

**”Cognitive and Emotional function
in relation to
Gender, Age, Education, BMI,
Subjectly Perceived Health
and Blood Pressure”**

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ABSTRACT:

Objective: To examine if there is any relationship between neuropsychological function and age, gender, education level, BMI, smoking, subjectively perceived health and blood pressure.

Subjects: A total of 438 subjects, of which 232 were from a TSH study; 87 cases and 145 controls, and 206 from a PTH study; 100 cases and 106 controls. The cases were recruited from the general health survey (the 5th Tromsø study). Of the total population there were 218 females and 220 males.

Main Outcome Measures: Fourteen tests of cognitive function were used, in addition to Beck Depression Inventory and the General Health Questionnaire.

Conclusion and results: It seems females, those with higher education and low BMI perform better on most cognitive function tests. High age and systolic hypertension is negative predictors for performance in cognitive function testing. Smoking status is virtually insignificant for cognitive function, and subjectively perceived health have inconclusive results.

Males performed better on most emotional function tests, and “good” or “excellent” subjective health is a predictor for positive result on all the emotional tests.

Higher education had a protective effect against feelings of social dysfunction in the emotional test battery. Systolic hypertension has little significance, and smoking status is insignificant for all the emotional tests.

Low BMI predicted a feeling of incompetence compared to those with higher BMI in the emotional tests, and high age is a negative predictor of performance of 1/3 of the depression tests.

INTRODUCTION:

The 5th Tromsø study yielded two follow-up studies with cases and controls that underwent tests for cognitive and emotional function. Both studies concluded that there were no greater significant differences between the cases and controls. Thus we had a population of over 400 individuals that were tested extensively for cognitive and emotional status. We used this opportunity to see if we could find any significant relations between cognitive and emotional

function and the factors age, gender, education, BMI, smoking, blood pressure and subjectively perceived health.

SUBJECTS AND METHODS:

In 2001 the 5th Tromsø study was performed in the same fashion as the previous ones (1). All men and women older than 29 years, living in the municipality of Tromsø and who participated in the second phase of the 4th Tromsø study, or became 30, 40, 45, 60 or 75 years old during 2001, were invited to participate.

The ones who enrolled filled out a questionnaire that charted smoking habits (no/yes, and number of cigarettes each day), education levels (meaning number of school years), self evaluated health status (poor, not too good, good and excellent), and they were also asked if they would prefer not to be invited to additional studies based on results from the present one.

This study is based on the results of both the case- and control-group of two separate follow-up studies, one concentrating on neuropsychological function in relation to serum PTH and serum 25-hydroxyvitamin D levels (2), the other on neuropsychological function in subjects with subclinical hypothyroidism (3). The cases for the PTH-study was subjects with serum calcium < 2,40 mmol/L and PTH > 6,4 pmol/L. The controls were age- and gender matched. In the sub hypothyroid-study the cases had serum TSH level between 3,5 and 10,0 mIU/L, and the controls were age- and gender matched, and had a TSH level of 0,50-3,49 mIU/L.

As the results of both studies concluded that there was no significant difference between the cases and controls, we have merged the two study-groups to form a population of 438 individuals.

In both studies those who had reported a history of coronary infarction, angina pectoris or stroke in the questionnaire, those participating in other follow-up studies, and those above the age of 80 years were not invited. The hospital records were also checked in order to exclude subjects with serious diseases not reported in the questionnaire.

In the subclinical hypothyroidism study those using thyroid medication were also excluded. Both studies invited an age and gender matched control subject for each case subject.

At the follow-up the subclinical hypothyroidism study subjects had blood drawn nonfasting day one. The PTH-study subjects had blood drawn fasting. All subjects had a clinical examination and their height and weight measured in light clothing without shoes. Body Mass Index (BMI) was calculated as weight (kg) divided by squared height (m²). At a

separate day all subjects were examined with neuropsychological tests for cognitive and emotional function, in a non-fasting state. These were administered in two sessions, both had a duration of one or two hours, and separated by a coffee break. A clinical neuropsychologist and an experienced technician trained the nurses who were examiners to carry out the tests in a standardized fashion and in the same order. The examiners were blinded for the subject's blood-test status.

Tests of cognitive function:

Working memory capacity:

For attention, sustained attention, and working memory the Digit Span forward and backward test (subtests from Wechsler Memory Scale-Revised (4)) and the Seashore Rhythm test from the Halstead-Reitan test battery (5) was used.

Speed of information processing:

For psychomotor/cognitive speed the Trail Making test, part A (5), the Stroop Color-Word test, parts 1 and 2 (reading speed)(scored at 1 and 2 added together) (6), modified version (7), and the Digit Symbol test (8) was used. Speed of information processing was measured by the California Computerized Assessment Package (CalCAP) (9).

Memory:

Was assessed by the Verbal and Visual paired associates immediate and 30 minutes delayed recall (from WMS-R) (4), and verbal recall test; a word list consisting of 12 words, a subtest from California Verbal Learning Test (CVLT) (10).

Language/word fluency:

The Controlled Oral Word Association test with words beginning with the letters F, A, and S (FAS) (11).

Cognitive flexibility/executive function:

Measured by the Trail Making test, part B (5), and the Stroop Color-Word test, part 3 (color-word interference effect) (6,7).

Intelligence:

The subtest Vocabulary from the Wechsler Adult Intelligence Scale (WAIS) (8).

Composite cognitive function score:

Was made by adding together the Z-scores for the following seven tests: Digit Span forward and backwards, Digit Symbol test, Stroop test parts 1 and 2 (scores added together), verbal and visual recall and Stroop test part 3. If a negative score was favorable, the Z-score was multiplied by -1.

Tests of emotional function:

Depressed mood:

Measured by Beck Depression Inventory (BDI) divided into two subscales (12). First, Cognitive-Affective; assesses the mental aspect of depression (items 1-13). Secondly, Somatic-Vegetative; measures vegetative and somatic symptoms (items 14-21). Total and subscale scores were recorded.

Mental health status, (also called psychological distress):

Assessed by the General Health Questionnaire (GHQ), using the GHQ-30 version (13). GHQ is a questionnaire where subjects are asked to compare their perceived health status to four standard answers, thus enabling the GHQ scoring method 0-0-1-1.

We also applied the Likert-scoring method, which allows factor scoring within the five subscales of GHQ-30. (Factors A=anxiety, B=feelings of incompetence, C=depression, hopelessness, D=difficulty in coping, and E=social dysfunction) (14).

Statistical analyses:

Normal distribution was evaluated with determination of skewness and kurtosis and visual inspection of histograms and pie charts. The score of tests of cognitive function were considered normally distributed, except for Trial Making A, Trial Making B, Seashore Rhythm test and Stroop Color-Word test part 3. After logarithmic transformation, these latter variables assumed normal distribution and were applied as such when used as a dependent variable. All the emotional function tests were normally distributed, and as such were evaluated with parametric statistics.

Students t-test was used to test the independent factors against each other, as well as to test the independent factors against emotional and cognitive function tests.

A multiple linear regression model was also used to assess the independent predictors age, gender, BMI, education level, health score, smoking and blood pressure against the test score for cognitive function.

We also used tables and crosstables to find the characteristics of the population.

The data of this study is expressed as +/-SD, unless otherwise stated. All tests were done two sided, and $P < 0,05$ was considered statistically significant.

Statistical analyses were performed with SPSS version 13.0 (SPSS Inc, Chicago, IL).

Ethics:

All participants gave their written consent, and the Regional Ethics Committee approved the studies.

RESULTS:

The population:

The study included a total of 438 subjects; 206 from the PTH-study and 232 from the sub-hypothyroid study. Of these a 106 was controls in the PTH-study, and 145 in the sub-hypothyroid study, giving us an overall number of 251 controls, and 187 cases.

