University of Cape Town

School of Public Health and family medicine

Centre for Occupational & Environmental Health Research (COEHR)

Faculty Health Sciences

Masters of Public Health Candidate

RELATIONSHIP BETWEEN PESTICIDE RESIDUE LEVELS AND NEUROTOXICITY AMONG WOMEN ON FARMS IN THE WESTERN CAPE

Author:

Motsoeneng Mamonyowe Portia

Supervisor:

Mohamed Aqiel Dalvie

September 2014

PART 0: PREAMBLE

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MOTSOENENG PORTIA MAMONYOWE

STUDENT NUMBER: MTSMAM012

Thesis submitted to the Faculty of Health Sciences, University of Cape Town in fulfilment of the requirements of the degree Master of Public Health.

Supervisor:

Associate Professor Mohamed Aqiel Dalvie

Centre for Occupational & Environmental Health Research (COEHR)

School of Public Health & Family Medicine

Health Sciences Faculty, University of Cape Town

Declaration

I, **Motsoeneng Portia Mamonyowe (MTSMAM012)** hereby declare that the work in this mini dissertation is based on my original work (except where acknowledgements indicate otherwise) and has not, in whole or in part, been submitted towards another degree at this or any other university.

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Signature Removed

Signature:.

Date: September 2014

Dedication

To my Family - Parents (Mathapelo and Tlhware Motsoeneg), my brother (Thapelo Motsoeneng), my nephew (Motlalepula Motsoeneng) and my grandparents (Majwalane and Jonas Dlamini). For their love and support thank you.

To my loving boyfriend Corey Springer. My pillar of strength thank you.

Acknowledgements

I would like to thank my supervisor, Associate Professor Mohamed Aqiel Dalvie from the Centre for Occupational and Environmental Health Research, School of Public Health and Family Medicine, University of Cape Town for his advice, insights and patience while working on this research project.

To the Centre for International Health of the Ludwig-Maximilian-University Munich, Germany (CIHLMU) and the Department of Education (health) Free State I would like to thank them for funding my studies while at the University of Cape Town.

A special thank you goes to the following organisations and individuals for their roles in the project:

Financial support:

The Women on Farms Project and the University of Cape Town (Prof Jeebhay Allergy Research Fund)

Sampling and provision of fieldwork venue:

Dr Colette Solomon and the rest of the WFP management and staff

Research assistance:

Algernon Africa, School of Public Health and Family Medicine, UCT

Dawn Venter, School of Public Health and Family Medicine, UCT

Mohammed Sharief Abrahams, School of Public Health and Family Medicine, UCT

Deon September, School of Public Health and Family Medicine, UCT

Michael Luma Ekema-Agbaw, Department of Psychology, Virginia Polytechnic Institute and State University

WFP staff

Laboratories:

National Institute for Occupational Health, Johannesburg

Path care

Thesis Abstract

Background: Farm workers and residents living in and around farms are exposed to pesticides. Women are vulnerable to health risks posed by pesticides. To date there are few studies that have investigated the relationship between pesticide residues in human body fluids and neurotoxicity.

Objective:

This study therefore aims to investigate the relationship between urinary pesticide residue levels and neurotoxicity amongst women working in farms in the Western Cape, South Africa.

Method: A cross- sectional study was conducted among 211 women recruited from farms (farm group, n = 121) and neighbouring towns (town group, n = 90). Testing included a general questionnaire, the Q16 questionnaire, reported pesticide exposures and measurement of urinary metabolite concentrations of dialkyl phosphates (DAP), the chlorpyriphos, metabolite 3, 5, 6-trichloropyridinol (TCPY) and pyrethroid (PYR).

Results: The median age of the Farm Group was 33 years (interquartile range: 27 - 40 years) and for the Town Group was 40 years (interquartile range 31-49 years). Median urinary pesticide metabolites were 6-49% higher in the Farm Group compared to the Town Group. The concentration (median and interquartile range) of DAP (sum of the 6 metabolites), TCPY and PYR (sum of the 5 metabolites) was respectively 141.42(37.4-249.8); 6.15(3.50-10.64) and 6.60(3.61-9.96) µg/g of creatinine in the Farm Group compared to 132(45.64-204.45); 4.26(2.72-8.27 and 5.26 (2.74-8.42) µg/g of creatinine in the Town Group.

The prevalence of all Q16 symptoms was higher amongst farm women compared to non-farm women. Three pyrethroids metabolites (cis- DCCA, trans DCCA, DBCA) were positively associated with at least 12 of the Q16 symptoms adjusting for confounders. The strongest association between for a pyrethroid metabolite was between problems with buttoning and DBCA (Odds ratio = 8.93, 95% Confidence Interval: 1.71-46.5. Problems with buttoning and reading was also significantly positively associated with, trans DCCA , DBCA. Taking notes due to problems with memory was positively significantly associated with DBCA. There was no association between Q16 symptoms and OP metabolites.

Conclusion: Women farm residents and rural women from neighbouring towns in the Western Cape are exposed to OP and PYR pesticides. The study provides evidence that PYR pesticides may result in neurotoxic effects but not OP pesticides. These results should be explored further in a bigger longitudinal study using more sensitive neurotoxic measures such as World Health Organisation Neurobehavioral Core Test Battery, The Brief Symptom Inventory and vibration sense threshold testing.

Table of Contents

List of tables

Part A

Part C

Supplementary tables to the journal manuscript

List of figures

Part A protocol

1. Introduction

1.1 Background

Farm workers and residents living in and around farms are highly exposed to pesticides. Women and children are the most vulnerable group to health risks posed by pesticides toxins. There are few studies that have investigated the relationship of pesticide exposure and neurological disorders in South Africa. This study therefore aims to investigate the effect of pesticide exposure on neurotoxicity amongst women working in farms in the Western Cape, South Africa. The study results will provide insight on the need to develop strategies to reduce pesticide exposure among women farm workers and residents.

1.2 Literature review

South Africa has the largest agriculture sector in sub-Saharan Africa. Farm workers and residents can be exposure to pesticides through various routes including exposure to pesticides sprayed on farms, residues in water and food, household usage, gardens, and lawn usage. The amount of pesticide usage in South Africa is regulated by the Fertilisers, Farm Feeds, Agricultural remedies and Stock Remedies ACT, 1947 (ACT NO ,36 OF 1947) of South African. This body is aimed at regulating the responsible usage of pesticide among the general population.

In many of the developing countries agricultural farming continues to grow due to the high demand of food security. And the need for high quality foods increases the usage of pesticides.

However, for a farm worker the workplace poses many health related hazards. The everyday usage of tractors, pesticide spreaders, harvesters, etc increases the risks of being exposed to highly concentrated amounts of pesticides, and most of the pesticide is either inhaled, ingested from drinking contaminated pesticide water, or mainly being absorbed by the skin. (Dalvie et al 2003). For women who breastfeed one of the health hazards they face is their breast milk getting contaminated with pesticide, which poses harm not only to mothers but also their children. Women farm workers who work as fieldworkers are said to be the highest risk group, due to high exposed to pesticide residues either in the soil or on the primary leaf surfaces.

Commonly known pesticides health effects include neurological, reproductive health effects and skin problems. Organophosphate (OP) pesticides are currently the most widely used insecticides and they have been associated with neurological disorders (London et al 2011, Rolhman et al 2006). Many international epidemiological studies have shown that there is an association between neurotoxicity and pesticide exposure. In SA, a cross-sectional study done by London et al showed that there is a significant association between reduced neurological tremor scores and previous pesticide poisoning (OR 4.08, 95%CI1.48-11.22). However this study results showed no significant association between average lifetime OP exposure and neurological symptoms. Thus these results may suggest that the association between OP

exposure, without prior pesticide poisoning is either weak or does not exist (London et al 1998).

A nationwide survey conducted in the rural areas of South Korea among 1958 male farmers showed an association between pesticide exposure and depressive symptoms (OR = 1.61). For measuring depression symptoms among the participants a Korean version of Geriatric Depression Screening Scale was used (Kim et al 2012). The incidences and prevalence of neurodegenerative diseases like Parkinson diseases Alzheimer disease, multiple sclerosis and suicides are high in areas with high pesticide usage (Parron et al 2011).

1.2 Problem statement

World-wide pesticides usage has increased in the past few years, especially in the developing countries (Zhang et al 2011). Developing countries account for most pesticides consumptions due to fast growing agriculture sectors. Africa alone accounts for 3% of the world's pesticide consumption of which 2% is used by South Africa (Zhang et al 2011). Pesticide exposure is a public health threat not only to agricultural workers but also to the general population (Zhang et al 2011). Continued wrongful disposal of these chemicals into the environment remains a major environmental health problem. Sixty seven tons of the pesticides chemicals are released into the environment yearly (Zhang et al 2011). Residues of pesticides, found in water, food, and in the environment, pose harm to both human and animal health. Each year approximately 370 000 people die from pesticides consumption, either in the form of rat poisoning or plant poisoning (Dawson et al 2010).Women and children remain the highest risk group(Freire et al 2012).

Pesticides are a combination of a multitude of chemicals used to kill, prevent, repel or extenuate any pests (insects, moulds, rats, snails , worms, weeds ect) used mainly in agriculture, health and other human interests. Pesticides are comprised of different classes including organophosphates, organochlorines, carbonates, organobromides, inorganics, phenoxy herbicides, and pyrethroids.

Pesticides exposure can be associated with damage to the nervous system and lungs, they also cause skin rashes, skin cancer and mental disorders such as Parkinson`s disease and Huntington`s disease (Parron et al 2011, Alavanjaet al 2004). Other chronic effects include birth defects, development problems in children, lungs, liver, kidney and neurological diseases (Alavanjaet al 2004, London et al 2012, Taetzsch et al2012). Pesticides enter the human body either by the water we drink, the chemicals used in our homes for killing rats, cockroaches, bedbugs etc, chemicals used in producing crops or residues in the food we eat (Marion, 1995).

Humans may suffer acute and long term chronic effects due to pesticide exposures (Bjorling-Poulsen et al2008). Exposure to pesticides has been associated with increase depression in cotton farmers (Keifer et al 1996). Rolhman and colleagues in 2006 also showed that long time low levels exposure to pesticides may be associated with neurological damage (Rolhman et al 2006). Studies in developing countries show that women working in agriculture is a high risk group (London et al 2002, Zhang et al 2002). Increased risk of neurological disorders has also been associated with pesticide exposure (Parron et al 2011). Exposure to

pesticides among Brazilian farmers has also been associated with psychiatric disorders and suicidal behaviour (Freire et al 2012)

Neurotoxicity develops when one is exposed to natural or toxic substances,which can affect the normal functioning of the nervous system and the brain. Common symptoms include impairment memory, low concentration, and problems with reaction time, reasoning, thinking, language, personality changes, depression and feet and hands numbness (Mason et al 2013).

Neurotoxicity and neurodegenerative disease like Parkinson's disease have been associated with chemical exposure of pesticides (Parron et al 2011). Commonly used insecticides like organophosphates have been associated with neurological damage. Neurological damage is characterized into the central nervous system (CNS) disorders and peripheral nervous system (PNS) disorders. The commonly known disorders are Alzheimer`s, Parkinson`s and Huntington`s disease.

A member of the organophosphate(OP) insecticide, chlorpyrifor, a commonly used insecticide in crops, has also been associated with neurotoxic effects, reproductive and development effects (Perera et al 2005). Many of the pesticides health related effects may go unnoticed for ages especially among agricultural workers (Zhang et al 2002).

1.3 Justification

Farmworkers are exposed to a number of hazards due to the nature of their work. Potential adverse health effects includes, respiratory problems, depression, suicidal behaviour, neurologic disorders and cancer. Some of these conditions have been associated with long or short term pesticides exposure. However the usage of pesticides in the agriculture industry continues to be high despite the already mentioned health related effects of pesticide exposure. South Africa alone consumes 2% of the world pesticides production, and only one study has been published on the neurotoxic effects of pesticides usage. Studies done in other countries have found that there is an association between pesticides exposure and neurological disorders. Long term pesticide exposure has been associated with deficits in cognitive and psychomotor functioning (Kamel et al 2003). A recent study done by London et al in 2012 showed that prolonged organophosphate insecticides (pesticides) exposure may be associated with psychiatric disorders (London et al 2012). However there was no research done on the association of pesticides residues and neurotoxicity.

The currently available data both international and here at home on health effects of pesticides exposure, are mainly on adult male farm workers, children and females are under-represented especially in the developing countries, however female farmworkers are high risk group. Most of the women farm workers suffer neurological damage but go unnoticed for years, due to the level of education and accessibility to healthcare.

Thus, this current study will shed some light on the association of pesticides exposure and neurotoxicity among farm women in the Western Cape. The study results will be used by the farm owners, policy makers, environmental advocacy groups and other stake holders in implementation of interventions that will reduce the risk of exposure to pesticides and neurotoxicity. The data produced from this study will also provide an indication of the prevalence of neurological disorders among farm women. Knowledge about the burden of neurotoxicity among the women farm workers will also assist in the prevention and control strategies to reduce the health related disorders associated with pesticide exposure.

1.4 Research Question

Does pesticides exposure cause neurotoxicity among women farm workers in the Western Cape?

1.5 Hypothesis

Exposure to pesticides among farm women in the Western Cape cause neurotoxicity.

1.6 Aim

To determine the neurotoxic effects of occupational and environmental pesticides exposure amongst women on farms in the Western Cape.

1.7 Objectives

- Determine the demographic and socio-economic factors of the study population.
- Measure the OP pesticides exposure of the women.
- Determine neurotoxicity amongst the women
- Determine the confounding factors for the relationship between pesticides exposure and neurotoxicity.
- Determine the association between pesticides exposure and neurotoxicity in women controlling for applicable confounders.

2. Methods

2.1 Study Design

The study is part of a larger cross-sectional study investigating the association between pesticides exposure and its health effects on rural women in the Western Cape. The data was collected in 2009 from 211 women recruited from farms and the neighbouring towns in the Boland regions of Western Cape Province in South Africa. The study data was collected with the assistance of a non-governmental organisation, Women on Farms (WFP). WFP assisted in the recruitment of participants, providing the study site and transportation of the participants.

2.2 Population and sampling

2.2.1 Inclusion criterion

The main study inclusion criteria included women from the Boland region of Western Cape who currently lived in the farms and those in the surrounding towns. Men and children were excluded from the study.

2.2.2 Study population

A total number of 211 women were recruited by the WFP into the study, 113 of these women were living and working on a farm and 98 from the surrounding towns. Initially the WFP was instructed to recruit 100 women from the farms in the 5 most accessible (located near the fieldwork site) but representative crop farming areas in the Western Cape which include Stellenbosch, Ceres, Paarl, Grabouw and Worcester and 100 women not living on farms from the areas surrounding the farms. Approximately 4 women, 20 participants each from farms and towns, from each of the 5 targeted areas were targeted.

The participants were from the most accessible houses and for the farm area 5-10 most accessible farms in the area were chosen. One adult female participant per household was selected. Eight of the women who lived in a town but worked in the farms were included into the farm group. And 24 of the women included in the farm group lived in the farms but they did not work in the farms. The participants who lived in the farms are referred to as “Farm Group” and those women who stayed in the towns and did not work in the farms were called

"Town Group ". The table below shows the study population. The participants were not randomly selected due to time-constrains and logistic difficulties.

Table 1: Study Participants

Area	Town Group (n=90)	Farm Group (n =121)	Total (n=211)
Ceres	19	23	42
Grabouw	3	35	38
Paarl	23	16	39
Stellenbosch	22	25	47
Worcester	23	22	45
Total	**90**	**121**	**211**

2.2.3 Sample size

Using the results from a recently published study by Wesseling et al 2002. The calculated sample size using the two sample comparison of proportions (Stata Corporation. 2003) with exposure/ control ratio =1, significance level of $\alpha = 0.05$ and 80% power, to detect a prevalence 25-45% of neurotoxicity among farmer is 164 participants.

2.3 Measurement

2.3.1 Instruments

Questionnaires

Since this study is part of a big study, a subset of the questionnaire will be used for the analysis of this study objectives (Appendix A1 and A2). The questionnaire was translated both into Afrikaans and Xhosa and then back translated into English to ensure language accuracy. The questionnaire included demographic information (age, education level, language), household factors (house owner, house utilities, people living in the household),

economic factors (occupation, family socio-economic statues), residential history (where participant live and lived before), work history (current occupation, previous occupation), alcohol usage, smoking and other drug usage (usage of drugs, age started using drugs), household pesticide usage (household usage of pesticides in the house, gardens), neurotoxicity Q16.

The Q16 questionnaire is commonly used in studies to study the prevalence of neurotoxic symptoms among the workers who are exposed to toxic substances. This questionnaire has 16 questions on the symptoms which these workers commonly describe eg. Short memory, poor concentration,tired etc (Lundberg et al 1997). Interviews were administered in the participants preferred language. The study fieldwork was done in the WFP premises.

2.4 Pesticide biomonitoring

OP pesticide residues testing

Spot urinary samples (50 ml) were collected in plastic containers topped with a plastic cap and kept on dry ice in the field and during transport and then stored at -20 degree Celsius before being sent to the laboratory for analysis. The urine samples were couriered to National Institute for Occupational Health (NIOH) laboratory in Johannesburg which has already set up methods for measuring the organophosphate pesticide metabolites, dialkyl phosphates and the chlorpyrifos metabolite, 3,5,6-trichloropyridinol (TCPY).

Urine samples (50 mL) were collected from participants in plastic containers topped with a plastic cap. A indoor clean toilet was available for participants who were told to take precautions not to contaminate samples such as removing contaminated clothing, washing

hands before handling containers, not touching the inside of containers and closing the containers immediately after producing the sample. The samples were kept on dry ice in the field and during transport and then stored at -20° centigrade before being sent for pesticide analysis to the NIOH laboratory, Johannesburg, SA. The DAP metabolites, dimethylphosphate (DMP), dimethylthiophosphate (DMTP), dimethyldithiophosphate, (DMDTP), diethylphosphate (DEP), diethylthiophosphate (DETP), and diethyldithiophosphate (DEDTP); TCPY and PYR metabolites were measured according to the method by Hardt et al 2000 with slight modifications.

Briefly, after allowing the samples to thaw at room temperature, 2mL of urine was pipetted into screw top vials, which already contained approximately 2g of sodium chloride. An internal standard, dibutylphosphate was added to all tubes. The samples were acidified with 250µL hydrochloric acid (6M), and extracted with a mixture of acetonitrile /diethylether(1:1 v/v). The extraction was repeated, and both the extracts were combined. The extracts were dried under a gentle stream of nitrogen, with the temperature set not higher than 40^{o}C. The dry residue was suspended in acetonitrile (500µL), followed by the addition of approximately 10g of anhydrous potassium carbonate. Derivatization was performed by adding pentafluorobenzyl bromide (50µL) in a sealed vial and heated overnight (16 hours) at 40^{o}C. After cooling to room temperature, the pentafluorobenzyl esters were extracted with hexane (5mL) twice. The extracts were combined and dried down under a gentle stream of nitrogen. The samples were reconstituted in toluene(100µL) and transferred to gas chromatography (GC) vials with low volume inserts fitted, and were ready for analysis.

Analysis were performed on a HP 6890 GC equipped with a split-splitless injector, a HP 7683A automatic liquid injector system and a HP 5973 mass selective detector (MSD,

quadrupole). GC conditions were as follows: capillary column, 5% phenylmethylpolysiloxane DB 5MS (30m x 0.25 mm i.d x 0.25µm film thickness, J & W Scientific, Folsom, CA). Temperatures were as follows: injection port 250ºC; transfer line 280ºC; column 140ºC for 3 min, raised at a rate of 7ºC/min to 227ºC, and then raised at a rate of 20ºC/min 260ºC for 5 min. Helium (99.999% purity) was used as the carrier gas. The sample injection volume was 1µL, with split less injection.

The MSD was operated in negative chemical ionization mode, using methane (99.9999% purity) gas. The source temperature was at 150ºC and the quadruple temperature set at 100ºC. The MSD was operated in selected ion monitoring mode (SIM).

A multi-component stock solution of all 6 dialkyl phosphate (20µmol), TCPY and PYR metabolites were used to prepare the calibration. From the stock solution, nine calibration standards were prepared with concentrations of 0, 500, 1000, 1500, 2000, 2500, 3000, 4000 and 5000 nmol/L. For quality assurance, we used spike pooled urine at a concentration 2000 nmol/l for each of the metabolites.

Results were adjusted for urinary creatinine to take account of hydration. Urine samples with creatinine concentrations within and outside the WHO recommended creatinine concentration range of 0.3 x 106 µg/L – 3.0 x 106µg/L were distinguished and taken into account in the analysis. Those outside the WHO range are not presented. The limit of detection (LOD) for all analytes were determined and values too low to be quantified were assigned a value equivalent to the LOD x (2)-1/2. The LOD for the pesticide metabolites were 0.5 µg/l for

TCPY; 1 µg/l for DMP; and 0.05 µg/l for DMTP, DMDTP, DEP, DETP, DEDTP, cis-DCCA, trans-DCCA, DBCA, 4F3PBA and 2PBA.

2.5 List and definition of Variables

The following list of variables will be used for the study analysis.

Exposure variables of interest

(a) Organophosphate metabolite concentrations in urine:

(i) TCPY

(ii) Six DAP metabolites (DMP, DEP, DMTP, DMDTP, DETP and DEDTP)

(b) Pyrethroid metabolites (3PBA; 4F3PBA; DBCA and cis-DCCA and trans-DCCA]

(c) History of living on the farms, current farm residence, being born on the farm and household pesticide usage.

Outcome variables

The following outcome variable will be used:

(a) Neurotoxicity outcomes will include the items in the Q16 questionnaire.

2.6 Validity and reliability of the study

The Q16 questionnaire has been validated for identifying long-term health effects including neurotoxicity Q16 (Axelson & Hogstedt et al 1988). The rest of the questionnaire was based on that used in previous studies in the Western Cape.

2.7 Pilot study

The questionnaire was piloted to test and work out the logistics for the main study. The pilot study for the main study fieldwork was conducted from 24 October to 3 December 2009.

3 Analysis plan

3.1 Data analysis plan

Statistical software STATA 11 (Stata Corp, Texas) will be used for data exploration and analysis of this study. Release 11 Statistical software.

3.2 Data Exploration

Descriptive analysis will be carried out to provide a general characteristics of the data set eg; the number of observations, the normality of the collected information, missing information. The following tests will be used to test if the data is normally distributed Shaphiro S wilk test. If the data is not normally distributed suitable transformations will be made. For all the continues values which are not normally distributed, median and interquartile ranges will used to summarise the variables and for further analysis non parametric tests will be used.

And those which are normally distributed the mean, standard deviation will be calculated and for further analysis parametric tests will be used. To determine any outliers in the data Box and Whisker plots will be drawn. Chi-squared test and contingency tables will be used to test and compare the pesticides exposure difference between the two groups. Univariate analysis will be carried out for the first part of the study analysis.

Univariate analysis of independent variables

Table 2: Continuous variables

Variables	**Farm group**		**Town group**		**t-test (difference of means)**
	Mean	Standard deviation	Mean	Standard deviation	
Age					
…etc					

Table 3: Categorical variables

Variables	**Farm Group**		**Town Group**		**X^2 test (difference of proportions)**
	Frequency	Percentage	Frequency	Percentage	
Gender					
…etc					

The different categorical variables will be described using frequency distributions and percentage.

3.3 Bivariate associations

The bivariate analysis will be carried out to determine the associations between the variables and the outcome of interest. To determine significance of the association between the numerical and dichotomous variables the Wilcoxon rank sum or t test will be carried out. For

categorical variables the chi-square test will be used and the Fischer`s Exact test will be used for values which are less than 5.

3.4 Multivariate analysis

Multiple logistic regression analyses will be used to test for associations between dichotomous outcomes and exposure variables while controlling for confounding variables and linear regression will be used for the Q16 score.

4. Ethics

The study was conducted according to the Helsinki Declaration. The main study proposal was approved by the ethics committee at the University of Cape Town Human Research and Ethics Council committee (reference number 393/2009) (Appendix C). Information regarding the study was made available in the mother tongue of participants to ensure full understanding of the provided information. To ensure autonomy written consent were obtained from the participants. To improve subject confidentiality in the study only the author and the supervisors were able to access the study data. Participants remained anonymous for the study data collection, data analysis and the write-up. Study Codes were used for identification of the participants instead of the participant's real names.

Study information sessions were held to provide the participants with the study information. The following information was provided to the participants during the information sessions, description of the research, names of the researchers, contact person information, purpose of research, expected benefits to participants, costs pertaining participation and expected risks or

discomfort. The participants were free to participate or decline participation into the study at any time without any consequences.

Dissemination of the results - A feedback session will be held on the farms, to provide the participants with the study results and be told about the potential interventions to reduce the harmfulness of pesticides exposure to the farmers.

4.1 The study risk or harms

There are no real additional harm to the women since the current study only involves the analysis of the already collected data.

4.2 Benefits

There will be no financial benefits from this study. However the study results will help in further understanding of the harm that pesticides exposure pose on the farm workers

5. Stakeholders, reporting and implementation

The study stakeholders are as follows:

The women who participated in the study

The farm owners

The WFP women on farms

The University of Cape Town

6. Reporting

The study results will be disseminated to the relevant stakeholders involved with the ultimate aim of implementing the necessary interventions and strategies to reduce the risk of neurotoxicity due to pesticides exposure among the farm workers. These interventions will be discussed and implemented where possible. The gathered information will also be written up as a journal article and published, the published article will be available at the University of Cape Town various libraries.

7. Logistics

Table 4: Time line

	Feb	Mar	Aprl	June	July	Sep	Oct	Nov	Dec	Jan	Feb
Protocol development and departmental approval											
Data cleaning and organisation											
Literiture review											
Article write for selected journal											
Complete write up and submission											

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Part B Literature Review

THE RELATIONSHIP BETWEEN PESTICIDE EXPOSURE AND NEUROTOXICITY AMONG WOMEN FARM WORKERS.

1. Introduction

Pesticides include herbicides (used to kill weeds), insecticides (used to kill insects), fungicides (used to kill fungi), rodenticides (used to kill rats, mice, and other rodents), plant regulators and others (Weiss et al 2004, Aktar et al 2009). They are used in the home, in businesses, in public places, in agriculture and horticulture. Organophosphates (OP) are globally the most widely used insecticides (Binukumar et al 2011, Quinn et al 2011). There are many different OP's used as insecticides for e.g. 40 different types are registered with the US- EPA (www.epa.org). Another group of chemicals widely used as insecticides are the pyrethroids (PYR), which are used for agricultural and household purposes. There are over 3500 registered PYR products in the used globally (www.epa.org).

Pesticide usage in South African agriculture is the highest in the region and is not decreasing (Dalvie et al 2009). The Western Cape is one of the most agriculturally productive provinces in the country and focuses on agriculture as an important industry and income earner. The crops which are commonly grown in this area include grapes, mangoes, apples, potatoes and wheat. In the Western Cape chlorpyrifos and azinphos methyl are commonly used organophosphates to control arthropods pests in orchards (Reinecke et al 2007). The commonly used PYR insecticides used in the Western Cape include cyfluthrin, cyhalothrin, cypermethrin, pypermethrin, deltamethrin and esfenvalerate (Quinn et al 2011).

Previous studies show that the pesticide usage is high in the rural environment in the Western Cape compared to the urban areas.(Dalvie et al 2003, Dalvie etal 2009, Dalvie et al 2011). Women farm workers are at particular risk from occupational and environmental hazards in agriculture resulting from farm work, spray drift and from environmental exposures (Forastieri et al 1999, McCoy et al 2002). Women are more likely to be employed to work on activities with high pesticide exposure compared to men and the ones who are tasked with the mixing of the chemicals for pesticide applicators and tractor sprayers (Rother et al 2000). During harvesting seasons women are mainly the once who will work in the fields collecting and packaging of the harvested crops. In many instances women working in the field are exposed to tractor sprayers and because protective clothing is rarely available for them, they are directly exposed (Nkurlu et al 1999, Araujo et al 1999).

An important concern about toxicity due to organophosphate use is that more than 3 million people experience acute organophosphate poisoning yearly (www.who.int/topics/pesticides/en/) according to the World Health Organisation.

1.1 Objectives of the literature review

The objectives of this literature review was to review currently available data on the neurotoxicity associated with OP and pyrethroid pesticides, types and mechanisms of neurotoxicity due to these pesticides, methods used to measure neurotoxicity, epidemiological evidence of neurotoxicity caused by OP and pyerthroid pesticides in women, and bio-monitoring of OP and pyrethroid pesticides in agricultural communities.

1.2 Search strategies

This review used electronic sources including PubMED / MEDLINE, EBSCO, Scopus, Google Scholar and J STOR as well as paper sources including text books, journals and previous thesis from the University of Cape Town Medical Library. The following keywords were used for searches in electronic resources: OP pesticides, pyrethroid pesticids, OP pesticides and neurotoxicity, pyrethroid pesticides and neurotoxicity, OP pesticides and neurotoxicity and women, pyrethroid pesticides and neurotoxicity and women, OP bio-monitoring, pyrethroid pesticides, bio-monitoring, urinary levels of OP pesticides, urinary levels of pyrethroid pesticides, neuropsychiatric tests and the Q16 questionnaire. The searches on neurotoxicity of pesticides focussed on women from general populations and farming populations exposed to pesticides but also include men. Epidemiological studies from all countries and with different study designs were considered in this review.

2. Neurotoxicity associated with OP and pyrethroid pesticides

Both OP and pyrethroid pesticides can disrupt the general cellular mechanisms necessary for supporting the high metabolic activity of both the central and the peripheral nervous system. (Keifer et al 2007).

2.1 Neurotoxicity of OP pesticides

There are four general categories in which the neurotoxic effects of OP pesticide poisoning can be summarised. Firstly, acute cholinergic effects causing acute poisoning (Costa et al 2006). Secondly, the intermediate syndrome (IMS) which may develop between one or four days post-acute pesticide poisoning (Balali-Mood et al 2012). Thirdly OP - induced delayed neurotoxicity(OPIDN) which follows after repeated pesticides exposure or and it may follow after 4 weeks of acute pesticide exposure (Lotti et al 2005). Lastly, chronic neurotoxicity resulting from long term exposure to pesticides (Ray et al 2001).

The acute toxicity of OP pesticides are associated with their inhibition of the enzyme acetycholinesterase (AcHE), that is primarily found in the synaptic membrane whose function is to produce choline and acetate that are important for the regulation of synaptic activity in the central and the peripheral systems (Elersek et al 2011). The accumulation of acetylcholine in the sypnatic cleft causes neuromuscular paralysis in the body (Gupta et al 2006). In the peripheral system the excess accumulation of acetylcholine causes the activation of muscarine and nicotine receptors which increases the activation of the sympathetic and parasympathetic parts. Acute effects due to OP pesticides include neurotoxic

symptoms like headaches, acute pesticide poisoning, vomiting, teary eyes, insomnia and confusion (Rother and Jacobs, Steenland et al 1994, Ross et al 2013, Sanborn et al 2004).

Long-term low dose neurotoxic effects due to OP exposure have been associated with cognitive effects, reduction in sensory and motor functioning, psychological dysfunction, change in behaviour, neurodegenerative and neurodevelopment effects, as well as suicide (Sanborn et al 2007, Starks et al 2012). Chronic effects are, however, not yet well understood (Sanborn et al 2007, Starks et al 2012). There are a number of possible mechanisms which have been proposed for chronic OP neurotoxicity including prolonged AChE inhibition, abnormal cerebral circulation, long term pre-synaptic disorder, disturbed cellular turnover and trans- membrane signalling and CNS receptor deregulation (Jamal et al 2002).

