired	Housekeep	Other	Total	
	In paid employment (full or part time)	Wife	2/3	6/0	1/0		0/2	2/2	N.S.
		Husband	1/0	3/0	0/3	0/0	0/0	1/1	*
	Has worked evening shifts	Wife	5/16	0/0	22/11		33/0	12/12	*
		Husband	10/15	17/13	10/18	24/26	31/13	16/17	N.S.
	Number of risky jobs	Wife	3/6	6/18	5/7		0/11	3/7	N.S.
		Husband	8/28	7/20	10/22	7/21	0/50	8/24	*
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	Has worked early shifts	Wife	6/10	11/5	9/9	8/8	N.S.		
		Husband	8/15	33/5	14/22	17/15	**		
	Income of CIE (12 cats)	Wife[1]	27/20	16/18	27/9	24/16	(*)		
		Husband[2]	22/20	15/22	11/31	17/24	*		
	Income of CIE (agree who) (12 cats)	Wife[1]	27/23	12/14	34/7	25/15	*		
		Husband[2]	24/22	13/21	10/32	17/25	(*)		
	Years since last worked (5 cats)	Wife	10/5	23/6	11/8	13/7	N.S.		
		Husband	8/42	3/24	10/7	8/14	**		
APARTNESS			0	>0	Total				
	Number of risky jobs	Wife	3/6	5/14	3/7	N.S.			
		Husband	8/22	5/35	7/24	*			
HEALTHINESS OF DIET			Both +	Self- pr+	Self+ pr-	Both +	Total		
	Has worked changing shift patterns	Wife	20/10	13/7	36/0	8/8	15/7	N.S.	
		Husband	24/13	5/21	16/11	2/12	11/13	*	
	Has worked evening shifts	Wife	10/10	0/26	0/18	19/5	12/12	*	
		Husband	20/18	21/11	8/16	16/18	16/17	N.S.	
	Social class (5 cats)	Wife	3/6	2/5	4/0	1/7	2/6	N.S.	
		Husband	8/2	0/6	0/4	7/0	5/2	*	

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 8.3 (Continued)

ALCOHOL - SELF			Abs/vocc	Light	Mod/heavy	Total		
	Has worked evening shifts	Wife	9/12	8/8	27/20	12/12	N.S.	
		Husband	26/13	13/27	8/14	16/17	*	
	Has worked overnight shifts	Wife	6/9	8/4	7/7	7/7	N.S.	
		Husband	25/11	12/23	11/17	16/17	*	
	Income of CIE (agree who) (12 cats)	Wife[1]	25/18	16/25	35/7	25/17	*	
		Husband[2]	19/23	22/21	10/31	17/25	(*)	
ALCOHOL - SPOUSE			Abs/vocc	Light	Mod/heavy	Total		
	Income of CIE (agree who) (12 cats)	Wife[1]	23/19	21/22	31/10	25/17	(*)	
		Husband[2]	18/25	25/16	7/35	17/25	*	
OUGHT TO CUT DOWN			BothN	SelfN prY	SelfY prN	BothY	Total	
	Years since last worked (5 cats)	Wife	14/8	13/13	0/0	75/0	15/9	*
		Husband	8/13	11/11	7/7	14/21	8/13	N.S.
GENERAL HEALTH			Excellent	Good	Fair/Poor	Total		
	Has worked changing shift patterns	Wife	13/0	17/9	7/7	15/7	N.S.	
		Husband	3/28	14/10	10/10	11/13	*	
	Years since last worked (5 cats)	Wife	10/10	12/5	17/13	13/8	N.S.	
		Husband	18/9	12/10	2/19	9/14	*	
N PROBLEMS LAST MONTH			0	1-2	3-5	6+	Total	
	Years since last worked (5 cats)	Wife	20/0	13/10	13/8	8/13	13/8	N.S.
		Husband	20/0	9/21	3/13	8/12	9/13	*
	Number of risky jobs	Wife	0/2	3/6	4/9	5/10	3/7	N.S.
		Husband	19/12	6/21	8/31	8/42	8/24	**
N ILLNESSES EVER			0	1-2	3+	Total		
	Has worked evening shifts	Wife	21/0	3/17	20/12	12/12	*	
		Husband	21/5	14/22	16/18	16/17	(*)	

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 9.1
Agreement between husband and wife - Alcohol consumption

9.1A 0/1 variables		N	Self%	Proxy%	Agree%	FPos%	FNeg%	McN P	Kappa	KapSE	Kap P
Has drunk more heavily in past	Wife	381	24.93	24.93	77.95	11.02	11.02	N.S.	0.41	0.05	***
	Husband	388	44.07	38.14	74.48	9.79	15.72	-	0.47	0.04	***
Ought to cut down on alcohol	Wife	368	12.23	8.15	87.77	4.08	8.15	-	0.33	0.08	***
	Husband	382	18.32	18.59	85.08	7.59	7.33	N.S.	0.50	0.06	***