Of the 438 subjects, 20 obvious unfit for the cognitive tests, for example analphabets, were excluded. Thus we have 175 cases and 243 controls. These were not differentiated between in our study unless so noted.

General information

The gender distinction was near 50/50, with 206 males and 212 females. (Figure 1)

334 of 418; near 80% was either normal weight or overweight according to BMI-groups. (Figure 2) From tables we find that blood pressure (bp) increases with higher BMI. We also find that youth has lower BMI, and that lower BMI coincides with higher education. (Table 1)

Health was "good" or "excellent" for over $\frac{3}{4}$ of the population. (Figure 3) Only 3 of 418 reported "bad" health (missing= 9). (Table 2)

Age had a distribution from 30 to 80 years. 271 of 418; almost 65% was over 60 years old, and 90 of the 147 younger than 61 years was between 40-49 years old. (Figure 4, Table 3)

Only 103 out of 411 (7 missing) were smokers, approximately 25% or 3/4 of the population. (Figure 5)

Intelligence had a median of 20, and an approximate Bell curve shape. (Figure 6) Almost no one had less than 6 and more than 21 years of education (school years). 250 of 418= near 60% had between 7-12 years of education. (Figure 7, Table 4)

By international standards hypertension is defined as systolic bp over 140 mmHg, and diastolic bp over 90 mmHg (19). Using this criteria, our population has approximately 1/4 hypertensive's. (Figure 8)

Independent t-test findings:

Cognitive tests:

Cases versus controls: Controls had significantly lower BMI, lower diastolic bp and less blood pressure medication use. Cases had significantly more non-smokers and performed better on 1/3 of the memory tests,

Gender: Women had significantly lower age and lower bp, and men had significantly lower pulse. On the cognitive tests that were significant; 2/4 of the speed of information processing tests, 2/3 of the memory tests, 1/2 of the cognitive flexibility tests, the language test and composite z –score, women performed better than men. Male and females had no significant differences in working memory capacity tests and intelligence (IQ) tests. (Table 5)

Smoke: Smokers were significantly younger and had lower bp. Non-smokers had significantly higher BMI and better language. Comparing those who smoke less than 9 cigarettes daily to those who smoke more, we find that the less than 9 cigarettes daily group has better language abilities, higher age and systolic bp as the only significant findings. (Table 5)

Subjective health-groups was cut between “bad”/”not so good” and “good”/”excellent”. “Good/excellent” health was significant for more males, lower age, lower BMI, lower systolic bp, low bp medication use and higher education. The “good”/”excellent” group also performed significantly better on these cognitive function tests: 1/3 of the working memory capacity tests, 3/4 of the speed of information processing tests, all the memory-, language-, cognitive flexibility and intelligence tests, as well as the composite z-score. (Table 5)

Systolic blood pressure over 140 mmHg (hypertension) was significant for higher age, male gender, higher BMI, worse subjectively perceived health, non-smokers and not

surprisingly, more bp medication use. It was also a predictor for negative result in 1/3 working memory capacity tests, all 4 speed of information processing tests, 2/3 of the memory tests, both cognitive flexibility tests and composite Z score.

Diastolic blood pressure over 90 mmHg (hypertension) was significant for male gender, higher BMI, non-smokers and, of course, bp medication use. It was insignificant for results in all cognitive function tests. (Table 5)

The use of **blood pressure medication** was significantly associated with high age, high BMI, and high blood pressure. It was also significant for low education and low subjective health perception. Of the cognitive tests bp medication use was significant for poorer performance in all 4 speed of information processing tests, all 3 memory tests, all cognitive flexibility tests, the IQ test and composite Z-score.

Education (school years) were tested with cutpoints at 8, 10 and 13 years of education:

Higher numbers of school years was significant for high systolic blood pressure, low use of blood pressure medication, better health and lower age in all cutpoints. Higher number of school years was also significant for better performance in all the cognitive tests.

Higher education also became significant for higher pulse at cutpoint 10 years, but was not still so at cutpoint 13 years.

At cutpoint 13 years, higher education was significant for low BMI. (Table 6)

High BMI was significant for male gender and non-smokers.

Low BMI was significant for young age, female gender, higher education, low blood pressure and no blood pressure medication use, as well as for better performance in 2/4 of the speed of information processing tests, 1/3 of the memory tests, 1/2 of the cognitive flexibility tests and composite z-score. (Table 5)

Age was cut at 49, 59, 65, 69 and 74 years old.

Gender was significant for age, where females were younger in all cutpoints.

Low age was not surprisingly significant for low blood pressure, and thus low use of blood pressure medication, and higher education in all cutpoints, with the exception of diastolic blood pressure in cutpoint 74, which was insignificant.

BMI was only significant for young age in the 59 years old cut group, making BMI irrelevant for age.

Youth was always significant for “good” or “excellent” subjectively perceived health , except in the 49 years old cut, where it was insignificant.

Smoking was insignificant for the 49, 59 and 74 years cut, but there were significantly more non-smokers at higher age in the 65 and 69 years old cut.

Youth was favorable for better performance at the cognitive function tests; speed of information processing, memory, cognitive flexibility, intelligence and composite Z-score in all age cutpoints.. Language was insignificant for age in all cutpoints.

Youth was significant for better performance in the working memory capacity tests, by 3/3 in cut 65 and 69, 2/3 in 49 and 59, and 1/3 at 74 years. (Table 6)

Emotional tests:

Cases versus controls: The controls had significantly more difficulty coping, according to GHQ-factor D. Cases was significantly less depressed on 2/3 of the depression tests, and scored better than controls on 1/2 the mental health status tests.

Gender: Males scored better on all the emotional function tests that were significant. These were 2/3 of the depression tests and 1/2 the mental status tests. And also the GHQ sub-scores A= anxiety, C= depression/hopelessness and D= difficulty in coping, meaning they had less off these feelings. (Table 7)

Subjective health: The “good/excellent” group scored significantly better on all the emotional function tests, compared to the “bad/not so good” group. (Table 7)

Systolic blood pressure over 140 mmHg (hypertension) was significant for poorer performance in 1/3 of the depression tests, and significantly poorer performance on GHQ-factor C= depression/hopelessness.

Diastolic blood pressure was non-significant in all emotional tests. (Table 7)

BP medication: Those using bp medication scored significantly poorer than those not using bp medication on all the 3 depression tests in the emotional status battery.

Education: Higher education were significant in all cutpoints for better result in GHQ-factor E= social dysfunction.

In cutpoint 10 those with lower education performed poorer on 1/3 of the depression test and 1/2 of the mental health status tests.

By cutpoint 13 years, none of the depression or mental health status tests were significant, excluding GHQ-factor E of cause. (Table 7)

High BMI was significant for better performance on 1/2 of the mental health status tests and for GHQ-factor B= feelings of incompetence. (Table 7)

Age: Emotional tests were insignificant for age in cut 49.

Youth was significant for better mental health in 1/3 of the depression tests in all cutpoints but 49. Also, youth had significantly better mental health in regard to GHQ-factor E= social dysfunction, in the 59 and 74 cut. In cuts 65 and 69, GHQ-factor A=anxiety, had significantly better results for those of higher age. (Table 7)

Linear regression findings:

Linear regression was done after exclusion of obvious unfits, for example analphabets. The multiple linear regression is in effect corrected twice when we use both age and education. The results therefore differs when we exclude education. Both is included in the table. Education is the most important positive predictor for cognitive performance, and age the most negative predictor. Leaving education out of the model we find that smoking and good subjective health becomes positive predictors. Age is still the most negative predictor though. (Table 8)

Crosstabulation:

Significant crosstabulation of age-groups and bp medications, reveals that the use of bp medications rises sharply after 60 years of age.

Bp medication and gender in non-significant crosstabulation shows us that men and women both use and don't use bp medication in the same degree.