2.2 Neurotoxicity of pyrethroid pesticides

Neurotoxicity due to pyrethroid insecticides have been attribute to their disruption of nerve membrane permeability to sodium ions which impairs nervous system function (Soderlund et al 1989, Weiss et al 2004). Pyrethroids can be subdivided into two subclasses based on the mode of action on the sodium channels. Type I pyrethroids (e.g. allethrin, permethrin, bifenthrin, resmethrin and tetramethrin) produces repetitive nerve discharge causing whole body tremors and prostration. Type II pyrethroids (e.g. cyhalothrin, cypermethrin, cyfluthrin and deltamethrin) produces stimulus- dependent nerve depolarazation and blockage which is associated with hyperactivity, incoordination, writhing and convulsions (Soderlund et al 1989, Palmquist et al 2012).

Pyrethroid neorotoxicity is much lower than that of OPs. Pyrethroid compounds which have the *IR* cis configuration (eg. [*1R,cis*]-permethrin (permethrin) and NRDC 157 (a deltamethrin analogue) are toxic to mammals (Soderlund et al 2002).

3. Methods used to measure neurotoxicity

Due to the complexity of the central nervous system (CNS), using a single tests to assess neurotoxic effects of pesticides may be inadequate (Bjorling-Poulsen et al 2008). Testing for neurotoxicity is aimed at determining changes in the structure and/or functioning of the CNS and tests currently used include indexes of neurofunction, behaviour and specific psychological effects. Neuropsychology is thought to be the most sensitive means of detecting neurotoxic damage (Lezak et al 2004).

Tests used for testing neurotoxicity include psychometric tests, electroencephalography (EEG), neurological examination, nerve conduction tests, needle electromyography (EMG), quantitative sensory neuromuscular testing, jitter testing, cognitive evoke potentials, SPECT(single photon emission computer tomography), the 28-item General Health questionnaire(GHQ-28), the GHQ Depression subscale, Beck`s scale for Suicidal Ideation (SSI) and the Q16 questionnaire (Lundberg et al 1997, Slikker et al 2000, London et al 2012)

The Q16 questionnaire was developed by Hogstedt in the early 1980`s (Ihrig et al 2001) to determine neurotoxicity among workers exposed to chemicals, and it has been used in a

number of studies investigating neurotoxicity of pesticides. The Q16 questionnaire consists of 16 Yes/ No questions on symptoms commonly associated with neurotoxicity (Lundberg et al 1997).

4. Epidemiological evidence of neurotoxicity caused by OP and pyrethroid pesticides

4.1 OP studies on neurotoxicity

There are numerous epidemiological studies in the literature that have investigated the neurological effects of OP pesticides. Recently Ross et. al. (2012) conducted a systematic review on neurobehavioral problems associated with low-level exposure to OP pesticides for the period 1960 -10th February 2012. A total of 644 articles were found from which 16 studies were selected for the review including studies from both developing and developed countries. The inclusion criteria included: evidence of prolonged exposure to OPs, comparison of exposed individuals with unexposed individulas, investigation of effects of long-term low-level exposure in the absence of an episode of acute poisoning and objective measures of cognitive function and validated measures of emotional state. The review found an overall significant relationship between low level OP exposure and cognitive functioning (language, general knowledge, attention psychomotor speed and memory). The review also showed that neurobehavioral health problems due to pesticides develop from prolonged exposure and not from a single exposure (Ross et al 2012). Duration of OP exposure that can result in neurotoxicity ranged from 2- over 20 years. The review concluded that there was still uncertainty on the association between long term pesticides exposure and some neurobehavioral effects. Most of these studies were conducted on men and women with no gender differences reported.

4.2 Pyrethroid studies on neurotoxicity

Laboratory evidence has shown that PYR pesticides cause behavioural effects and effects CNS motor activity (Nasuti et al 2006, Starr et al 2012). Common symptoms which have been associated with PYR toxicity are over excitement, restlessness and body tremors from ingestion of type I PYR pesticides. Dizziness, headache and fatigue are associated with type II PYR pesticicides (Sonderland et al 1989, Bradberry et al 2005). No epidemiologial study investigating the neorotoxicity of pyrethroid pesticides could be found in the literature.

4.3 Studies investigating neurotoxicity due to OP and PYR pesticide exposure in women.

Only two studies could be indentified in the literature that have investigated neurotoxic effects of OP pesticides only on women. The first was a small cross-sectional study that found that the neurobehavioural scores of 51 women employed as gardeners and exposed to OP pesticides were significantly lower than that of 25 women who did not work with chemicals. The following neurotoxic outcomes were measured: depression, reaction times, motor steadiness, tension and fatigue (Bazylewicz-Walczak B et al 1999). The second was a case control study that found that reported exposues (recent expsoure, years using pesticides, washing contaminated clothing) to OP pesticides amongst 341 women with glicomas were not significantly higher than 528 controls (Carreon at al 2005). As indicated before, no epidemiological studies were found that investigated neurotoxic effects of PYR pesticides. With no gender differences reported in studies conducted in men and women, there is threfore a lack of studies investigating neurotoxic effects of OP and PYR pesticides amongst women. More studies, especially large longitudinal studies in both developed and developing

countries using sensitive expsoure measures identifying specific pesticides as well as sensitive neurotoxic outcome measures are required in the literature.

4.4 Studies on neurotoxicity in South Africa

To date in South Africa only two studies have investigated the neurotoxic effects associated with pesticides exposure amongst farm workers (London et al 1998, London et al 2012). In a cross-sectional study of 752 grape farm workers (41% female) from 57 farms in the Western Cape, neurotoxicity was measured using the 28-item General Health questionnaire(GHQ-28), the GHQ Depression subscale and Beck`s scale for Suicidal Ideation (SSI). The results of the study did not show an association between long-term OP exposure and impulsivity, depression or depression among the study participants. The study found an association between past pesticide poisoning and mood disorders (London et al 2012).

The other study was also a cross-sectional investigation into the association of pesticide long term exposure and neurotoxicity measured using neurological symptoms and tr emor scores. Among 247 Western Cape farm workers, of which 164 were pesticide applicators and 93 non applicators. The results showed a significant association between reduced neurological tremor scores and previous pesticide poisoning (OR 4.08, 95%CI1.48-11.22), but there was no significant association between average lifetime OP exposure and neurological symptoms (London et al 1998).

5. Urinary levels of OP and pyrethroid pesticide residues

Measurement of pesticide residues in human body fluids is a useful tool for assessing short-term pesticide exposure to agricultural pesticides. The body fluids in which pesticides have been measured include amongst others blood, saliva and urine. Urine is the most commonly used body fluid because of its availability in high volume compared to other bodily fluids (Kapka-Skrzypczak et al 2011). The use of urinary pesticide metabolites as biomarkers to assess acute or short-term exposure to pesticides is well described (Roberts and Reigart, 1999; Maroni et al, 2000). This review will focus on urinary metabolites of OP and pyrethroids as these were measured in the study.

5.1 Urinary levels of OP pesticide metabolites in farming communities

Most of the OPs are metabolized to one or more of the six dialkyl phosphate metabolites (DAP). The measurement of urinary DAP is a sensitive indicator of non-specific short-term (24-48 hours) exposure to OP's in humans (Roberts and Reigart, 1999). Exposure to specific OP pesticides is also measured and the most commonly monitored pesticide is chlorpyrifos. In humans the major chlorpyrifos-specific metabolite is 3, 5, 6- trichloro-2-pyridinol (TCPY) which is used as a bio marker to test for the short-term exposure (24-48 hours) to chlorpyrifos and chlorpyrifos-methyl in human.

The only study that measured urinary levels of pesticide residues in South Africa, was a cross sectional study among Western Cape grape farm workers to investigate the effects of chlorpyrifos spraying on urinary levels of DAPs among applicators and non-applicators. The study found that the median level of the dimethylthiophosphates (DMTP) and

dimethyldithiophosphates (DMDTP) measured before and after spraying were higher among the farm workers compared to non-farming communities in other settings and at the high end of the spectrum compared to farm workers in other settings. (Dalvie et al 2011).

5.2 Urinary levels of pyrethroid pesticide metabolites in farming communities

Commonly measured pyrethroid metabolites includes [3- phenoxybenzoic acid (3PBA); 4-fluoro-3-phenoxybenzoic acid (4F3PBA); cis-2, 2-dibromovinyl-2, 2-dimethylcyclopropane-1-carboxylic acid (DBCA) and cis- and trans-isomers of 2, 2-dichlorovinyl-2, 2-dimethylcyclopropane-1-carboxylic acid (cis- and trans-DCCA)]. The most frequently measured of these metabolites is the 3PBA. No previous study has measured pyrethroid metabolites in South Africa.

6. Conclusion

There is strong epidemiological evidence that OP pesticides causes acute neurological impairments but the evidence that they cause chronic neurological impairment is still growing. Although there is evidence from laboratory studies that PYR pesticides cause neurotoxic effects, there are no epidemiological studies that have investigated neurotoxic effects PYR pesticides. Because limited understanding of the central nervous system functions, the diversity in the neurotoxic events and the large number of cellular and molecular targets involved there remains uncertainty about mechanism and dose response relationship associated with the pesticide exposures.

Most of epidemiological studies that investigated neurotoxic effects of pesticides were conducted on both men and women with no gender differences reported. There are also few studies that have investigated the relationship between pesticide metabolites and neurotoxicity. Epidemiological studies investigating neurotoxic effects of pesticides among women, especially large longitudinal studies in both developed and developing countries using sensitive expsoure measures identifying specific pesticides as well as sensitive neurotoxic outcome measures are required in the literature. Future research should also focus on a better understanding of the central nervous system in order to fully understand the neurotoxic effects associated with pesticide exposure. This is particularly relevant to South Africa who has a growing number of women exposed to pesticides on farms and where both OP and PYR pesticides are commonly used and have been detected in the enivornment.

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Part C: Publication- ready Manuscript

This manuscript is prepared for submission to the journal of Environment International. The journal's guidelines for authors are attached (Appendix E), The Author has adhered to these guidelines with the exception that some of the tables have been included in the articles main text.

Title: Relationship between urinary pesticide residue levels and neurotoxicity among women on farms in the Western Cape

Authors:

Motsoeneng Mamonyowe Portia a*, Mohamed Aqiel Dalvie a

a Centre for Occupational and Environmental Health Research(COEHR)

School of Public Health and Family Medicine

University of Cape Town.

***Correspondence directed to**:

Motsoeneng Mamonyowe Portia : mamonyowe.portia.64@gmail.com

[i] ʻAbbreviations: DDT, dichlorodiphenyltrichloroethane ; WFP, Women on Farms Project; OP, Organophosphates; PYR, pyrethroids; DAP, dialkyl phosphate; TCPY, 3,5,6- trichloropyridinol; OR, odds ratio; 95% Cl, ninety five percent confidence interval; IQR, interquartile range.

Abstract

Background: Farm workers and residents living in and around farms are exposed to pesticides. Women are vulnerable to health risks posed by pesticides. To date there are few studies that have investigated the relationship between pesticide residues in human body fluids and neurotoxicity.

Objective:

This study therefore aims to investigate the relationship between urinary pesticide residue levels and neurotoxicity amongst women working in farms in the Western Cape, South Africa.

Method: A cross- sectional study was conducted among 211 women recruited from farms (farm group, n = 121) and neighbouring towns (town group, n = 90). Testing included a general questionnaire, the Q16 questionnaire, reported pesticide exposures and measurement of urinary metabolite concentrations of dialkyl phosphates (DAP), the chlorpyriphos, metabolite 3, 5, 6-trichloropyridinol (TCPY) and pyrethroid (PYR).

Results: The median age of the Farm Group was 33 years(interquartile range: 27 - 40 years) and for the Town Group was 40 years (interquartile range 31-49). Median urinary pesticide metabolites were 6-49% higher in the Farm Group compared to the Town Group.The concentration (median and interquartile range) of DAP (sum of the 6 metabolites), TCPY and PYR (sum of the 5 metabolites) was respectively 141.42(37.4-249.8); 6.15(3.50-10.64)and 6.60(3.61-9.96) µg/g of creatinine in the Farm Group compared to 132(45.64-204.45); 4.26(2.72-8.27 and 5.26 (2.74-8.42) µg/g of creatinine in the Town Group.

The prevalence of all Q16 symptoms was higher amongst farm women compared to non-farm women. Three pyrethroids metabolites (cis- DCCA, trans DCCA, DBCA) were positively associated with at least 12 of the Q16 symptoms adjusting for confounders. The strongest association between for a pyrethroid metabolite was between problems with buttoning and DBCA (Odds ratio = 8.93, 95% Confidence Interval: 1.71-46.5. Problems with buttoning and reading was also significantly positively associated with, trans DCCA , DBCA. Taking notes due to problems with memory was positively significantly associated with DBCA. There was no association between Q16 symptoms and OP metabolites.

Conclusion: Women farm residents and rural women from neighbouring towns in the Western Cape are exposed to OP and PYR pesticides. The study provides evidence that PYR pesticides may result in neurotoxic effects but not OP pesticides. These results should be explored further in a bigger longitudinal study using more sensitive neurotoxic measures such as World Health Organisation Neurobehavioral Core Test Battery, The Brief Symptom Inventory and vibration sense threshold testing.

Keywords: Neurotoxicity, Organophosphates, pyrethroid, neurotoxicity, Q16, female farmer workers.

Highlights:

- Rural women who live on farms have higher levels of pesticide residues compared to rural women who reside in towns
- Women who live or work on farms reports higher neurotoxic symptoms than those who do not live on farms
- Exposure to PYR was associated with neurotoxic outcomes

1. Introduction

Organophosphate and pyrethroids insecticides, commonly used in agriculture have been associated with neurological deficits (Bjorling-Poulsen et al 2008). Neurological effects from exposure to or poisoning from to OP pesticides include problems with memory, sleeping, numbness, dizziness, weakness, confusion, depression, personality changes, thinking, concentration and language disabilities (Ross et al 2012). The neurotoxic effects of pesticide exposure can be summarised into both acute and chronic health effects. Acute neurotoxic effects are well studied and it is said to be caused by the inhibition of the enzyme acetylcholinesterase (AChE) causing changes in central nervous system function (Costa et al 2006, Lauder et al 1999). However there remains conflicting information about the severity of chronic neurotoxic effects of pesticides exposure (Ross et al 2012).

There are numerous epidemiological studies in the literature that have investigated the neurological effects of OP pesticides. Recently Ross et. al. (2012) conducted a systematic review on neurobehavioral problems associated with low-level exposure to OP pesticides for the period 1960 -10th February 2012. The review found an overall significant relationship between low level OP exposure and cognitive functioning (language, general knowledge, attention psychomotor speed and memory). The review also showed that neurobehavioral health problems due to pesticides develop from prolonged exposure and not from a single exposure (Ross et al 2012). Duration of OP exposure that can result in neurotoxicity ranged from 2- over 20 years. The review concluded that there was still uncertainty on the association between long term pesticides exposure and some neurobehavioral effects. Most of

these studies were conducted on men and women with no gender differences reported. Women are increasing exposed to pesticides in agriculture (Rother et al 2000). There is limited evidence from two studies in the literature that have investigated neurotoxic effects of OP pesticides only on women and no studies investating PYR neurotoxicity (Bazylewicz-Walczak B et al 1999, Carreon at al 2005).

Urinary concentration levels of pesticide metabolites such as the six dialkyl phosphate (DAP) metabolites of organophosphate pesticides, 3,5,6- trichloropyridinol (TCPY) which is a specific metabolite of chlorpyrifos (Smith et al 2009) and metabolites of pyrethroid pesticides have been shown to be higher in farm workers compared to the general population. (Barr et al 2008, Phung et al 2012). However, only 2 studies have investigated the association between urinary levels of pesticide metabolites and neurological health (Eskenazi et al 2007, Bouchard et al 2010) but these were on chid participants and not on adults. To our knowledge there is no previous study which has investigated the association between urinary levels of pesticide metabolites and neurotoxicity in adults.

South Africa is the highest user pesticides in sub-Saharan Africa and the Western Cape is an important agricultural area in the country (Zhang et al 2011, Reinecke et al 2007). Pesticide residues have been detected in environmental samples and high levels in farm workers (Dalvie et al 2011, Dalvie et al 2006, Rother et al 2000). One study has been conducted investigating neurological disorders due to agricultural pesticides amongst farm workers in the Western Cape and this study did not provide evidence of neurotoxicity due to OP exposure (London et al 1998). No previous studies have been conducted investigating the

relationship between pesticide residues levels in biological samples and neuroxicity in South Africa. Female farm workers in South Africa are increasingly exposed to pesticides (Bowers et al 2009).

The data presented in this paper is part of a bigger study investigating neurotox]c, respiratory health and reproductive health effects of pesticide exposure among women living/working on farms in the Western Cape in South Africa. The aim of this analysis is to investigate the effect of occupational and environmental pesticide exposure on neurotoxic outcomes measured by means of the Q16 questionnaire.

2. Material and Methods

2.1 Study design, population and sampling

A cross-sectional study of women farm workers and residents and women living in towns neighbouring the farms, in the Western Cape region of South Africa was conducted during the period 24 October to 3 December 2009. The Women on Farms Project (WFP), a rural women's rights non- governmental organisation, assisted with the recruitment of participants. About 100 women living on farms were targeted from the 5 most accessible agricultural areas representative of the Western Cape and 100 women from neighbouring towns that were about 5 to 10km away from agricultural areas (Supplementary Material, Table 1). The only inclusion criteria for women from these areas was age (above 18 years and below 70 years).

The study areas included Stellenbosch, Ceres, Paarl, Grabouw and Worcester. Farm workers and residents were selected from the 5-10 most accessible and representative farms in each area and town dwellers from the most accessible and representative houses in each area. One adult female participant per household was selected. A total of 211 women were recruited into the study including 113 women currently living on a farm and 98 residents in towns. There were 8 women who lived in town but were actually farm workers. In total there were therefore 97 farm workers (89 women living in farms and 8 not living in farms) . There were an additional 24 women residing but not working on farms who were included with the farm workers in the "Farm Group (n = 121) as the results of sub-analysis showed they had similar results to that of farm workers. The remaining 90 women who neither lived nor worked on a farm are referred to as "Town Group" (Figure 1). The study was approved by the University of Cape Town's (UCT) Research Ethics Committee (Reference 393/2009). Informed consent was obtained from participants prior to the interview.

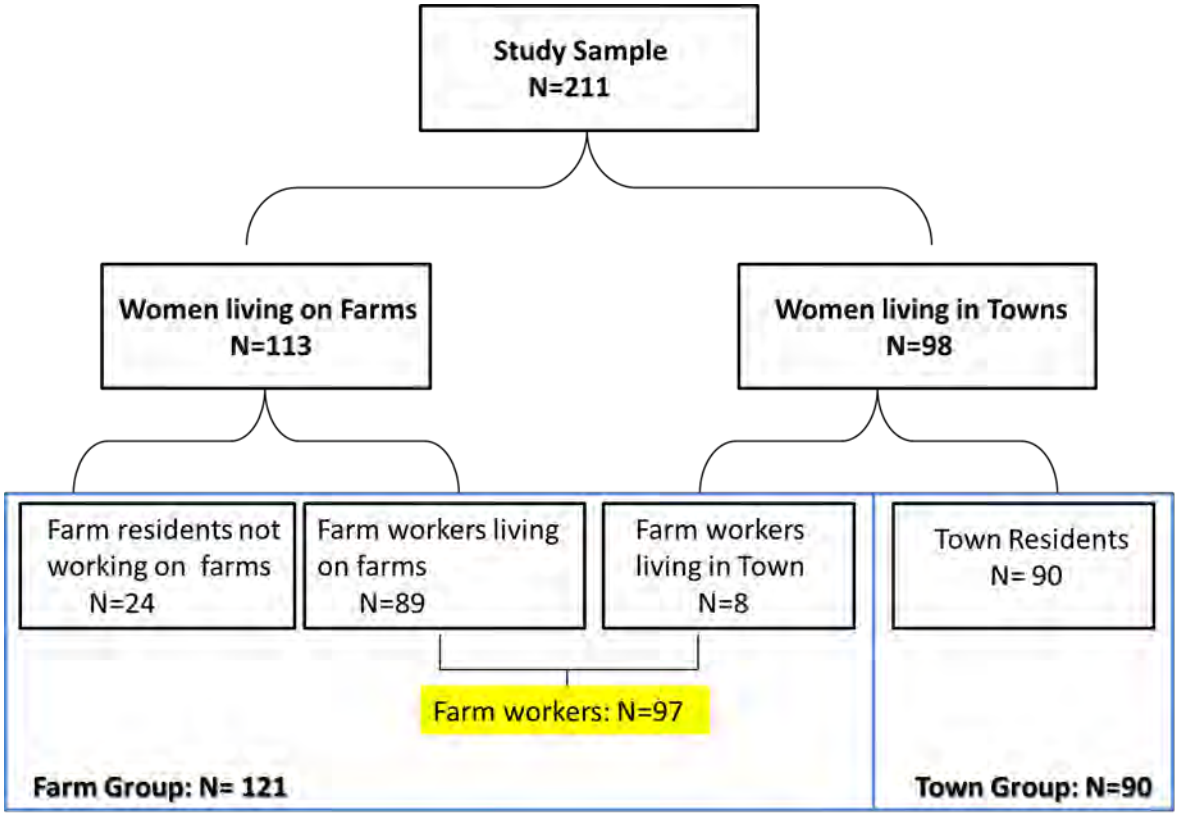

Diagram 1: Study participants

2.2 Questionnaire

The questionnaire had sections on socio-demographic information (age, schooling, home language, income, employment); residential history (farm or town); pesticide household pesticide exposure; occupational and environmental pesticide exposure (being an applicator, re-entry pesticide exposure, pesticide drift, distance of residence to spraying and other exposures to agricultural spraying), job history (farm worker, non-farm worker, number of years in a job, job title), lifestyle factors (smoking, drug usage and alcohol consumption), pesticide poisoning and the Q16 questionnaire commonly used in studies that investigating

neurotoxic symptoms among the workers who are exposed to toxic substances (Lundberg et al 1997).

The Q16 questionnaire which consists of 16 questions, with yes/ no responses to symptoms associated with neurotoxicity. The Q16 questionnaire has been used successfully by many neurotoxic researchers although the instrument has been criticized for lacking sensitivity and specificity (Bast-Pettersen et al 2006).

The study interviews were administered in the participants preferred language and the questionnaire was translated into Afrikaans and Xhosa and then back translated into English. Fieldwork was done on the WFP premises.

2.3 Urinary pesticide metabolites determination

Urine samples were collected in 50 ml plastic containers. Participants were instructed to take precautions not to contaminate samples by not removing contaminated clothing, making sure that they wash their hands before handling urine containers, not touching the inside of containers and closing the containers immediately after producing the sample. The samples were then kept on dry ice, and stored at -20 degree Celsius before being sent for analysis at the National Institute for Occupational Health (NIOH) laboratory in Johannesburg, South Africa. The urine samples were analysed for the organophosphate pesticide metabolites, dialkyl phosphates, the chlorpyrifos specific metabolite, TCPY and pyrethroid metabolites.

Briefly, after allowing the samples to thaw at room temperature, 2 ml of urine was pipetted into screw top vials, which already contained approximately 2g of sodium chloride. The samples were acidified and extracted. The extraction was repeated, and the two extracts were combined and dried. The dry residue was suspended in acetonitrile (500µL). Derivatization was performed by adding pentafluorobenzyl bromide (50µL). After cooling at room temperature the samples were reconstituted and transferred to gas chromatography ready for analysis.

Analysis was performed on a HP 6890 GC. For calibration a multi-component stock solution of all 6 dialkyl phosphate (20µmol) metabolites, TCPY and PYR metabolites were used. For quality assurance, we used spike pooled urine at a concentration 2000 nmol/l for each of the dialkyl phosphate metabolites, TCPY and PYR metabolites.

Results were adjusted for urinary creatinine to take account of hydration. Urine samples with creatinine concentrations within and outside the WHO recommended creatinine concentration range of 0.3 x 106 µg/L – 3.0 x 106µg/L were distinguished and taken into account during analysis. Those outside the WHO range are not presented (n = 18).

The following metabolites were measured: OP metabolites (according to the methods by (Hardt et al, 2000) including dimethyl phosphate (DMP), diethyl phosphate (DEP), dimethyl thiophosphate (DMTP), dimethyl dithiophosphate (DMDTP), diethyl thiophosphate (DETP), diethyl dithiophosphate (DEDTP); and 3,5,6- trichloropyridinol (TCPY), the specific chlorpyrifos metabolite (Sams & Jones, 2011) and the 5 PYR metabolites 3- phenoxybenzoic acid (3PBA), 4-fluoro-3-phenoxybenzoic acid (4F3PBA), cis-2,2-dibromovinyl-2,2-

dimethylcyclopropane-1-carboxylic acid (DBCA), and cis- and trans isomers of 2,2-dichlorovinyl-2,2- dimethylcyclopropane-1-carboxylic acid (cis- and trans-DCCA) (according the methods of (Areebola et al 1999).

The limit of detection (LOD) for all analyses were determined and values too low to be quantified were assigned a value equivalent to the LOD x (2)-1/2. The limit of detection (LOD) for the pesticide metabolites were 0.5 µg/l for TCPY ; 1 µg/l for DMP; and 0.05 µg/l for DMTP, DMDTP, DEP, DETP, DEDTP, cis-DCCA, trans-DCCA, DBCA, 4F3PBA and 2PBA (n < LOD = 8, 1, 1.for TCPY, DAP and PYR respectively). There were 8, 16 and 11 insufficient urine samples for TCPY, DAP and PYR analysis respectively.

2.3 Variables

The outcome variables included the dichotomous (Yes, No) Q16 questions, a continuous Q16 score variable which was calculated as the sum of positive responses (positive responses coded as 1 and negative responses as 0) to Q16 questions. The Q16 score was also dichotomised at the median and 75th percentile. The exposure variables included the dichotomous self reported history of living or working on farms (Yes, No), Farm Group/Town Group, and born on a farm as well as the urinary pesticide metabolite levels which were analysed as continuous variables.

2.4 Statistical Analysis

The selected software for analysis was Stata: Release 11 (StataCorp.al Software.College Station,TX:StataCorp LP)**.** Since all continuous variables were not normally distributed, median and interquartile ranges were used to summarise these variables. After conducting univariate and bivariate analysis, multiple logistic regression analyses were used to test for associations between dichotomous outcomes and exposure variables while controlling for confounding and linear regression was used for the Q16 score. Confounders were selected on an *a priori* basis, according to biological plausibility, or based on their association with outcomes in bivariate testing if $p < 0.1$. (Tables 2a, b provided in the supplementary materials). Age, education, household income were selected *a priori* and drugs, alcohol usage, current smoking, language and previous poisoning were selected based on bivariate testing. Exposure variables were then added separately to all the different outcomes adjusting for these covariates.

To test for effect modification, interaction variables were created between exposure variables and potential effect modifiers (smoking, years of schooling and being born on a farm). These were the products between each exposure variable and a suspected effect modifier. For all the outcomes, an interaction term between the variable and the exposure variable of interest was included in the model. If this interaction term was significant ($p<0.05$), the variable would be an effect modifier. None of the interaction terms were significant so all were not retained in the models.

3. Results

3.1 Participants

Two hundred and eleven women were recruited into the study with 20% (n= 42) coming from Ceres, 18% (n=38) from Grabouw, 19% (n= 39) from Paarl, 22% (n= 47) from Stellenbosch and 21% (n = 45) from Worcester. Table 1 (Supplementary section) summarises the distribution of Farm Group and Town Group (as already been defined earlier) that participated in the study. Twenty- five (28%) of the women in the Town Group previously lived on farms. Among all the studied participants only two (2%) of the farm workers reported that they were applicators.

3.2 Demographic information, socio-economic status, lifestyle factors and self-reported pesticide exposure

In both groups Afrikaans was the most spoken language (> 87%) and less than 1% of the total studied population spoke English (Table 1). The median age in the Town Group was higher (40.5 years) than in the Farm Group (33 years) due to the fact that 25% of the Town Group were older than 50 years (excluding women aged higher than 50 years from the analysis did not change the results in the study). The number of women who attended school were not different in the two groups with over 96% of the participants in both groups who had attended school. The number of women who had matriculated was significantly more in the Farm Group although only 2% overall matriculated in both groups.

Median household income was statistically significantly higher in the Town Group.

Unemployment was statistically significantly higher in the Town Group compared to the Farm Group (17% compared to 71% in the Town Group).

Table1: Demographic information, socio-economic status, living and working history and lifestyle factors of participants in the study

Characteristic	**Farm Group (n = 121)**	**Town Group (n = 90)**	**Total (n = 211)**
Demographic characteristics: (Median, IQR)			
Age (years)	33.0(27.0- 40.0)	40.5(31.0-49.0)	37.0(28.3-45.0)
Weight (Kg) (n = 207)	61.0(51.0 – 72.1)	70.0(58.3 -81.1)	65.0(54.0-75.1)
Home language n(%)			
English	0(0%)	1(1.1%)	1(0.5%)
Afrikaans	119(98%)	79(88%)	198(94%)
Isixhosa	2(2%)*	10(11%)	12(6%)
Level of Education: n (%)			
No schooling	4(3%)	4(4%)	8(4%)
Matriculated	1(1%)*	3(3%)	4(2%)
Length of stay in current residence (years)	15.0(8-24)	21.5(12-41)	17(9-29)
Born on a farm: n (%)	83 (69)	13 (14)	96 (46)
History of ever? living or working on farms	121(100)*	26(29)	147(70)
Socio economic status			
Unemployment: n (%)	20(17)	65 (71)	85(40)
Household income/month ($US) (Median, IQR)	270.0(188-500)*	378.7(221-744)	324.0(199-600)
Lifestyle factors (n %)			
Current cigarette smoker	69(57)	36(40)	105(50)
Current alcohol consumption	79(65)	39(43)	118(56)
Use drugs	0(0)	2(2)	2 (0.01)

Abbreviations: IQR- Inter quartile range, Kg- kilograms, $US- United states dollar, n- number, % -percentage
Current ciggarette smoker: having smoked at least 20 packs of cigarettes or 30 grams of tobacco in a lifetime or at least one cigarette per day for one year AND having smoked tobacco in the last month or more.
P<=0.05 is said to be significant and denoted by *
Statistical Tests: t-test (for normally distributed data) or Wilcoxon rank sum test (for data not normally distributed) was used for one dichotomous and one continuous variable, and Chi-square testing for 2 dichotomous variables.

Alcohol consumption and smoking was more prevalent in the Farm Group. Household pesticides usage was prevalent in both groups although slightly higher in the Farm Group. Household pesticide exposures were higher in the Farm Group including 10 (8%) who uses empty containers. As expected, past pesticide poisoning events diagnosed by a doctor were more prevalent in the Farm Group but low in both groups. On spraying days, about two thirds (67%) of the Farm Dwellers reported that they re-entered the field on the same day after pesticide spraying. Workers were employed for an average of five years on the farms and about a third of Farm dwellers were seasonal farm workers (Table 2).