9.1B Graded variables		N	Self%	Proxy%	Agree%	High%	Low%	WSR P	KappaW	KapWSE	KapW P
Alcohol self-defined status (5 cats[1])	Wife	394	45.94	47.46	69.29	13.71	17.01	N.S.	0.78	0.03	***
	Husband	396	68.18	70.20	69.19	17.42	13.38	N.S.	0.77	0.03	***

9.1C Continuous variables		N	Mean self	Mean proxy	Mean diff	St.Dev diff	PT P	KappaW	ICC	ICCSE	ICC P
Shandy	Wife	397	0.14	0.12	-0.01	0.42	N.S.	0.55	0.55	0.04	+++
	Husband	397	0.22	0.20	-0.02	0.66	N.S.	0.62	0.62	0.03	+++
Beer	Wife	397	0.53	0.40	-0.12	1.21	-	0.73	0.73	0.02	+++
	Husband	397	3.39	3.21	-0.18	4.15	N.S.	0.72	0.72	0.02	+++
Premium beer	Wife	397	0.08	0.13	0.04	1.20	N.S.	0.05	0.05	0.05	N.S.
	Husband	397	0.65	0.57	-0.08	3.28	N.S.	0.27	0.27	0.05	+++
Sherry etc	Wife	397	0.29	0.39	0.10	0.81	+	0.85	0.85	0.01	+++
	Husband	397	0.22	0.20	-0.02	0.72	N.S.	0.81	0.81	0.02	+++
Wines	Wife	397	2.16	2.31	0.16	2.33	N.S.	0.84	0.84	0.02	+++
	Husband	397	1.88	1.81	-0.07	2.62	N.S.	0.72	0.73	0.02	+++
Spirits	Wife	397	0.81	0.76	-0.05	1.59	N.S.	0.80	0.80	0.02	+++
	Husband	397	1.61	1.22	-0.39	3.22	-	0.90	0.60	0.03	+++
Liqueurs	Wife	397	0.21	0.20	-0.00	0.79	N.S.	0.80	0.80	0.02	+++
	Husband	397	0.23	0.20	-0.03	0.74	N.S.	0.90	0.90	0.01	+++
Other alcohol	Wife	397	0.09	0.02	-0.07	0.89	N.S.	0.06	0.05	0.05	N.S.
	Husband	397	0.09	0.07	-0.03	0.91	N.S.	0.61	0.61	0.03	+++
Combined alcohol	Wife	394	4.38	4.45	0.07	4.30	N.S.	0.78	0.77	0.02	+++
	Husband	386	11.96	11.11	-0.85	9.18	(-)	0.81	0.78	0.02	+++

[1] Cut point: light drinker

Table 9.2
Significant variation in extent of association - Alcohol consumption

Covariate	Alcohol variable	Subject	Association statistics						
AGE			<50	50-59	60+	Total			
	Combined alcohol consumption	Wife	0.72	0.82	0.92	0.78	*		
		Husband	0.79	0.76	0.86	0.78	N.S.		
EMPLOYMENT - SELF			Full	Part	Retir-ed	Hse-keep	Other	Total	
	Ought to cut down alcohol	Wife	0.58	0.21	0.32	0.40	-0.11	0.32	***
		Husband	0.49	0.85	0.45		0.50	0.50	N.S.
	Alcohol self-defined status (5 cats)	Wife	0.74	0.74	0.87	0.75	0.51	0.78	*
		Husband	0.72	0.42	0.83		0.73	0.77	N.S.
	Combined alcohol consumption	Wife	0.77	0.76	0.89	0.72	0.82	0.78	N.S.
		Husband	0.79	0.93	0.77		0.88	0.81	*
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	Combined alcohol consumption	Wife	0.69	0.86	0.90	0.78	(*)		
		Husband	0.81	0.91	0.80	0.85	*		
APARTNESS			0	>0	Total				
	Ought to cut down alcohol	Wife	0.38	-0.09	0.32	***			
		Husband	0.51	0.41	0.50	N.S.			
	Combined alcohol consumption	Wife	0.87	0.40	0.78	*			
		Husband	0.82	0.84	0.83	N.S.			
EVER SMOKED CIGARETTES - SELF			Yes	No	Total				
	Alcohol self-defined status (5 cats)	Wife	0.83	0.70	0.78	*			
		Husband	0.76	0.79	0.77	N.S.			
OUGHT TO CUT DOWN ALCOHOL			Both N	SelfN prY	SelfY prN	Both Y			
	Has drunk more heavily in past	Wife	0.48	0.31	0.08	0.31	0.42	*	
		Husband	0.51	0.30	0.15	0.34	0.46	**	
	Alcohol self-defined status (5 cats)	Wife	0.74	0.52	0.65	0.71	0.76	N.S.	
		Husband	0.71	0.93	0.50	0.88	0.76	***	
	Combined alcohol consumption	Wife	0.77	0.89	0.66	0.89	0.82	N.S.	
		Husband	0.75	0.90	0.70	0.80	0.81	*	
NEUROTICISM			Both-	Self-pr+	Self+ pr-	Both+	Total		
	Ought to cut down alcohol	Wife	0.37	0.53	0.16	0.53	0.34	N.S.	
		Husband	0.66	0.13	0.73	0.60	0.51	***	
ACTIVITIES LIMITED			Yes	No	Total				
	Combined alcohol consumption	Wife	0.91	0.77	0.78	*			
		Husband	0.88	0.79	0.81	N.S.			