BMI groups and bp medication use crosstabulation reveals that a little over half of those using bp medication is in the overweight BMI group. And over 80% of bp medication users have BMI's of overweight or obese.

Significant crosstabulation of bp medication and health reveals that about 60% of those not using bp medication report "good" health, and about 20% report "not so good". Near 40% of those using bp medication report "not so good" health, and near 50% report "good" health. The bp medication users is near absent from the group reporting "excellent" health.

Age-groups and subjectly perceived health was significant and shows us that about half of those with "excellent" subjectly perceived health, is younger than 50 years. And over half of those reporting "not so good" health, is older than 60 years old. A little over half of the population thinks they have "good" health.

Non-significant crosstabulation shows us that there are no significant difference between the genders when they report on subjectively perceived health.

About 1/3 of those reporting “not so good” health is in the obese BMI category, and about 70% of the same group is in the overweight/obese BMI category. Over 30% of those reporting “excellent” health was in the under- or normalweight BMI category.

Non-significant crosstabulation of age-groups and smoking status reveals that about 1/3 of the smokers is between 30 and 50, 1/3 between 60 and 69, and about 20% between 70 and 80.

Non-significant crosstabulation of smoke status and gender shows us that both men and women smoke and don't smoke in the same degree.

BMI groups and smoking in crosstabulation shows that nearly half of the smokers have a BMI of normal- or underweight.

Crosstabulation of smoking status and subjectively perceived health shows us that over half of the smokers have “good” subjectively perceived health. And over 90% of the smokers have “not so good” or “good” perceived health. Non smokers have a little over 80% in the same groups.

DISCUSSION

The **population** itself, it may be argued, is not a true representative for real life, as half the subjects entered the study because of specific characteristics. The use of cases and controls may influence the result, even though no significant differences between them in the previous studies were found. The cases versus controls t-test also confirms that there is few differences between the two groups.

The different tests for cognitive function did not show uniformly significant differences for **gender**, but even so it must be acknowledged that for tests within nearly all subcategories females performed significantly better than males. Females in this study are of lower age, and youth favor several of the cognitive tests. But females do not have higher education than men, which also favors youth. That language is favorable for females is hardly worth a discussion, as this is well established already (2,3). That females perform significantly better at Verbal recall and Word list tests could be explained by the findings of higher dopamine availability in the caudate nucleus found in females and younger people (15,16). Low availability of dopamine in the caudate nucleus is associated with the decline of cognitive and motor functions found in normal aging (15,16). It could be argued that the fact that the females in general are younger in this study would

potentate this effect here. However, the jury is still out on the question of sex-differences in the dopamine system, as the evidence so far is inconclusive (15).

Gender difference was also apparent in the emotional tests, where males performed better than females. Here it may be argued that females as a gender is less assertive, and therefore exhibit more uncertainty and doubt than males. One could also wonder if the females cyclic hormonal impact makes them less emotionally stable, and therefore suffers more doubts about their abilities, both cognitively and emotionally. This applies to the males as well, where the hormonal impact of testosterone may make males more assertive and self confident than they perhaps should be.

The variable **age** is the most negative predictor for cognitive function. This may and probably do have a complicated multifactorial background. One of these is the age impact on memory, which is well documented (16). It seems that it is mostly secondary memory that is affected, not sensory or primary. This means that it's mainly the ability to memorize new things that is affected, not actually remembering them once memorized. There is of course great individual differences here (16). It becomes statistically significant in the 50's in comparison to younger individuals (16). This could be explained by the loss of white matter in the brain by age, neuron loss selective to subcortical areas related to memory function, the increase in cerebrospinal fluid after the age of 70, the loss of dopamine receptors in the caudate nucleus and the substantia nigra (16) by age or all of the above.

The changes in dopamine levels can be the cause of decreased cognitive flexibility by age (16).

The effects of systemic disease and damage also usually become more prominent in old age.

Higher years of **education** seem to make one more functional in social life, as well as being a positive predictor for performance on all cognitive function tests.

Education is known to be the most important non biological factor for cognitive performance (17), with a 71% protective effect on memory, and 75% protective effect on crystallized abilities¹⁷. Fluid abilities means reasoning, processing speed, working memory and spatial ability. These are known to be affected by genetic factors, neurological damage and biological ageing. Crystallized abilities includes verbal fluency, general knowledge, vocabulary and arithmetic. These are affected by education and acculturation (17).

The protective effect on cognitive function seem to be present in all adulthood, not just in old age (17). Three main explanations for this have been suggested (17). First, that education may act as a proxy for other effects, such as socioeconomic status and nutrition. Secondly, that education may reflect brain reserve capacity in the form of increased dendritic growth

and spread, vascularisation and number of synapses on educational stimulus. Thirdly, that education don't effect the rate of biological decline, but affect preservation of learning. This means that learning isn't critical for a specific period in life, but has an ongoing effect throughout life (17).

Higher number of school years is significant for a protective effect against social dysfunction.

Only 25% of the population was **smoking**, so we cannot exclude that we would have had more significant differences in cognitive function, had we included more subjects in the study. Language was the only significant cognitive test factor, which was better for non-smokers. Nicotine has been known to have an improving effect on cognitive function in several neuropsychiatric illnesses, but this effect is not as convincing in normal states (18). Smoking had no significant effect on the emotional function tests.

$\frac{3}{4}$ of the population was in the "good"/"excellent" category for **subjective health**. "Good" or "excellent" subjectively perceived health is a positive predictor in several of the cognitive tests subscores, and we cannot rule out that there might have been more if we had a bigger population. However, the literature on this subject have mixed and contradictory results (17).

The use of **bp medication** may be heavily influenced by the fact that the users are older, therefore also having less education, more health problems, higher BMI through inactivity. The cognitive tests result may as well be due to high age and low education, rather than the actual use of bp medication. The literature is not conclusive on this point, but it can be stated that baseline hypertension is a predictor for declining cognitive function, regardless of bp medication use (17). This can be said to be confirmed in this study, as several of the cognitive tests was significant for poorer performance when using bp medication. All depression tests also found better performance for those not using bp medication.

The strength of this study is its large number of subjects, but at the same time we cannot exclude that there would be more significant factors for the variables smoking, subjective health, and bp had the study been even larger still.

CONCLUSION:

It seems females perform better on most cognitive function tests, while males perform better on most emotional function tests.

High age is the greatest negative predictor for performance of cognitive function, and was also a negative predictor of performance of 1/3 of the depression tests.

Higher education is the most important non-biological protective factor for cognitive function, with significance on all cognitive function tests. It also had a protective effect against feelings of social dysfunction in all cutpoints.

Smoking status is virtually insignificant for cognitive function, and was not significant at all for any of the emotional tests.

Subjectively perceived health have inconclusive results for cognitive function, but “good” or “excellent” health was a predictor for positive result on all the emotional tests.

Systolic hypertension was a negative predictor for cognitive function significant in many of the tests, but little significance in the emotional tests.

Low BMI was significant for better performance in several cognitive function tests, but the results are inconclusive. In the emotional tests it predicted a feeling of incompetence compared to those with higher BMI.