Table2: Household pesticide exposure, pesticide poisoning and agricultural pesticde exposure of participants

Pesticide Exposure	**Farm Group N (%)**	**Town Group N(%)**	**Total N(%)**
Use pesticides at home	67(55)	56(62)	123(58)
Member of the family works as a pesticide applicator	36(30)	1(1)	37(18)
Pesticide contaminated clothing washed at home	58(48)	1 (1.1)	59(28)
Clothing washed with rest of washing	39(32)	0(0.0)	39(18)
Use of empty pesticide containers at home for drinking	10(8)	0 (0.0)	10(5)
Pesticide poisoning			
Pesticide poisoning Confirmed by a doctor?	6(5)	1(1)	7(3)
Farm worker status (n=208)			
Permanent	53(45)*	0(0)	53(25)
Seasonal	40(34)*	4(4)	44(21)
Re-entry into sprayed fields			
Delayed re-entry[a]	33(27)*	1(1)	34(16)
Immediate re-entry[b]	81(67)*	0(0)	81(38)

Abbreviations: n- number, % percentage
P<=0.05*
[a]re-entry into field on the same day after pesticide spraying

[b]re-entry into field 1 to 7 days after pesticide spraying

3.3 Urinary pesticide metabolite results

Table 4 below gives a summary of the urinary pesticides metabolites measured among the study participants. A total of 186 urine samples were collected from the participants from which 18 had a creatinine concentration which was outside the WHO recommended range. For seven of the participants (4%) the collected urine sample were not enough for measuring TCPY, for the dialkyl phosphates 15(8%) and for pyrethroid 10(5%).

Most of the urinary organophosphate and pyrethroid metabolites were not significantly different between the two groups with only TCPY and trans-DCCA levels significantly higher in the Farm Group.

Table3: Pesticide residues levels among the rural female workers

Pesticide metabolites	Farm Group	Town Group	Total
		Median (IQR)	
		Corrected for creatinine (µg/g creatinine)	
Organophosphate metabolites n = 101		**n = 77**	**n = 178**
∑DAP	141.42(37.4-249.83)	132(45.64-204.45)	133.59(41.86-229.09)
DMP	32.91(13.50-55.75)	26.19(14.33-52.36)	29.63(14.06-53.22)
DMTP	13.41(3.05-62.45)	36.44(6.11-71.85)	21.87(4.03-65.85)
DMDTP	5.70(0.83-51.51)	9.57(0.87-66.22)	6.87(0.85-61.77)
DEP	5.01(1.37-12.90)	4.13(0.59-9.47)	4.27(1.08-10.04)
DETP	3.70(1.15-26.98)	3.94(1.35-26.18)	3.87(1.20-26.98)
DEDTP	1.99(0.55-5.10)	1.70(0.60-8.02)	1.89(0.58-6.44)
Chlorpyrifos metabolite n = 104		**n = 82**	**n = 186**
TCPY	6.15(3.50-10.64)*	4.14(2.70-7.57)	5.16(2.84-9.24)
Pyrethroid metabolites n=101		**n=82**	**n = 183**
∑Pyrethroids	6.60(3.61-9.96)	5.26(2.74-8.42)	6.01(3.24-9.67)
cis-DCCA	0.71(0.27-1.28)	0.56(0.23-1.13)	0.62(0.26-1.24)
trans-DCCA	0.85(0.47-1.29)*	0.59(0.28-1.02)	0.70(0.37-1.22)
DBCA	0.31(0.05-0.63)	0.30(0.04-0.60)	0.30(0.04-0.62)
4F3PBA	0.73(0.31-1.32)	0.70(0.33-1.30)	0.73(0.32-1.32)
3PBA	3.61(2.11-6.25)	3.34(2.27-5.92)	3.40(2.18-6.00)

*p < =0.05; TCPY: 3,5,6- trichloropyridinol; DAP: sum of the 6 dialkyl phosphate metabolites; DMP: dimethyl phosphate
DMTP: dimethyl thiophosphate; DMDTP: dimethyl dithiophosphate; DEP: diethyl phosphate; DETP: diethyl thiophosphate
DEDTP: diethyl dithiophosphate; Pyrethroids: sum of the 5 pyrethroid metabolites;
cis-DCCA: cis- 2,2-dichlorovinyl-2,2- dimethylcyclopropane-1-carboxylic acid
trans-DCCA: trans- 2,2-dichlorovinyl-2,2- dimethylcyclopropane-1-carboxylic acid
DBCA: cis-2,2-dibromovinyl-2,2-dimethylcyclopropane-1-carboxylic acid;
4F3PBA: 4-fluoro-3-phenoxybenzoic acid; 3PBA: 3- phenoxybenzoic acid
Values below LOD were substituted by LOD divided by square root of 2
∑- total sum

3.5 Response to Q16 questionnaire

Positive responses to individual items in the Q16 questionnaire were all more prevalent in the Farm Group with 10(63%) items statistically significantly higher in this group. The total score was therefore also statistically significantly higher in the Farm Group

Table 4: Responses to Q16

	Farm group N=121(57)	Town group N=90(43)	Total N=211(100)
Are you abnormally tired? (tired)	81(77)*	37(41)	118(56)
Do you have palpitations of the heart when you do not exert yourself? (heart palpitations)	60(50)*	26(29)	86(41)
Do you often have painful tingling in some part of your body? (tingling)	55(46)*	24(27)	79(37)
Do you often feel irritated without any particular reason? (irritated)	59(49)*	22(24)	81(38)
Do you often feel depressed without any particular reason? (depressed)	62(51)*	30(33)	92(44)
Do you often have problems concentrating? (poor concentration)	34(28)	20(22)	54(26)
Do you have a short memory? (short memory)	59(49)*	28(31)	87(41)
Do you often perspire without any particular reason? (perspire)	30(25)	15(17)	45(21)
Do you have any problems with buttoning and unbuttoning? (button)	6(5)	4(4)	10(5)
Do you generally find it hard to get the meaning from reading newspapers and books? (reading)	31(26)	16(18)	47(22)
Have your relatives told you that you have a short memory? (fam mem)	32(26)	18(20)	50(24)
Do you sometimes feel a heavy feeling on your chest? (chest)	48(40)*	17(19)	65(31)
Do you often have to make notes about what you must remember? (notes)	36(30)*	14(16)	50(24)
Do you often have to go back and check things you have done such as locking the door? (check door)	64(53)*	26(29)	90(43)
Do you have a headache at least once a week? (headache)	105(87)*	42(47)	147(70)
Do you think that you have less sex than most persons of your age? (less-sex)	53(44)	35(39	88(42)
Total Score (median, range) (q16 score)	7 (0-16)*	2.5(0-15)	5(0-16)
*** P < 0.05 comparing Farm group to Town group**			

*- shows that there is a significant difference between the two groups.

3.6 Multivariate associations between pesticides exposure indices and Q16 questionnaire items.

Tables 5a, b, c below gives details of the multivariate association between Q16 outcomes and pesticides exposure indices (farm group, history of ever living on a farm, born on a farm and pesticide residue levels) among the women who live on farms and neighbouring towns in the rural Western Cape areas. The prevalence of fifteen Q16 symptoms was higher in the Farm Group compared to the Town Group with 10 statistically significantly higher (tired, heart palpitations, tingling, irritated, depressed, short memory, chest, notes, check door and headache). All the Q16 symptoms were positively associated with history of ever living on a farm of which 8 were statistically significant (tired, heart palpitation, irritated, tingling, poor concentration, short memory, perspire and chest). The sum of Q16 score was also positively significantly associated with Farm Group and history of living on a farm. Eight Q16 symptoms were positively associated with born on farm and 6 symptoms were positively associated with household pesticides of which 1 (button) was significant.

Three pyrethroids metabolites (cis- DCCA, trans DCCA , DBCA) were positively associated with at least 12 of the Q16 symptoms. The strongest associations was between DBCA and Q16 outcome “Button” [(OR(95%Cl)= 8.93(1.71-46.5)] (Table 5c). “Button” and “Reading” were significantly positively associated with, trans DCCA , DBCA and “Notes” was positively significantly associated with and DBCA.

There was no significant association between any Q16 symptom and any of the dialkyl phosphate and chlorpyrifos metabolites (Table 5b). Excluding those previously poisoned from the analysis did not make a difference to the results.

Table 5a: Adjusted models for the association between pesticide exposures and neurotoxic outcomes among rural women in Western Cape.

	Pesticide exposure. Odds Ratio/ Regression Coefficient (95% Confidence Interval)			
	History of ever living and/or workingon farm	**Born on farm**	**Household pesticides**	**Farm vs. Town Group**
Q16 Outcomes				
Tired	**3.3(1.46-7.36)**	0.95(0.50-1.78)	0.61(0.07-4.77)	**4.03(2.07-7.86)**
Heart palpitations	**4.73(1.98-11.31)**	1.29(0.66-2.41)	0.44(0.04-4.59)	**3.40(1.70-6.78)**
Tingling	**4.72(1.94-11.50)**	0.85(0.44-1.62)	0.46(0.04-5.07)	**3.81(1.88-7.74)**
Irritated	**4.25(1.82-9.95)**	0.77(0.41-1.45)	1 (omitted)	**4.17(2.08-8.36)**
Depression	1.89(0.87-4.11)	0.91(0.49-1.69)	0.40(0.04-4.10)	**2.60(1.38-4.88)**
Poor concentration	**4.15(1.59-10.80)**	1.36(0.67-2.77)	0.95(0.09-9.95)	1.96(0.93-4.12)
Short term memory	**2.94(1.34-6.45)**	1.48(0.78-2.79)	1.54(0.20-11.73)	**3.03(1.56-5.80)**
Perspire	**4.35(1.42-13.31)**	1.05(0.49-2.29)	0.76(0.07-8.20)	1.69(0.78-3.66)
Button	5.83(0.56-60.74)	1.17(0.28-4.94)	**10.35(1.73-146.18)**	0.78(0.19-3.25)
Reading	2.16(0.79-5.86)	1.05(0.51 -2.32)	2.70(0.34-21.37)	1.67(0.76-3.65)
Fam mem	1.34 (0.54-3.36)	1.93(0.88-4.25)	4.57(0.58-35.88)	1.92(0.88-4.16)
Chest	**5.21 (1.90-14.25)**	0.63(0.31-1.29)	2.37(0.30-18.91)	**3.84(1.77-8.33)**
Notes	1.55(0.64-3.77)	1.03(0.49-2.19)	0.84(0.08-9.05)	**2.47(1.12-5.48)**
Check door	1.90(0.85-4.23)	1.34(0.71-2.54)	1.20(0.16-9.30)	**3.10(1.60-6.00)**
Headache	2.13(0.91-5.00)	0.79(0.40-1.56)	0.39(0.05-3.03)	**9.41(4.34-20.40)**
Less sex	1.70(0.78-3.73)	0.71(0.38-1.32)	0.49(0.05-5.02)	1.29(0.70-2.40)
Q16 score	**2.69(1.71-10.14)**	2.10(0.72-6.10)	0.07(0.01-0.60)	**60.41 (6.96-524.51)**
Q16 score50	5.31(2.22-12.69)	0.79(0.42-1.51)	1.03(0.13-7. 92)	5.27(2.62-10.59)
Q16 score75	5.01(1.76-14.25)	1.68(0.77-3.54)	2.52(0.32-19.72)	3.05(1.39-6.87)

Confounder: Age, level of education, drugs, current smoking, alcohol consumption, household income, language, past pesticide poisoning.

Table 5b: Adjusted models for the association between OP metabolites and Q16 outcomes among rural women in Western Cape

	Organophosphate metabolites						
	Dialkyl phosphates. Odds Ratio Regression Coefficient (95% Confidence Interval)						Chlorpyrifos metabolite
	DMP	DMTP	DMDTP	DEP	DETP	DEDTP	TCPY
Q16 outcomes							
Tired	0.998(0.985-1.009)	1.001(0.996-1.005)	0.998(0.995-1.005)	1.006(0.995-1.022)	0.995(0.985-1.005)	1.004(0.993-1.015)	1.005(0.992-1.020)
Heart palpitations	0.990(0.977-1.002)	0.999(0.995-1.009)	1.002(0.998-1.006)	1.003(0.988-1.019)	0.995(0.984-1.005)	0.997(0.987-1.008)	1.007(0.989-1.026)
Tingling	1.003(0.989-1.009)	0.999(0.995-1.003)	0.999(0.995-1.004)	1.002(0.978-1.017)	0.995(0.984-1.006)	1.000(0.989-1.011)	0.998(0.988-1.007)
Irritated	0.997(0.985-1.008)	1.001(0.997-1.005)	1.000(0.996-1.005)	1.002(0.986-1.016)	0.993(0.983-1.005)	0.995(0.985-1.007)	1.021(0.997-1.046)
Depression	1.002(0.991-1.013)	1.000(0.996-1.004)	0.999(0.996-1.003)	0.999(0.985-1.013)	0.994(0.984-1.004)	0.998(0.987-1.008)	1.006(0.991-1.022)
Poor concentration	1.009(0.9971-0.022)	1.000(0.996-1.005)	0.996(0.995-1.003)	0.994(0.976-1.012)	0.998(0.987-1.010)	0.999(0.987-1.012)	0.929(0.867-0.995)
Short term memory	1.005(0.994-1.014)	1.000(0.996-1.005)	1.000(0.997-1.005)	0.996(0.976-1.010)	0.989(0.977-1.002)	0.994(0.982-1.007)	1.000(0.991-1.006)
Perspire	0.999(0.985-1.014)	1.003(0.998-1.007)	0.999(0.994-1.004)	0.985(0.959-1.011)	0.991(0.976-1.001)	0.997(0.981-1.012)	1.000(0.990-1.009)
Button	1.010(0.984-1.035)	1.003(0.996-1.010)	0.994(0.980-1.007)	0.972(0.907-1.045)	1.000(0.979-1.022)	0.966(0.891-1.047)	1.000(0.981-1.018)
Reading	0.997(0.983-1.010)	1.005(1.001-1.010)	0.999(0.995-1.005)	0.986(0.966-1.007)	0.998(0.987-1.009)	0.995(0.987-1.009)	0.993(0.969-1.018)
Fam mem	0.997(0.983-1.011)	0.996(0.991-1.002)	1.002(0.998-1.006)	0.995(0.976-1.015)	0.995(0.981-1.008)	1.003(0.992-1.015)	0.991(0.965-1.017)
Chest	0.993(0.979 -1.006)	1.001(0.997-1.006)	1.004(0.999-1.009)	0.994(0.978-1.010)	0.993(0.981-1.006)	0.996(0.984-1.008)	0.998(0.990-1.005)
Notes	1.009(0.995-1.022)	1.004(0.999-1.009)	0.998(0.993-1.005)	0.991(0.967-1.014)	0.996(0.982-1.010)	1.002(0.989-1.015)	0.999(0.991-1.007)
Check door	1.006(0.995-1.018)	0.999(0.996-1.004)	1.997(0.993-1.001)	0.992(0.978-1.020)	0.999(0.990-1.009)	1.000(0.989-1.009)	0.990(0.960-1.012)
Headache	0.995(0.983-1.007)	1.001(0.997-1.006)	0.999(0.995-1.004)	0.999(0.983-1.015)	1.000(0.989-1.009)	1.002(0.991-1.014)	1.011(0.983-1.040)
Less sex	0.994(0.982-1.005)	0.999(0.995-1.007)	0.996(0.995-1.000)	1.008(0.993-1.024)	0.996(0.985-1.006)	1.005(0.994-1.015)	0.998(0.990-1.005)
Q16 score	1.002(0.984-1.020)	1.002(0.996-1.006)	0.999(0.993-1.006)	1.007(0.981-1.032)	0.999(0.985-1.010)	1.003(0.986-1.021)	1.003(0.981-1.026)
Q16 score50	1.000(0.989-1.012)	1.001(0.997-1.005)	0.999(0.996-1.005)	0.995(0.975-1.007)	0.991((0.980-1.003)	0.998(0.987-1.009)	0.998(0.989-1.005)
Q16 score75	1.006(0.992-1.019)	1.002(0.997-1.007)	1.000(0.995-1.005)	0.996(0.971-1.010)	0.995((0.982-1.008)	0.998(0.985-1.012)	0.997(0.981-1.01)

Confounder: Age, level of education, drugs, current smoking, alcohol consumption, household income, language, past pesticide poisoning

Table 5c: Adjusted models for the association between pyrethroid metabolites and Q16 outcomes among rural women in Western Cape

Pesticide exposure					
Pyrethroids. Odds Ratio Regression Coefficient (95% Confidence Interval)					
	cis-DCCA	**trans-DCCA**	**DBCA**	**4F3PBA**	**3PBA**
Neurotoxic outcomes					
Tired	1.22(0.74-2.00)	1.44(0.81-2.56)	1.91(0.80-4.55)	1.16(0.80-1.68)	1.00(0.98-1.02)
Heart palpitations	1.03(0.63-1.66)	1.17(0.72-1.89)	1.14(0.49-2.64)	0.92(0.65-1.32)	1.00(0.98-1.02)
Tingling	0.81(0.488-1.34)	0.92(0.56-1.54)	0.82(0.34-1.95)	0.73(0.46-1.14)	1.00(0.98-1.02)
Irritated	1.02(0.63-1.65)	1.18(0.73-1.90)	1.34(0.58-3.07)	0.94(0.66-1.34)	1.00(0.98-1.02)
Depression	1.05(0.67-1.66)	1.10(0.69-1.76)	1.54(0.69-3.42)	0.96(0.68-1.34)	1.00(0.98-1.02)
Poor concentration	1.06(0.63-1.78)	0.93(0.55-1.59)	1.49(0.61-3.65)	0.82(0.52-1.28)	0.97(0.91-1.03)
Short term memory	1.00(0.61-1.62)	1.14(0.70-1.85)	1.35(0.58-3.13)	0.78(0.51-1.18)	1.00(0.98-1.02)
Perspire	1.00(0.55-1.74)	1.11(0.65-1.90)	1.22(0.46-3.29)	0.72(0.42-1.23)	1.01(0.99-1.03)
Button	**3.03(1.22-7.50**)	2.47(0.94-6.45)	**8.93(1.71-46.5)**	1.47(0.85-2.54)	1.02(0.99-1.05)
Reading	1.57(0.92-2.67)	1.63(0.94-2.83)	**2.95(1.16-7.54)**	1.08(0.74-1.57)	1.01(0.99-1.03)
Fam mem	1.08(0.63-1.87)	1.01(0.59-1.73)	1.45(0.56-3.78)	0.90(0.56-1.45)	1.00(0.97-1.03)
Chest	0.96(0.57-1.60)	0.94(0.57-1.57)	1.12(0.46-2.76)	0.62(0.38-1.04)	1.00(0.98-1.02)
Notes	1.54(0.88-2.71)	**1.82(1.00-3.32)**	**2.82(1.04-7.63)**	1.19(0.81-1.75)	1.00(0.97-1.02)
Check door	1.17(0.74-1.86)	1.43(0.85-2.39)	1.53(0.68-3.48)	1.09(0.77-1.53)	1.00(0.98-1.02)
Headache	1.11(0.66-1.85)	1.03(0.60-1.77)	1.04(0.43-2.52)	0.97(0.67-1.39)	0.98(0.96-1.01)
Less sex	0.85(0.53-1.38)	0.88(0.54-1.43)	0.66(0.28-1.54)	0.77(0.51-1.15)	0.99(0.96-1.02)
Q16 score	1.32(0.60-2.92)	1.35(0.53-3.42)	1.46(0.38-5.63)	0.93(0.55-1.56)	0.98(0.96-1.01)
Q16 score50	1.06(0.66-1.71)	1.10(0.68-1.79)	1.56(0.68-3.59)	0.82(0.56-1.20)	1.00(0.98-1.02)
Q16 score75	1.12(0.65-1.92)	1.29(0.76-2.20)	2.06(0.80-5.25)	0.87(0.55-1.37)	1.01(0.99-1.03)

Confounder: Age, level of education, drugs, current smoking, alcohol consumption, household income, language, past pesticide poisoning

4. Discussion

This study showed that Q16 symptoms used as the neurotoxic outcome in the study, are more prevalent among women currently living or working on farms compared to those living in nearby towns and, those who have a history of living on farms compared to those who have lived in nearby towns. This suggests that women living and working on farms are showing neurotoxic effects likely due to pesticides exposure on farms. The neurotoxic effect of pesticide exposure was found even when controlling for pesticide poisoning which have not previously been demonstrated with the Q16 questionnaire. Previous studies in Nicaragua and California have shown significantly higher positive symptoms responses in those that experienced poisoning compared to a non-poisoned group (Rosenstock et al 1991, Steenland et al 1994, Wesseling et al 2002). This is also the first study that has found an association between neurotoxicity and pesticide exposure only in women.

The study results showed no significant association between urinary metabolite levels of organophosphates, the most commonly used neurotoxic pesticides worldwide (Van der Schans et al 2013, Barr et al 2006) and in South Africa and the Q16 outcomes. The median levels of DAP metabolites in this study (134 μg/g of creatinine) were lower than that measured in a previous study in the Western Cape among farm workers (1587.5 μg/g creatinine (Dalvie et al 2011). In this study median DAP levels were also at the low end of the spectrum when compared to those of the Netherlands farm workers in another setting (296.0 μg/g creatinine) (Ye et al 2008). The reason for no positive associations of DAP metabolites with Q16 outcomes could be therefore due to low levels of total organophosphate pesticide exposure of the female participants in this study. The low level OP exposure is

probably due to the fact that only two of the farm workers reported that they were applicators. Another reason for the lack of association between OP metabolites can be due to the lack of specificity and sensitivity of the Q16 questionnaire. (Bast-Pettersen et al 2006) and that more sensitive neurotoxic test are required to explore this association.

Cis and trans-DCCA are metabolites for permethrin, cypermethrin and cyfluthrin that are commonly used on farms in the Western Cape crop farming; DBCA, is the metabolite of deltamethrin and 4F3PBA, a metabolite of cyfluthrin which are also both commonly used on Western Cape farms. 3PBA is a non-specific metabolite for common synthetic pyrethroids (Barr et al 2008). The median PYR metabolites measured in this study in both the Farm and Town Groups (6.60 μg/g creatinine and 5.26 μg/g creatinine respectively) was higher than those measured in the general population in other settings such as the Mexican study, MICASA (Trunnelle et al 2014), and the two USA population based studies NHANES data set 1999-2002 and CHAMACOS cohort with U.S. National Health and Nutrition Examination Survey data set 1999–2002.

We could not find another epidemiological study that have investigated the relationship between pyrethroid levels and neurotoxic outcomes but altered nerve functioning has been found in rats dosed with pyrethroid compounds through intracerebral dosing experiment (Soderlund et al 2002).

The consistent positive associations between PYR metabolites, cis- DCCA, trans DCCA , DBCA and Q16 symptoms should be studied further using sensitive neurotoxic outcomes

such as World Health Organisation Neurobehavioral Core Test Battery, The Brief Symptom Inventory and vibration sense threshold testing. With most of the positive associations with the three PYR matabolites not significant, this also indicates lack of statistical power in the current study and that a bigger sample size would be required for future studies.

It is interesting that the levels of OP and PYR metabolites amongst women in the Town Group were also substantially higher than those in general populations (Trunnelle et al 2014). This indicates that those residents who live in towns are also exposed to pesticides. The most likely pesticide exposures in rural towns include household pesticide and environmental exposure to agricultural pesticides.

A key limitation in this study is the cross-sectional design; consequently it cannot be established with certainty if the associations are the result of a temporal relationship between pesticide exposure and outcomes. The short half-lives (< 48 hours) of the pesticides in the body (Roberts and Reigart, 1999) is particularly relevant here as exposures would be variable and one spot urinary sample is not an ideal indicator of exposure. A longitudinal design whereby pesticide exposure especially urinary pesticide metabolites and neurotoxic outcomes are measured repeatedly over time would be more powerful. With respect to the comparison of Q16 symptoms between the Farm Group and Town Group, the healthy worker effect commonly observed in cross-sectional studies may have resulted in farm workers affected by pesticides to move to towns and thereby reducing the level of neurotoxicity in the Farm Group. However, the study results show Q16 symptoms were significantly higher in the Farm Group (Table 5 a) despite a possible Health Worker Effect. Additionally, Q16 symptoms were

significantly higher among women with a history of ever living and/or working on farm compared to those not. (Table 5a). Furthermore sub-analyses excluding town women who had previously lived or worked on farm from the analyses did not change the results found. Another important limitation in the study is the fact that age, income and employment status in the Farm Group and Town Group were different. These variables were not found to have strong associations with the Q16 symptoms in bivariate analysis and age and income were controlled for in multivariate analysis as they were included apriori. There might, however, have been residual confounding especially with income as the only indicator of socio-economic status. The most important limitations in the study was a lack of a sensitive outcomes due to a low budget, and the cross-sectional design which precludes the determination of the temporal effects and also a lack of statistical power due to a too small sample size. With a bigger budget, a larger study cohort study incorporating sensitive neurotoxic outcomes and multiple pesticide bio-monitoring measurements could have been conducted.

5. Conclusion

This study found that urinary levels of DAP metabolites of rural women in the Western Cape to be lower than those in other settings, but PYR metabolites to be higher than those in other settings. The prevalence of all Q16 symptoms was higher amongst farm women compared to non-farm women. Three urinary pyrethroids metabolites (cis- DCCA, trans DCCA , DBCA) were positively associated with at least 12 of the Q16 symptoms adjusting for confounders. These results should be explored further in a bigger longitudinal study using more sensitive neurotoxic measures. The study results highlight the need to develop strategies to reduce pesticide exposure among women farm workers and residents.

6. Acknowledgment

This study was supported by the Women on Farms Project and the University of Cape Town. Motsoeneng Portia Mamonyowe is sponsored by the Centre for International Health of the Ludwig-Maximilian-University, Munich, Germany (CIHLMU) and Department of Health/Education Free State.

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Supplementary material to the journal manuscript

Supplementary Table 1: Participation of rural women participants in the study

	N(%)		
Area	**Farm group**	**Town group**	**Total**
Ceres	23(19)	19 (21)	42 (20)
Grabouw	35(29)	3(3)	38(18)
Paarl	16(13)	23(26)	39(19)
Stellenbosch	25(21)	22(24)	47(22)
Worcester	22(18)	23(26)	45(21)
Total	121 (100)	98(100)	211(100)

Supplementary table 2a, b: Unadjusted odd ratios for associations between Q16 outcomes and possible confounders.

		Confounder variables. Odds Ratio (95% Confidence Interval)					
	Prevalence, (%) (n=211)	Age (years)	Education	Alcohol	Household income	Poisoning	Drugs
Tired	55%	1.00(0.98-1.00)	1.00(0.95-1.07)	0.92(0.64-1.33)	0.99(0.99-1.00)	0.99(0.40-2.43)	1.57(0.38-6.40
Heart palpitations	41%	0.98(0.96-1.00)	1.02(0.95-1.10)	0.93(0.61-1.42)	1.00(0.99-1.00)	1.09(0.40-2.98)	2.17(0.53-8.89)
Tingling	37%	0.99(0.97-1.01)	1.05(0.97-1.14)	1.02(0.65-1.59)	0.99(0.99-1.00)	1.19(0.44-3.28)	2.37(0.58-9.72)
Irritated	38%	0.99(0.98-1.01)	1.01(0.94-1.09)	0.96(0.62-1.49)	0.99(0.99-1.00)	1.16(0.43-3.19)	2.31(0.57-9.45)
depression	44%	0.99(0.98-1.01)	0.99(0.93-1.07)	1.10(0.73-1.67)	1.00(0.99-1.00)	1.02(0.37-2.78)	1.00(0.14-7.20)
Poor concentration	26%	0.98(0.95-1.00)	1.03(0.94-1.13)	1.18(0.68-2.03)	1.00(0.99-1.00)	0.86(0.21-3.54)	1.72(0.24-12.49)
Short term memory	41%	0.98(0.97-1.00)	1.04(0.97-1.12)	1.04(0.68-1.60)	1.00(0.99-1.00)	1.08(0.40-2.95)	2.15(0.53-8.79)
perspire	21%	0.97(0.94-1.00)	1.10(0.99-1.22)	1.21(0.67-2.21)	1.00(0.99-1.00)	1.04(0.25-4.31)	¥
button	5%	0.98(0.93-1.03)	1.16(0.90-1.48)	1.89(0.49-7.31)	1.00(0.99-1.00)	2.49(0.32-19.68)	¥
reading	22%	0.97(0.94-0.99)	1.00(0.91-1.10)	1.10(0.61-1.95)	1.00(0.99-1.00)	0.49(0.07-3.53)	1.98(0.27-14.42)
Fam mem	24%	0.98(0.96-1.00)	1.13(1.01-1.26)	0.87(0.50-1.53)	1.00(0.99-1.00)	0.93(0.23-3.85)	1.86(0.26-13.53)
Chest	31%	0.98(0.96-1.00)	1.05(0.97-1.15)	1.30(0.79-2.14)	1.00(0.99-1.00)	1.87(0.75-4.67)	1.42(0.20-10.30)
Notes	24%	0.98(0.96-1.00)	1.01(0.92-1.10)	0.95(0.54-1.66)	1.00(0.99-1.00)	1.95(0.70-5.43)	¥
Check door	43%	1.00(0.97-1.00)	1.03(0.96-1.10)	1.40(0.91-2.15)	1.00(0.99-1.00)	1.90(0.87-4.11)	1.02(0.14-7.37)
Headache	70%	0.99(0.97-1.00)	1.00(0.95-1.06)	1.14(0.82-1.59)	1.00(0.99-1.00)	0.95(0.42-2.16)	1.25(0.31-5.10)
Less sex	53%	0.99(0.97-1.00)	1.02(0.95-1.10)	1.12(0.73-1.71)	1.00(0.99-1.00)	0.83(0.30-2.27)	1.67(0.41-6.83)
Q16 score		0.98(0.98-0.99)	1.02(1.00-1.04)	1.07(0.95-1.20)	1.00(1.00-1.00)	1.22(0.93-1.60	1.66(1.04-2.64)
		Coefficient 95% Confidence Interval					
Q16 score 50		-0.00(-0.10- -0.00)	0.02(-0.01-0.04)	0.04(-0.095-0.18)	-0.00(-0.00—7.19)	0.55(0.18-0.93)	-0.00(-0.00-0.00)
Q16score75		-0.01(-0.10- -0.00)	0.02(-0.01-0.04)	0.09(-0.03-0.20)	-0.00(-0.00-1.26)	0.34(0.18-0.66)	0.00(-0.00-0.00)

*p<0.1

Supplementary table 2b: Unadjusted odd ratios for association between Q16 outcomes and possible confounders.