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 9.2 (Continued)

N PROBLEMS LAST MONTH			0	1-2	3-5	6+	Total	
	Combined alcohol consumption	Wife	0.55	0.77	0.87	0.57	0.78	N.S.
		Husband	0.80	0.82	0.74	0.94	0.81	*
N ILLNESSES EVER			0	1-2	3+	Total		
	Has drunk more heavily in past	Wife	0.65	0.42	0.27	0.41	*	
		Husband	0.44	0.54	0.38	0.47	N.S.	
	Combined alcohol consumption	Wife	0.78	0.83	0.73	0.78	N.S.	
		Husband	0.85	0.72	0.90	0.81	*	

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

Table 9.3
Significant variation in difference in response - Alcohol consumption

Covariate	Alcohol variable	Subject	Statistics on difference in response						
AGE			<50	50-59	60+	Total			
	Has drunk more heavily in past	Wife	16/10	10/10	5/14	11/11	*		
		Husband	15/14	6/23	9/12	8/16	*		
SOCIAL CLASS			AB	C1	C2	D	Total		
	Has drunk more heavily in past	Wife	0/14	14/10	15/4	20/14	13/10	*	
		Husband	17/17	12/10	6/18	9/21	11/14	N.S.	
	Combined alcohol consumption	Wife	1.97	-0.07	0.87	-1.48	0.13	*	
		Husband	0.30	-0.23	-1.52	-1.29	-0.66	N.S.	
EMPLOYMENT - SELF			Full	Part	Retired	Housekeep	Other	Total	
	Has drunk more heavily in past	Wife	12/4	15/16	3/15	14/6	14/14	11/11	**
		Husband	10/15	6/24	9/14		13/20	10/16	N.S.
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	Has drunk more heavily in past	Wife	15/13	12/4	6/15	11/11	*		
		Husband	12/17	3/15	12/15	10/16	N.S.		
EVER SMOKED CIGARETTES - SELF			Yes	No	Total				
	Alcohol self-defined status (5 cats)	Wife	13/14	16/19	14/17	N.S.			
		Husband	19/12	12/17	17/13	*			
ALCOHOL - SPOUSE			Abs/vocc	Light	Mod/heavy	Total			
	Ought to cut down alcohol	Wife	5/1	2/5	5/16	4/8	**		
		Husband	5/6	3/9	18/10	8/7	N.S.		
	Alcohol self-defined status (5 cats)	Wife	5/14	15/24	22/14	14/17	*		
		Husband	15/14	19/19	23/5	17/13	*		
OUGHT TO CUT DOWN ALCOHOL			BothN	SelfN prY	SelfY prN	BothY	Total		
	Has drunk more heavily in past	Wife	9/8	40/0	3/40	40/0	11/10	***	
		Husband	9/13	28/7	0/54	10/17	10/16	***	
	Alcohol self-defined status (5 cats)	Wife	14/15	33/33	3/33	13/27	14/18	*	
		Husband	18/15	7/3	21/21	14/10	17/14	N.S.	
	Combined alcohol consumption	Wife	-0.01	-1.60	-0.07	4.00	0.09	***	
		Husband	-0.87	1.43	-5.00	-0.07	-0.91	(*)	
NEUROTICISM			Both -	Self- pr+	Self+ pr-	Both +	Total		
	Has drunk more heavily in past	Wife	8/11	13/0	13/17	14/12	12/12	(*)	
		Husband	4/16	18/12	8/21	9/16	11/15	*	
ANY CARDIORESPIRATORY SYMPTOM			Yes	No	Total				
	Ought to cut down alcohol	Wife	8/6	2/9	4/8	*			
		Husband	5/8	10/7	8/7	N.S.			

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables; mean difference for continuous variables.