TABLES AND FIGURES:

Figure 1:

Male/female frequency pie chart

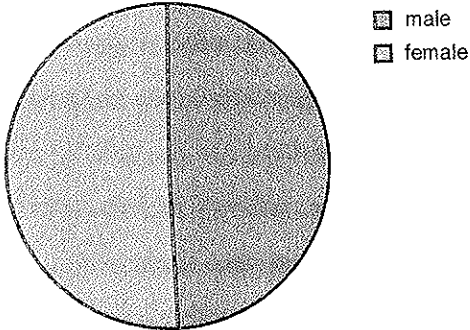


Figure 2:

BMI frequency histogram

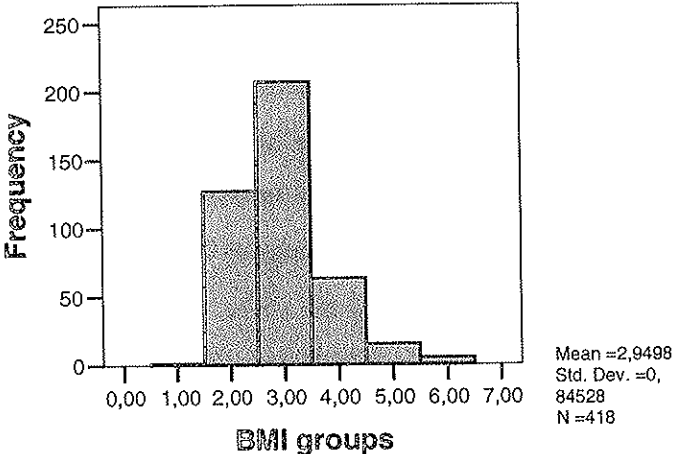


Figure 3:

Subjectively perceived health piechart

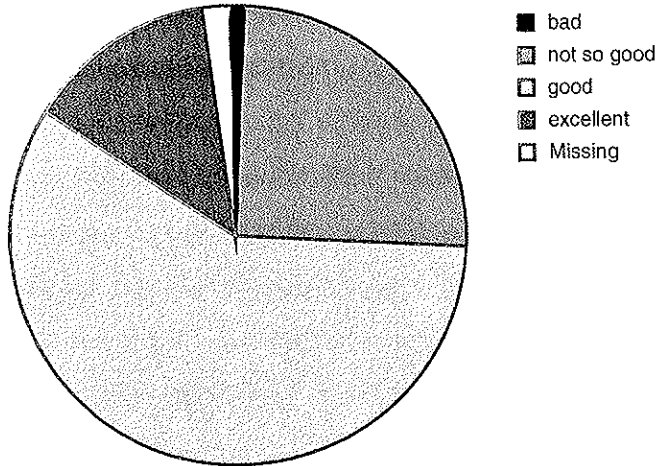


Figure 4:

Age frequency histogram

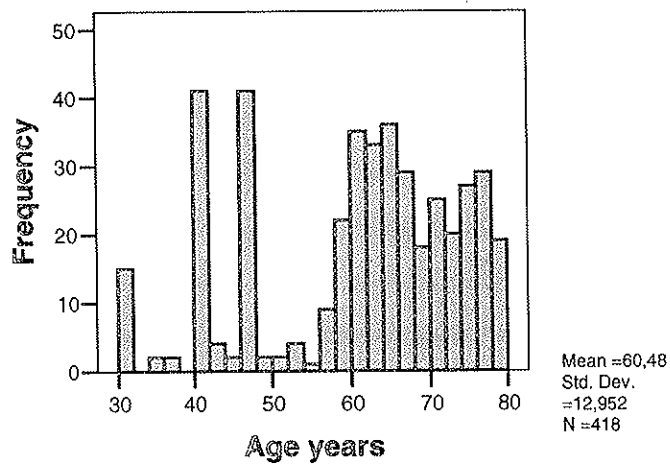


Figure 5:

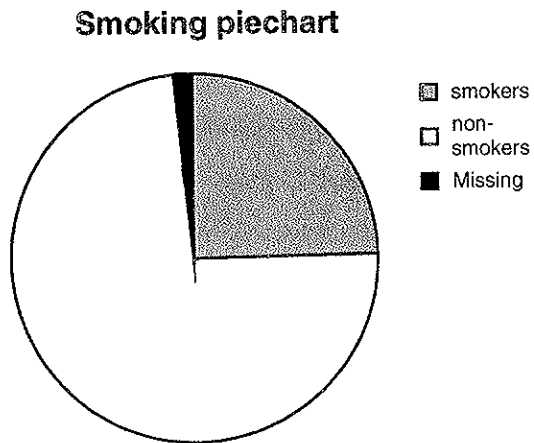


Figure 6:

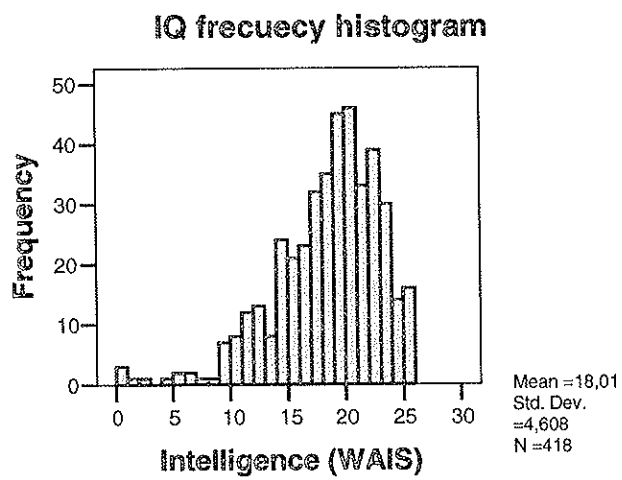


Figure 7:

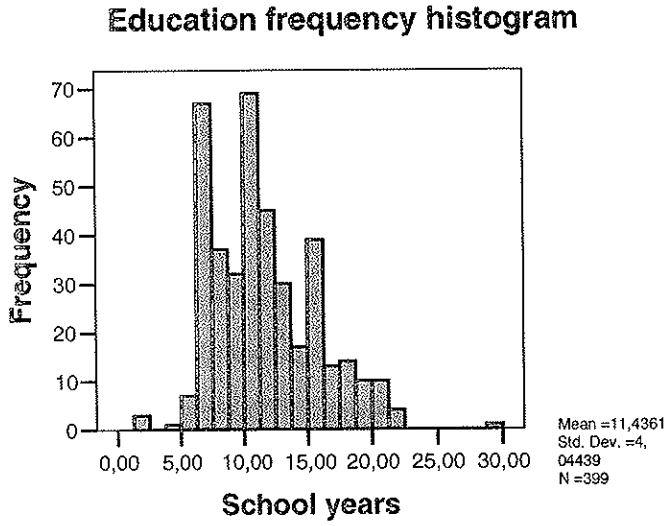
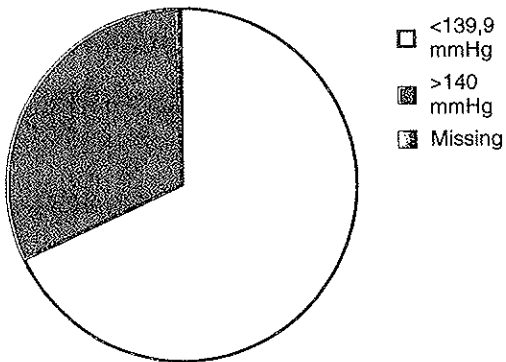


Figure 8:

Systolic blood pressure pie chart



Diastolic blood pressure pie chart

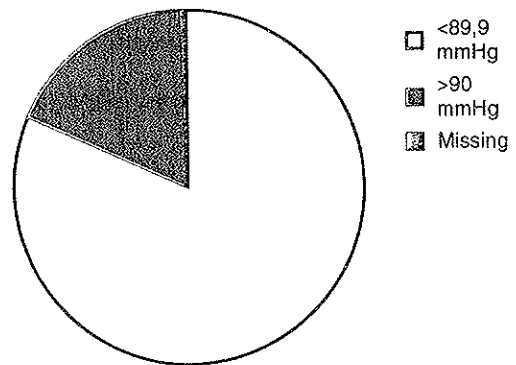


Table 1-4:

Shows BMI groups (=bmigr3) , health scoring (helse= health, dårlig= bad, ikke helt good= not so good, god= good and svært god= excellent), age-groups (=aldersgr, år= years) and school year groups (=skoleårgr3) in relation to the variables:

age,

BMI ,

bt syst= systolic bp,

bt diast= diastolic bp,

skoleaar= school years,

simil= WAIS (IQ),

digs forw= Digit span forward,

digs back= Digit span backwards,

dig symb= Digit symbol,

verbsum= Verbal recall,

visusum= Visual recall,

trials1= Trail Making test A,

trials2= Trail Making test B,

fas= Word association test,

srt med= Seashore Rhythm test,

cmeasum= CalCAP,

strabsum= Stroop test, parts 1 & 2,

Stroop C1= Stroop test, part3 and

lctr1= Word list test.