Confounder variables. Odds Ratio (95% Confidence Interval)			
	Current smoke	Language	Farm vs. town dwellers
Neurotoxic outcomes			
Tired	0.90(0.64-1.29	0.93(0.71-1.24)	1.58(1.07-2.34)
Heart palpitations	0.79(0.52-1.21)	0.87(0.65-1.15)	1.67(1.05-2.65)
Tingling	0.79(0.49-1.19)	0.86(0.65-1.52)	1.66(1.02-2.67)
Irritated	0.69(0.45-1.07)	0.96(0.72-1.27)	1.94(1.19-3.17)
depression	0.94(0.63-1.42)	0.97(0.74-1.30)	1.50(0.97-2.31)
Poor concentration	1.17(0.68-2.00)	1.01(0.74-1.39)	1.22(0.71-2014)
Short term memory	0.93(0.61-1.41)	0.97(0.731.29)	1.52(0.97-2.39)
perspire	1.00(0.55-1.78)	1.00(0.70-1.40)	1.44(0.78-2.69)
button	2.02(0.52-7.83)	1.24(0.66-2.36)	1.08(0.31-3.84)
reading	0.76(0.43-1.35)	1.00(0.71-1.39)	1.40(0.76-2.56)
Fam mem	0.80(0.46-1.39)	0.92(0.67-1.29)	1.28(0.72-2.29)
Chest	0.70(0.43-1.14)	0.86(0.64-1.16)	2.04(1.17-3.55)
Notes	0.80(0.46-1.39)	1.04(0.74-1.45)	1.86(1.00-3.45)
Check door	0.95(0.63-1.43)	1.08(0.81-1.43)	1.78(1.13-2.81)
Headache	0.93(0.67-1.28)	0.95(0.70-1.28)	1.81(1.26-2.59)
Less sex	0.80(0.53-1.21)	1.12(0.81-1.53)	0.88(0.58-1.36)
Q16 score	0.83(0.74-0.94)	0.99(0.96-1.03)	1.53(1.37-1.75)
	Coefficient 95% Confidence Interval		
Q16 score 50	-0.004(-0.14-0.13)	-0.15(-0.43-0.13)	-0.00(-0.00-0.00)
Q16score75	0.007(-0.10-0.12)	-0.11(-0.35-0.13)	0.00(-0.00-0.00)

*p<0.1

Metabolites Distribution between Farm and Town Group

Figure 1 OPs metabolites

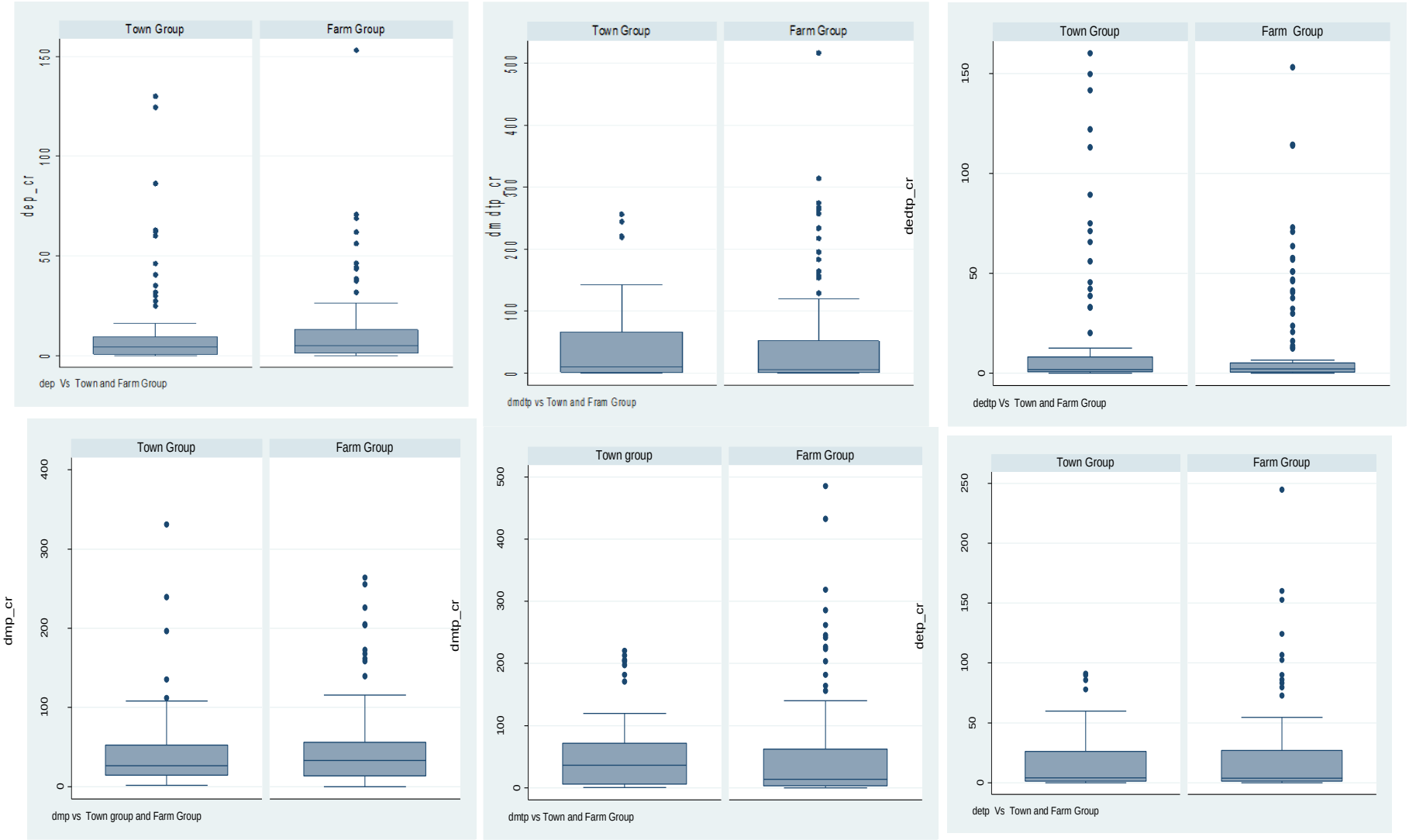
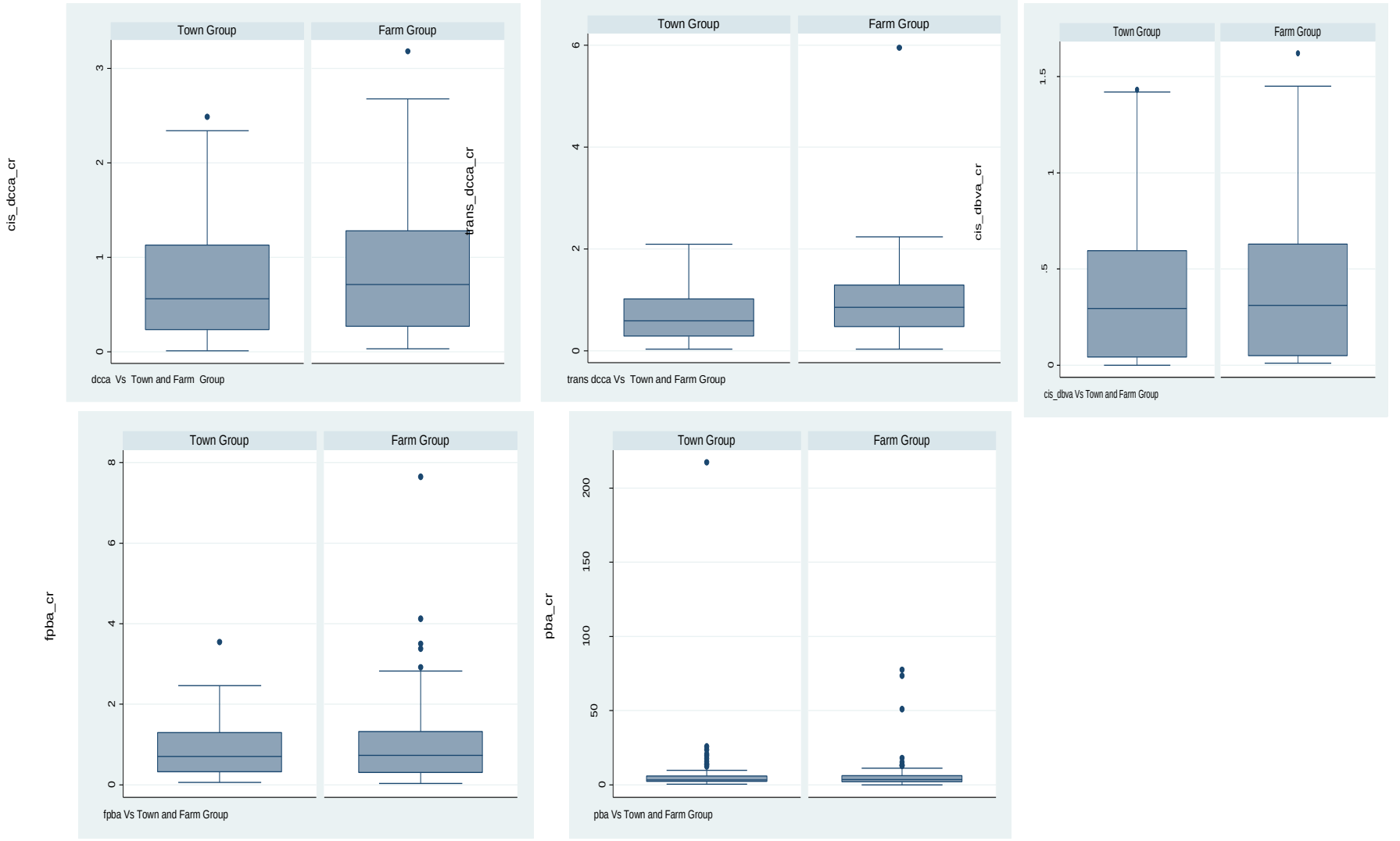


Figure 2 PYR metabolites



Part D Appendices

A 1

English Questionnaire

Health effects due to pesticide exposure amongst rural women in the Western Cape

UNIVERSITY OF CAPE TOWN

Study Number _____

Date _____

Area _____

Farm Name _____

Name of Interviewer _____

GENERAL INSTRUCTIONS

Thank you for agreeing to take part in this study.

We will work through the questionnaire as follows: I will ask the questions and give you the answer choices and tick or circle the answers you give me in the questionnaire. Choose the answer that is the closest to how you feel.

Please note that there are no right or wrong answers to the questions asked. Please feel free to answer just what you think. You may stop at any time if you do not want to carry on with these questions. Your answers are

confidential and will not be shared with anyone. Only the research staff will have access to the questionnaire once it has been completed.

Section 1: DEMOGRAPHIC CHARACTERISTICS

We would like to ask you a few questions about yourself.

1.1 How old are you? _____ (years**)**

Date of birth ____/_____/_____

1.2 What is the highest level of education you have passed?

Less than one year completed	1
Sub A/Class 1/Grade 1	2
Sub B/Class 2/Grade 2	3
Standard 1/Grade 3	4
Standard 2/Grade 4	5
Standard 3/Grade 5	6
Standard 4/Grade 6	7
Standard 5/Grade 7	8
Standard 6/Grade 8	9
Standard 7/Grade 9	10
Standard 8/Grade 10	11
Standard 9/Grade 11	12
Standard 10/Grade 12	13
Further studies – incomplete	14
Diploma/other post school – complete	15
Degree	16

1.3 Which main language do you speak at home? _____

Section 2: HOUSEHOLD FACTORS

2.1 Is the house you live in:

Owned by your family	**1**
Rented	**2**
Owned by the owner of the farm	**3**
Other (please specify)	**4**

Specify _____

2.2 Does your house have:

		Yes	No
A	**Electricity**		
B	**A radio**		
C	**A television**		
D	**A landline telephone**		
E	**A fridge**		
F	**A computer**		
G	**A washing machine**		
H	**A cell phone (anybody)**		

2.3 How many people usually live and sleep in your household?

Number of people

Section 3: ECONOMIC FACTORS

Now we would like to ask a few questions about you and the work that you do.

3.1 What kind of work do you do? (If working, please tell me your occupation. For example, Farmer, Street Trader, Primary School Teacher, Domestic Worker)

Not working	**No**
Working	**Yes**

If working, specify	

3.2 Please indicate which of the following are your sources of income. Please answer this question whether or not you are working.

		Yes	No
A	**Work**		
B	**Spouse/partner**		
C	**Parents**		
D	**Brothers and/or sisters**		
E	**Children**		
F	**Child Support Grant**		
G	**State Old Age Pensions**		
H	**Disability Grant**		
I	**Care Dependency Grant**		
J	**Foster Care Grant**		
K	**Grants-in-Aid**		
L	**Workman's Compensation Fund**		
M	**Other (Please specify)**		

3.3 What is your household income? _____

3.4 How often do the people in your family go hungry or have no food to eat?

Never	**0**
Seldom	**1**
Sometimes	**2**
Often	**3**

3.5 During which months of the year do you go hungry? **_____** (months of year).

Section 4. RESIDENTIAL HISTORY

Now I'd like to ask you a few questions about the places where you have lived in your lifetime:

4.1 Where do you currently live (Town, city, farm)? _____

How long have you lived here? _____ (Years/Months)

If on a farm,

4.2 What kind of farm is this? (what is grown here?) _____

4.2.1 Is this an export farm? _____ (Yes, No)

If yes, where are crops exported to? _____ (countries)

4.2.2 Is this a Tesco farm _____ (Yes, No)

4.3 How far from your house is the nearest vineyard/orchard? _____ (meters)

4.4 Are pesticides sprayed on the vineyard/orchard during the year? ____ (Yes/No)

4.5 When last was pesticides applied in the vineyard/orchard? _____ (number of days)

IF YES, complete the following:

4.5 How many months a year are pesticides applied on the farm _____

How many days per month are pesticides applied during the spraying months? _____

Number of days per year _____

4.6 Does the pesticides spraying come into the house? _____ (Yes/No)

4.7 Do you come into contact with pesticides

outside the house while spraying occurs (e.g.

hanging your washing? . _____ (Yes/No)

4.8 Who apply pesticides on this farm _____(Men, Women, Both)

4.9 Does the farmer provide you with protective clothes and equipment (including gloves,

masks, overalls, etc? _____

If yes, is it free of charge? _____ (Yes, No)

4.10 Are shower/washing rooms provided for workers coming into contact with pesticides?

_____ (Yes, No)

4.11 When spraying happens, are workers expected to work in sprayed blocks? ___(Yes, No)

4.12 How soon after spraying/application of pesticides do you return to the

vineyard/orchard? _____ (number of days)

4.13 What is the method of pesticide application? _____ (Tractor, backpack or other

methods)

4.14 What are the sources of drinking water at your house? _____

(municipal water, storage dam on mountain, borehole/spring, river water, farm

dam, rain water tank, etc)

4.15 What are the sources of water for recreational use (bathing, washing of clothes)

at your house? _____ (municipal water, storage dam on

mountain, borehole/spring, river water, farm dam, rain water tank, etc)

4.16 Did you live elsewhere before? _____ (Yes/No)

If YES,

Please provide the details about the places where you have lived **PREVIOUSLY** in the following table:

Places											
	1	2	3	4	5	6	7	8	9	10	11
Number of years											
Was pesticides											

4.12 Were you born on a farm where pesticides were applied? ___ (Yes/No)

Section 5. WORK HISTORY

Current job

5.1 What is your current occupation? _____

5.2 What is your job title? _____

5.3 For how many years have you worked in this job? _____ (years)

5.4 Do you currently work on a farm? ___ (Yes/No)

If you work on a farm,

5.5 Are you a permanent or seasonal farm worker? _____

5.6 If you do not live on the farm you work at:

5.6.1 Which crops are produced on the farm _____

5.6.2 Is the farm you work on an export farm? _____ (Yes, No)

If yes, where are crops exported to? _____ (countries)

5.6.3 Is the farm you work on a Tesco farm? _____ (Yes, No)

5.7.1 Do you work in the field? _____ (Yes/No)

5.7.2 Do you apply (spray/mix) pesticides _____ (Yes/No)

5.7.3 If YES which pesticides do you use _____

_____

5.7.4 When last did you apply pesticides? _____ (number of days)

5.7.5 How many months a year do you apply pesticides? _____

How many days per month do you apply pesticides in the spraying months? _____

Total number of days per year _____

5.7.6 Do you drive a tractor while others spray pesticide? _____(Yes/No)

If yes, how many times per year? _____

5.7.7 Which Personal Protective Equipment do you use? _____

(Indicate with A = Apron, B = Boots, G = Gloves, M = Mask, O = Overalls, Gls = Goggles)

5.78 Is PPE provided free of charge? _____ (Yes, No)

Previous jobs

Please provide the details about your **PREVIOUS** work in the following table

	Previous										
	1	2	3	4	5	6	7	8	9	10	11
Numbe											
Work											
Occupa											
Job											
If on											
Do you											
Do/did											
How											
Were											
How											
Which											
*Indicate											

Section 6. ALCOHOL USE

6.1 Do you drink alcohol or did you drink before _____? (Yes/No)

If yes,

6.2 Have you ever felt that you should drink less alcohol? ____ (Yes/No)

6.3 Have people ever angered you by criticising your drinking habits? ____ (Yes/No)

6.4 Have you ever felt guilty or bad because you drink alcohol? ____ (Yes/No)

6.5 Have you ever had a drink early in the morning to make you

feel better or to get over a 'babalaas'? ____ (Yes/No)

Section 7. SMOKING AND OTHER DRUG USE

7.1 Have you ever smoked tobacco (cigarettes or pipe) for as long as a year? ____ (Yes/No)

('Yes' means at least 20 packs of cigarettes or 30 grams of tobacco in a lifetime or at least one cigarette per day for one year)

If Yes,

7.1.1 How old were you when you started smoking? ____ (years)

7.1.2 Do you smoke currently? ___ (Yes/No)

('Yes' means smoking tobacco in the last month or more)

7.1.3 If no, how old were you when you stopped smoking? _____

7.1.4 How much do/did you now smoke on average?

Number of cigarettes per day ____

Pipe tobacco in grams/week _____

7.1.5 Do you or did you inhale the smoke? ____ (Yes/No)

7.2 Have you been regularly exposed to tobacco smoke from other people smoking cigarettes or pipe in the last 12 months?

('Regularly' means on most days or nights)

7.3 Do you take drugs or have taken drugs before? _____ (Yes/No)

7.3.1 If YES, please state for how many years _____ (years)

Section 8. HOUSEHOLD PESTICIDE USAGE

8.1 Do you or any one in your house use pesticides in the garden

or in your home?____ (Yes/ No)

If yes, what do you use? _____

8.2 Do pesticide contaminated clothes get washed at home? ____ (Yes/ No)

8.4 If yes, does it get washed with the rest of the washing? _____ (Yes/ No)

8.5 Do you eat fruit or vegetables from your garden ? _____ (Yes / No)

8.6 Do you use empty pesticide containers at home for domestic

purposes? ____(Yes/ No)

8.7 **If yes,** what do you use them for? _____

Section 9 MEDICAL, REPRODUCTIVE AND RESPIRATORY HISTORY

9.1 Do you suffer from :

Asthma _____ (Yes/No)

Bronchitis _____ (Yes/No)

TB _____ (Yes/No)

Eczema _____ (Yes/No)

Hayfever _____ (Yes/No)

Farmers Lung _____ (Yes/No)

Other diseases: _____ (Yes/No) **if yes,** specify _____

9.2 What was your weight at birth _____

9.3 At what age did you reach puberty? _____

9.4 Did you ever experience pesticide poisoning that was confirmed by a doctor?

____(Yes, No)

If yes, how many times_____

9.5 Do you frequently feel/have :

Dizzy _____ (Yes/No)

Nauseas _____ (Yes/No)

Headaches _____ (Yes/No)

Skin, nose and/or eye irritation _____ (Yes/No)

Skin rashes _____ (Yes, No)

Nauseas and want to vomit (Yes, No)

Cold or open sores _____ (Yes, No)

Section 10 (Q16)

10.1. Are you abnormally tired? ____ (Yes / No)

10. 2. Do you have palpitations of the heart when you do not exert yourself? ____ (Yes/No)

10. 3. Do you often have painful tingling in some part of your body? ____ (Yes/No)

10. 4. Do you often feel irritated without any particular reason? ____ (Yes/No)

10. 5. Do you often feel depressed without any particular reason? ____ (Yes/No)

10.6. Do you often have problems concentrating? ____ (Yes/No)

10. 7. Do you have a short memory? ____ (Yes/No)

10. 8. Do you often perspire without any particular reason? ____ (Yes/No)

10. 9. Do you have any problems with buttoning and unbuttoning? ____ (Yes/No)

10.10 Do you generally find it hard to get the meaning from reading

newspapers and books? ____ (Yes/No)

10. 11.Have your relatives told you that you have a short memory? ____ (Yes/No)

10. 12. Do you sometimes feel a heavy feeling on your chest? ____ (Yes/No)

10. 13. Do you often have to make notes about what you must remember? ____ (Yes/No)

10. 14. Do you often have to go back and check things you have done such

as locking the door? ____ (Yes/No)

10. 15. Do you have a headache at least once a week? ____ (Yes/No)

10. 16. How many times do you have sex per week? ____ (Yes/No)

10. 16a. Do you think that this is less than most persons of your age? ____ (Yes, No)

Section 11. Time to pregnancy

11. 1. Have you ever been pregnant? _____ (Yes/No)

11. 2. If yes, how many times? _____

11. 3. List how many pregnancies ended in

Live birth ____

Stillbirth ____

Miscarriage ____

Ectopic/Tubal pregnancy ____

Other ____

11.4 FOR LIVE BIRTHS AND STILLBIRTHS ONLY (omit twins) Fill in the following

Table:

	Pregnancy

	1	2	3	4	5	6	7	8	9	10	11
Weight											
During											
Method											
Were											
If NO											
*oral (the											

Section 12. ALLERGIC HEALTH PROBLEMS

12.1 Have you had wheezing or whistling in your chest at any time

in the last 12 months? _____ (Yes/No)

If yes, go on to Question 12.2

If no, go on to Question 12.4

12.2 Have you been short of breath when the wheezing noise was present? _____ (Yes/No)

12.3 Have you had this wheezing or whistling when you did not have a cold or flu? ___ (Yes/No)

12.4 Have you been woken up with a feeling of tightness in your chest at any

time in the last 12 months? _____ (Yes/No)

12.5 Have you had an attack of shortness of breath that came on during the daytime when you were at

rest at any time in the last 12 months? ____ (Yes/No)

12.6 Have you been woken by an attack of coughing at any time in the last 12

months? _____ (Yes/No)

12.7 Have you ever had asthma? ____ (Yes/No)

If Yes, go on to Question 12.

If No, skip to next Question

12.8 If yes, was this confirmed by a doctor?

12.9 How old were you when you were told you have asthma? _____ (years)

12.10 Have you had an attack of asthma in the last 12 months? _____ (Yes/No)

12.11 Are you using any medicines, including inhalers/pumps, nebulizers,
syrups or tablets, for asthma or breathing problems? ____ (Yes/No)

12.12 When you are near animals, feather or in a dusty part of the house, do you ever get a feeling of
tightness in your chest? ____ (Yes/No)

12.13 Do you get a tight chest or wheeze when you work in the:

12.13.1 Vineyard/Orchard ____ (Yes/No)

12.13.2 Packing room ____ (Yes/No)

12.13.3 Other ____ (Yes/No) If yes, specify _____

12.14 Have you had any nasal allergies including hay fever or itchy and watery
eyes/nose in the last 12 months? ____ (Yes/No)

12.15 Do you get itchy/watery eyes or nose when you work in the:

12.14.1 Vineyard/Orchard ____ (Yes/No)

12.14.2 Packing room ____ (Yes/No)

12.14.3 Other ____ (Yes/No) If yes, specify _____

12.16 Have you had any skin problems in the last 12 months? ____ (Yes/No)

12.17 Do you get red, itchy pimples when you work in the:

12.17.1 Vineyard/Orchard ____ (Yes/No)

12.17.2 Packing room ____ (Yes/No)

12.17.3 Other ____ (Yes/No) If yes, specify _____

Thank you for taking part in this study

A2

Afrikaans Questionnaire

Gesondheids gevolge weens blootstelling aan gifstowwe op landlike vrouens in die Weskaap

UNIVERSITEIT VAN KAAPSTAD

Vraelysnommer **_____**

Datum **_____**

Area **_____**

Naam van plaas **_____**

Naam van

Onderhoudvoerder _____

ALGEMENE INSTRUKSIES

Dankie dat jy ingestem het om aan hierdie studie deel te neem.

Ons gaan soos volg deur die vraelys werk: Ek sal die vrae vra en aan jou die moontlike antwoordkeuses gee en ek sal jou antwoorde merk en omsirkel in die vraelys. Kies die antwoord wat die naaste is aan hoe jy voel.

Let asseblief op dat daar geen regte of verkeerde antwoorde op die vrae is nie. Antwoord asseblief soos jy voel. Jy kan enige tyd ophou as jy nie wil voortgaan met die vrae nie. Jou antwoorde is vertroulik en sal aan niemand anders bekend gemaak word nie. Slegs die navorsingspersoneel sal toegang tot die vraelys hê nadat dit voltooi is.

Afdeling 1: DEMOGRAFIESE BESONDERHEDE

Ons wil jou graag ’n paar vrae oor jouself vra.

1.1 Hoe oud is u? _____(jaar)

Geboortedatum ____/_____/_____

1.2 Wat is die hoogste vlak van onderrig wat jy geslaag het?

Minder as een jaar voltooi	1
Sub A/Klas 1/Graad 1	2
Sub B/Klas 2/Graad 2	3
Standerd 1/Graad 3	4
Standerd 2/Graad 4	5
Standerd 3/Graad 5	6
Standerd 4/Graad 6	7
Standerd 5/Graad 7	8
Standerd 6/Graad 8	9
Standerd 7/Graad 9	10
Standerd 8/Graad 10	11
Standerd 9/Graad 11	12
Standerd 10/Graad 12	13
Verdere onderrig – onvoltooid	14
Diploma/ander naskools – voltooid	15
Graad	16

1.3 Wat is die taal wat die meeste tuis gepraat word? _____

Afdeling 2: INLIGTING OOR HUISHOUDING

2.2 Is die huis waarin jy woon:

Die eiendom van jou gesin	**1**
Gehuur	**2**

Die eiendom van die plaaseienaar	**3**
Ander (spesifiseer asb.)	**4**

Spesifiseer asseblief _____

2.2 Is die volgende in jou huis:

		Ja	Nee
A	**Elektrisiteit**		
B	**'n Radio**		
C	**'n Televisie**		
D	**'n Landlyntelefoon**		
E	**'n Yskas**		
F	**'n Rekenaar**		
G	**'n Wasmasjien**		
H	**'n Selfoon (enige iemand)**		

2.3 Hoeveel mense woon en slaap gewoonlik in jou huishouding?

	Aantal mense

Afdeling 3: EKONOMIESE FAKTORE

Nou wil ons graag 'n paar vrae oor jou en die werk wat jy doen, vra.

3.2 Watter soort werk doen jy? (Indien jy werk, wat is jou beroep? Byvoorbeeld boer, straathandelaar, laerskoolonderwyser, huishulp)

Werk nie	**Nee**
Werk	**Ja**
Indien u werk, spesifiseer	

3.2 Dui asseblief aan watter van die volgende is jou bronne van inkomste. Antwoord asseblief hierdie vraag – of jy werk of nie.

		Ja	Nee
A	Werk		
B	Eggenoot/lewensmaat		
C	Ouers		
D	Broers en/of susters		
E	Kinders		
F	Kinderonderhoudstoelae		
G	Staatsouderdomspensioen		
H	Ongeskiktheidstoelae		
I	Sorgafhanklikheidstoelae		
J	Pleegsorgtoelae		
K	Hulptoelae		
L	Vergoeding vir beroepsbeserings		
M	Ander		

Indien ander, spesifiseer asseblief _____

3.3 Wat is u totaal huishoudelike inkomste? _____

3.4 Hoe gereeld ly die mense hier honger of het nie kos om te eet nie?(please tick**)**

Nooit	
Selde	
Soms	
Dikwels	

3.5 Gedurend watter maande van die jaar, ly u honger? _____

_____ (maande van die jaar)

Afdeling 4. LEWENSGESKIEDENIS

Nou wil ek jou graag ’n paar vrae vra oor die plekke waar u al in jou leeftyd gewoon het:

4.1 Waar woon jy nou? (Dorp, stad, plaas)? _____

Hoe lank woon jy al hier? _____(jare/maande)

Indien op 'n plaas woon nie, skip na vraag 4.15

4.2 Watter soort plaas is hierdie (waarmee word hier geboer)? _____

4.2.1 Is hierdie plaas 'n uitvoerplaas? ____ (Ja/Nee)

Indien ja, waarnatoe uitvoer hierdie plaas hul gewasse? _____

_____ (lande)

4.2.2 Is hierdie ,n Tesco plaas? ____ (Ja/Nee)

4.3 Hoe ver is jou huis van die naaste wingerd/lande? _____(meters)

4.4 Word gifstowwe gedurende die jaar op die wingerd/lande gespuit? ____ (Ja/Neee)

4.5 Wanneer laas was daar gifstowwe aangewend op die

wingerd/boord. _____ (aantal dae)

Indien Ja, Voltooi die volgende:

4.6 Hoeveel maande 'n jaar word gifstowwe op die plaas aangewend? _____

Hoeveel dae in die maand word gifstowwe aangewend gedurend die

bespuiting maande? _____

Aantal dae in ‘n jaar _____

4.7 Kom die gifstowwe in die huis in? ____ (Ja, Nee)

4.8 Kom u in kontak met gifstowwe buite die huis terwyl daar gespuit word?

(b.v. wanneer u wasgoed buitekant gaan op hang)? ____(Ja, Nee)

4.9 Wie wend gifstowwe aan op die plaas? _____ (Mans, vrouens, albei)

4.10 Voorsien die plaas eienaar/bestuurder u vir klere van beskerming en

Toerusting?(b.v. handskoene, oorpakke en maskers ens.) ____ (Ja/Nee)

Indien ja, is dit gratis? ____ (Ja/Nee)

4.11 Het die plaas ’n stort vir plaaswerkers wie in aanraking kom

met gifstowwe ____ (Ja/Nee)

4.12 Wanneer bespuiting plaasvind, word dit verwag van die werkers om in hierdie blokke te

werk wat kortliks gespuit was? ____ (Ja/Nee)

4.13 Nadat hulle die gifstowwe aangewend het, hoeveel dae daarna gaan u terug

wingerd/boorde toe? _____ (aantal dae)

4.14 Dui aan hoe u die gifstowwe aanwend:

Trekker met balkspuit _____ (Ja/Nee)

Trekker sonder balkspuit _____ (Ja/nee)

Rugsak _____ (Ja/Nee)

Quad bike _____ (Ja/Nee)

Ander _____ (Ja/Nee) Indien ja, spesifiseer _____

4.15 Waar kom die drinkwater in jou huis vandaan? _____
(Munisipale water, opgaardam op berg, boorgat/fontein, rivierwater, plaasdam,

reënwatertenk, ens.)

4.16 Waar kom die water vir gebruiksdoeleindes in jou huis vandaan (b.v. bad of klere

was)?_____ (munisipale water, opgaardam op berg,

boorgat/fontein, rivierwater, plaasdam, reënwatertenk, ens.)