Table 10.1
Agreement between husband and wife - Other factors

10.1A 0/1 variables		N	Self%	Proxy%	Agree%	FPos%	FNeg%	McN P	Kappa	KapSE	Kap P
Any educational qualifications	Wife	319	63.64	62.70	89.03	5.02	5.96	N.S.	0.76	0.04	***
	Husband	328	70.12	70.12	90.85	4.57	4.57	N.S.	0.78	0.04	***
Gets enough exercise	Wife	393	45.29	48.85	77.10	13.23	9.67	N.S.	0.54	0.04	***
	Husband	391	50.90	47.57	77.75	9.46	12.79	N.S.	0.56	0.04	***

10.1B Graded variables		N	Self%	Proxy%	Agree%	High%	Low%	WSR P	KappaW	KapWSE	KapW P
N other adults in household[1,2]		384	37.24	37.76	95.83	2.08	2.08	N.S.	0.84	0.09	***
N children in household[1,2]		377	22.81	22.55	98.14	0.80	1.06	N.S.	0.96	0.02	***
Meals together weekdays[1,3]		364	37.91	38.19	75.27	11.54	13.19	N.S.	0.65	0.06	***
Meals together weekends[1,3]		352	59.09	57.67	69.03	16.48	14.49	N.S.	0.58	0.04	***
Free time spent together[1] (5 cats[4])		385	90.39	92.73	65.71	17.14	17.14	N.S.	0.67	0.04	***
Weight for height (3 cats[5])	Wife	380	97.63	96.58	80.53	4.74	14.74	---	0.69	0.03	***
	Husband	388	96.39	96.39	81.19	7.47	11.34	(-)	0.71	0.03	***
Age left school (7 cats[6])	Wife	379	47.49	44.59	67.81	15.30	16.89	N.S.	0.84	0.02	***
	Husband	382	46.60	42.93	67.80	13.61	18.59	N.S.	0.86	0.02	***
Qualification (4 cats[7])	Wife	319	42.95	40.13	76.18	10.34	13.48	N.S.	0.81	0.03	***
	Husband	327	52.29	50.46	76.76	10.40	12.84	N.S.	0.81	0.03	***
Physical activity (5 cats[8])	Wife	394	29.95	32.23	51.78	27.16	21.07	N.S.	0.60	0.04	***
	Husband	394	36.80	33.25	48.98	22.59	28.43	N.S.	0.60	0.03	***

10.1C Continuous variables		N	Mean self	Mean proxy	Mean diff	St.Dev diff	PT P	KappaW	ICC	ICCSE	ICC P
BMI	Wife	363	25.93	25.50	-0.44	2.52	--	0.87	0.87	0.01	+++
	Husband	374	26.22	26.30	0.08	1.82	N.S.	0.87	0.87	0.01	+++
Height (inches)	Wife	384	64.16	64.44	0.28	2.03	++	0.76	0.76	0.02	+++
	Husband	387	69.30	69.21	-0.10	1.32	N.S.	0.90	0.90	0.01	+++
Weight (lbs)	Wife	363	151.77	150.39	-1.39	11.55	-	0.93	0.93	0.01	+++
	Husband	374	179.49	179.27	-0.22	10.35	N.S.	0.93	0.93	0.01	+++

1 Wife's report treated as "self" report
2 Cut point: 1
3 Cut point: 3
4 Cut point: about half
5 Cut point: about right
6 Cut point: 16
7 Cut point: A-level
8 Cut point: little more active

Table 10.2
Significant variation in extent of association - Other factors

Covariate	Variable	Subject	Association statistics						
AGE			<50	50-59	60+	Total			
	Any educational qualifications	Wife	0.79	0.74	0.70	0.76	N.S.		
		Husband	0.93	0.61	0.78	0.78	**		
	Qualification (4 cats)	Wife	0.86	0.73	0.77	0.81	N.S.		
		Husband	0.89	0.73	0.78	0.81	*		
SOCIAL CLASS			AB	C1	C2	D	Total		
	Age left school (7 cats)	Wife	0.96	0.76	0.79	0.54	0.81	***	
		Husband	0.88	0.73	0.81	0.66	0.81	N.S.	
EMPLOYMENT - SELF			Full	Part	Retired	Hse-keep	Other	Total	
	Qualification (4 cats)	Wife	0.85	0.73	0.85	0.79	0.69	0.81	N.S.
		Husband	0.85	0.98	0.74		0.66	0.81	***
	Physical activity (5 cats)	Wife	0.55	0.45	0.70	0.45	0.77	0.60	*
		Husband	0.57	0.70	0.56		0.60	0.60	N.S.
	Meals together weekdays	Wife[1]	0.58	0.33	0.45	0.89	0.84	0.65	***
		Husband[2]	0.43	0.76	0.64		0.73	0.65	N.S.
EMPLOYMENT - SPOUSE			Full	Part	Retired	Hse-keep	Other	Total	
	Meals together weekdays	Wife[1]	0.43	0.76	0.64		0.73	0.65	N.S.
		Husband[2]	0.58	0.33	0.45	0.89	0.84	0.65	***
	Height (inches)	Wife	0.85	0.12	0.83		0.77	0.79	**
		Husband	0.90	0.92	0.82	0.96	0.90	0.90	N.S.
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	Meals together weekends	Wife[1]	0.61	0.23	0.44	0.60	**		
		Husband[2]	0.62	0.29	0.41	0.58	*		
	Free time (5 cats)	Wife[1]	0.72	0.66	0.58	0.69	N.S.		
		Husband[2]	0.67	0.78	0.41	0.67	**		
HEALTHINESS OF DIET			Both-	Self-pr+	Self+ pr-	Both+	Total		
	Weight for height (3 cats)	Wife	0.87	0.60	0.66	0.65	0.69	*	
		Husband	0.77	0.65	0.65	0.69	0.71	N.S.	
	Age left school (7 cats)	Wife	0.87	0.79	0.64	0.87	0.84	*	
		Husband	0.81	0.78	0.82	0.89	0.86	N.S.	
	Qualification (4 cats)	Wife	0.73	0.88	0.66	0.81	0.81	N.S.	
		Husband	0.75	0.93	0.87	0.79	0.81	*	
	BMI	Wife	0.86	0.83	0.83	0.88	0.87	N.S.	
		Husband	0.87	0.72	0.94	0.88	0.87	*	