Table 1

	ase			TSHI			bt syst		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	57,76	13,48	128	22,97	1,60	128	122,55	23,05
25-29.9	207	61,94	12,38	207	27,36	1,44	207	132,84	20,41
30-	83	61,02	13,01	83	33,76	3,87	83	136,62	19,45

	bt diast			Skoleaar			simil		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	75,76	10,78	128	12,13	4,55	128	18,44	4,65
25-29.9	207	80,31	10,58	207	11,44	3,85	207	18,00	4,71
30-	83	81,74	10,08	83	10,35	3,47	83	17,37	4,25

	DIG S FOR			DIG S BAK			dig symb		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	5,82	1,18	128	4,41	1,07	128	46,91	13,84
25-29.9	207	5,71	1,11	207	4,45	3,34	207	42,42	13,04
30-	83	5,36	1,07	83	4,06	1,16	83	42,84	13,62

	verbum			visusum			trials 1		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	21,90	5,67	128	17,14	7,23	128	42,34	15,64
25-29.9	207	20,92	5,58	207	16,81	6,95	207	47,58	22,09
30-	83	21,13	4,91	83	16,94	7,03	83	44,71	19,76

	trialb_1			fas			srt_mean		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	103,13	60,10	128	37,40	12,91	128	400,63	141,58
25-29.9	207	108,87	60,17	207	37,69	13,16	207	419,58	177,96
30-	83	108,50	73,09	83	35,01	13,27	83	393,24	113,38

	srt_med			crmeasum			strabsuam		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	392,18	144,69	128	1627,61	242,84	128	47,46	9,23
25-29.9	207	404,89	165,28	207	1638,42	242,40	207	49,18	9,00
30-	83	383,21	108,32	83	1682,88	234,62	83	50,09	11,86

	STROOP_C1			ictr1			BDI (1-13)		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	61,23	22,90	128	26,20	6,88	128	2,09	2,49
25-29.9	207	66,11	23,47	207	24,56	5,91	207	1,67	2,31
30-	83	66,30	23,64	83	24,64	6,18	83	2,64	2,60

	BDI (14-21)			BDI (TOT)			GHQ score		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	2,34	2,27	128	4,43	4,28	128	2,36	4,35
25-29.9	207	2,16	1,98	207	3,81	3,76	207	1,51	3,01
30-	83	3,16	2,26	83	5,75	4,40	83	2,09	3,44

	LIKERT score			GHQ-A			GHQ-B		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	24,02	8,91	128	5,62	3,80	128	4,10	1,06
25-29.9	207	21,65	6,86	207	4,58	3,45	207	3,82	,86
30-	83	23,74	7,30	83	5,51	3,46	83	4,02	,92

	GHQ-C			GHQ-D			GHQ-E		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
bmigr3 <25	128	2,09	1,84	128	4,02	1,66	128	3,12	1,29
25-29.9	207	1,80	1,36	207	3,69	1,27	207	3,09	1,14
30-	83	2,20	1,65	83	3,96	1,36	83	2,93	1,17

	samlet_z		
	Count	Mean	Std Deviation
bmigr3 <25	128	1,02	4,45
25-29.9	207	,16	4,29
30-	83	-,36	4,17

Table 2

	d.5.c			OMI			bt syst		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
Helse	3	64,33	9,29	3	26,93	2,84	3	130,00	24,27
dårlig	105	63,59	11,66	105	28,18	5,25	105	134,96	22,75
ikke helt god	244	60,59	12,84	244	27,04	3,94	244	129,71	21,32
god	57	53,79	13,59	57	26,40	3,61	57	124,46	19,27
svært god									

	bt diast			Skoleaar			simil		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
Helse	3	72,00	11,36	3	9,00	1,00	3	17,67	3,21
dårlig	105	79,66	11,03	105	10,00	3,73	105	16,52	5,16
ikke helt god	244	79,55	10,53	244	11,48	3,93	244	18,39	4,17
god	57	77,13	11,60	57	13,91	3,99	57	19,54	4,60
svært god									

	DIG S FOR			DIG S BAK			dig symb		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
Helse	3	5,33	,58	3	4,33	,58	3	37,67	13,32
dårlig	105	5,44	1,13	105	4,18	1,22	105	39,37	12,26
ikke helt god	244	5,70	1,06	244	4,41	3,07	244	44,17	12,94
god	57	6,07	1,36	57	4,53	1,36	57	51,11	14,71
svært god									

	verbsum			visusum			triala 1		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
Helse	3	20,00	7,21	3	19,33	9,24	3	39,00	10,15
dårlig	105	20,13	5,47	105	15,13	7,49	105	48,45	20,43
ikke helt god	244	21,25	5,44	244	17,12	6,67	244	44,87	19,49
god	57	23,54	5,15	57	19,34	7,05	57	40,40	14,67
svært god									

Helse	trialb 1			fas			srt mean		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
dårlig	3	96,00	46,51	3	35,67	15,01	3	353,00	18,38
ikke helt god	105	121,49	72,00	105	34,49	12,29	105	426,38	192,34
god	244	103,57	53,07	244	37,01	12,32	244	403,03	143,54
svært god	57	89,00	41,17	57	43,79	15,78	57	380,26	103,54

Helse	srt med			cmeasum			strabsum		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
dårlig	3	349,00	19,80	3	1715,00	59,40	3	52,33	3,06
ikke helt god	105	413,10	180,81	105	1723,42	238,84	105	50,82	11,12
god	244	391,71	139,74	244	1630,02	238,62	244	48,88	9,04
svært god	57	372,12	105,24	57	1541,77	215,42	57	44,23	7,97

Helse	STROOP C1			lctr1			BDI (1-13)		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
dårlig	3	70,67	23,07	3	22,00	3,46	3	3,00	3,00
ikke helt god	105	70,62	22,21	105	23,56	6,05	105	2,48	2,62
god	244	63,85	23,31	244	24,92	5,86	244	1,92	2,41
svært god	57	55,04	17,92	57	28,54	7,11	57	1,47	2,13

Helse	BDI (14-21)			BDI (TOT)			GHQ score		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
dårlig	3	4,00	3,46	3	7,00	6,24	3	3,33	2,89
ikke helt god	105	3,44	2,45	105	5,84	4,38	105	2,59	4,43
god	244	2,14	1,94	244	4,06	3,95	244	1,67	3,17
svært god	57	1,65	1,82	57	3,12	3,55	57	1,67	3,53

Helse	LIKERT score						GHQ-A			GHQ-B		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
	dårlig	3	29,33	8,96	3	8,00	4,36	3	4,00	4,36	3	4,00
ikke helt god	105	25,08	8,94	105	6,02	3,88	105	4,17	3,88	105	4,17	1,10
god	244	22,29	7,00	244	4,90	3,48	244	3,91	3,48	244	3,91	,83
svært god	57	20,82	7,41	57	4,23	3,22	57	3,75	3,22	57	3,75	,99