4.17 Het u in die verlede erens anders gewoon? _____ (Ja/Nee)

Indien Ja,

Gee asseblief besonderhede van die plekke waar u **IN DIE VERLEDE** gewoon het in die volgende tafel

Plekke											
	1	2	3	4	5	6	7	8	9	10	11
Waar het u gewoon?											
Antal jare											
Was gifstowwe											

4.18 Was u gebore op ’n plaas waar hulle gifstowwe aangwend het? _____ (Ja/Nee)

Afdeling 5. WERKSGESKIEDINIS

Huidige werk

5.1 Wat is u huidige beroep? _____

5.2 Wat is u werkstitel? _____

5.3 Hoeveel jare doen u die werk? _____ (jare)

5.4 Is u ’n lid van ’n vakbond? ____ (Ja/Nee)

5.5 Werk u huidiglik op ’n plaas? ____ (Ja/Nee)

Indien u op’n plaas werk, gaan voort van vraag 5.6 af

Indien u nie op ’n plaas werk nie, skip na vraag 5.12

5.6 Is u ‘n permanent of seisoen plaaswerker? _____

5.7 Indien u nie op die plaas woon waar u werk:

5.7.1 Met watter soort gewasse boer hierdie plaas _____

5.7.2 Is hierdie plaas ‘n uitvoerplaas? ____ (Ja/Nee)

Indien ja, waarnatoe uitvoer hierdie plaas hul gewasse? _____

_____ (lande)

5.7.3 Die plaas waar u werk, is dit ’n Tesco plaas? ____ (Ja/Nee)

5.8 Werk u in die wingerd/boord? ___ (Ja/Nee)

5.9 Wend u gifstowwe aan? (mend/spuit) ___ (Ja/Nee)

5.9.1 Indien Ja, watter gifstowwe gebruik u? _____

_____ (name van die gifstowwe)

5.9.2 Wanneer laas het u gifstowwe aangewend? _____ (aantal dae)

5.9.3 Hoeveel maande ’n jaar wend u gifstowwe aan? _____(aantal maande)

Hoeveel dae in die maand word gifstowwe aangewend gedurend die bespuiting maande? _____

Aantal dae in ‘n jaar _____

5.10 Ry u ’n trekker terwyl anders, van agter die trekker, spuit? ____ (Ja/Nee)

Indien ja, hoeveel keer in ’n jaar? _____

5.11 Watter klere van beskerming dra u? _____ (Dui aan met V = Voorskoot, S = Steuwels, H = Handskoene, M = Masker, GM = Gasmasker, O = Oorpak, SB = Skermbril)

5.12 U klere van beskerming en toerusting, is dit gratis? ___ (Ja/Nee)

Vorige werk

Gee asseblief die besonderhede oor jou **VORIGE** werk met gifstowwe in die volgende tabel

	Vorige										
	1	2	3	4	5	6	7	8	9	10	11
Aantal											
Op ‘n											
Beroep											
Werksti											
Indien											
het u in											
Het u											
Hoevee											
Het u											
Hoevee											
Watter											
*Dui aan											

Afdeling 6. ALKOHOLGEBRUIK

6.1 Drink jy alkohol of het u al voorheen alkohol gedrink? ____(Ja/Nee)

Indien Ja,

6.2 Het jy al gevoel dat jy minder alkohol moet gebruik? ____(Ja/Nee)

6.3 Het jy al kwaad geword as mense jou drinkgewoontes kritiseer? ____(Ja/Nee)

6.4 Het jy al ooit sleg of skuldig gevoel oor jy alkohol gebruik? ____(Ja/Nee)

6.5 Het jy al ooit vroeg in die oggend gedrink om beter te voel of

om jou babelas beter te maak? ____ (Ja/Nee)

Afdeling 7. ROOK EN ANDER DWELM MIDDEL GEBRUIK

7.1 Het u al ooit al oor ‘n jaar tabak, sigarette of pyp gerook ? ____ (Ja/Nee)

(‘Ja’ beteken ten minste 20 pakke sigarette of 30 gramme van tabak in ‘n leeftyd of ten minste een sigaret ‘n dag vir een jaar)

Indien Ja,

7.1.1 Hoe oud was u toe u begin rook? ____ (jaar oud)

7.1.2 Rook u op die huidige oomblik? ___ (Ja/Nee)

(‘Ja’ beteken rook in die afgelope maand of meer)

7.1.3 Indien nee**,** hoe oud was u toe u ophou? _____ (jaar oud)

7.1.4 Hoeveel rook u of het u ongeveer gerook?

Aantal sigarette ‘n dag ____

Pyp tabak in gramme/week _____

7.1.5 Haal u of het u die rook ingehaal? ____ (Ja/Nee)

7.2 In die afgelope 12 maande, was u gereeld bloodgestel aan tabak rook van ander mense

wie sigarette en pyp rook? ____ (Ja/Nee)

(’Gereeld’ beteken op meeste dae en aande)

7.3 Neem u dwelmmiddels of het enige dwelmmiddels voorheen gebruik? ____ (Ja/Nee)

7.3.1 Indien Ja, dui asseblief aan vir hoeveel jare _____ (jare)

Afdeling 8. GEBRUIK VAN HUISHOUDELIKE GIFSTOWWE

8.1 Gebruik jy enige gifstowwe in jou tuin of in jou huis? ____ (Ja / Nee)

(bv. Target of Doom)

Indien JA – watter gifstowwe gebruik u? _____

_____

8.2 Werk enige ander persoon in die huis met gifstowwe? ____ (Ja/Nee)

8.3 Word klere wat met gifstowwe besmet is, by die huis gewas? ____ (Ja/Nee)

8.4 Indien JA, word dit saam met ander wasgoed gewas? _____ (Ja/ Nee)

8.5 Eet jy vrugte of groente uit jou tuin? _____ (Ja/ Nee)

8.6 Gebruik jy leë plaagdoderhouers tuis vir huishoudelike doeleindes? ____ (Ja/Nee)

8.7 Indien JA, waarvoor gebruik jy dit? _____

Afdeling 9. MEDIESE, VOORPLANTING EN ASEMHALING GESKIEDINIS

9.6 Lei u aan:

Asma _____ (Ja/Nee)

Brongitis _____ (Ja/Nee)

TB _____ (Ja/Nee)

Ekseem _____ (Ja/Nee)

Hooikoors _____ (Ja/Nee)

Boer se longe _____ (Ja/Nee)

Ander siekte: _____ (Ja/Nee) **indien ja,** spesifiseer _____

_____

9.7 Wat was u geboorte gewig? _____

9.8 Op watter ouderdom het u puberteit bereik? _____

9.9 Was u al ooit vergif deur gifstowwe wat bevestig was deur 'n dokter? ____(Ja, Nee)

Indien ja, hoeveel keer_____

9.10 Het u of voel u dikwels :

Duiselig ____ (Ja/Nee)

Mislik(naar) ____(Ja/Nee)

Hoofpyn ____ (Ja/Nee)

Prikkeling in u vel, neus of/en oog _____ (Ja/Nee)

Vel uitslag _____ (Ja/Nee)

Mislik (naar) en u wil opgooi ____ (Ja/Nee)

Verkoue of wonde wat oop is _____ (Ja/Nee)

Adeling 10 (Q16)

10.1 Voel u buitengewoon moeg ? (JA/NEE)

10.2 Het u hartkloppens al het u nie geoefen nie ? (JA/NEE)

10.3 Het u dikwels pynvolle prikkel sensasies in ‘n

gedeelte van jou liggaam ? (JA/NEE)

10.4 Voel u dikwels geirriteerd sonder enige rede ? (JA/NEE)

10.5 Voel u dikwels teneergedruk sonder enige rede ? (JA/NEE)

10.6 Het u dikwels probleme met konsentrasie ? (JA/NEE)

10.7 Is u kort van gedagte ? (JA/NEE)

10.8 Sweet u dikwels sonder enige rede ? (JA/NEE)

10.9 Het u enige probleme om u knope vas en los te maak ? (JA/NEE)

10.10 Vind u dit oor die algemeen moeilik om koerante en boeke te verstaan ? (JA/NEE)

10.11 Het u familie al vir u gese dat u kort van gedagte is ? (JA/NEE)

10.12 Voel u soms ‘n swaar drukking op u bors ? (JA/NEE)

10.13 Moet u dikwels notas maak oor dinge wat u moet onthou ? (JA/NEE)

10.14 Moet u dikwels teruggaan om seker te maak dat u sekere dinge

gedoen het bv. Of die deur gesluit is ? (JA/NEE)

10.15 Het u ‘n hoofpyn ten minste een keer per week ? (JA/NEE)

10.16a. Dink u dat dit minder is as ander persone van u ouderdom ? (JA/NEE)

Afdeling 11. TYD VAN SWANGERSKAP

11. 1. Was u al ooit swanger? _____ (Ja/Nee)

11. 2. Indien ja, hoeveel keer? _____

11. 3. Lys hoeveel keer toe u swanger was, het u swangerskap op ge-eindig in:

Lewendige geboortes ____

Dood geboortes ____

Miskraam ____

Ectopic/Swangerskap in die eierstok ____

Ander ____

11.4 VIR LEWENDIGE GEBOORTES EN DOOD GEBORTES ALLENLIK(nie tweelings

nie) Voltooi die volgende tafel: (gee 'n antwoord vir elke baba)

	Swangersk										
	1	2	3	4	5	6	7	8	9	10	11
Gewig											
Gedure											
Metode											
Het u											
Indien											
*mondeli											

11.5 Is gesonheidsdienste toeganklik vir u om die volgende by te woon:

Swangerskap ____ (Ja/Nee)

Indien ja, watter dienste (hospitaal, kliniek) _____

Geboorte aan u kinders ____ (Ja/Nee)

Indien ja, watter dienste (hospitaal, kliniek) _____

Ginekologiesesorg ____ (Ja/Nee)

Indien ja, watter dienste (hospitaal, kliniek) _____

Seksuele oorsending siekte ____ (Ja/Nee)

Indien ja, watter dienste (hospitaal, kliniek) _____

Ander voorplantingsdienste ____ (Ja/Nee)

Indien ja, spesifiseer watter probleeme en watter dienste (hospitaal, kliniek)

_____

Adeling 12. ALLERGIESE GESONDHEIDSPROBLEEME

12.1 In die afgelope 12 maande, het u 'n asemfluit of 'n fluit van keel op u

bors al ooit gehad al? **_____** (Ja/Nee)

Indien ja, gaan voort met 12.2

Indien nee, gaan voort met 12.4

12.2 Was u kort van asem toe die geluid van die asemfluit teenwoordig was? ____ (Ja/Nee)

12.3 Het u die asemfluit/asemhyg gehad terwyl u nie griep of verkoue gehad het nie ____ (Ja/Nee)

12.4 Het u al ooit wakker kom word deur ‘n gevoel van u bors wat toe trek ? _____ (Ja/Nee)

12.5 In die afgelope 12 maande, het u al ooit ‘n aanval gehad deur kort van asem
wees gedurend die dag terwyl u rustig gewees het? ____ (Ja/Nee)

12.6 In die afgelope 12 maande, het u al ooit wakker kom word deur ‘n aanval
van hoes ? _____ (Yes/No)

12.7 Het u al ooit aan asma gelei? ____ (Ja/Nee)

Indien ja, gaan voort met 12.7.1

Indien nee, skip na vraag 12.8

12.7.1 Indien ja, was dit bevestig deur ‘n dokter?

12.7.2 How oud was u toe u ingelig was dat u aan asma lei? _____ (jare oud)

12.7.3 In die afgelope 12 maande, het u ‘n aanval van asma gehad? ____ (Ja/Nee)

12.7.4 Gebruik u enige medisyne, ingesluit met pompe/opsnuifers, nebulizers,
stroop of pille vir asma of asemhalingsprobleeme? ____ (Ja/Nee)

12.8 Wanneer u naby diere of in stowwerige gedeeltes is van die huis, kry u ooit
’n gevoel van toetrek in u bors? _____ (Ja/Nee)

12.9 As u op ‘n plaas werk, trek u bors toe of ‘n asemfluit wanneer u in die:

12.9.1 Wingerd/boord werk ____ (Ja/Nee)

12.9.2 Pakstoor werk ____ (Ja/Nee)

12.9.3 Ander ____ (Ja/Nee) Indien ja, spesifiseer asseblief _____

12.10 In die afgelope 12 maande, het u al ooit nasaal allergies probleeme saam met hooikoors of kraperige en waterige oe en neus gehad? ____ (Ja/Nee)

12.11 As u op ‘n plaas werk, kry u kraperige/waterige oe of neus wanneer u in die:

12.11.1 Wingerd/boord werk ____ (Ja/Nee)

12.11.2 Pakstoor werk ____ (Ja/Nee)

12.11.3 Ander ____ (Ja/Nee) Indien ja, spesifiseer asseblief _____

12.12 In die afgelope 12 maande, het u enige vel probleeme gehad? _____ (Yes/No)

12.13 As u op ‘n plaas werk, kry u rooi kraperige puisies wanneer u in die:

12.13.1 Wingerd/boord werk ____ (Ja/Nee)

12.13.2 Pakstoor werk ____ (Ja/Nee)

12.13.3 Ander ____ (Ja/Nee) Indien ja, spesifiseer asseblief _____

12.4 In die afgelope 12 maande, apart van u werk, was u blootgestel aan enige gifstowwe? ____ (Ja/Nee)

DANKIE DAT U AAN HIERDIE STUDIE DEELGENEEM HET

B Consent Form

Consent to participate in a survey investigating health effects due to pesticide exposures on women from the rural Western Cape

1. **Title of research project**

Health effects due to pesticide exposure amongst rural women residents in the Western Cape

2. Names of the researchers

Mohamed Aqiel Dalvie (BSc, Honours, MSc, PhD)

Algernon Africa (BTech)

Vicky Major (MSc)

Lungiswa Giwane

Jean May

3. Purpose of research

This study is being conducted by The University of Cape Town to investigate the health effects of pesticides on women in the Western Cape. We would like to conduct measurements on you. The study will be of benefit to women living in farming areas and who are exposed to pesticides in the environment.

4. Description of the research project

Your son will be required to produce a urine and 2 blood samples and undergo a respiratory test and you will complete a questionnaire.

a) **Questionnaire:** A member of our study team will interview you in privacy to complete the questionnaire. You will be asked questions about general personal information, your general medical health, and lifetime environmental exposure to pesticides.

b) **Urine sample:** Your will produce a urine sample (in privacy) in a plastic container and give it to the nurse. The sample will be analysed for pesticides.

c) **Blood sample:** A nurse will draw 14 ml blood from a vein on your arm. The blood will be analysed for to test your allergy status and for pesticide residues.

d) **Respiratory test:** A nurse will perform a respiratory test.

5. **Risks and discomforts of the research**

a) **From the blood tests**. A single needle stick will be felt when the blood is taken. Sometimes a small bruise may occur from the needle stick, but this is minor and will heal quickly. The total amount of blood taken is quite small and the body will quickly replace it. Blood samples will be used only to measure allergy and will be destroyed at the end of the study.

b) **From the questionnaire.**

There are minimal risks associated with completing the questionnaire. The only risk is a loss of confidentiality about personal information but the data will be seen only by study personnel. All reports will present aggregate data in which individuals will not be identifiable.

6. Expected benefits to you and others

Your health will be assessed for free.

Refreshments will be provided as compensation for time in participating in the study.

This study on the health effects of pesticides will benefit women living in farming areas and who are exposed to pesticides in the environment. Steps can be taken to reduce or prevent exposure to the pesticides or the pesticide can be banned. The blood and urine results can be used to develop ways in which the amount of pesticides in your body can be monitored.

7. **Costs to you resulting form participation in the study**

The study is offered at no cost to you.

8. Confidentiality of information collected

Study participants will not be personally identified in any reports on this study. The records will be kept confidential to the extent provided by law. The records, including any identification information, will be destroyed after the results have been fully analysed.

9. Documentation of the consent

One copy of this document will be kept together with our research records on this study. A second copy will be given to you to keep.

10. **Contact person.**

You may contact the following person for answers to further questions about the research, your rights, or any injury you may feel is related to the study.

Name of person: MA Dalvie (The principal investigator) telephone 021 4066610

Name of person: Lamees Emjedi (Ethics administrator) telephone 021 4066492

11.Voluntary nature of participation

Your participation in this project is voluntary. Subsequent to your consent, you may refuse to participate in or withdraw from the study at any time without penalty or loss of benefits to which you may otherwise be entitled.

12. **Consent of the participant**

I have read the information given above. I understand the meaning of this information. I hereby consent to participate in the study.

_____ _____

Printed name of participant **signature**

_____ _____

Date

_____ _____ _____

Interviewers (print) **signature** **Date**

_____ _____ _____

Witness (print) **signature** **Date**

Date:_____

Study Number _____

C

Letter of Approval from Research Ethics Committee

UNIVERSITY OF CAPE TOWN

Health Sciences Faculty
Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Telephone [021] 406 6626 • **Facsimile** [021] 406 6411
e-mail: shuerta.thomas@uct.ac.za

13 October 2009

REC REF: 393/2009

Dr MA Dalvie
Public Health

Dear Dr Dalvie

PROJECT TITLE: HEALTH EFFECTS DUE TO PESTICIDE EXPOSURE AMONGST RURAL WOMEN IN THE WESTERN CAPE.

Thank you for addressing the queries raised by the Research Ethics Committee.

It is a pleasure to inform you that the Ethics Committee has formally approved the above-mentioned study including the following documentation:

Approval is granted for one year till the 20th October 2010.

Please submit an annual progress report if the research continues beyond the expiry date. Please submit a brief summary of findings if you complete the study within the approval period so that we can close our file.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the REC. REF in all your correspondence.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, HSF HUMAN ETHICS

Federal Wide Assurance Number FWA00001637.
Institutional Review Board (IRB) number IRB00001938

S Thomas

D

Annual progress report

UNIVERSITY OF CAPE TOWN

FACULTY OF HEALTH SCIENCES
Human Research Ethics Committee

Annual Progress Report

Date	25/2/2013
HREC REF Number	393/2009
Protocol number (if applicable) & Protocol title	Title of full study: Health effects due to pesticide exposure amongst rural women residents in the Western Cape Title of sub-study: Asthma and allergy due to pesticide exposure amongst rural women residents in the Western Cape/ Relationship between pesticide residues and asthma outcomes among women farm workers
Principal Investigator	M A Dalvie
Department / Office Internal Mail Address	School of Public Health and Family Medicine

List of documentation

N/A

HUMAN RESEARCH ETHICS COMMITTEE
26 FEB 2013
HEALTH SCIENCES FACULTY
UNIVERSITY OF CAPE TOWN

HREC office use only (FWA00001637; IRB00001938)			
☑ Approved	This serves as notification of annual approval, including all documentation described above.		
☐ Not approved	See attached comments.		
Type of review	☐ Expedited	☐ Full committee	
Expiry date	15 MARCH 2014		
Signature Chairperson of the HREC		Date	27/2/13

7 October 2010 Page 5 of 6 FHS016

E. Authors instruction

ELSEVIER

ENVIRONMENT INTERNATIONAL

A Journal of Environmental Science, Risk & Health

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TABLE OF CONTENTS

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The effects of previous pesticide poisoning on the results

Table 1 Analysis including Pest- poisoning

Pesticide exposure. Odds Ratio/ Regression Coefficient (95% Confidence Interval)				
	History of ever living and/or workingon farm	**Born on farm**	**Household pesticides**	**Farm vs. Town Group**
Q16 Outcomes				
Tired	**3.3(1.46-7.36)**	0.95(0.50-1.78)	0.61(0.07-4.77)	4.03(2.07-7.86)
Heart palpitations	**4.73(1.98-11.31)**	1.29(0.66-2.41)	0.44(0.04-4.59)	3.40(1.70-6.78)
Tingling	**4.72(1.94-11.50)**	0.85(0.44-1.62)	0.46(0.04-5.07)	3.81(1.88-7.74)
Irritated	**4.25(1.82-9.95)**	0.77(0.41-1.45)	1 (omitted)	4.17(2.08-8.36)
Depression	**1.89(0.87-4.11)**	0.91(0.49-1.69)	0.40(0.04-4.10)	2.60(1.38-4.88)
Poor concentration	**4.15(1.59-10.80)**	1.36(0.67-2.77)	0.95(0.09-9.95)	1.96(0.93-4.12)
Short term memory	**2.94(1.34-6.45)**	**1.48(0.78-2.79)**	**1.54(0.20-11.73)**	3.03(1.56-5.80)
Perspire	**4.35(1.42-13.31)**	1.05(0.49-2.29)	0.76(0.07-8.20)	1.69(0.78-3.66)
Button	**5.83(0.56-60.74)**	1.17(0.28-4.94)	**10.35(1.73-146.18)**	0.78(0.19-3.25)
Reading	**2.16(0.79-5.86)**	1.05(0.51 -2.32)	**2.70(0.34-21.37)**	1.67(0.76-3.65)
Fam mem	1.34 (0.54-3.36)	1.93(0.88-4.25)	**4.57(0.58-35.88)**	1.92(0.88-4.16)
Chest	**5.21 (1.90-14.25)**	0.63(0.31-1.29)	**2.37(0.30-18.91)**	3.84(1.77-8.33)
Notes	1.55(0.64-3.77)	1.03(0.49-2.19)	0.84(0.08-9.05)	2.47(1.12-5.48)
Check door	**1.90(0.85-4.23)**	1.34(0.71-2.54)	1.20(0.16-9.30)	3.10(1.60-6.00)
Headache	**2.13(0.91-5.00)**	0.79(0.40-1.56)	0.39(0.05-3.03)	9.41(4.34-20.40)
Less sex	1.70(0.78-3.73)	0.71(0.38-1.32)	0.49(0.05-5.02)	1.29(0.70-2.40)
Q16 score	2.69(1.71-10.14)	2.10(0.72-6.10)	0.07(0.01-0.60)	60.41 (6.96-524.51)
Q16 score50	5.31(2.22-12.69)	0.79(0.42-1.51)	1.03(0.13-7. 92)	5.27(2.62-10.59)
Q16 score75	5.01(1.76-14.25)	1.68(0.77-3.54)	2.52(0.32-19.72)	3.05(1.39-6.87)

Confounder: Age, level of education, drugs, current smoking, alcohol consumption, household income, language, past pesticide poisoning

Table 2 Example of Analysis excluding past pesticide poisoning

	History of ever living and/or workingon farm	Born on farm	Household pesticides	Farm vs. Town Group
Tired	**3.3(1.46-7.36)**	0.93 (0.50-1.78)	0.59 (0.07-4.77)	4.04(2.07-7.76)
Heart palpitations	**4.35 (1.87- 10.14)**	1.24.29(0.66-2.41)	0.42 (0.04-4.59)	3.590(1.70-6.78)
Tingling	**4.39 (1.85- 10.4)**	0.83 (0.49-1.62)	0.44 (0.04-5.07)	3.71(1.88-7.74)
Irritated	**3.98 (1.74- 9.12)**	0.76 (0.48-1.45)	1 (omitted)	4.17(2.09-8.36)
Depression	**1.87 (0.87- 4.04**	0.90 (0.59-1.69)	0.39 (0.04-4.10)	2.60(1.38-4.88)
Poor concentration	**4.08 (1.59-10.80)**	1.36 (0.67-2.77)	0.93 (0.09-9.95)	1.80(0.91-4.12)
Short term memory	**2.91 (1.34-6.45)**	**1.46 (0.78-2.79)**	**1.50(0.20-11.73)**	3.02(1.56-5.80)
Perspire	**4.33 (1.42-13.31)**	1.05 (0.49-2.29)	0.75(0.07-8.20)	1.79(0.98-3.66)
Button	**5.01 (0.56-60.74)**	1.18 (0.08-4.94)	**10.07(1.73-146.18)**	0.88(0.19-3.25)
Reading	**2.15(0.79-5.86)**	1.05(0.51 -2.32)	**2.70(0.34-21.37)**	1.57(0.76-3.65)
Fam mem	1.33 (0.54-3.36)	1.92 (0.68-4.25)	**4.55(0.58-35.88)**	2.02(0.98-4.16)
Chest	**4.65 (1.90-14.25)**	0.62 (0.32-1.29)	**2.34(0.30-18.91)**	3.74(1.97-8.33)
Notes	1.50(0.64-3.77)	1.01 (0.49-2.19)	.78 (0.08-9.05)	2.97(1.92-5.48)
Check door	**1.75 (0.85-4.23)**	1.27 (0.81-2.54)	1.11(0.16-9.30)	3.10(1.60-6.00)
Headache	**2.10(0.91-5.00)**	.78 (0.40-1.56)	0.38(0.05-3.03)	9.45(4.36-20.40)
Less sex	1.70 (0.78-3.73)	0.70(0.98-1.32)	0.48(0.05-5.02)	1.45(0.50-2.40)
Q16 score	2.64 (1.71-10.14)	2.02 (0.72-6.10)	0.07(0.01-0.60)	58.41 (6.96-524.51)
Q16 score50	4.46 (2.22-12.69)	0.77(0.32-1.51)	.96 (0.13-7. 92)	5.65(2.62-10.59)
Q16 score75	4.46 (1.76-14.25)	1.59 (0.77-3.54)	2.41 (0.32-19.72)	3.25(1.39-6.87)

Confounder: Age, level of education, drugs, current smoking, alcohol consumption, household income, language

Conclusion

The inclusion or exclusion of previous pest- poisoning does not affect the study results substantially

Table 3: Example of Multivariate analysis excluding participants who are 50 years and older

Organophosphate metabolites							
	Dialkyl phosphates. Odds Ratio Regression Coefficient (95% Confidence Interval)						Chlorpyrifos metabolite
	DMP	DMTP	DMDTP	DEP	DETP	DEDTP	TCPY
Q16 outcomes							
Tired	0.997(0.985-1.009)	1.001(0.996-1.005)	0.998(0.995-1.005)	1.006(0.995-1.022)	0.995(0.985-1.005)	1.004(0.993-1.015)	1.005(0.992-1.020)
Heart palpitations	0.995(0.977-1.002)	0.987(0.995-1.009)	1.002(0.998-1.006)	1.003(0.988-1.019)	0.995(0.984-1.005)	0.998(0.987-1.008)	1.009(0.989-1.026)
Tingling	1.003(0.989-1.009)	0.982(0.995-1.003)	0.999(0.995-1.004)	1.002(0.978-1.017)	0.995(0.984-1.006)	1.000(0.989-1.011)	0.988(0.988-1.007)
Irritated	0.997(0.985-1.008)	1.001(0.997-1.005)	1.000(0.996-1.005)	1.002(0.986-1.016)	0.998(0.983-1.005)	0.999(0.985-1.007)	1.021(0.997-1.046)
Depression	1.002(0.991-1.013)	1.000(0.996-1.004)	0.999(0.996-1.003)	0.998(0.985-1.013)	0.994(0.984-1.004)	0.989(0.987-1.008)	1.006(0.991-1.022)
Poor concentration	1.009(0.9971-0.022)	1.000(0.996-1.005)	0.997(0.995-1.003)	0.995(0.976-1.012)	0.989(0.987-1.010)	0.999(0.987-1.012)	0.929(0.867-0.995)
Short term memory	1.005(0.994-1.014)	1.000(0.996-1.005)	1.000(0.997-1.005)	0.996(0.976-1.010)	0.996(0.977-1.002)	0.994(0.982-1.007)	1.000(0.991-1.006)
Perspire	0.956(0.985-1.014)	1.001(0.998-1.007)	0.998(0.994-1.004)	0.999(0.959-1.011)	0.995(0.976-1.001)	0.997(0.981-1.012)	1.000(0.990-1.009)
Button	1.010(0.984-1.035)	1.003(0.996-1.010)	0.994(0.980-1.007)	0.972(0.907-1.045)	1.000(0.979-1.022)	0.966(0.891-1.047)	1.000(0.981-1.018)
Reading	0.985(0.983-1.010)	1.005(1.001-1.010)	0.999(0.995-1.005)	0.988(0.966-1.007)	0.999(0.987-1.009)	0.986(0.987-1.009)	0.993(0.969-1.018)
Fam mem	0.996(0.983-1.011)	0.992(0.991-1.002)	1.002(0.998-1.006)	0.995(0.976-1.015)	0.995(0.981-1.008)	1.003(0.992-1.015)	0.995(0.965-1.017)
Chest	0.995(0.979 -1.006)	1.001(0.997-1.006)	1.004(0.999-1.009)	0.986(0.978-1.010)	0.987(0.981-1.006)	0.996(0.984-1.008)	0.998(0.990-1.005)
Notes	1.001(0.995-1.022)	1.004(0.999-1.009)	0.997(0.993-1.005)	0.998(0.967-1.014)	0.996(0.982-1.010)	1.002(0.989-1.015)	0.997(0.991-1.007)
Check door	1.006(0.995-1.018)	1.000(0.996-1.004)	1.999(0.993-1.001)	0.999(0.978-1.020)	0.999(0.990-1.009)	1.000(0.989-1.009)	0.990(0.960-1.012)
Headache	0.994(0.983-1.007)	1.001(0.997-1.006)	0.998(0.995-1.004)	0.986(0.983-1.015)	1.000(0.989-1.009)	1.002(0.991-1.014)	1.011(0.983-1.040)
Less sex	0.991(0.982-1.005)	0.998(0.995-1.007)	0.996(0.995-1.000)	0.999(0.993-1.024)	0.992(0.985-1.006)	1.004(0.994-1.015)	0.999(0.990-1.005)
Q16 score	1.002(0.984-1.020)	1.002(0.996-1.006)	0.999(0.993-1.006)	1.007(0.981-1.032)	0.999(0.985-1.010)	1.004(0.986-1.021)	1.004(0.981-1.026)
Q16 score50	1.000(0.989-1.012)	1.001(0.997-1.005)	0.987(0.996-1.005)	0.999(0.975-1.007)	0.985((0.980-1.003)	0.996(0.987-1.009)	0.998(0.989-1.005)
Q16 score75	1.006(0.992-1.019)	1.002(0.997-1.007)	1.000(0.995-1.005)	0.996(0.971-1.010)	0.995((0.982-1.008)	0.998(0.985-1.012)	0.997(0.981-1.01)

Confounder: Age, level of education, drugs, current smoking, alcohol consumption, household income, language, past pesticide poisoning. N =177

Summary - Exclusion of women over 49 years of age does not change the results substantially.