/cont

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 10.2 (Continued)

HEALTHINESS OF DIET (continued)			Both-	Self-pr+	Self+ pr-	Both+	Total	
	Height (inches)	Wife	0.75	0.56	0.86	0.80	0.76	N.S.
		Husband	0.89	0.89	0.97	0.88	0.90	**
	Weight (lbs)	Wife	0.93	0.93	0.85	0.95	0.93	N.S.
		Husband	0.92	0.75	0.97	0.95	0.93	*
EVER SMOKED CIGARETTES - SELF			Yes	No	Total			
	Free time (5 cats)	Wife[1]	0.64	0.71	0.67	N.S.		
		Husband[2]	0.62	0.77	0.67	*		
EVER SMOKED CIGARETTES - SPOUSE			Yes	No	Total			
	Age left school (7 cats)	Wife	0.80	0.90	0.84	*		
		Husband	0.85	0.85	0.86	N.S.		
	Free time (5 cats)	Wife	0.62	0.77	0.67	*		
		Husband	0.64	0.71	0.67	N.S.		
ALCOHOL - SELF			Abs/ vocc	Light	Mod/ heavy	Total		
	Weight for height (3 cats)	Wife	0.70	0.64	0.71	0.69	N.S.	
		Husband	0.63	0.66	0.80	0.71	*	
	Meals together weekends	Wife[1]	0.50	0.82	0.47	0.58	***	
		Husband[2]	0.42	0.79	0.55	0.58	***	
	Height (inches)	Wife	0.73	0.71	0.90	0.76	**	
		Husband	0.93	0.91	0.85	0.90	N.S.	
ALCOHOL - SPOUSE			Abs/ vocc	Light	Mod/ heavy	Total		
	Meals together weekends	Wife[1]	0.42	0.79	0.55	0.58	***	
		Husband[2]	0.50	0.82	0.47	0.58	***	
OUGHT TO CUT DOWN ALCOHOL			BothN	SelfN prY	SelfY prN	BothY		
	Gets enough exercise	Wife	0.52	0.47	0.79	0.47	0.54	N.S.
		Husband	0.57	0.85	0.27	0.62	0.57	*
	Weight for height (3 cats)	Wife	0.66	1.00	0.67	1.00	0.69	N.S.
		Husband	0.66	0.86	0.88	0.78	0.71	*
	Age left school (7 cats)	Wife	0.84	0.57	0.89	0.72	0.84	**
		Husband	0.86	0.80	0.89	0.80	0.85	N.S.
	Meals together weekdays	Wife[1]	0.68	0.82	0.63	0.05	0.64	*
		Husband[2]	0.69	0.50	0.53	0.49	0.65	N.S.
	Height (inches)	Wife	0.77	0.41	0.68	0.83	0.76	N.S.
		Husband	0.89	0.97	0.81	0.95	0.90	**

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 10.2 (Continued 2)