Helse	GHQ-C						GHQ-D			GHQ-E		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
	dårlig	3	3,33	2,08	3	4,33	1,15	3	3,67	1,15	3	3,67
ikke helt god	105	2,38	1,91	105	4,12	1,57	105	3,39	1,57	105	3,39	1,15
god	244	1,85	1,39	244	3,77	1,32	244	3,01	1,32	244	3,01	1,20
svært god	57	1,70	1,66	57	3,72	1,64	57	2,68	1,64	57	2,68	1,17

Helse	samlet z		
	Count	Mean	Std Deviation
	dårlig	3	-,87
ikke helt god	105	-1,11	4,37
god	244	,44	4,10
svært god	57	2,68	4,16

Table 3

aldersgr	SM						bt syst			bt diast		
	Count		Mean		Std Deviation		Count	Mean	Std Deviation	Count	Mean	Std Deviation
	Count	Mean	Std Deviation	Count	Mean	Std Deviation						
30-39 år	19	25,77	4,08	19	106,08	7,62	19	66,87	5,97			
40-49 år	90	26,65	4,90	90	119,64	17,71	90	77,23	11,78			
50-59 år	38	28,89	6,13	38	127,78	16,44	38	81,53	9,52			
60-64 år	92	27,37	3,90	92	128,66	18,31	92	79,51	9,83			
65-69 år	59	26,57	3,15	59	135,43	26,52	59	81,69	10,62			
70-74 år	53	27,80	3,65	53	140,27	20,69	53	81,42	11,68			
75-80 år	67	27,78	4,10	67	143,91	18,78	67	79,62	9,16			

aldersgr	Skoleaar						simil			DIG S FOR		
	Count		Mean		Std Deviation		Count	Mean	Std Deviation	Count	Mean	Std Deviation
	Count	Mean	Std Deviation	Count	Mean	Std Deviation						
30-39 år	19	15,16	3,04	19	19,26	2,35	19	6,53	1,17			
40-49 år	90	13,79	4,17	90	19,40	4,28	90	5,87	1,13			
50-59 år	38	11,25	3,85	38	18,11	3,97	38	5,58	1,22			
60-64 år	92	10,94	3,97	92	18,24	4,80	92	5,62	1,11			
65-69 år	59	10,50	3,63	59	17,95	3,41	59	5,47	1,02			
70-74 år	53	9,90	3,09	53	17,00	5,36	53	5,60	1,01			
75-80 år	67	9,89	3,29	67	16,28	5,25	67	5,55	1,18			

aldersgr	DIG S BAK						dig symb			verbsum		
	Count		Mean		Std Deviation		Count	Mean	Std Deviation	Count	Mean	Std Deviation
	Count	Mean	Std Deviation	Count	Mean	Std Deviation						
30-39 år	19	4,95	1,18	19	59,68	12,13	19	25,58	4,32			
40-49 år	90	4,48	1,20	90	55,27	11,14	90	24,16	4,76			
50-59 år	38	4,18	1,16	38	49,79	9,44	38	22,03	5,26			
60-64 år	92	4,87	4,84	92	42,82	9,86	92	20,84	5,09			
65-69 år	59	4,14	,97	59	40,27	9,85	59	20,36	5,18			
70-74 år	53	3,87	1,06	53	34,33	9,72	53	19,45	4,94			
75-80 år	67	4,03	1,07	67	32,65	10,99	67	18,48	5,66			

aldersgr	visusum			triala 1			trialb 1		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
	30-39 år	19	23,79	2,74	19	32,58	10,29	19	57,26
40-49 år	90	21,66	5,18	90	36,73	14,45	90	81,27	35,89
50-59 år	38	19,08	6,14	38	36,08	9,90	38	80,13	29,65
60-64 år	92	17,34	6,45	92	41,70	14,11	92	101,77	40,21
65-69 år	59	15,53	6,64	59	49,56	18,03	59	113,41	48,34
70-74 år	53	12,28	5,93	53	55,70	23,24	53	130,64	64,48
75-80 år	67	11,74	6,07	67	59,27	25,43	67	155,38	101,94

aldersgr	fas			srt mean			srt med		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
	30-39 år	19	38,79	9,77	19	396,21	166,51	19	391,84
40-49 år	90	38,73	14,21	90	382,69	121,50	90	376,66	124,84
50-59 år	38	37,21	13,15	38	370,21	77,13	38	362,03	80,20
60-64 år	92	36,66	13,33	92	392,05	96,69	92	381,05	96,50
65-69 år	59	37,37	12,16	59	463,12	244,82	59	445,47	222,96
70-74 år	53	37,92	12,87	53	400,66	141,87	53	391,21	153,43
75-80 år	67	33,83	13,06	67	451,70	189,89	67	429,36	168,54

aldersgr	cmeasum			strabsum			STROOP C1		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
	30-39 år	19	1492,21	184,77	19	41,84	4,94	19	42,37
40-49 år	90	1546,31	237,81	90	44,17	8,39	90	48,28	10,73
50-59 år	38	1572,42	206,90	38	46,84	8,95	38	53,74	12,25
60-64 år	92	1618,25	219,96	92	47,55	7,92	92	62,29	16,22
65-69 år	59	1721,62	229,62	59	50,97	8,50	59	67,85	15,57
70-74 år	53	1706,83	227,05	53	52,19	9,65	53	79,63	21,56
75-80 år	67	1782,66	231,24	67	55,78	10,99	67	89,77	30,47

aldersgr	Ictr1			BDI (1-13)			BDI (14-21)		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
	19	31,32	8,40	19	2,84	2,06	19	2,21	1,93
30-39 år	90	29,09	5,91	90	1,84	2,22	90	1,80	1,77
40-49 år	38	26,50	4,55	38	1,55	2,08	38	2,34	2,00
50-59 år	92	25,63	5,25	92	2,04	2,63	92	2,38	2,30
60-64 år	59	23,24	5,61	59	1,93	2,58	59	2,63	2,27
65-69 år	53	21,17	4,04	53	1,74	2,32	53	2,70	1,91
70-74 år	67	21,00	5,27	67	2,39	2,72	67	2,97	2,52
75-80 år									

aldersgr	BDI (TOT)			GHQ score			LIKERT score		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
	19	5,05	3,47	19	2,89	3,20	19	23,53	7,14
30-39 år	90	3,60	3,50	90	1,92	3,44	90	22,43	7,72
40-49 år	38	3,89	3,75	38	1,97	4,19	38	23,74	9,68
50-59 år	92	4,42	4,36	92	1,97	3,65	92	23,35	7,69
60-64 år	59	4,47	4,42	59	1,79	3,65	59	21,41	7,46
65-69 år	53	4,43	3,85	53	1,51	4,23	53	23,32	8,41
70-74 år	67	5,36	4,72	67	1,77	2,63	67	22,54	6,10
75-80 år									

aldersgr	GHQ-A			GHQ-B		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation
	19	6,53	3,44	19	3,84	,90
30-39 år	90	5,36	3,45	90	3,88	,90
40-49 år	38	5,39	4,38	38	4,08	1,28
50-59 år	92	5,16	3,49	92	4,00	,95
60-64 år	59	4,76	4,37	59	3,84	,77
65-69 år	53	4,66	3,40	53	4,17	,87
70-74 år	67	4,63	2,71	67	3,83	,98
75-80 år						

aldersgr	GHQ-C			GHQ-D			GHQ-E		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
	30-39 år	19	1,58	1,68	19	4,05	1,61	19	2,68
40-49 år	90	1,91	1,67	90	3,76	1,47	90	2,86	1,22
50-59 år	38	2,13	1,60	38	4,05	1,86	38	2,97	1,08
60-64 år	92	2,07	1,63	92	3,95	1,39	92	3,15	1,16
65-69 år	59	1,84	1,51	59	3,72	1,15	59	2,98	1,21
70-74 år	53	2,13	1,78	53	4,00	1,58	53	3,28	1,03
75-80 år	67	1,89	1,28	67	3,65	1,15	67	3,31	1,13

aldersgr	Mean	Std Deviation
30-39 år	5,54	2,78
40-49 år	3,48	3,38
50-59 år	1,55	2,91
60-64 år	,53	3,79
65-69 år	-,89	3,26
70-74 år	-2,49	3,12
75-80 år	-3,46	3,96