Template for submission of dissertation corrections/revisions

Candidate:	Motsoeneng Mamonyowe Portia
Degree:	Master Public health
Department:	Public health and family medicine
Title:	Relationship between urinary pesticide residue levels and neurotoxicity among women on farms in the Western Cape
Supervisors:	Mahomed Aqiel Dalvie

Examiner 1 – (Give name of examiner if known)

	Original dissertation		**Corrected/Revised dissertation**	
1	Comment 1, pg 63	In what?	Now on pg 62	Changes made, Paragraph1 line 1
2	Comment 2, pg 64	Not clear what you mean here	Now on pg 63	Changes made, Paragraph1 line 3-4
3	Comment 3, pg 64	In blood?	Now on pg 63	Changes made Paragraph 2, Line 1
4	Comment 5, pg 64	Split into the two groups	Now on pg 63	Changes made Paragraph 4, Line 1
5	Comment 5-10, pg 64	In which group. Univariate results of Farm Group and Town Group in Abstract to be split.	Now on pg 63	Changes made Paragraph 4, Line 5-8
6	Comment 11, pg 65	Be specific, individual Q 16 item, if so please specify!!	Now on pg 64	Changes made Paragraph1, Line 4
7	Comment 12, pg 65	What about the lack of association with OP shouldn't that be mentioned either?	Now on pg 64	Changes made Paragraph2, Line 2-3
8	Comment 13, pg65	Like which? List Neurotests	Now on pg 64	Changes made Paragraph2 , Line 4-5
9	Comment 14, pg66	Unclear what is meant here, brain damage of any cause or specifically from pesticide exposures?	Now on pg 65	Changes made Paragraph 1, Line 4
10	Comment 15, pg67	You are just presenting one and there seems to be at least another one (Bouchard et al. 2010)	Now on pg 66	Details of both studies investigating the relationship between biological levels of pesticides and neurotoxic outcomes were included in the text on paragraph 1, line

				1-3
11	Comment 16, pg67	This should go to materials and methods	Now on pg 68	The text was moved to Paragraph 3 line 1-4
12	Comment 17, pg67	Any evidence, references for this rather sweeping statement?	Now on pg 66	A reference, "Bowers et al 2009", was provided for the statement that female farm workers in SA are increasingly exposed to pesticides. The full reference was added to page 91.
	Comment 18, pg67	Please make clear what this analysis entails. Which part of the larger study are you addressing and what exactly is your aim and which research questions will you try to answer!	Now on pg 66	The aim and research questions of the study was clarified, paragraph 3, line 3-5
	Comment 19, pg68	Any selection criteria use. E.g. age criteria, etc.	Now on pg 67	The only selection criteria for women selected from the study areas were age between 18- 70. This is now stated in the thesis
	Comment 20, pg68	So was the actual grouping based on being a female agricultural worker or based on residence: farm versus town?	Now on pg 67	Women were recruited into the study based on whether they lived on farms or towns but in the analysis they were grouped into the Farm Group if they worked or resided on a farm and into the Town Group if they lived in a Town but did not work on a farm. The reason for this was that the results of sub-analysis showed that the non-farm workers residing on a farm (n = 24) and farm workers living in towns (n = 8) had similar results to that of farm workers and that excluding them or treating them as a separate group did not change the overall results.
	Comment 21, pg69	This is hard to follow. A diagram showing the different groups and color coding the mto show how they were	Now on pg 68	A diagram has been included in Part C of the thesis to indicate the grouping of the

		eventually grouped is needed		participants.
	Comment 22, pg69	One could argue to leave out the farm workers not living on farms and similarly exclude the people living on farms but not working on farms. In order to create more contrast in exposure between the groups	Now on pg 67	This is now explained in the text above, see comment 20 response.
	Comment 23, pg69	why not more specific items on pesticide related work? E.g. being an applicator, re-entry work etc	Now on pg 69	Specific questionnaire items on occupational and environmental pesticide exposure were specified in the methods sections. The results of the analysis involving these variables are also presented.
	Comment 24, pg70	Sentence is not correct	Now on pg 70	Changes made paragraph3, line 1-2
	Comment 25, pg71	Why, how many??, please be more specific	Now on pg 71	Changes made paragraph1 line 4
	Comment 26, pg72	Again be more specific present the actual LOD and indicate how many samples were below LOD	Now on pg 71	Changes made paragraph 3 line 2-7
	Comment 27, pg73	Unclear sentence	Now on pg 72	Changes made paragraph1 line 4-7
	Comment 28, pg73	Unclear what you exactly have been testing here	Now on pg 72	Changes made paragraph2 line8
	Comment 29, pg73	Previous poisoning ?? and why not excluded?? If you are looking at environmental exposure	Now on pg 81	Analysis was conducted excluding previous poisoning, but this did not have any effect on the study results. This is now stated on page 80
	Comment 30, pg73	Interactions ...?? What exactly do you mean?	Now on pg 73	In response to the comment on exploration of interactions the following text has been added on page 74 paragraph 1. To test for effect modification, interaction variables were created between exposure variables and potential effect modifiers (smoking, years of schooling and being born on a

				farm). These were the products between each exposure variable and a suspected effect modifier. For all the outcomes, an interaction term between the variable and the exposure variable of interest was included in the model. If this interaction term was significant ($p<0.05$), the variable would be an effect modifier. None of the interaction terms were significant so all were not retained in the models.
	Comment 31, pg74	Why just this fact?	Now on pg 73	More details on participation were added to the text and in Table1. Most of the details has already been described in the methods section on sampling.
	Comment 32, pg74	Provide percentages!	Now on pg 73	Change made paragraph3 line1
	Comment 33, pg74	Why (age higher in Town Group)	Now on pg 74 and 166	The reason for the higher median age of the Town Group was given and also that excluding women > 50 years did not change the results.
	Comment 34, pg74	What matters is whether the groups were different.	Now on pg 74	The text now state if the results in the two groups were different.
	Comment 35,pg75	Provide percentages, significant or not?	Now on pg 74	Changes made paragraph 2.
	Comment 36,pg75	Why only this one with one decimal?	Now on pg 75	All the results in Table 1 were rounded to 1 decimal
		Statistically significant results not indicated	Now on pg 75	Statistically significant results in Table 1 shown.
	Comment 37,pg76	Which test have you used for this?	Now on pg 75	Described in Table 1
	Comment 38,pg76	What about exposures at work?	Now on pg 77	Occupational exposures were added to Table 2 and described in the text in the first paragraph of page 76.
	Comment 39,pg76	There are also symptoms in this table…..	Now on pg 77	Symptoms were deleted from the Table2.
	Comment 40,pg77	Only discuss the ones that are statistically significant	Now on pg 77	Changes made paragraph 1 -2

		different between the two groups. The others should be seen as not being different between the two groups of individuals.		
	Comment 41, pg 77-8	Add numbers of samples within each group	Now on pg 79	Requested changes were made to Table 3
	Comment 42,pg78	These * are hard to see, maybe place them after the percentage of the farm group?	Now on pg 81	Requested changes were made to Table 4
	Comment 43,pg79	So do I understand this correctly that you've lumped the two groups together for this analysis?	Now on pg 82	For multivariate analysis various exposure indices were used to investigate the relationship between pesticide exposures and outcomes including farm group, history of ever living on a farm, born on a farm. This has now been stated more clearly in the text.
	Comment 44,pg79	Please focus on the ones that are really statically significantly different from	Now on pg 82	Changes made paragraph 1-2; The associations not exceeding 1 were deleted from the text which now only list the significant associations.
	Comment 45,pg81	Please use bold to indicate the significant ones	Now on pg 83-5	Changes made table 5a,b,c
	Comment 46,pg81	I don't understand how the ORs can be so different between the first column and the last. These classifications must be almost the same??	Now on pg 84	The classifications are not the same – Farm Group/Town group refers to current residence which is different to history of ever living on a farm. Table 1 shows that 26 women (29%) in the Town Group actually previously lived on a farm. The results was checked and confirmed to be correct. The results are now presented to 3 decimals rather than rounded to 1 as done previously for many of the associations.

	Comment 47,pg 85	What kind of models are we looking at? And why are they all so close to 1.00? Especially the chlorpyrifos results are unexpected, because we saw the biggest differences between the groups for this metabolite see table 3. These ORs should be presented per standard amount of increase in conc of the metabolite	Now on pg 84-85	The results presented in the table are ODs from logistic regression analysis where the outcomes were dichotomous (individual symptoms and dichotomous categories) and regression coefficients for linear regression analysis for continuous outcomes (symptom score). We agree that the results are strange in that they are all close to one but these results have been checked several times including by a statistician. The output is attached. The change in outcome per unit increase exposure is actually applicable to linear regression analysis and is applicable when both outcome and exposure are continuous. The latter is only applicable for the symptom score.
	Comment 48,pg 85	You only present one of these groupings? Or am I missing something	Now on pg 83	The results of the relationship between Q16 symptoms and currently living or working on a farm (Farm Group /Non-Farm Group) and history of ever living on a farm (Table 5 a) are presented in the paper.
	Comment 49,pg85	But you are not testing the effects of poisoning, you use it as a confounder to correct for …???	Now on pg 86	The text in the last part of the 1st paragraph was changed as follows "The neurotoxic effect of pesticide exposure was found even when controlling for pesticide poisoning which have not previously been demonstrated with the Q16 questionnaire.

				Previous studies in Nicaragua and California have shown significantly higher positive symptoms responses in those that experienced poisoning compared to a a non-poisoned group (Rosenstock et al 1991) Steenland et al 1994, Wesseling et al 2002). This is also the first study that has found an association between neurotoxicity and pesticide exposure only in women.
	Comment 50,pg86	But you saw a significant difference between the farm and town group!!??	Now on pg 86	Examples of farm residents in other settings where included in the text, the number of female sprayers were included in the paper and the last sentence in the paragraph was deleted.
	Comment 51,pg86	Do you mean the town group? What are acute pesticides? Are these levels comparable to the low levels found in your study	Now on pg 87	The text in the 3rd paragraph has been revised to describe how PYR levels in the study compared those of the general population in other settings and to state the dose in which effects were found in rats
	Comment 52,pg87	Like what? What could you have done better with a bigger budget	Now on pg 87	The text in the 3 paragraphs were revised to state examples of sensitive neurotoxic outcomes, to clarify that levels of PYR in the study were higher than those measured in general populations in other settings and to state how the study could be improved with a higher budget
	Comment 53,pg87	Than what?	Now on pg 89	The sentence in the Conclusion section was revised to state the PYR metabolite levels were higher than those in other

				settings.
	Comment 54, Examiners report	Discussion of the cross-sectional design of the study and comparing largely different groups (age, income and employment status)	Now on pg 88	The following sentences were added to the discussion section: paragraph 2 "A key limitation in this study is the cross-sectional design; consequently it cannot be established with certainty if the associations are the result of a temporal relationship between pesticide exposure and outcomes. A longitudinal design whereby pesticide exposure especially urinary pesticide metabolites and neurotoxic outcomes are measured repeatedly over time would be more powerful. With respect to the comparison of Q16 symptoms between the Farm Group and Town Group, the healthy worker commonly observed in cross-sectional studies may have resulted in farm workers affected by pesticides to move to towns and thereby reducing the level of neurotoxicity in the Farm Group. However, the study results show Q16 symptoms were significantly higher in the Farm Group (Table 5 a) despite a possible health worker effect. Additionally, Q16 symptoms were significantly higher among women with a history of ever living and/or working on farm compared to those not (Table 5a). Furthermore sub-analyses excluding town women who had

				previously lived or worked on farm from the analyses did not change the results found. Another important limitation in the study is the fact that age, income and employment status in the Farm Group and Town Group were different. These variables were not found to have strong associations with the Q16 symptoms in bivariate analysis and age and income were controlled for in multivariate analysis as they were included apriori. There might, however, have been residual confounding especially with income as the only indicator of socio-economic status."
	Comment 55, Examiners Report	More structured literature review focussing solely focussing on pesticide exposure of women and neurologic symptoms of women is clearly needed. Addressing reproductive health effects and health effects of children are not relevant to this thesis.	Now on pg 39-60	The literature review in Part B as well as Part C has been revised as suggested by the reviewer.
	Comment 56, Examiners Report	Occupational exposure is hardly addressed at all in the analyses.	Now on pg 69	Please refer to response to Comment 23.
	Comment 57, Examiners Report	Doubts whether logistic regression analysis is correct. Contradictions between bivariate analyses and multivariate analyses.	Now on pg 82	Please refer to response to Comment 44.
	Comment 58, Examiners Report	Why was pesticide poisoning not analysed as an exposure factor rather than as a confounder.	Now on pg 163-5	Pesticide poisoning was not analysed as an exposure factor because this has been studied extensively in the literature and the study focussed on effects after controlling for poisoning. Analysis was conducted excluding previous poisoning, but this did not have any effect on the study

				results. This is now stated on page 78
	Comment 59, Examiners Report	It would be insightful to show the distributions of the metabolites in each group graphically (e.g. as box plots)	Now on pg 102-2	Box plots of the distributions of the metabolites has been included in an additional appendix
	Comment 60, Examiners Report	A more critical assessment of the results compared to that of other studies is warranted in the discussion section of the manuscript	Now on pg 86-9	A more critical assessment of the results compared to that of other studies has been included in the discussion section.

Examiner 2 – (Give name of examiner if known)

	Original dissertation		**Corrected/Revised dissertation**	
1	Comment 1, Examiners Report	The literature review would have been more illuminating if it were more on the pesticides tested and not generalise to all pesticides.	Now on pg 39-60	The literature review in Part B as well as Part C has been revised as suggested by the reviewer
2	Comment 2, Examiners Report	Compare urinary levels of pesticides with recent exposures	Now on pg 79	The thesis focussed on the relationship between pesticide exposures and Q16 symptoms. A comparison between pesticide residues in the Farm Group and Town Group is made in Table 3.
3	Comment 3, Examiners Report	Implications of pesticide half lives and their effect on levels must be included in the discussion.	Now on pg 86-89	This point is discussed in the revised text on limitations of the study.
	Comment 4, Examiners Report	The abstract needs to be revised to make it clearer. More results should be included.	Now on pg 8	The abstract was revised as suggested by the reviewer.
	Comment 5, Examiners Report	Table 5b appears unnecessary.	Now on pg 84	Table 5b presents multivariate results of the relationship between Q16 symptoms and OP metabolites.

Student signature: _____ **Date:** _____

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      name:  <unnamed>
       log:  C:\Users\Student\Desktop\31_01\second.log



. logistic tired dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      17.05
                                                Prob > chi2     =     0.0295
Log likelihood = -100.56933                     Pseudo R2       =     0.0782

------------------------------------------------------------------------------
       tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |   .9994092   .0032436    -0.18   0.856     .9930722    1.005787
         age |   .9684146   .0172377    -1.80   0.071     .9352118    1.002796
     levledu |   1.044191   .0711768     0.63   0.526     .9136047    1.193444
    hous_inc |   .9998267   .0000697    -2.49   0.013     .9996902    .9999633
       drink |   .4749821   .1935953    -1.83   0.068     .2136686    1.055878
       smoke |   1.345191   .5337471     0.75   0.455     .6180772     2.92769
   pest_pois |   1.981419   1.760936     0.77   0.442     .3471305    11.30993
      lang12 |   .6438085    .477134    -0.59   0.552     .1506334    2.751643
       drugs |          1  (omitted)
       _cons |    11.6814   15.94855     1.80   0.072     .8041817    169.6819
------------------------------------------------------------------------------

. logistic hart_palp dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      10.52
                                                Prob > chi2     =     0.2304
Log likelihood = -102.42211                     Pseudo R2       =     0.0488

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |   .9956386    .003604    -1.21   0.227     .9885999    1.002727
         age |   .9615507   .0177479    -2.12   0.034     .9273872    .9969727
     levledu |   .9769647   .0662232    -0.34   0.731     .8554222    1.115777
    hous_inc |   .9999363   .0000659    -0.97   0.334     .9998071    1.000066
       drink |   .6298993   .2478933    -1.17   0.240     .2912632    1.362249
       smoke |   .8728359    .338906    -0.35   0.726     .4077809    1.868265
   pest_pois |   3.020262   2.505184     1.33   0.183     .5943026    15.34905
      lang12 |   1.636818    1.12383     0.72   0.473     .4261579     6.28681
       drugs |          1  (omitted)
```

```
      _cons |   4.356215   5.829075     1.10   0.271     .3163091    59.99386
------------------------------------------------------------------------------

. logistic tingling dmp_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       9.39
                                                Prob > chi2     =     0.3102
Log likelihood = -100.07847                     Pseudo R2       =     0.0448

------------------------------------------------------------------------------
    tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |   .9965023   .0034996    -1.00   0.318     .9896668    1.003385
         age |    .987508   .0177975    -0.70   0.485     .9532345    1.023014
      levledu |   1.074313   .0769078     1.00   0.317     .9336732    1.236136
    hous_inc |   .9999827   .0000637    -0.27   0.786     .9998579    1.000108
       drink |   .6581469   .2633639    -1.05   0.296     .3004044    1.441914
       smoke |   .9155723   .3653272    -0.22   0.825     .4188421    2.001405
   pest_pois |   2.858351   2.364232     1.27   0.204     .5650148     14.4601
      lang12 |   .4196463   .2855178    -1.28   0.202     .1105975    1.592288
       drugs |          1  (omitted)
       _cons |   1.737909   2.349732     0.41   0.683     .1227902    24.59747
------------------------------------------------------------------------------

. logistic irritated dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.44
                                                Prob > chi2     =     0.5977
Log likelihood = -103.59708                     Pseudo R2       =     0.0302

------------------------------------------------------------------------------
   irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |   .9971822   .0033328    -0.84   0.399     .9906714    1.003736
         age |   .9983126   .0173183    -0.10   0.922     .9649398     1.03284
      levledu |   .9569714   .0636128    -0.66   0.508      .840073    1.090137
    hous_inc |   .9999732   .0000632    -0.42   0.672     .9998493    1.000097
       drink |   .8821513   .3420242    -0.32   0.746      .41259    1.886112
       smoke |   .5874192    .227754    -1.37   0.170     .2747392     1.25596
   pest_pois |   2.507793   2.066678     1.12   0.265     .4986716    12.61156
      lang12 |   .7040923    .461748    -0.53   0.593     .1947182    2.545966
       drugs |          1  (omitted)
       _cons |    2.30416   2.968101     0.65   0.517     .1845179    28.77311
------------------------------------------------------------------------------

. logistic depress dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
```

```
Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       3.28
                                                Prob > chi2     =     0.9521
Log likelihood = -109.85811                     Pseudo R2       =     0.0147

------------------------------------------------------------------------------
      depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
       dmp_cr |   1.002609   .0029371     0.89   0.374     .9968683    1.008382
          age |   .9996396   .0168741    -0.02   0.983      .967108    1.033265
       levledu |   .9820903   .0638582    -0.28   0.781     .8645775    1.115575
      hous_inc |   .9999401   .0000625    -0.96   0.338     .9998177    1.000063
         drink |   .7590968   .2884107    -0.73   0.468     .3604891    1.598461
         smoke |    1.092828   .4125738     0.24   0.814     .5214337    2.290365
     pest_pois |    1.620492   1.319498     0.59   0.553     .3285105    7.993636
        lang12 |   .7737878   .5078362    -0.39   0.696     .2137859    2.800688
         drugs |    1.178348   1.762643     0.11   0.913     .0628052    22.10812
         _cons |    1.477462   1.855967     0.31   0.756     .1259647    17.32941
------------------------------------------------------------------------------

. logistic pr_concen dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       7.48
                                                Prob > chi2     =     0.5876
Log likelihood = -87.905238                     Pseudo R2       =     0.0408

------------------------------------------------------------------------------
    pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
       dmp_cr |   1.003778   .0031913     1.19   0.236     .9975423    1.010052
          age |   .9669799    .020578    -1.58   0.115     .9274772    1.008165
       levledu |   .9995171   .0784232    -0.01   0.995     .8570458    1.165672
      hous_inc |    .999971   .0000725    -0.40   0.689     .9998288    1.000113
         drink |   .7881967   .3515724    -0.53   0.594     .3288207     1.88934
         smoke |    1.636832   .7196314     1.12   0.262     .6914711    3.874663
     pest_pois |    1.498268   1.367343     0.44   0.658     .2504783    8.962086
        lang12 |    2.049337    1.83609     0.80   0.423      .353985    11.86429
         drugs |    2.22638   3.391616     0.53   0.599     .1124341    44.08596
         _cons |   .4473848   .6899715    -0.52   0.602     .0217736    9.192469
------------------------------------------------------------------------------

. logistic short_mem dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.58
                                                Prob > chi2     =     0.5828
Log likelihood = -102.56135                     Pseudo R2       =     0.0311

------------------------------------------------------------------------------
```

```
  short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
     dmp_cr |   1.000709   .0031825     0.22   0.824     .9944909    1.006966
        age |   .9803461   .0176814    -1.10   0.271     .9462965    1.015621
     levledu |   1.072287   .0755665     0.99   0.322     .9339527    1.231111
    hous_inc |   .9999199   .0000668    -1.20   0.230      .999789    1.000051
      drink |   .7589887   .3004193    -0.70   0.486     .3493951    1.648746
      smoke |   1.168177   .4577719     0.40   0.692      .541938     2.51807
   pest_pois |   2.661744   2.187669     1.19   0.234     .5315814    13.32793
     lang12 |   1.504862   1.031184     0.60   0.551     .3928467     5.76461
      drugs |          1  (omitted)
      _cons |   .6145163   .8136728    -0.37   0.713     .0458637    8.233755
------------------------------------------------------------------------------

. logistic perspire dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       9.67
                                                Prob > chi2     =     0.2888
Log likelihood = -80.470434                     Pseudo R2       =     0.0567

------------------------------------------------------------------------------
   perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
     dmp_cr |    .997942    .004148    -0.50   0.620     .9898451    1.006105
        age |   .9616775   .0221082    -1.70   0.089      .919308       1.006
     levledu |   1.055135    .092315     0.61   0.540     .8888637    1.252508
    hous_inc |   .9999496   .0000805    -0.63   0.531     .9997917    1.000107
      drink |   .7891342   .3684949    -0.51   0.612     .3159896    1.970738
      smoke |    1.57139   .7397544     0.96   0.337     .6245519     3.95366
   pest_pois |   1.473725   1.373987     0.42   0.677     .2370403     9.16243
     lang12 |   .3689944   .2666732    -1.38   0.168     .0895064    1.521196
      drugs |          1  (omitted)
      _cons |   2.113958   3.400929     0.47   0.642     .0902997    49.48877
------------------------------------------------------------------------------

. logistic button dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       7.57
                                                Prob > chi2     =     0.4770
Log likelihood = -30.860775                     Pseudo R2       =     0.1092

------------------------------------------------------------------------------
     button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
     dmp_cr |   1.008912   .0056852     1.57   0.115      .99783    1.020116
        age |   .9747042   .0406124    -0.61   0.539     .8982688    1.057644
```

```
    levledu |   1.123532   .1913711     0.68   0.494     .8046379    1.568811
   hous_inc |   .9998224   .0001671    -1.06   0.288     .9994949     1.00015
      drink |   1.285418   1.201543     0.27   0.788     .2057713    8.029784
      smoke |   2.851127     2.6491     1.13   0.259     .4614558    17.61583
  pest_pois |   2.851893   3.695752     0.81   0.419     .2249396    36.15768
     lang12 |   8.366935   24.17418     0.74   0.462     .0290557    2409.362
      drugs |          1  (omitted)
      _cons |   .0028127   .0108463    -1.52   0.128     1.47e-06    5.389854
------------------------------------------------------------------------------

. logistic reading dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       7.07
                                                Prob > chi2     =     0.6294
Log likelihood = -82.275204                     Pseudo R2       =     0.0412

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |   1.001956   .0034076     0.57   0.566     .9952993    1.008657
         age |    .949237   .0220071    -2.25   0.025     .9070691    .9933653
     levledu |   .9201265   .0738417    -1.04   0.300     .7862076    1.076857
    hous_inc |   .9999791   .0000767    -0.27   0.786     .9998287     1.00013
       drink |   .7638852   .3477434    -0.59   0.554     .3129938     1.86432
       smoke |   .8839617   .3968123    -0.27   0.783     .3667138    2.130785
   pest_pois |   .8811789   1.007656    -0.11   0.912     .0936889    8.287816
      lang12 |   .9983451   .7993881    -0.00   0.998      .207832    4.795667
       drugs |   2.182979    3.28295     0.52   0.604     .1145355    41.60629
       _cons |   4.509165   7.127702     0.95   0.341     .2035118    99.90856
------------------------------------------------------------------------------

. logistic fam_mem dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      10.81
                                                Prob > chi2     =     0.2888
Log likelihood = -84.006979                     Pseudo R2       =     0.0605

------------------------------------------------------------------------------
     fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |    .996974   .0040299    -0.75   0.453     .9891066    1.004904
         age |   1.018893   .0207553     0.92   0.358     .9790147    1.060396
     levledu |   1.220087   .1080562     2.25   0.025     1.025663    1.451365
    hous_inc |   .9998664   .0000849    -1.57   0.116     .9996999    1.000033
       drink |   .6663702   .3063327    -0.88   0.377     .2706545     1.64065
       smoke |   2.062276    .97868     1.53   0.127     .8135759    5.227519
   pest_pois |   .9106319   .8347579    -0.10   0.919     .1510301    5.490629
      lang12 |    .753186   .5561633    -0.38   0.701     .1771589     3.20215
       drugs |   5.475342   8.399141     1.11   0.268     .2708153    110.7004
       _cons |    .054361   .0851098    -1.86   0.063      .002527    1.169401
------------------------------------------------------------------------------
```

```
. logistic chest dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        162
                                        LR chi2(9)      =      20.27
                                        Prob > chi2     =     0.0163
Log likelihood = -92.271632             Pseudo R2       =     0.0990

------------------------------------------------------------------------------
       chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |   .9968391    .003829    -0.82   0.410     .9893626    1.004372
         age |    .989076   .0189896    -0.57   0.567     .9525486    1.027004
     levledu |    1.08662   .0811041     1.11   0.266     .9387398    1.257797
    hous_inc |   .9997263   .0000949    -2.88   0.004     .9995403    .9999124
       drink |   1.386896   .5871781     0.77   0.440     .6048754    3.179962
       smoke |   .6649762   .2792158    -0.97   0.331     .2920091    1.514313
    pest_pois |   5.089879   4.571155     1.81   0.070      .875496    29.59107
     lang12 |   1.158573   .8251874     0.21   0.836     .2868531    4.679368
      drugs |   1.164263   1.770137     0.10   0.920     .0591412    22.91986
      _cons |   .8017411   1.157096    -0.15   0.878     .0473757     13.5679
------------------------------------------------------------------------------

. logistic notes dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        160
                                        LR chi2(8)      =      13.62
                                        Prob > chi2     =     0.0923
Log likelihood =  -78.49718             Pseudo R2       =     0.0798

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |   1.000724   .0039267     0.18   0.854     .9930574     1.00845
         age |   .9492283   .0222223    -2.23   0.026     .9066575    .9937979
     levledu |   .9940451   .0838722    -0.07   0.944     .8425317    1.172805
    hous_inc |   .9999005   .0000875    -1.14   0.256      .999729    1.000072
       drink |    .522202   .2442035    -1.39   0.165     .2088244    1.305858
       smoke |   .8525756   .3951466    -0.34   0.731     .3437345     2.11467
    pest_pois |   8.919122   7.760794     2.51   0.012     1.620565    49.08829
     lang12 |   .9270624   .6985056    -0.10   0.920     .2117199    4.059348
      drugs |          1  (omitted)
      _cons |    3.94287   6.290899     0.86   0.390     .1728661    89.93221
------------------------------------------------------------------------------

. logistic chek_door dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                     Number of obs   =        155
                                        LR chi2(8)      =       3.65
```

```
                                  Prob > chi2     =     0.8872
Log likelihood = -103.58744                       Pseudo R2       =     0.0173

------------------------------------------------------------------------------
  chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     dmp_cr |    1.00207   .0029814     0.70   0.487      .996244    1.007931
        age |   .9764431   .0175149    -1.33   0.184      .942711    1.011382
     levledu |   .9759274   .0658842    -0.36   0.718     .8549751    1.113991
    hous_inc |   .9999527   .0000636    -0.74   0.457     .9998281    1.000077
      drink |   1.230326   .4741661     0.54   0.591     .5780536    2.618618
      smoke |   .8226952   .3145738    -0.51   0.610     .3888349    1.740655
   pest_pois |          1  (omitted)
     lang12 |   1.292143   .9109098     0.36   0.716     .3245244    5.144865
      drugs |   .7408721   1.102629    -0.20   0.840     .0400786    13.69537
      _cons |   1.749647   2.325958     0.42   0.674     .1292333     23.6879
------------------------------------------------------------------------------

. logistic q16_head dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        160
                                  LR chi2(8)      =       6.90
                                  Prob > chi2     =     0.5475
Log likelihood = -94.288273                       Pseudo R2       =     0.0353

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     dmp_cr |   .9990522   .0031841    -0.30   0.766     .9928309    1.005312
        age |   .9896213   .0181279    -0.57   0.569     .9547216    1.025797
     levledu |    1.05652   .0746009     0.78   0.436     .9199714    1.213336
    hous_inc |   .9998745   .0000646    -1.94   0.052     .9997479    1.000001
      drink |   1.227837   .5095673     0.49   0.621     .5443545    2.769489
      smoke |   1.025762   .4246916     0.06   0.951     .4556459    2.309222
   pest_pois |   2.321965   2.608911     0.75   0.453     .2567224    21.00138
     lang12 |   1.557731    1.07569     0.64   0.521      .402435    6.029607
      drugs |          1  (omitted)
      _cons |   2.034082   2.753151     0.52   0.600      .143304    28.87211
------------------------------------------------------------------------------

. logistic less_sex dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        160
                                  LR chi2(8)      =       8.46
                                  Prob > chi2     =     0.3898
Log likelihood = -103.03303                       Pseudo R2       =     0.0394

------------------------------------------------------------------------------
```

```
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     dmp_cr |   .9929399   .0039203    -1.79   0.073      .985286    1.000653
        age |   1.002142   .0176624     0.12   0.903     .9681152    1.037364
     levledu |   1.074021   .0735817     1.04   0.297     .9390671     1.22837
    hous_inc |    .999916    .000066    -1.27   0.204     .9997866    1.000045
       drink |   1.246853   .4935172     0.56   0.577     .5739854    2.708504
       smoke |   1.063023   .4147327     0.16   0.876     .4948239    2.283675
   pest_pois |   1.762409   1.445656     0.69   0.490     .3530934    8.796785
      lang12 |   1.552782   1.076175     0.63   0.525     .3991853    6.040133
       drugs |          1  (omitted)
       _cons |   .3251761   .4348127    -0.84   0.401     .0236551    4.470047
------------------------------------------------------------------------------

. logistic q16_score dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       5.68
                                                Prob > chi2     =     0.5780
Log likelihood = -52.580074                     Pseudo R2       =     0.0512

------------------------------------------------------------------------------
  q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     dmp_cr |   1.003378   .0051623     0.66   0.512     .9933104    1.013547
        age |   .9544364   .0243007    -1.83   0.067     .9079767    1.003273
     levledu |   .9656486   .0979435    -0.34   0.730     .7915598    1.178025
    hous_inc |   .9999034   .0000797    -1.21   0.226     .9997471     1.00006
       drink |   .6348214   .3938882    -0.73   0.464     .1881507    2.141891
       smoke |   1.109438   .6778448     0.17   0.865     .3349927    3.674265
   pest_pois |          1  (omitted)
      lang12 |   1.189704   1.236063     0.17   0.867     .1552632      9.1161
       drugs |          1  (omitted)
       _cons |   80.56078    163.684     2.16   0.031     1.501917     4321.17
------------------------------------------------------------------------------

. logistic q16_score50 dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       6.89
                                                Prob > chi2     =     0.4405
Log likelihood = -101.66059                     Pseudo R2       =     0.0328
```

```
------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |   .9986246   .0032367    -0.42   0.671     .9923008    1.004989
         age |   .9814292   .0174607    -1.05   0.292     .9477966    1.016255
      levledu |   1.050335   .0717777     0.72   0.472     .9186678    1.200873
    hous_inc |   .9999012   .0000663    -1.49   0.137     .9997712    1.000031
       drink |   .7759827   .2991389    -0.66   0.511      .364516    1.651914
       smoke |   .9079165   .3480111    -0.25   0.801     .4283256    1.924499
   pest_pois |          1  (omitted)
      lang12 |   .7387776   .5187711    -0.43   0.666     .1865513    2.925696
       drugs |          1  (omitted)
       _cons |   2.566828   3.453643     0.70   0.484     .1837017     35.8658
------------------------------------------------------------------------------

. logistic q16_score75 dmp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      13.50
                                                Prob > chi2     =     0.1411
Log likelihood = -83.793093                     Pseudo R2       =     0.0746

------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dmp_cr |   1.000803    .003641     0.22   0.825     .9936918    1.007964
         age |   .9813106   .0209173    -0.89   0.376      .941158    1.023176
      levledu |    1.11092   .0954915     1.22   0.221     .9386761    1.314769
    hous_inc |   .9998488     .00009    -1.68   0.093     .9996723    1.000025
       drink |   1.252558   .5785353     0.49   0.626     .5065733    3.097087
       smoke |   1.311436    .600925     0.59   0.554     .5342082    3.219466
   pest_pois |   3.921039   3.322226     1.61   0.107     .7450638    20.63521
      lang12 |   .5224755   .3796597    -0.89   0.372      .125758    2.170682
       drugs |   2.037153   3.088126     0.47   0.639     .1043963     39.7523
       _cons |   .5141825   .7973292    -0.43   0.668      .024614    10.74121
------------------------------------------------------------------------------

. logistic tired dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      17.32
                                                Prob > chi2     =     0.0269
Log likelihood = -100.43703                     Pseudo R2       =     0.0794

------------------------------------------------------------------------------
      tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     dmtp_cr |   1.001182   .0021672     0.55   0.585     .9969431    1.005438
         age |   .9675488   .0172593    -1.85   0.064     .9343057    1.001975
      levledu |   1.043902   .0712333     0.63   0.529     .9132207    1.193283
```

```
    hous_inc |    .999821   .0000698    -2.56   0.010     .9996841    .9999579
       drink |   .4569583   .1879043    -1.90   0.057     .2041065    1.023049
       smoke |   1.349314   .5347699     0.76   0.450     .6205244    2.934049
   pest_pois |   1.991945   1.775198     0.77   0.439     .3472934    11.42505
      lang12 |   .6245403   .4660822    -0.63   0.528     .1446523     2.69647
       drugs |           1  (omitted)
       _cons |   11.87137   16.20007     1.81   0.070     .8183175    172.2184
------------------------------------------------------------------------------

. logistic hart_palp dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       9.07
                                                Prob > chi2     =     0.3361
Log likelihood = -103.14521                     Pseudo R2       =     0.0421