NEUROTICISM			Both-	Self-pr+	Self+ pr-	Both+	Total	
	Qualification (4 cats)	Wife	0.95	0.76	0.77	0.77	0.83	***
		Husband	0.91	0.77	0.76	0.75	0.81	*
EXTROVERSION			Both-	Self-pr+	Self+ pr-	Both+	Total	
	Weight for height (3 cats)	Wife	0.83	0.62	0.60	0.57	0.70	*
		Husband	0.70	0.79	0.63	0.61	0.69	N.S.
GENERAL HEALTH			Excellent	Good	Fair/ Poor	Total		
	Qualification (4 cats)	Wife	0.81	0.78	0.83	0.81	N.S.	
		Husband	0.90	0.78	0.76	0.81	*	
	Physical activity (5 cats)	Wife	0.69	0.42	0.59	0.60	**	
		Husband	0.42	0.54	0.55	0.60	N.S.	
ACTIVITIES LIMITED			Yes	No	Total			
	Meals together weekdays	Wife[1]	0.69	0.64	0.65	N.S.		
		Husband[2]	0.85	0.61	0.65	**		
N PROBLEMS LAST MONTH			0	1-2	3-5	6+	Total	
	Meals together weekdays	Wife[1]	0.89	0.62	0.61	0.65	0.65	*
		Husband[2]	0.72	0.59	0.62	0.79	0.65	N.S.
	Meals together weekends	Wife[1]	0.66	0.63	0.55	0.43	0.58	N.S.
		Husband[2]	0.76	0.56	0.50	0.29	0.58	*
	Free time (5 cats)	Wife[1]	0.82	0.65	0.68	0.51	0.67	(*)
		Husband[2]	0.84	0.63	0.51	0.82	0.67	**
N ILLNESSES EVER			0	1-2	3+	Total		
	Any educational qualifications	Wife	0.68	0.78	0.79	0.76	N.S.	
		Husband	0.93	0.72	0.80	0.78	*	
	Meals together weekdays	Wife[1]	0.83	0.65	0.54	0.65	*	
		Husband[2]	0.35	0.77	0.70	0.65	*	
ANY CARDIORESPIRATORY SYMPTOM			Yes	No	Total			
	Free time (5 cats)	Wife[1]	0.63	0.69	0.67	N.S.		
		Husband[2]	0.55	0.74	0.67	*		

Statistics shown are Kappa for 0/1 variables, Weighted Kappa for graded and continuous variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 10.3
Significant variation in difference in response - Other factors

Covariate	Variable	Subject	Statistics on difference in response						
AGE			<50	50-59	60+	Total			
	Height (inches)	Wife	0.36	0.22	0.21	0.28	N.S.		
		Husband	0.06	-0.36	-0.04	-0.10	*		
SOCIAL CLASS			AB	C1	C2	D	Total		
	Weight for height (3 cats)	Wife	6/19	4/14	0/13	2/8	3/13	N.S.	
		Husband	0/14	5/17	9/4	8/6	6/11	*	
	BMI	Wife	-0.54	-0.81	0.19	0.17	-0.31	(*)	
		Husband	-0.11	-0.23	-0.04	0.67	0.04	*	
	Height (inches)	Wife	0.16	0.46	0.11	0.22	0.27	N.S.	
		Husband	0.07	0.17	-0.30	-0.40	-0.08	*	
EMPLOYMENT - SPOUSE			Full	Part	Retired	Housekeep	Other	Total	
	Qualification (4 cats)	Wife	12/14	13/6	12/10		2/26	10/14	*
		Husband	5/11	11/13	11/13	15/12	12/24	10/13	N.S.
MEALS TOGETHER WEEKDAYS			0-1	2	3+	Total			
	Meals together weekends	Wife[1]	23/13	19/18	8/14	16/14	(*)		
		Husband[2]	20/17	22/13	4/19	14/17	**		
APARTNESS			0	>0	Total				
	Gets enough exercise	Wife	13/10	15/10	13/10	N.S.			
		Husband	11/11	2/23	9/13	**			
HEALTHINESS OF DIET			Both +	Self- pr+	Self+ pr-	Both +	Total		
	Gets enough exercise	Wife	5/7	17/6	7/32	15/8	13/10	**	
		Husband	7/13	29/9	7/17	7/12	9/13	*	
	Weight for height (3 cats)	Wife	5/3	3/19	0/27	6/14	5/15	**	
		Husband	5/10	9/14	13/7	6/13	7/11	N.S.	
EVER SMOKED CIGARETTES - SELF			Yes	No	Total				
	Meals together weekdays	Wife[1]	12/14	11/12	11/13	N.S.			
		Husband[2]	11/15	19/3	13/11	***			
EVER SMOKED CIGARETTES - SPOUSE			Yes	No	Total				
	Meals together weekdays	Wife[1]	15/11	3/19	11/13	***			
		Husband[2]	14/12	12/11	13/11	N.S.			
	BMI	Wife	-0.27	-0.85	-0.44	*			
		Husband	0.23	-0.06	0.09	N.S.			
	Weight (lbs)	Wife	-0.62	-3.31	-1.39	*			
		Husband	0.58	-0.92	-0.12	N.S.			
OUGHT TO CUT DOWN ALCOHOL				SelfN prY	SelfY prN	BothY	Total		
	N other adults in household (5 cats)	Wife[1]	1/2	0/7	3/3	13/0	2/2	*	
		Husband[2]	2/1	3/0	4/4	0/8	2/2	N.S.	