Table 4

	asv			BN			bt syst		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleårgr3 0-9	147	65,97	9,17	147	27,90	4,17	147	136,03	20,33
10-13	144	59,47	13,07	144	27,26	4,22	144	127,78	22,93
14-	108	53,70	14,01	108	26,37	4,17	108	126,02	19,76

	bt diast			Skoleaar			simil		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleårgr3 0-9	147	79,74	9,34	147	7,50	1,25	147	16,39	5,08
10-13	144	79,50	12,24	144	11,42	1,14	144	18,24	3,78
14-	108	78,41	10,19	108	16,82	2,52	108	20,66	3,04

	DIG S FOR			DIG S BAK			dig symb		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleårgr3 0-9	147	5,41	1,05	147	4,01	,98	147	36,32	11,51
10-13	144	5,73	1,14	144	4,28	1,24	144	44,68	11,56
14-	108	6,05	1,16	108	5,05	4,46	108	53,50	11,99

	verbum			visusum			trila 1		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleårgr3 0-9	147	19,86	5,24	147	13,14	6,95	147	49,14	21,41
10-13	144	20,69	5,49	144	18,01	5,90	144	43,88	17,84
14-	108	24,23	4,81	108	20,99	5,71	108	40,13	12,97

	trialb 1			fas			srt mean		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleårgr3 0-9	147	130,27	78,25	147	33,04	11,46	147	440,02	189,24
10-13	144	101,03	50,38	144	35,37	10,84	144	402,46	135,65
14-	108	79,68	29,79	108	45,94	13,96	108	367,69	112,94

	srt med			cmeasum			strabsum		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleårgr3 0-9	147	425,84	180,62	147	1728,90	241,63	147	52,12	10,65
10-13	144	390,79	127,95	144	1636,71	227,17	144	48,73	8,89
14-	108	360,37	116,89	108	1525,99	205,74	108	44,10	6,91

	STROOP C1			lctr1			BDI (1-13)		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleårgr3 0-9	147	73,67	25,28	147	22,68	5,42	147	1,65	2,05
10-13	144	64,12	21,67	144	25,21	6,07	144	2,42	2,80
14-	108	51,66	15,55	108	28,21	6,28	108	1,94	2,40

	BDI (14-21)			BDI (TOT)			GHQ score		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleårgr3 0-9	147	2,51	2,17	147	4,16	3,68	147	1,32	2,32
10-13	144	2,45	2,23	144	4,81	4,64	144	2,10	3,86
14-	108	1,99	1,81	108	3,93	3,79	108	2,07	3,66

	LIKERT score			GHQ-A			GHQ-B		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleårgr3 0-9	147	22,28	6,14	147	4,57	2,94	147	3,88	,85
10-13	144	23,08	7,80	144	5,44	3,92	144	4,00	,80
14-	108	22,38	7,69	108	5,07	3,51	108	3,91	,95

	GHQ-C			GHQ-D			GHQ-E		
	Count	Mean	Std Deviation	Count	Mean	Std Deviation	Count	Mean	Std Deviation
skoleárgr3 0-9	147	1,96	1,43	147	3,71	1,12	147	3,20	1,08
10-13	144	2,02	1,68	144	3,93	1,50	144	3,09	1,05
14-	108	1,79	1,41	108	3,82	1,50	108	2,80	1,34

	samlet z		
	Count	Mean	Std Deviation
skoleárgr3 0-9	147	-1,97	3,76
10-13	144	,48	3,81
14-	108	3,53	3,64

Tabel 5 :Students t-test

Dependent variables	Independent variables					
	GENDER b	HEALTH d	SMOKE a	BMI c	BLOOD PRESSURE*	
	male/female	>=3/<3	1/2	>=3/<3	Systolic**	Diastolic**
<i>Working memory capacity</i>						
Digit span forward	5,7 / 5,6	5,8 / 5,4	5,7 / 5,7	5,6 / 5,8	5,7 / 5,6	5,7 / 5,6
Digit span backwards	4,2 / 4,3	4,3 / 4,2	4,2 / 4,3	4,2 / 4,4	4,3 / 4,1	4,3 / 4,2
Seashore Rhythm test	397,8 / 395,6	388,0 / 411,9	415,3 / 390,0	398,7 / 392,2	386,0 / 420,3	394,1 / 408,5
<i>Speed of information processing</i>						
Trail Making test A	46,3 / 44,6	44,0 / 48,2	45,8 / 45,2	46,8 / 42,3	43,2 / 50,1	45,3 / 45,8
Stroop test, parts 1 & 2	51,1 / 46,7	48,0 / 50,9	50,1 / 48,4	49,4 / 47,5	47,5 / 51,6	48,8 / 48,5
Digit symbol	41,3 / 46,4	45,5 / 39,3	42,6 / 44,3	42,5 / 46,9	46,5 / 38,5	44,3 / 42,5
CalCAP	1635 / 1652	1613 / 1723	1678 / 1632	1651 / 1628	1613 / 1708	1633 / 1688
<i>Memory</i>						
Verbal recall	20,2 / 22,3	21,7 / 20,1	21,6 / 21,1	21,0 / 21,9	21,4 / 21,0	21,4 / 20,9
Visual recall	16,7 / 17,2	17,5 / 15,3	15,8 / 17,4	16,9 / 17,1	18,0 / 14,8	17,0 / 16,8
Word list test	24,28 / 25,86	25,6 / 23,5	24,1 / 25,4	24,6 / 26,2	26,0 / 23,2	25,2 / 24,9
<i>Language</i>						
Word association test	35,1 / 39,0	38,3 / 34,5	34,7 / 38,0	36,9 / 37,4	36,9 / 37,3	36,9 / 37,9
<i>Cogn. flexibility/executive funk</i>						
Stroop test, part 3	68,1 / 61,3	62,2 / 70,6	66,5 / 64,0	66,2 / 61,2	60,8 / 72,7	64,3 / 65,7
Trail Making test B	111,0 / 103,2	100,8 / 120,8	114,1 / 104,6	108,8 / 103,1	99,8 / 121,4	105,6 / 111,4
<i>Intelligence</i>						
WAIS	18,0 / 18,1	18,6 / 16,6	17,5 / 18,2	17,8 / 18,4	18,3 / 17,5	18,1 / 17,6
<i>Composite Z-score</i>						
	0,3 / 1,0	0,9 / -1,1	-0,1 / 0,5	0,0 / 1,0	1,0 / -1,2	0,4 / 0,1

Arrow indicates favorable result

P<0,05 significant

a) smokers=1, non-smokers=2

b) male=1, female=2.

c) >=3 is BMI > or =overweight, <3 is BMI < or = normalweight.

d) >=3 is subjective health "good" or "excellent", <3 is "not so good" or "bad"