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     dmtp_cr |   .9991241   .0022861    -0.38   0.702     .9946535    1.003615
       age |   .9617703   .0176956    -2.12   0.034     .9277056    .9970859
     levledu |   .9813947   .0664955    -0.28   0.782     .8593491    1.120773
    hous_inc |   .9999293   .0000655    -1.08   0.280     .9998009    1.000058
       drink |   .6242005   .2467393    -1.19   0.233     .2876431    1.354548
       smoke |    .890561   .3437554    -0.30   0.764     .4179275    1.897695
   pest_pois |   3.160736   2.622843     1.39   0.165     .6215039    16.07431
      lang12 |   1.735433   1.194398     0.80   0.423     .4503764    6.687138
       drugs |           1  (omitted)
       _cons |   3.447986   4.527163     0.94   0.346     .2629956     45.2046
------------------------------------------------------------------------------

. logistic tingling dmtp_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       8.37
                                                Prob > chi2     =     0.3985
Log likelihood = -100.59183                     Pseudo R2       =     0.0399

------------------------------------------------------------------------------
   tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     dmtp_cr |   .9995495   .0022686    -0.20   0.843     .9951131    1.004006
       age |   .9874681   .0177567    -0.70   0.483     .9532718    1.022891
     levledu |   1.077436   .0771996     1.04   0.298     .9362719    1.239884
    hous_inc |   .9999749   .0000634    -0.40   0.691     .9998506    1.000099
       drink |   .6527889   .2629135    -1.06   0.290     .2964474    1.437467
       smoke |   .9266054   .3678042    -0.19   0.848     .4256192     2.01729
   pest_pois |   2.946352   2.429237     1.31   0.190     .5854337     14.8283
```

```
     lang12 |   .4370669    .297546    -1.22   0.224     .1150979    1.659695
      drugs |          1  (omitted)
      _cons |   1.465509   1.959479     0.29   0.775     .1066295    20.14186
------------------------------------------------------------------------------

. logistic irritated dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       5.92
                                                Prob > chi2     =     0.6562
Log likelihood = -103.85852                     Pseudo R2       =     0.0277

------------------------------------------------------------------------------
  irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dmtp_cr |   1.001002    .002093     0.48   0.632     .9969082    1.005113
       age |   .9974505    .017275    -0.15   0.883     .9641603     1.03189
    levledu |   .9575181   .0636641    -0.65   0.514     .8405271    1.090793
   hous_inc |   .9999637   .0000634    -0.57   0.566     .9998394    1.000088
      drink |   .8395775    .328419    -0.45   0.655     .3900271    1.807285
      smoke |   .5927357    .229337    -1.35   0.176     .2776645    1.265324
  pest_pois |    2.54543   2.094879     1.14   0.256     .5072543    12.77311
     lang12 |   .7017326   .4601115    -0.54   0.589     .1941138    2.536804
      drugs |          1  (omitted)
      _cons |   2.096153   2.675069     0.58   0.562     .1718449    25.56874
------------------------------------------------------------------------------

. logistic depress dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       2.49
                                                Prob > chi2     =     0.9812
Log likelihood = -110.25384                     Pseudo R2       =     0.0112

------------------------------------------------------------------------------
    depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dmtp_cr |   1.000068   .0020551     0.03   0.973     .9960486    1.004104
       age |   1.000299   .0168749     0.02   0.986     .9677656    1.033926
    levledu |   .9821246   .0636946    -0.28   0.781     .8648939    1.115245
   hous_inc |    .999948   .0000614    -0.85   0.397     .9998276    1.000068
      drink |   .7742091   .2963965    -0.67   0.504     .3655831    1.639572
      smoke |    1.08601   .4089445     0.22   0.827     .5191679    2.271745
  pest_pois |   1.571939   1.277054     0.56   0.578     .3198262     7.72605
     lang12 |   .7602157    .49812    -0.42   0.676     .2104746    2.745832
      drugs |    1.43744   2.115065     0.25   0.805     .0803752    25.70734
      _cons |   1.594497   1.993047     0.37   0.709     .1376138    18.47505
------------------------------------------------------------------------------

. logistic pr_concen dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
```

```
Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       6.28
                                                Prob > chi2     =     0.7113
Log likelihood = -88.501875                     Pseudo R2       =     0.0343

------------------------------------------------------------------------------
   pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     dmtp_cr |   1.000935   .0023552     0.40   0.691      .99633    1.005562
         age |   .9685427    .020413    -1.52   0.129     .9293491    1.009389
     levledu |   .9986937   .0778707    -0.02   0.987     .8571601    1.163597
    hous_inc |   .9999807   .0000711    -0.27   0.786     .9998414     1.00012
       drink |   .7952436   .3581522    -0.51   0.611     .3289624    1.922446
       smoke |   1.600425   .7017033     1.07   0.283     .6776846    3.779575
   pest_pois |    1.40989   1.280224     0.38   0.705     .2378306    8.358008
      lang12 |   1.900935   1.687107     0.72   0.469     .3338213    10.82482
       drugs |    3.10082   4.629575     0.76   0.448     .1661954    57.85412
       _cons |     .51012   .7864778    -0.44   0.662     .0248503     10.4716
------------------------------------------------------------------------------

. logistic short_mem dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.61
                                                Prob > chi2     =     0.5792
Log likelihood = -102.54478                     Pseudo R2       =     0.0312

------------------------------------------------------------------------------
   short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     dmtp_cr |   1.000624    .002163     0.29   0.773     .9963934    1.004872
         age |   .9802278   .0176708    -1.11   0.268     .9461983    1.015481
     levledu |   1.071166   .0754093     0.98   0.329     .9331096    1.229648
    hous_inc |   .9999203   .0000664    -1.20   0.230     .9997902     1.00005
       drink |   .7500252   .3000255    -0.72   0.472     .3424347    1.642759
       smoke |   1.165672   .4567994     0.39   0.696     .5407674    2.512709
   pest_pois |   2.623458   2.154191     1.17   0.240     .5247224    13.11652
      lang12 |   1.473609   1.010068     0.57   0.572     .3845351    5.647138
       drugs |          1  (omitted)
       _cons |   .6399214   .8431724    -0.34   0.735     .0483691    8.466145
------------------------------------------------------------------------------

. logistic perspire dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      10.68
                                                Prob > chi2     =     0.2203
Log likelihood = -79.964912                     Pseudo R2       =     0.0626
```

```
------------------------------------------------------------------------------
   perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dmtp_cr |   1.002806   .0024237     1.16   0.246     .9980666    1.007567
        age |   .9609802   .0219137    -1.75   0.081     .9189757    1.004905
    levledu |   1.057631   .0937178     0.63   0.527     .8890133     1.25823
   hous_inc |   .9999372   .0000824    -0.76   0.445     .9997758    1.000099
      drink |   .7133716   .3408599    -0.71   0.480     .2796396    1.819839
      smoke |   1.589904   .7537032     0.98   0.328     .6278469    4.026131
  pest_pois |   1.413158   1.342655     0.36   0.716     .2195107    9.097573
     lang12 |   .3614068   .2607534    -1.41   0.158     .0878736    1.486396
      drugs |          1  (omitted)
      _cons |   1.866678   2.966618     0.39   0.695     .0828509    42.05732
------------------------------------------------------------------------------

. logistic button dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.09
                                                Prob > chi2     =     0.6370
Log likelihood = -31.597808                     Pseudo R2       =     0.0879

------------------------------------------------------------------------------
     button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dmtp_cr |    1.00311   .0036067     0.86   0.388     .9960661    1.010204
        age |   .9806857   .0399423    -0.48   0.632     .9054434    1.062181
    levledu |   1.106257   .1829878     0.61   0.542     .7999398     1.52987
   hous_inc |    .999851   .0001649    -0.90   0.366     .9995279    1.000174
      drink |   1.301341   1.255255     0.27   0.785     .1964874    8.618816
      smoke |    2.53738   2.375677     0.99   0.320     .4049762    15.89797
  pest_pois |   2.444643   3.116911     0.70   0.483     .2008799     29.7505
     lang12 |   6.027506   15.50833     0.70   0.485     .0389098    933.7186
      drugs |          1  (omitted)
      _cons |   .0048057   .0174508    -1.47   0.142     3.90e-06    5.924939
------------------------------------------------------------------------------

. logistic reading dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      12.93
                                                Prob > chi2     =     0.1657
Log likelihood = -79.346304                     Pseudo R2       =     0.0754

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dmtp_cr |   1.005925   .0023671     2.51   0.012     1.001296    1.010575
        age |    .943051   .0222965    -2.48   0.013     .9003477    .9877797
    levledu |   .9060327   .0752255    -1.19   0.235     .7699647    1.066147
```

```
   hous_inc |   .9999659   .0000814    -0.42   0.676     .9998064    1.000125
      drink |   .6313382   .3011834    -0.96   0.335     .2478516    1.608172
      smoke |   .8652553   .4003949    -0.31   0.754     .3493435    2.143067
  pest_pois |   .7635896   .9024552    -0.23   0.819     .0753112    7.742124
     lang12 |   .8225981   .6454227    -0.25   0.803     .1767349    3.828716
      drugs |   3.675434   5.556656     0.86   0.389     .1898589    71.15188
      _cons |   7.084593   11.36815     1.22   0.222     .3051064    164.5047
------------------------------------------------------------------------------

. logistic fam_mem dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      11.45
                                                Prob > chi2     =     0.2464
Log likelihood = -83.690016                     Pseudo R2       =     0.0640

------------------------------------------------------------------------------
     fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     dmtp_cr |   .9968106   .0030833    -1.03   0.302     .9907857    1.002872
         age |   1.017952   .0208456     0.87   0.385     .9779041    1.059639
     levledu |   1.219224   .1075174     2.25   0.025     1.025699    1.449261
    hous_inc |   .9998672   .0000838    -1.59   0.113      .999703    1.000031
       drink |   .7090246    .326998    -0.75   0.456      .287139    1.750776
       smoke |    2.03405   .9582137     1.51   0.132     .8079264    5.120959
   pest_pois |   .9954968   .9156868    -0.00   0.996     .1640892    6.039482
      lang12 |    .804145   .5985339    -0.29   0.770     .1869717    3.458541
       drugs |   3.585246    5.45286     0.84   0.401     .1819335    70.65215
       _cons |   .0524652   .0815637    -1.90   0.058     .0024921    1.104513
------------------------------------------------------------------------------

. logistic chest dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      19.80
                                                Prob > chi2     =     0.0192
Log likelihood = -92.507256                     Pseudo R2       =     0.0967

------------------------------------------------------------------------------
       chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     dmtp_cr |   1.001168   .0023402     0.50   0.618     .9965916    1.005765
         age |   .9884446   .0188764    -0.61   0.543     .9521313    1.026143
     levledu |   1.090058   .0816649     1.15   0.250     .9411944    1.262467
    hous_inc |   .9997132   .0000957    -3.00   0.003     .9995257    .9999008
       drink |   1.314267    .560777     0.64   0.522     .5694939    3.033038
       smoke |   .6699191   .2809037    -0.96   0.339     .2945135    1.523841
   pest_pois |    5.25915   4.748987     1.84   0.066     .8959518    30.87069
      lang12 |   1.180089   .8378786     0.23   0.816      .293461    4.745467
       drugs |   .9737159   1.441411    -0.02   0.986     .0535035    17.72077
       _cons |   .6880886   .9756126    -0.26   0.792     .0427327     11.0797
------------------------------------------------------------------------------

. logistic notes dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
```

```
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      16.53
                                                Prob > chi2     =     0.0354
Log likelihood = -77.039682                     Pseudo R2       =     0.0969

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     dmtp_cr |   1.004386   .0024821     1.77   0.077     .9995328    1.009263
         age |   .9466483   .0221346    -2.34   0.019     .9042444    .9910408
     levledu |   .9880828   .0847299    -0.14   0.889     .8352207    1.168922
    hous_inc |   .9998828   .0000918    -1.28   0.202     .9997029    1.000063
       drink |   .4531499   .2198598    -1.63   0.103     .1750874    1.172813
       smoke |   .8410973   .3964753    -0.37   0.714     .3338935    2.118773
   pest_pois |   9.006858   7.978868     2.48   0.013     1.586803    51.12386
      lang12 |   .8576667    .647502    -0.20   0.839     .1952979    3.766514
       drugs |          1  (omitted)
       _cons |   4.578635   7.275017     0.96   0.338     .2033563    103.0895
------------------------------------------------------------------------------

. logistic chek_door dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                             Number of obs   =        155
                                                LR chi2(8)      =       3.17
                                                Prob > chi2     =     0.9230
Log likelihood = -103.82644                     Pseudo R2       =     0.0150

------------------------------------------------------------------------------
   chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     dmtp_cr |   .9998983   .0021534    -0.05   0.962     .9956866    1.004128
         age |   .9771466   .0175206    -1.29   0.197     .9434031    1.012097
     levledu |   .9758969   .0657352    -0.36   0.717     .8552008    1.113627
    hous_inc |   .9999596   .0000625    -0.65   0.518      .999837    1.000082
       drink |    1.252208     .48644     0.58   0.563     .5848089    2.681262
       smoke |   .8180316   .3120655    -0.53   0.599      .387303    1.727784
   pest_pois |          1  (omitted)
      lang12 |   1.273639   .8999122     0.34   0.732      .318871    5.087188
       drugs |   .8621701   1.270545    -0.10   0.920     .0479968    15.48724
       _cons |   1.856415   2.466471     0.47   0.641     .1373255    25.09568
------------------------------------------------------------------------------

. logistic q16_head dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used
```

```
Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       7.29
                                                Prob > chi2     =     0.5058
Log likelihood = -94.093782                     Pseudo R2       =     0.0373

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dmtp_cr |   1.001594   .0023638     0.68   0.500     .9969721    1.006238
        age |   .9882579   .0182369    -0.64   0.522     .9531528    1.024656
    levledu |   1.055018   .0743596     0.76   0.447     .9188941    1.211306
   hous_inc |   .9998681   .0000647    -2.04   0.041     .9997414    .9999949
      drink |   1.166517   .4881322     0.37   0.713     .5136932     2.64898
      smoke |   1.032901   .4271188     0.08   0.938     .4592777    2.322963
  pest_pois |   2.329787   2.615438     0.75   0.451     .2580775    21.03208
     lang12 |   1.495745   1.044216     0.58   0.564     .3807262    5.876275
      drugs |          1  (omitted)
      _cons |   2.082369   2.822932     0.54   0.588     .1460963    29.68083
------------------------------------------------------------------------------

. logistic less_sex dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       4.66
                                                Prob > chi2     =     0.7929
Log likelihood = -104.93187                     Pseudo R2       =     0.0217

------------------------------------------------------------------------------
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dmtp_cr |   .9996797     .00212    -0.15   0.880     .9955332    1.003843
        age |   1.001401   .0174196     0.08   0.936      .967835    1.036132
    levledu |   1.079076   .0737813     1.11   0.266     .9437379    1.233822
   hous_inc |   .9999034   .0000661    -1.46   0.144     .9997739    1.000033
      drink |   1.183116   .4660522     0.43   0.669     .5466666    2.560543
      smoke |   1.079803   .4158267     0.20   0.842     .5076344    2.296878
  pest_pois |   1.874395   1.534507     0.77   0.443     .3767121     9.32637
     lang12 |   1.603094   1.098264     0.69   0.491     .4186098    6.139155
      drugs |          1  (omitted)
      _cons |   .2484489   .3236141    -1.07   0.285     .0193426    3.191239
------------------------------------------------------------------------------

. logistic q16_score dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
```

```
                                LR chi2(7)      =       5.73
                                Prob > chi2     =     0.5722
Log likelihood = -52.555597                     Pseudo R2       =     0.0517

------------------------------------------------------------------------------
  q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dmtp_cr |   1.002355   .0034239     0.69   0.491     .9956668    1.009088
       age |   .9532578   .0244154    -1.87   0.062     .9065858    1.002333
    levledu |   .9666814   .0974724    -0.34   0.737     .7933321    1.177909
   hous_inc |   .9999071   .0000787    -1.18   0.238     .9997529    1.000061
      drink |   .6110807   .3792769    -0.79   0.427     .1810451    2.062577
      smoke |   1.124638   .6819914     0.19   0.846     .3426383    3.691388
  pest_pois |          1  (omitted)
     lang12 |   1.092806   1.164806     0.08   0.934     .1352882    8.827265
      drugs |          1  (omitted)
      _cons |   94.19903   191.3842     2.24   0.025     1.756549    5051.643
------------------------------------------------------------------------------

. logistic q16_score50 dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        153
                                LR chi2(7)      =       7.25
                                Prob > chi2     =     0.4036
Log likelihood = -101.48168                     Pseudo R2       =     0.0345

------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmtp_cr |   1.001581   .0021406     0.74   0.460      .997394    1.005785
       age |   .9802168   .0174907    -1.12   0.263     .9465282    1.015104
    levledu |   1.050291   .0720123     0.72   0.474     .9182217    1.201355
   hous_inc |   .9998918   .0000669    -1.62   0.106     .9997607    1.000023
      drink |   .7343125   .2867239    -0.79   0.429     .3415984    1.578505
      smoke |    .916197   .3514207    -0.23   0.820     .4320143     1.94303
  pest_pois |          1  (omitted)
     lang12 |   .7086894   .5003698    -0.49   0.626     .1776092    2.827785
      drugs |          1  (omitted)
      _cons |   2.561978   3.435849     0.70   0.483      .184942    35.49075
------------------------------------------------------------------------------

. logistic q16_score75 dmtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        162
                                LR chi2(9)      =      14.49
                                Prob > chi2     =     0.1060
Log likelihood = -83.301289                     Pseudo R2       =     0.0800
```

```
------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmtp_cr |   1.002473   .0023798     1.04   0.298     .9978192    1.007148
       age |   .9807217   .0208106    -0.92   0.359     .9407703     1.02237
    levledu |   1.110243   .0960531     1.21   0.227     .9370783    1.315406
   hous_inc |   .9998406   .0000915    -1.74   0.082     .9996613     1.00002
      drink |   1.171955   .5508215     0.34   0.736      .466492     2.94427
      smoke |   1.302225   .6008241     0.57   0.567     .5271766    3.216738
  pest_pois |   3.854555   3.301346     1.58   0.115      .719346    20.65431
    lang12 |   .5030088   .3665805    -0.94   0.346     .1205704    2.098507
      drugs |   2.497215   3.729698     0.61   0.540     .1337056    46.64039
      _cons |   .5327034   .8251783    -0.41   0.684     .0255824    11.09251
------------------------------------------------------------------------------

. logistic tired dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      17.32
                                                Prob > chi2     =     0.0269
Log likelihood = -100.43681                     Pseudo R2       =     0.0794

------------------------------------------------------------------------------
      tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmdtp_cr |   .9988272   .0021344    -0.55   0.583     .9946525    1.003019
       age |    .967614   .0172664    -1.84   0.065     .9343575    1.002054
    levledu |   1.043531   .0710612     0.63   0.531     .9131485    1.192531
   hous_inc |   .9998198    .00007    -2.57   0.010     .9996826    .9999571
      drink |   .4703383   .1913614    -1.85   0.064     .2118807    1.044069
      smoke |   1.371765   .5464137     0.79   0.427     .6283784    2.994594
  pest_pois |   2.036749   1.817822     0.80   0.425      .354185    11.71237
    lang12 |   .6646276   .4956918    -0.55   0.584     .1540764    2.866953
      drugs |          1  (omitted)
      _cons |   12.31981    16.8596     1.84   0.067      .842828    180.0815
------------------------------------------------------------------------------

. logistic hart_palp dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      10.02
                                                Prob > chi2     =     0.2637
Log likelihood = -102.67238                     Pseudo R2       =     0.0465

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmdtp_cr |   1.002211   .0021357     1.04   0.300     .9980341    1.006406
```

```
       age |   .9624709   .0177762    -2.07   0.038     .9282533    .9979499
    levledu |    .982787   .0671262    -0.25   0.799     .8596482    1.123565
   hous_inc |   .9999353   .0000656    -0.99   0.324     .9998067    1.000064
      drink |   .6144357   .2414037    -1.24   0.215     .2844792    1.327096
      smoke |   .8611945   .3350053    -0.38   0.701     .4017753    1.845947
  pest_pois |   3.044488   2.514914     1.35   0.178     .6030804    15.36927
     lang12 |   1.595941   1.097669     0.68   0.497     .4145441    6.144164
      drugs |          1  (omitted)
      _cons |   3.110041   4.117277     0.86   0.391     .2322146    41.65266
------------------------------------------------------------------------------

. logistic tingling dmdtp_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       8.36
                                                Prob > chi2     =     0.3995
Log likelihood = -100.59668                     Pseudo R2       =     0.0399

------------------------------------------------------------------------------
    tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmdtp_cr |   .9996206   .0021906    -0.17   0.863     .9953363    1.003923
       age |   .9871093   .0177438    -0.72   0.470     .9529376    1.022506
    levledu |    1.07662   .0772357     1.03   0.303     .9354018    1.239159
   hous_inc |   .9999725   .0000638    -0.43   0.667     .9998475    1.000098
      drink |   .6437062   .2563948    -1.11   0.269      .29488    1.405174
      smoke |   .9320019   .3711009    -0.18   0.860     .4270598    2.033972
  pest_pois |   2.948191   2.435865     1.31   0.191     .5838119    14.88807
     lang12 |   .4367986   .2975624    -1.22   0.224     .1149246    1.660158
      drugs |          1  (omitted)
      _cons |   1.507661   2.025677     0.31   0.760     .1083025     20.9879
------------------------------------------------------------------------------

. logistic irritated dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       5.85
                                                Prob > chi2     =     0.6640
Log likelihood = -103.89374                     Pseudo R2       =     0.0274

------------------------------------------------------------------------------
  irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmdtp_cr |    1.00084   .0021177     0.40   0.691     .9966984       1.005
       age |   .9986113   .0173073    -0.08   0.936     .9652594    1.033116
    levledu |   .9592238   .0637142    -0.63   0.531     .8421333    1.092595
   hous_inc |   .9999692   .0000632    -0.49   0.626     .9998453    1.000093
      drink |   .8676834     .33495    -0.37   0.713     .4071681    1.849051
```

```
      smoke |    .584989   .2271876    -1.38   0.167     .2732582     1.25234
  pest_pois |   2.539745   2.087916     1.13   0.257     .5070141    12.72214
     lang12 |   .7025968   .4615086    -0.54   0.591     .1939031    2.545819
      drugs |          1  (omitted)
      _cons |   1.939712   2.484887     0.52   0.605     .1575062    23.88786
------------------------------------------------------------------------------

. logistic depress dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       2.66
                                                Prob > chi2     =     0.9761
Log likelihood = -110.16629                     Pseudo R2       =     0.0119

------------------------------------------------------------------------------
     depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   dmdtp_cr |   .9991247   .0020966    -0.42   0.676     .9950239    1.003242
      age |   .9998429   .0168612    -0.01   0.993     .9673357    1.033443
    levledu |   .9812635   .0636748    -0.29   0.771     .8640735    1.114347
   hous_inc |   .9999449   .0000618    -0.89   0.373     .9998238    1.000066
      drink |   .7723129   .2924357    -0.68   0.495     .3676939    1.622184
      smoke |   1.100431   .4159901     0.25   0.800     .5245511    2.308544
  pest_pois |   1.591751   1.294575     0.57   0.568      .323289    7.837173
     lang12 |   .7792211   .5111027    -0.38   0.704     .2154492     2.81823
      drugs |   1.383517   2.032573     0.22   0.825     .0777061    24.63281
      _cons |   1.676501   2.104422     0.41   0.681     .1431978    19.62779
------------------------------------------------------------------------------

. logistic pr_concen dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       7.67
                                                Prob > chi2     =     0.5672
Log likelihood = -87.806134                     Pseudo R2       =     0.0419

------------------------------------------------------------------------------
  pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   dmdtp_cr |   .9968214   .0027274    -1.16   0.245     .9914901    1.002181
      age |   .9675102   .0204902    -1.56   0.119     .9281723    1.008515
    levledu |    .99448   .0777292    -0.07   0.944      .853229    1.159115
   hous_inc |   .9999725    .000072    -0.38   0.703     .9998314    1.000114
      drink |   .7983214   .3568516    -0.50   0.614     .3324211    1.917198
      smoke |   1.671483   .7353756     1.17   0.243     .7056872    3.959054
  pest_pois |   1.477799   1.349088     0.43   0.669     .2469164    8.844648
     lang12 |   2.110405   1.875048     0.84   0.401     .3699069    12.04036
      drugs |   2.642773   3.934706     0.65   0.514     .1428052    48.90752
      _cons |   .6019472    .936112    -0.33   0.744     .0285641    12.68515
------------------------------------------------------------------------------

. logistic short_mem dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used
```

```
Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.72
                                                Prob > chi2     =     0.5667
Log likelihood = -102.48813                     Pseudo R2       =     0.0318

------------------------------------------------------------------------------
  short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dmdtp_cr |   1.000932    .002106     0.44   0.658     .9968125    1.005068
        age |   .9809514   .0177307    -1.06   0.287     .9468082    1.016326
     levledu |   1.072923   .0756574     1.00   0.318     .9344283    1.231945
   hous_inc |   .9999259   .0000661    -1.12   0.262     .9997964    1.000055
      drink |   .7660594    .302604    -0.67   0.500     .3532044    1.661494
      smoke |   1.149339    .451738     0.35   0.723     .5319744    2.483166
  pest_pois |   2.611248   2.142672     1.17   0.242     .5228662    13.04084
     lang12 |   1.454614   .9988406     0.55   0.585     .3786629    5.587825
      drugs |          1  (omitted)
      _cons |   .5997955    .79482    -0.39   0.700     .0446717    8.053308
------------------------------------------------------------------------------

. logistic perspire dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       9.60
                                                Prob > chi2     =     0.2942
Log likelihood = -80.505915                     Pseudo R2       =     0.0563

------------------------------------------------------------------------------
   perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dmdtp_cr |   .9989111   .0025642    -0.42   0.671     .9938979     1.00395
        age |   .9613929   .0220414    -1.72   0.086     .9191487    1.005579
     levledu |   1.056809   .0926598     0.63   0.529     .8899467    1.254957
   hous_inc |   .9999407   .0000813    -0.73   0.466     .9997813      1.0001
      drink |   .7759969   .3622019    -0.54   0.587     .3108535    1.937154
      smoke |   1.609131   .7571761     1.01   0.312     .6398212    4.046914
  pest_pois |   1.501279   1.402405     0.43   0.664     .2406136    9.367052
     lang12 |   .3900336   .2830256    -1.30   0.194     .0940659    1.617229
      drugs |          1  (omitted)
      _cons |   1.973329   3.139823     0.43   0.669     .0872624    44.62434
------------------------------------------------------------------------------

. logistic button dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.69
```

```
                                Prob > chi2     =     0.5708
Log likelihood = -31.300135     Pseudo R2       =     0.0965

------------------------------------------------------------------------------
     button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dmdtp_cr |   .9937151   .0067532    -0.93   0.354     .9805668     1.00704
        age |   .9837289    .040197    -0.40   0.688     .9080165    1.065754
     levledu |   1.106479   .1817686     0.62   0.538     .8018821    1.526777
   hous_inc |   .9998366   .0001647    -0.99   0.321      .999514    1.000159
      drink |   1.470658   1.396294     0.41   0.685     .2287449     9.45523
      smoke |    2.69781   2.498328     1.07   0.284     .4392884    16.56812
   pest_pois |    2.81383    3.53076     0.82   0.410     .2405583    32.91359
     lang12 |   8.378912   22.92395     0.78   0.437     .0392986    1786.481
      drugs |         1  (omitted)
      _cons |     .00442   .0167003    -1.43   0.151     2.69e-06    7.270201
------------------------------------------------------------------------------

. logistic reading dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        162
                                LR chi2(9)      =       6.77
                                Prob > chi2     =     0.6615
Log likelihood = -82.429385     Pseudo R2       =     0.0394

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dmdtp_cr |   .9997408   .0024863    -0.10   0.917     .9948796    1.004626
        age |   .9496511   .0220129    -2.23   0.026      .907472    .9937908
     levledu |   .9196756   .0736039    -1.05   0.295      .78616    1.075867
   hous_inc |   .9999836   .0000761    -0.22   0.829     .9998344    1.000133
      drink |    .77384   .3518995    -0.56   0.573     .3173744     1.88682
      smoke |   .8771501   .3943945    -0.29   0.771      .363368    2.117391
   pest_pois |   .8640073    .986951    -0.13   0.898     .0920861    8.106632
     lang12 |   .9829602   .7852692    -0.02   0.983      .205365    4.704847
      drugs |   2.490443   3.729836     0.61   0.542     .1322714    46.89072
      _cons |   4.936632   7.830293     1.01   0.314     .2204388    110.5538
------------------------------------------------------------------------------

. logistic fam_mem dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        162
                                LR chi2(9)      =      11.19
                                Prob > chi2     =     0.2630
Log likelihood = -83.818474     Pseudo R2       =     0.0626

------------------------------------------------------------------------------
     fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dmdtp_cr |   1.002317   .0023308     1.00   0.320     .9977595    1.006896
        age |   1.019252   .0207294     0.94   0.348      .979422    1.060701
     levledu |   1.226355   .1091818     2.29   0.022     1.029993    1.460153
   hous_inc |   .9998697   .0000847    -1.54   0.124     .9997036    1.000036
```

```
      drink |   .6507419    .297916    -0.94   0.348     .2652897    1.596236
      smoke |    2.00471   .9511774     1.47   0.143     .7910077    5.080685
  pest_pois |    .905701   .8400175    -0.11   0.915     .1470667    5.577702
     lang12 |   .7173093   .5316582    -0.45   0.654     .1678067    3.066221
      drugs |   4.783365   7.280443     1.03   0.304      .242201    94.46939
      _cons |   .0426581   .0665445    -2.02   0.043     .0020052    .9074748
------------------------------------------------------------------------------
```

```
. logistic chest dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      23.20
                                                Prob > chi2     =     0.0058
Log likelihood = -90.806611                     Pseudo R2       =     0.1133

------------------------------------------------------------------------------
       chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmdtp_cr |    1.00438   .0023679     1.85   0.064     .9997492    1.009031
         age |   .9914767   .0191619    -0.44   0.658     .9546226    1.029754
     levledu |    1.09718   .0832991     1.22   0.222     .9454833    1.273216
    hous_inc |   .9997353   .0000954    -2.77   0.006     .9995483    .9999224
       drink |   1.396365   .5952986     0.78   0.434     .6055004    3.220204
       smoke |   .6264502   .2672814    -1.10   0.273     .2714643    1.445641
   pest_pois |   5.231603    4.75936     1.82   0.069      .879567    31.11721
      lang12 |   1.047352    .744824     0.07   0.948     .2598729    4.221087
       drugs |   1.089137   1.612297     0.06   0.954     .0598428    19.82227
       _cons |   .5194106   .7469039    -0.46   0.649     .0310097    8.700107
------------------------------------------------------------------------------
```

```
. logistic notes dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      13.90
                                                Prob > chi2     =     0.0845
Log likelihood =  -78.35844                     Pseudo R2       =     0.0814

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmdtp_cr |    .998552   .0026658    -0.54   0.587     .9933409    1.003791
         age |   .9487276   .0222149    -2.25   0.025     .9061712    .9932826
     levledu |   .9910335   .0833908    -0.11   0.915     .8403569    1.168726
    hous_inc |   .9998965   .0000881    -1.17   0.240     .9997237    1.000069
       drink |   .5196366   .2432735    -1.40   0.162     .2075872    1.300765
       smoke |   .8663216    .402117    -0.31   0.757     .3488031    2.151681
   pest_pois |   9.050379   7.933413     2.51   0.012     1.623744    50.44476
      lang12 |   .9619028   .7277476    -0.05   0.959     .2183418    4.237653
       drugs |          1  (omitted)
       _cons |   4.438232   7.030289     0.94   0.347     .1990132    98.97786
------------------------------------------------------------------------------
```