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables; mean difference for continuous variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 10.3 (Continued)

NEUROTICISM			Both -	Self- pr+	Self+ pr-	Both +	Total	
	Any educational qualifications	Wife	1/2	3/11	7/3	7/6	5/5	N.S.
		Husband	2/2	1/9	9/0	8/3	4/4	*
	Qualification (4 cats)	Wife	4/6	6/25	13/13	17/12	10/13	(*)
		Husband	5/10	4/21	29/3	11/13	9/13	***
EXTROVERSION			Both -	Self- pr+	Self+ pr-	Both +	Total	
	Meals together weekdays	Wife[1]	10/15	19/2	6/19	6/12	10/12	**
		Husband[2]	15/10	19/6	2/19	12/6	12/10	**
	Meals together weekends	Wife	11/15	27/5	17/22	10/14	16/14	**
		Husband	15/11	22/17	5/27	14/10	14/16	**
	Physical activity (5 cats)	Wife	26/10	37/10	24/29	33/21	29/20	(*)
		Husband	28/24	29/24	14/41	16/35	23/30	**
GENERAL HEALTH			Excellent	Good	Fair/Poor	Total		
	Gets enough exercise	Wife	13/11	14/9	11/9	13/10	N.S.	
		Husband	9/19	7/14	17/5	9/13	**	
N PROBLEMS LAST MONTH			0	1-2	3-5	6+	Total	
	BMI	Wife	-0.16	-0.39	-0.59	-0.44	-0.44	N.S.
		Husband	0.27	0.01	-0.23	0.95	0.08	**
	Weight (lbs)	Wife	0.54	-0.91	-1.80	-3.30	-1.39	N.S.
		Husband	1.05	-0.44	-2.19	3.22	-0.22	*
N ILLNESSES EVER			0	1-2	3+	Total		
	Gets enough exercise	Wife	11/11	13/11	15/8	13/10	N.S.	
		Husband	9/21	9/14	12/5	9/13	*	
	Physical activity (5 cats)	Wife[1]	23/21	28/19	28/25	27/21	N.S.	
		Husband[2]	13/38	23/27	28/25	23/28	*	
	Free time (5 cats)	Wife	13/24	21/18	13/18	17/17	*	
		Husband	15/20	18/19	17/13	17/17	N.S.	
ANY CARDIORESPIRATORY SYMPTOM			Yes	No	Total			
	Gets enough exercise	Wife	11/9	15/10	13/10	N.S.		
		Husband	13/10	7/15	9/13	*		

Statistics shown are % false positives/% false negatives for 0/1 variables; % higher/% lower for graded variables; mean difference for continuous variables

[1] Wife's report treated as "self" report. Wife's covariate values

[2] Husband's report treated as "self" report. Husband's covariate values

Table 11.1
Summary of extent of association*

Very good agreement (Index ≥0.90 in both sexes)

Current regular cigarette smoker
Ever smoked cigarettes regularly
Smoked cigs regularly in last 10 years
Ever smoked any tobacco product
Current smoker any product
Cigarette smoking status
Spouse current regular cigarette smoker (never smokers)
Spouse ever smoked cigarettes regularly (never smokers)
In paid employment
Social class
1 risky job (chimney sweep)
Number of children in household
Weight

Good agreement (Index≥0.80 in both sexes, but not ≥0.90 in both)

Years since smoked (ex smokers)
Other household member smokes (never smokers)
Mother smoked in childhood (never smokers)
Sugar in tea or coffee
Drinks semi-skimmed milk (vs full cream)
Tea consumption
Coffee consumption
Working status of chief income earner
Income of chief income earner
1 risky job (miner)
Years since last worked
2 (/7) types of alcohol (sherry, liqueurs)
Number of other adults in household
Age left school
Qualification
Body mass index

Poor agreement (Index ≤0.55 in both sexes, but not≤0.45 in both)

Age started smoking (ever smoked)
Eats meals at regular times
Ever cut down on fatty food
Healthiness of diet
10 (/29) food frequencies (tinned fruit, potatoes, nuts, puddings, ice cream/yoghurt, cream, fish, poultry, sausages/pasties, meat)
Vegetable score
Has worked changing shifts
Has worked evening shifts
2 risky jobs (beryllium, aluminium production)
Has drunk more heavily in past
Ought to cut down on alcohol

Very poor agreement (Index ≤0.45 in both sexes)

Other ETS (never smokers)
Ever eaten fatty food
4 (/29) food frequencies (root vegetables, peas/beans, green vegetables, other vegetables)
Who is chief income earner
13 (/32) risky jobs (production, application of arsenic pesticides, production, application of other pesticides, roofer, asbestos production, BCME, chromate pigments, batteries, chromium plating, cadmium, ferrous chromium, nickel refining)
1 (/7) types of alcohol (premium beer)

* Variables included are those shown in tables 5.1, 6.2 (excluding analyses counting DK as No), 7.1, 8.1 (excluding analyses restricted to couples agreeing who is chief income earner, and excluding production of mustard gas), 9.1, 10.1. Index considered is Kappa (0/1 variables), Weighted Kappa (graded and continuous variables). Where the index is available for one sex only, the variable is shown in the appropriate category based on one sex.