* dias bp >90 mmHg= hypertensjon, syst bp >149 mmHg= hypertensjon,

** normotensive/hypertensive

Table 6 :Students t-test

Dependent variables	Independent variables									
	AGE					EDUCATION				
	cut 49 yr*	59 yr*	65 yr*	69 yr*	74 yr*	cut 8 yr^	10 yr^	13 yr^		
Working memory capacity	56/65	56/60	55/58	55/58	56/57	58/53	59/54	61/55		
Digit span forward	42/50	41/46	40/44	40/44	40/44	44/39	44/40	46/41		
Digit span backwards	396,9/391,8	402,9/379,3	423,1/377,2	423,1/377,2	412,1/390,6	384,1/441,5	377,7/425,8	363,7/411,9		
Seashore Rhythm test										
Speed of information processing										
Trail Making test A	46,0/32,6	48,7/36,0	55,0/38,2	55,0/38,2	57,7/40,5	43,0/52,1	42,3/49,1	40,3/47,2		
Stroop test, parts 1 & 2	49,2/41,8	50,6/43,8	53,1/45,7	53,1/45,7	54,2/46,8	47,4/54,2	46,8/52,1	45,0/50,7		
Digit symbol test	49,1/59,7	39,6/56,0	35,7/50,0	35,7/50,0	33,4/48,1	46,6/33,3	48,5/36,3	52,6/39,5		
CatCAP	1651/1492	1682/1537	1740/1574	1740/1574	1748/1603	1613/1754	1589/1729	1539/1697		
Memory										
Verbal recall	21,1/25,6	20,2/24,4	19,4/22,7	19,4/22,7	18,9/22,2	21,8/19,4	22,2/19,9	23,8/20,0		
Visual recall	16,6/23,8	15,1/22,0	13,2/19,8	13,2/19,8	12,0/18,9	18,3/11,6	19,3/13,1	20,9/15,0		
Word list test	24,8/31,3	23,5/29,5	21,8/27,5	21,8/27,5	21,1/26,7	25,9/21,8	26,5/22,7	27,8/23,7		
Language										
Word association test	37,0/38,8	36,5/38,7	36,2/37,7	36,2/37,7	35,7/37,6	38,9/31,2	39,9/33,0	41,3/33,7		
Cogn. flexibility/executive function										
Stroop test, part 3	65,7/42,4	70,9/47,3	79,3/54,1	79,3/54,1	85,2/56,8	60,5/80,1	58,6/73,7	53,2/70,1		
Trail Making test B	109,4/57,3	117,7/77,1	134,0/87,1	134,0/87,1	144,9/92,3	97,4/141,8	91,8/130,3	79,6/120,0		
Intelligence										
WAIS	18,0/19,3	17,5/19,4	17,0/18,7	17,0/18,7	16,6/18,6	18,9/15,6	19,3/16,4	20,3/17,1		
Composite Z-score	0,1/5,5	1,0/3,8	2,3/2,2	2,3/2,2	3,0/1,6	1,2/3,1	1,8/2,0	3,2/1,1		

Arrow indicates favorable result

* P<0,05 is significant

^ > = age / < age

^ > = educationyears / < educationyears

Table 7 : Students t-test score emotional function tests

Dependent variables	Independent variables											
	Gender	Age*			Education^			BMI a	Smoke b	Health c	Blood pressure	
	male/female	cut 49 yr	59 yr	65 yr	74 yr	cut 8 yr	10 yr	13 yr	>=3/<3	>=3/<3	Systolic ^	Diastolic^^
Depressed mood	1,8/2,2	2,0/2,8	2,0/2,0	2,0/2,0	2,1/2,0	2,0/1,9	2,2/2,7	2,1/2,0	2,0/2,0	1,5/2,5	1,9/2,3	2,0/1,8
BDI (1-13)	2,1/2,8	2,4/2,2	2,6/1,9	2,8/2,1	2,9/2,2	2,3/2,6	2,3/2,5	2,1/2,5	2,4/2,3	2,1/3,5	2,3/2,7	2,4/2,4
BDI (14-21)	3,8/4,9	4,4/5,1	4,6/3,9	4,8/4,1	5,0/4,2	4,3/4,5	4,4/4,2	4,1/4,4	4,4/4,4	3,9/5,9	4,1/4,9	4,4/4,1
BDI total score												
Mental health status												
GHQ-30	1,7/2,1	1,8/2,9	1,8/2,1	1,7/2,0	1,7/2,0	1,9/1,3	2,1/1,3	2,1/1,6	1,7/2,4	1,7/2,6	1,8/2,1	1,9/2,0
Likert score	2,2/2,4	2,3/2,4	2,3/2,3	2,2/2,3	2,3/2,3	2,3/2,3	2,3/2,2	2,3/2,3	2,2/2,4	2,2/2,5	2,3/2,3	2,3/2,3
GHO factor scores:												
A= anxiety	4,5/5,7	5,0/6,5	4,9/5,6	4,7/5,4	4,7/5,4	5,1/4,6	5,3/4,6	5,2/4,9	4,9/5,6	4,8/6,1	5,1/5,1	5,1/4,9
B= feeling of incompetence	3,9/4,0	4,0/3,8	4,0/3,9	3,9/4,0	4,0/3,9	4,0/3,8	4,0/3,9	3,9/4,0	3,9/4,1	3,9/4,2	3,9/4,0	4,0/4,0
C= depression/ hopelessness	1,8/2,1	2,0/1,6	2,0/1,9	2,0/2,0	2,0/2,0	1,9/2,0	1,9/2,0	1,8/2,0	1,9/2,1	1,8/2,4	1,9/2,2	1,9/2,2
D= difficulty in coping	3,7/4,0	3,8/4,1	3,9/3,8	3,8/3,9	3,8/4,0	3,8/3,8	3,9/3,7	3,9/3,8	3,8/4,0	3,8/4,1	3,8/4,0	3,9/3,8
E= social dysfunction	3,2/3,0	3,1/2,7	3,2/2,8	3,2/3,0	3,3/3,0	3,0/3,3	3,0/3,2	2,6/3,2	3,1/3,1	3,0/3,4	3,0/3,1	3,0/3,2

Direction of arrow indicates favorable result

* >= age/< age, cut means cutpoint

^ >= education years / < education years, cut means cutpoint

a) >=3 is BMI > or = overweight, <3 is BMI < or = normalweight

b) smokers= 1, non-smokers= 2

c) >= 3 is subjective health "good" or "excellent", <3 is "not so good" or "bad"

^^ normotensive / hypotensive, where systolic bp >140 mmHg and diastolic bp >90 mmHg= hypertension

Table 8 : Linear regression

Independent variables

Dependent variables	AGE		GENDER		BMI		HEALTH		SMOKING		Systolic BLOOD PRESSURE		EDUCATION	
	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t
<i>Working memory capacity</i>	-0.09	-1.53	-0.03	-0.61	0.01	0.1	-0.05	-1.03	0.05	1.01	0.03	0.67	0.07	1.31
Digit span forward	0.02	0.36	0.05	1.09	0.08	1.68	-0.04	-0.68	0.03	0.67	0.08	1.34	0.04	0.82
Digit span backward	0.02	0.36	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
Seashore Rhythm test	0.44	7.88	0.03	0.64	0.02	0.46	-0.05	-1.03	0.03	0.67	0.05	1.04	0.04	0.82
<i>Speed of information processing</i>	0.31	5.7	0.05	1.09	0.08	1.68	-0.04	-0.68	0.03	0.67	0.05	1.04	0.04	0.82
Trail Making test A	0.46	11.19	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
Stroop test, part 1 & 2	0.23	4.1	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
Digit symbol test	0.03	0.61	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
CalCAP	0.03	0.61	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
<i>Memory</i>	-0.3	-5.51	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
Verbal Recall	0.46	9.245	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
Visual Recall	0.42	8.07	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
Word list test	0.13	2.26	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
<i>Language</i>	0.13	2.26	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
Word association test	0.13	2.26	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
<i>Cogn. Flexibility/executive func.</i>	0.55	12.06	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
Stroop test, part 3	0.36	6.83	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
Trail Making test B	0.05	1.04	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
<i>Intelligence</i>	-0.05	-0.88	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
WAIS	-0.05	-0.88	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82
<i>Composite z-score</i>	0.45	10.21	0.03	0.62	0.03	0.61	-0.02	-0.35	-0.03	-0.47	0.05	1.04	0.04	0.82

Direction og arrows indicate favorable result.

* P < 0.05 (significant)

es- inkluderer education as independent variable

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