Table 11.2

Summary* of significance of difference† in response

	Type/ N categories	Wife	Husband
Ever regularly smoked 20+ cigarettes	0/1	NS	-
Ever smoked pipe or cigars regularly	0/1	NS	--
Other ETS exposure (in never smokers)	5	NS	--
Total ETS exposure (in never smokers)	5	NS	-
Time to first meal	4	NS	-
Frequency of use of jam/honey/marmalade	6	+	NS
Healthiness of diet	4	+++	---
Fresh fruit in summer	6	---	NS
Fresh fruit in winter	6	---	NS
Salad/raw vegetables in summer	6	---	(-)
Salad/raw vegetables in winter	6	---	NS
Tinned fruit	6	NS	---
Chips	6	+	NS
Potatoes (not chips)	6	---	NS
Green vegetables	6	---	NS
Other vegetables	6	---	(+)
Breakfast cereals	6	--	NS
Biscuits	6	--	++
Cakes	6	NS	++
Pure fruit juice	6	---	NS
Cheese	6	---	(+)
Eggs	6	--	NS
Sausages, pasties	6	+	NS
Meat	6	-	+++
Fruit score	C	---	NS
Vegetable score	C	---	NS
Salad score	C	---	NS
Amount of bread	C	NS	--
Sole/joint chief income earner	0/1	+++	+++
Ever had risky job	0/1	(-)	---

* Variables included are those shown in tables 5.1, 6.2 (excluding analyses counting DK as No), 7.1, 8.1 (excluding analyses restricted to couples agreeing who is chief income earner, and excluding production of mustard gas), 9.1, 10.1 and for which a significant difference ($p<0.05$) was seen for either sex

† Minus (plus) signs indicate proxy response significantly lower (higher) than self-report.

Table 11.2 (Continued)

	Type/ N categories	Wife	Husband
Has worked as welder	0/1	NS	---
Has worked in construction industry	0/1	NS	---
Has worked as a haulier or truck/bus driver	0/1	NS	-
Has worked in rubber industry	0/1	NS	-
Has worked as butcher	0/1	NS	-
Number of risky jobs	16	--	---
Has drunk more heavily in past	0/1	NS	-
Ought to cut down on alcohol	0/1	-	NS
Beer	C	-	NS
Sherry	C	+	NS
Spirits	C	NS	-
Weight for height	3	---	(-)
Body mass index	C	--	NS
Height	C	++	NS
Weight	C	-	NS
Social class[1,2]	6	Husband < wife	-
Income of chief income earner[1]	12	Wife > husband	++

* Minus (plus) signs indicate proxy response significantly lower (higher) than self-report.
[1] Question refers to family not husband or wife.
[2] Husband reported lower scores, i.e. higher social class.

APPENDIX A

Relationship of the observed relative risk to the true relative risk, the proportion exposed and the Kappa statistic

Consider a variable classified as present or absent. Let the frequency for exposure be p and the associated relative risk of exposure for a specified disease be R. Assume subjects report exposure accurately, but spouses do not, though they report it with no bias. We can now draw up the following 2x2 table of frequency of exposure:

		Subject		
		No	Yes	Total
	No	1-p-d	d	1-p
Spouse	Yes	d	p-d	p
	Total	1-p	p	1

where d is the proportion of false positives and of false negatives in the total sample.

The observed proportion of agreement $P_O = 1-2d$

The expected proportion of agreement $P_E = p^2+(1-p)^2 = 1-2p(1-p)$

The Kappa statistic $$K = \frac{P_O - P_E}{1-P_E} = \frac{2p(1-p)-2d}{2p(1-p)}$$

$$= 1 - \frac{d}{p(1-p)}$$

$\therefore$ $d = (1-K)p(1-p)$

The true relative risk is R.

The observed relative risk based on spousal report is given by:

$$R' = \frac{d+R(p-d)}{p} \Big/ \frac{(1-p-d)+Rd}{(1-p)}$$

$$= \frac{(1-p)(d+R(p-d))}{p(1-p-d+Rd)}$$

Substituting for d we have:

$$R' = \frac{(1-p)((1-K)p(1-p)+Rp(1-(1-K)(1-p)))}{p(1-p-(1-K)p(1-p)+R(1-K)p(1-p))}$$

$$= \frac{(1-p)(1-K)+R-R(1-p)(1-K)}{1-p(1-K)+Rp(1-K)}$$

$$= \frac{R-(1-p)(1-K)(R-1)}{1+p(1-K)(R-1)}$$