```
. logistic chek_door dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                     Number of obs   =        155
                                        LR chi2(8)      =       4.71
                                        Prob > chi2     =     0.7876
Log likelihood = -103.05572             Pseudo R2       =     0.0224

------------------------------------------------------------------------------
  chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dmdtp_cr |   .9972489   .0022918    -1.20   0.231     .9927671    1.001751
        age |   .9750305   .0175848    -1.40   0.161      .941167    1.010112
     levledu |   .9717223   .0657915    -0.42   0.672     .8509629    1.109619
    hous_inc |   .9999507   .0000634    -0.78   0.436     .9998264    1.000075
      drink |   1.225081   .4734801     0.53   0.599     .5743612    2.613032
      smoke |   .8482386   .3257358    -0.43   0.668     .3996174    1.800494
  pest_pois |          1  (omitted)
     lang12 |   1.346575   .9479551     0.42   0.673      .338849    5.351248
      drugs |   .7794094   1.147842    -0.17   0.866     .0434705     13.9745
      _cons |   2.285241   3.064349     0.62   0.538     .1650174    31.64711
------------------------------------------------------------------------------

. logistic q16_head dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        160
                                        LR chi2(8)      =       6.84
                                        Prob > chi2     =     0.5537
Log likelihood = -94.316976             Pseudo R2       =     0.0350

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dmdtp_cr |   .9995904    .002324    -0.18   0.860     .9950458    1.004156
        age |   .9891138    .018212    -0.59   0.552     .9540552    1.025461
     levledu |   1.055963    .074613     0.77   0.441     .9193983    1.212812
    hous_inc |   .9998703   .0000647    -2.00   0.045     .9997435    .9999971
      drink |   1.216071   .5040198     0.47   0.637     .5397153    2.740014
      smoke |   1.034707   .4302682     0.08   0.935     .4579917    2.337639
  pest_pois |   2.363604    2.65486     0.77   0.444     .2615072    21.36318
     lang12 |   1.582942   1.096922     0.66   0.507     .4070172    6.156264
      drugs |          1  (omitted)
      _cons |   2.030065   2.763478     0.52   0.603     .1408608      29.257
------------------------------------------------------------------------------

. logistic less_sex dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used
```

```
Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       7.51
                                                Prob > chi2     =     0.4831
Log likelihood = -103.51031                     Pseudo R2       =     0.0350

------------------------------------------------------------------------------
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dmdtp_cr |   .9961615   .0024062    -1.59   0.111     .9914565    1.000889
        age |    .999701   .0174811    -0.02   0.986     .9660191    1.034557
    levledu |   1.076468    .074181     1.07   0.285     .9404668    1.232136
   hous_inc |    .999886   .0000679    -1.68   0.093     .9997529    1.000019
      drink |   1.163813   .4587408     0.38   0.700     .5374826    2.520007
      smoke |   1.138119   .4430038     0.33   0.740     .5307185    2.440682
  pest_pois |   1.975598   1.627954     0.83   0.409     .3928998    9.933797
    lang12 |   1.760839     1.2077     0.82   0.409     .4591025    6.753514
     drugs |          1  (omitted)
     _cons |   .2996904   .3934505    -0.92   0.359     .0228648    3.928063
------------------------------------------------------------------------------

. logistic q16_score dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       5.20
                                                Prob > chi2     =     0.6362
Log likelihood = -52.820668                     Pseudo R2       =     0.0469

------------------------------------------------------------------------------
  q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dmdtp_cr |   .9997982   .0035639    -0.06   0.955     .9928374    1.006808
        age |   .9554464   .0243305    -1.79   0.073      .90893    1.004343
    levledu |   .9680792    .098802    -0.32   0.751     .7925696    1.182454
   hous_inc |     .99991   .0000799    -1.13   0.260     .9997533    1.000067
      drink |   .6523417   .4025766    -0.69   0.489     .1946153     2.18662
      smoke |   1.119064    .683936     0.18   0.854     .3377754    3.707507
  pest_pois |          1  (omitted)
    lang12 |   1.211489   1.251131     0.19   0.853     .1600535    9.170094
     drugs |          1  (omitted)
     _cons |   83.52512   169.8704     2.18   0.030     1.551222    4497.387
------------------------------------------------------------------------------

. logistic q16_score50 dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used
```

```
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       6.71
                                                Prob > chi2     =     0.4601
Log likelihood = -101.75211                     Pseudo R2       =     0.0319

------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmdtp_cr |   .9999572   .0021273    -0.02   0.984     .9957964    1.004135
         age |   .9812507   .0175182    -1.06   0.289     .9475093    1.016194
     levledu |   1.051568   .0719847     0.73   0.463     .9195363    1.202558
    hous_inc |   .9998967   .0000663    -1.56   0.119     .9997669    1.000027
       drink |   .7682609   .2957256    -0.68   0.493     .3612908    1.633656
       smoke |   .9132087   .3507159    -0.24   0.813     .4301975    1.938529
   pest_pois |           1  (omitted)
      lang12 |   .7483356   .5269222    -0.41   0.681     .1882537    2.974741
       drugs |           1  (omitted)
       _cons |   2.419927    3.25905     0.66   0.512     .1727594    33.89712
------------------------------------------------------------------------------

. logistic q16_score75 dmdtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      13.46
                                                Prob > chi2     =     0.1429
Log likelihood = -83.815763                     Pseudo R2       =     0.0743

------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dmdtp_cr |   1.000121   .0023717     0.05   0.959     .9954839    1.004781
         age |   .9814905    .020926    -0.88   0.381     .9413214    1.023374
     levledu |   1.109932   .0951661     1.22   0.224     .9382396    1.313042
    hous_inc |   .9998519   .0000901    -1.64   0.100     .9996753    1.000028
       drink |    1.25957   .5809036     0.50   0.617     .5100996     3.11021
       smoke |   1.305305   .5995363     0.58   0.562     .5305775    3.211258
   pest_pois |   3.879264   3.279812     1.60   0.109     .7397445    20.34309
      lang12 |   .5164191    .376834    -0.91   0.365     .1235594    2.158385
       drugs |    2.17663   3.241693     0.52   0.602     .1175101    40.31754
       _cons |   .5312475   .8211276    -0.41   0.682      .025682    10.98916
------------------------------------------------------------------------------

. logistic tired dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      17.64
                                                Prob > chi2     =     0.0241
```

```
Log likelihood =  -100.2763                     Pseudo R2       =     0.0808

------------------------------------------------------------------------------
       tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |   1.006211    .008028     0.78   0.438     .9905984    1.022069
         age |   .9681845   .0172897    -1.81   0.070     .9348835    1.002672
     levledu |   1.049758    .071926     0.71   0.478     .9178414    1.200634
    hous_inc |    .999825   .0000693    -2.52   0.012     .9996892    .9999609
       drink |   .4435412   .1844143    -1.96   0.051     .1963468    1.001946
       smoke |   1.439076   .5855242     0.89   0.371     .6482631      3.1946
   pest_pois |   2.113147   1.881416     0.84   0.401     .3690391    12.10005
      lang12 |    .719281   .5336673    -0.44   0.657     .1680171    3.079241
       drugs |          1  (omitted)
       _cons |    9.18688   12.68013     1.61   0.108     .6141899    137.4148
------------------------------------------------------------------------------

. logistic hart_palp dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       9.16
                                                Prob > chi2     =     0.3289
Log likelihood = -103.10128                     Pseudo R2       =     0.0425

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |   1.003836   .0078564     0.49   0.625     .9885554    1.019353
         age |   .9616368   .0176271    -2.13   0.033     .9277015    .9968133
     levledu |    .983645   .0669376    -0.24   0.809     .8608224    1.123992
    hous_inc |   .9999278   .0000657    -1.10   0.272     .9997989    1.000057
       drink |   .5887005   .2347343    -1.33   0.184     .2694588    1.286164
       smoke |   .9288852   .3677958    -0.19   0.852     .4274895     2.01836
   pest_pois |   3.224858   2.678482     1.41   0.159     .6331768    16.42465
      lang12 |   1.760341   1.204871     0.83   0.409      .460245    6.732933
       drugs |          1  (omitted)
       _cons |   3.100682   4.135111     0.85   0.396     .2271347    42.32831
------------------------------------------------------------------------------

. logistic tingling dep_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       8.42
                                                Prob > chi2     =     0.3934
Log likelihood = -100.56399                     Pseudo R2       =     0.0402

------------------------------------------------------------------------------
   tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
      dep_cr |   1.002446   .0078706     0.31   0.756     .9871383    1.017992
         age |   .9872211   .0177356    -0.72   0.474     .9530649    1.022601
     levledu |   1.079124   .0776111     1.06   0.290     .9372441    1.242483
    hous_inc |   .9999746   .0000633    -0.40   0.688     .9998505    1.000099
       drink |    .628472   .2556707    -1.14   0.254     .2831431    1.394973
       smoke |   .9514675   .3863754    -0.12   0.902     .4292744    2.108885
   pest_pois |   3.005259   2.488725     1.33   0.184     .5929007    15.23287
      lang12 |   .4495642   .3083385    -1.17   0.244     .1172157    1.724239
       drugs |          1  (omitted)
       _cons |   1.355798   1.845425     0.22   0.823     .0941009     19.5342
------------------------------------------------------------------------------

. logistic irritated dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       5.73
                                                Prob > chi2     =     0.6772
Log likelihood = -103.95238                     Pseudo R2       =     0.0268

------------------------------------------------------------------------------
  irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |     1.0015   .0076259     0.20   0.844     .9866644    1.016559
         age |    .998119   .0172389    -0.11   0.913     .9648969    1.032485
     levledu |   .9595235   .0639252    -0.62   0.535     .8420678    1.093362
    hous_inc |   .9999666   .0000629    -0.53   0.595     .9998433     1.00009
       drink |   .8503156   .3353033    -0.41   0.681     .3925794    1.841759
       smoke |   .6028158   .2382967    -1.28   0.200     .2777791    1.308187
   pest_pois |   2.605287   2.150405     1.16   0.246     .5167417    13.13523
      lang12 |   .7353349   .4874223    -0.46   0.643     .2005671    2.695942
       drugs |          1  (omitted)
       _cons |   1.934966   2.516217     0.51   0.612     .1512783     24.7497
------------------------------------------------------------------------------

. logistic depress dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       2.51
                                                Prob > chi2     =     0.9807
Log likelihood = -110.24493                     Pseudo R2       =     0.0112

------------------------------------------------------------------------------
    depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |   .9990137   .0071767    -0.14   0.891     .9850462    1.013179
         age |   1.000386   .0168355     0.02   0.982     .9679275    1.033933
     levledu |   .9816975   .0637549    -0.28   0.776     .8643659    1.114956
    hous_inc |   .9999478   .0000612    -0.85   0.394     .9998279    1.000068
       drink |   .7837949   .3022464    -0.63   0.528     .3680974    1.668945
       smoke |   1.074796   .4126248     0.19   0.851     .5064555    2.280923
```

```
  pest_pois |   1.557446   1.269935     0.54   0.587      .315026    7.699798
     lang12 |   .7501217    .498001    -0.43   0.665     .2041853    2.755745
      drugs |   1.491116   2.233101     0.27   0.790     .0792043    28.07205
      _cons |   1.640727   2.081992     0.39   0.696     .1364297    19.73167
------------------------------------------------------------------------------

. logistic pr_concen dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       6.51
                                                Prob > chi2     =     0.6881
Log likelihood = -88.389063                     Pseudo R2       =     0.0355

------------------------------------------------------------------------------
  pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     dep_cr |   .9943844   .0093865    -0.60   0.551     .9761564    1.012953
        age |   .9689345   .0204654    -1.49   0.135      .929642    1.009888
     levledu |   .9977345   .0778623    -0.03   0.977     .8562252    1.162631
    hous_inc |   .9999818   .0000703    -0.26   0.796     .9998441     1.00012
      drink |   .8505888   .3812745    -0.36   0.718     .3533218    2.047712
      smoke |   1.518219   .6746793     0.94   0.347     .6354334    3.627427
  pest_pois |   1.367908    1.24535     0.34   0.731     .2296776    8.146949
     lang12 |   1.929127   1.768654     0.72   0.474     .3198645    11.63471
      drugs |   3.725931   5.862545     0.84   0.403     .1705755    81.38662
      _cons |    .554356   .8658404    -0.38   0.706     .0259603    11.83771
------------------------------------------------------------------------------

. logistic short_mem dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       7.17
                                                Prob > chi2     =     0.5187
Log likelihood = -102.26629                     Pseudo R2       =     0.0339

------------------------------------------------------------------------------
  short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     dep_cr |   .9932056   .0087761    -0.77   0.440     .9761529    1.010556
        age |   .9802862   .0177316    -1.10   0.271     .9461417    1.015663
     levledu |   1.066895   .0754708     0.92   0.360     .9287714     1.22556
    hous_inc |   .9999209   .0000657    -1.20   0.229     .9997921     1.00005
      drink |   .8042952   .3227112    -0.54   0.587     .3663396    1.765823
      smoke |   1.093637   .4369998     0.22   0.823     .4997429    2.393314
  pest_pois |   2.500869    2.0609     1.11   0.266     .4973228    12.57603
     lang12 |   1.400137   .985143     0.48   0.632     .3525829    5.560066
      drugs |          1  (omitted)
      _cons |   .7737834   1.039822    -0.19   0.849      .05556    10.77647
------------------------------------------------------------------------------

. logistic perspire dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
```

```
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      10.99
                                                Prob > chi2     =     0.2023
Log likelihood = -79.811194                     Pseudo R2       =     0.0644

------------------------------------------------------------------------------
    perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |   .9851654   .0130775    -1.13   0.260     .9598645    1.011133
         age |   .9625925   .0223011    -1.65   0.100     .9198606     1.00731
      levledu |   1.051893   .0929681     0.57   0.567     .8845872    1.250841
     hous_inc |   .9999398   .0000808    -0.74   0.456     .9997815    1.000098
       drink |   .8757135   .4184463    -0.28   0.781     .3432641    2.234064
       smoke |   1.435327   .6842734     0.76   0.448     .5638347    3.653845
    pest_pois |   1.283838    1.21783     0.26   0.792     .2000195    8.240392
      lang12 |    .297464   .2318242    -1.56   0.120     .0645748    1.370269
       drugs |          1  (omitted)
       _cons |   2.845292    4.64694     0.64   0.522     .1158622     69.8734
------------------------------------------------------------------------------

. logistic button dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.32
                                                Prob > chi2     =     0.6116
Log likelihood = -31.484357                     Pseudo R2       =     0.0912

------------------------------------------------------------------------------
      button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |   .9725758   .0356598    -0.76   0.448     .9051361     1.04504
         age |   .9810872   .0405496    -0.46   0.644     .9047453    1.063871
      levledu |   1.098084   .1799952     0.57   0.568      .796359    1.514128
     hous_inc |   .9998602   .0001631    -0.86   0.391     .9995406     1.00018
       drink |   1.613971    1.51218     0.51   0.609     .2572637    10.12542
       smoke |   2.275144     2.0968     0.89   0.372     .3737069    13.85117
    pest_pois |   2.230223   2.825557     0.63   0.527     .1861777    26.71585
      lang12 |   13.41919    58.0867     0.60   0.549     .0027745    64902.52
       drugs |          1  (omitted)
       _cons |   .0032006   .0159601    -1.15   0.249     1.82e-07    56.21292
------------------------------------------------------------------------------

. logistic reading dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       8.64
                                                Prob > chi2     =     0.4713
```

Log likelihood = -81.493067 Pseudo R2 = 0.0503

reading	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
dep_cr	.9864515	.0107762	-1.25	0.212	.965555	1.0078
age	.9497433	.0220883	-2.22	0.027	.9074229	.9940375
levledu	.914625	.0740548	-1.10	0.270	.7804112	1.071921
hous_inc	.9999816	.0000758	-0.24	0.808	.999833	1.00013
drink	.8587018	.3974731	-0.33	0.742	.3466099	2.127374
smoke	.777785	.3556362	-0.55	0.583	.3174346	1.905745
pest_pois	.7691987	.883885	-0.23	0.819	.0808955	7.313964
lang12	.8717688	.7362173	-0.16	0.871	.1665533	4.562989
drugs	4.578994	8.138717	0.86	0.392	.1405536	149.1757
_cons	6.764733	10.92726	1.18	0.237	.2852864	160.4059

. logistic fam_mem dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression Number of obs = 162
LR chi2(9) = 10.54
Prob > chi2 = 0.3088
Log likelihood = -84.144963 Pseudo R2 = 0.0589

fam_mem	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
dep_cr	.9945425	.0097948	-0.56	0.578	.9755291	1.013926
age	1.018973	.0207667	0.92	0.356	.979073	1.060498
levledu	1.222935	.109022	2.26	0.024	1.026882	1.456419
hous_inc	.9998557	.0000848	-1.70	0.089	.9996895	1.000022
drink	.6841678	.3183782	-0.82	0.415	.2748242	1.703218
smoke	1.989612	.9486971	1.44	0.149	.7814373	5.065738
pest_pois	.8823898	.8139936	-0.14	0.892	.1446897	5.381251
lang12	.7028365	.5374096	-0.46	0.645	.1570364	3.145634
drugs	5.496969	8.613129	1.09	0.277	.2549099	118.5386
_cons	.0551743	.086232	-1.85	0.064	.0025787	1.18054

. logistic chest dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression Number of obs = 162
LR chi2(9) = 20.05
Prob > chi2 = 0.0176
Log likelihood = -92.384111 Pseudo R2 = 0.0979

chest	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
dep_cr	.9944178	.0081296	-0.68	0.494	.978611	1.01048
age	.9894707	.0189572	-0.55	0.581	.9530042	1.027333
levledu	1.087046	.0815703	1.11	0.266	.9383718	1.259275
hous_inc	.9997166	.0000948	-2.99	0.003	.9995308	.9999024
drink	1.437154	.6202209	0.84	0.401	.6168183	3.348494

```
      smoke |   .6385681   .2716291    -1.05   0.292     .2774149    1.469889
  pest_pois |   4.957776   4.484685     1.77   0.077     .8419969    29.19196
     lang12 |   1.082769   .7939127     0.11   0.914      .257285    4.556774
      drugs |   1.163001   1.780242     0.10   0.921     .0578921    23.36367
      _cons |   .8104369   1.168058    -0.15   0.884     .0480738    13.66248
------------------------------------------------------------------------------

. logistic notes dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      14.29
                                                Prob > chi2     =     0.0745
Log likelihood = -78.161009                     Pseudo R2       =     0.0838

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |   .9909111   .0114852    -0.79   0.431     .9686542    1.013679
         age |    .949016   .0223252    -2.22   0.026     .9062528     .993797
     levledu |   .9875082    .083616    -0.15   0.882     .8365007    1.165776
    hous_inc |   .9999006   .0000871    -1.14   0.254      .99973    1.000071
       drink |   .5618648   .2668215    -1.21   0.225     .2215177    1.425132
       smoke |   .7823559   .3696792    -0.52   0.603     .3098805    1.975216
   pest_pois |   8.272401   7.246224     2.41   0.016     1.486005    46.05142
      lang12 |   .8447261   .6604744    -0.22   0.829     .1824645     3.91069
       drugs |         1  (omitted)
       _cons |   5.317596   8.595639     1.03   0.301     .2237633    126.3694
------------------------------------------------------------------------------

. logistic chek_door dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                             Number of obs   =        155
                                                LR chi2(8)      =       4.10
                                                Prob > chi2     =     0.8479
Log likelihood = -103.36215                     Pseudo R2       =     0.0195

------------------------------------------------------------------------------
   chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |   .9928524   .0075634    -0.94   0.346     .9781385    1.007788
         age |   .9770003    .017543    -1.30   0.195     .9432146    1.011996
     levledu |   .9712847   .0657517    -0.43   0.667     .8505971    1.109096
    hous_inc |   .9999577   .0000623    -0.68   0.497     .9998355     1.00008
       drink |   1.337011   .5244383     0.74   0.459     .6198034    2.884138
       smoke |   .7608875   .2966569    -0.70   0.483     .3543657    1.633764
   pest_pois |         1  (omitted)
      lang12 |   1.154663   .8371991     0.20   0.843     .2787942     4.78219
       drugs |   1.168933   1.815991     0.10   0.920     .0556429     24.5567
```

```
      _cons |   2.343374   3.172207     0.63   0.529     .1650352    33.27412
------------------------------------------------------------------------------

. logistic q16_head dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.83
                                                Prob > chi2     =     0.5555
Log likelihood = -94.325007                     Pseudo R2       =     0.0349

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     dep_cr |   .9990153   .0081073    -0.12   0.903      .983251    1.015032
        age |   .9894196    .018123    -0.58   0.561     .9545292    1.025585
     levledu |   1.055919   .0747606     0.77   0.442     .9191033    1.213101
    hous_inc |   .9998715   .0000641    -2.00   0.045      .999746    .9999971
      drink |   1.231881   .5214359     0.49   0.622     .5373636    2.824028
      smoke |   1.016527   .4315342     0.04   0.969     .4423527    2.335982
   pest_pois |    2.33074   2.623684     0.75   0.452      .25663    21.16803
     lang12 |   1.545903   1.081917     0.62   0.534      .392157     6.09403
      drugs |          1  (omitted)
      _cons |   2.035956   2.806363     0.52   0.606     .1366065    30.34348
------------------------------------------------------------------------------

. logistic less_sex dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       5.88
                                                Prob > chi2     =     0.6608
Log likelihood = -104.32388                     Pseudo R2       =     0.0274

------------------------------------------------------------------------------
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     dep_cr |   1.008527   .0077342     1.11   0.268     .9934814      1.0238
        age |   1.001252   .0174337     0.07   0.943     .9676586    1.036011
     levledu |   1.086539   .0749717     1.20   0.229       .9491     1.24388
    hous_inc |   .9999033   .0000663    -1.46   0.145     .9997733    1.000033
      drink |   1.079389   .4290685     0.19   0.848     .4952412    2.352554
      smoke |   1.187401   .4709817     0.43   0.665     .5457185    2.583603
   pest_pois |   2.026568   1.668243     0.86   0.391     .4037047    10.17323
     lang12 |   1.796083   1.233379     0.85   0.394     .4675222    6.900026
      drugs |          1  (omitted)
      _cons |   .1860154   .2484574    -1.26   0.208     .0135711    2.549668
------------------------------------------------------------------------------

. logistic q16_score dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
```

```
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       5.47
                                                Prob > chi2     =     0.6033
Log likelihood =  -52.68521                     Pseudo R2       =     0.0493

------------------------------------------------------------------------------
   q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |    1.00657   .0132538     0.50   0.619     .9809257    1.032885
         age |   .9555184   .0242357    -1.79   0.073     .9091786     1.00422
     levledu |   .9722359   .0999229    -0.27   0.784     .7948556      1.1892
    hous_inc |    .999912   .0000796    -1.11   0.269     .9997561    1.000068
       drink |   .6116158   .3856669    -0.78   0.436     .1777199    2.104851
       smoke |   1.179153   .7287463     0.27   0.790     .3511611    3.959444
   pest_pois |          1  (omitted)
      lang12 |   1.432662   1.597643     0.32   0.747     .1610348    12.74581
       drugs |          1  (omitted)
       _cons |   62.86685   130.3188     2.00   0.046     1.081279    3655.154
------------------------------------------------------------------------------

. logistic q16_score50 dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       8.03
                                                Prob > chi2     =     0.3296
Log likelihood = -101.08788                     Pseudo R2       =     0.0382

------------------------------------------------------------------------------
  q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |   .9907546   .0083159    -1.11   0.268     .9745892    1.007188
         age |   .9810362   .0175319    -1.07   0.284     .9472691    1.016007
     levledu |   1.044025   .0721121     0.62   0.533     .9118377    1.195376
    hous_inc |   .9998948    .000066    -1.59   0.111     .9997655    1.000024
       drink |   .8376611   .3300222    -0.45   0.653     .3870005    1.813115
       smoke |   .8350036   .3274313    -0.46   0.646     .3871732    1.800824
   pest_pois |          1  (omitted)
      lang12 |   .6356769   .4730827    -0.61   0.543     .1478278    2.733485
       drugs |          1  (omitted)
       _cons |   3.417363    4.74958     0.88   0.377     .2242121    52.08626
------------------------------------------------------------------------------
```

```
. logistic q16_score75 dep_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      14.44
                                                Prob > chi2     =     0.1075
Log likelihood = -83.324413                     Pseudo R2       =     0.0797

------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      dep_cr |   .9906171   .0099703    -0.94   0.349     .9712672    1.010353
         age |   .9831051   .0211008    -0.79   0.427     .9426062    1.025344
     levledu |    1.108303   .0958098     1.19   0.234     .9355657    1.312933
    hous_inc |   .9998463     .00009    -1.71   0.088      .99967    1.000023
       drink |   1.376842   .6503007     0.68   0.498     .5455696    3.474704
       smoke |   1.223658   .5679867     0.43   0.664     .4926712    3.039228
   pest_pois |    3.50943   2.997283     1.47   0.142     .6580434    18.71624
      lang12 |   .4355402   .3331125    -1.09   0.277     .0972763    1.950066
       drugs |   3.317485   5.307805     0.75   0.454     .1441884    76.32865
       _cons |   .6715225   1.050212    -0.25   0.799     .0313216    14.39717
------------------------------------------------------------------------------

. logistic tired detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      17.82
                                                Prob > chi2     =     0.0226
Log likelihood = -100.18576                     Pseudo R2       =     0.0817

------------------------------------------------------------------------------
      tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     detp_cr |     .99543   .0052035    -0.88   0.381     .9852834    1.005681
         age |   .9696042   .0173181    -1.73   0.084     .9362486    1.004148
     levledu |   1.043363   .0713088     0.62   0.535     .9125567    1.192919
    hous_inc |    .999824   .0000692    -2.54   0.011     .9996884    .9999597
       drink |   .4847473   .1977298    -1.78   0.076     .2179254    1.078259
       smoke |   1.345939   .5352193     0.75   0.455     .6173632    2.934336
   pest_pois |   1.865023   1.660701     0.70   0.484     .3256386    10.68151
      lang12 |   .5838555   .4391284    -0.72   0.474     .1336906    2.549821
       drugs |          1  (omitted)
       _cons |   13.10626   18.01047     1.87   0.061     .8866815     193.727
------------------------------------------------------------------------------

. logistic hart_palp detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
```

```
                                LR chi2(8)      =       9.78
                                Prob > chi2     =     0.2810
Log likelihood = -102.79289                     Pseudo R2       =     0.0454

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    detp_cr |   .9950533   .0055482    -0.89   0.374     .9842382    1.005987
       age |   .9625083   .0177625    -2.07   0.038     .9283166    .9979593
    levledu |   .9792401   .0665388    -0.31   0.758     .8571376    1.118736
   hous_inc |   .9999261   .0000655    -1.13   0.259     .9997978    1.000054
      drink |   .6239503   .2446108    -1.20   0.229     .2893668      1.3454
      smoke |   .8804276   .3408653    -0.33   0.742     .4122337    1.880372
  pest_pois |   2.932363   2.428847     1.30   0.194     .5783302    14.86824
     lang12 |   1.529379   1.070769     0.61   0.544     .3877578    6.032112
      drugs |          1  (omitted)
      _cons |   4.119782   5.509155     1.06   0.290      .299647    56.64201
------------------------------------------------------------------------------

. logistic tingling detp_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        160
                                LR chi2(8)      =       9.07
                                Prob > chi2     =     0.3364
Log likelihood = -100.23992                     Pseudo R2       =     0.0433

------------------------------------------------------------------------------
   tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    detp_cr |   .9952911   .0056567    -0.83   0.406     .9842657     1.00644
       age |   .9884261   .0178367    -0.65   0.519     .9540779    1.024011
    levledu |   1.075917   .0773041     1.02   0.308     .9345881    1.238617
   hous_inc |   .9999726   .0000634    -0.43   0.665     .9998483    1.000097
      drink |   .6564548   .2616609    -1.06   0.291     .3005512    1.433809
      smoke |   .9262806   .3688777    -0.19   0.848     .4243889    2.021721
  pest_pois |    2.76551   2.293379     1.23   0.220     .5443672    14.04943
     lang12 |    .384514   .2690586    -1.37   0.172     .0975652    1.515407
      drugs |          1  (omitted)
      _cons |   1.736332   2.361946     0.41   0.685     .1207082    24.97635
------------------------------------------------------------------------------

. logistic irritated detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        160
                                LR chi2(8)      =       7.00
                                Prob > chi2     =     0.5361
Log likelihood = -103.31624                     Pseudo R2       =     0.0328
```

```
------------------------------------------------------------------------------
  irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    detp_cr |   .9939506   .0055252    -1.09   0.275     .9831802    1.004839
        age |   .9994518   .0174284    -0.03   0.975      .96587    1.034201
    levledu |   .9567218   .0637508    -0.66   0.507     .8395879    1.090198
   hous_inc |   .9999647    .000063    -0.56   0.575     .9998411    1.000088
      drink |   .8881142   .3437728    -0.31   0.759     .4158955    1.896502
      smoke |   .5881454   .2282883    -1.37   0.171     .2748472    1.258572
  pest_pois |    2.37839   1.967688     1.05   0.295     .4699671    12.03645
     lang12 |   .6222437    .420775    -0.70   0.483     .1653329    2.341865
      drugs |          1  (omitted)
      _cons |   2.521038   3.287565     0.71   0.478      .19569    32.47808
------------------------------------------------------------------------------

. logistic depress detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       3.97
                                                Prob > chi2     =     0.9134
Log likelihood = -109.51381                     Pseudo R2       =     0.0178

------------------------------------------------------------------------------
    depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    detp_cr |   .9940274   .0050964    -1.17   0.243     .9840887    1.004067
        age |    1.00226   .0170403     0.13   0.894     .9694118    1.036221
    levledu |    .982119   .0639746    -0.28   0.782     .8644053    1.115863
   hous_inc |   .9999471   .0000613    -0.86   0.388     .9998271    1.000067
      drink |   .7996528   .3038406    -0.59   0.556     .3797293    1.683948
      smoke |   1.084708    .410234     0.21   0.830     .5168808     2.27633
  pest_pois |    1.4455   1.181121     0.45   0.652     .2914069    7.170286
     lang12 |   .6609706   .4446863    -0.62   0.538     .1768124     2.47088
      drugs |   1.696838   2.527939     0.35   0.723      .091522    31.45976
      _cons |   1.883729   2.392508     0.50   0.618     .1562841    22.70504
------------------------------------------------------------------------------

. logistic pr_concen detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       6.17
                                                Prob > chi2     =     0.7229
Log likelihood = -88.559128                     Pseudo R2       =     0.0337

------------------------------------------------------------------------------
  pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    detp_cr |   .9988802   .0056817    -0.20   0.844     .9878062    1.010078
        age |   .9693439   .0205937    -1.47   0.143     .9298099    1.010559
    levledu |   .9998049   .0777033    -0.00   0.998     .8585413    1.164312
   hous_inc |    .999983   .0000703    -0.24   0.809     .9998453    1.000121
      drink |   .8238197   .3662946    -0.44   0.663     .3446378    1.969253
      smoke |   1.593872   .6970281     1.07   0.286     .6764072    3.755768
  pest_pois |   1.407113   1.279085     0.38   0.707     .2369057    8.357619
```

```
     lang12 |   1.919281   1.727474     0.72   0.469     .3288543    11.20144
      drugs |   3.016066   4.509098     0.74   0.460     .1610171    56.49494
      _cons |   .5082884   .7883354    -0.44   0.663     .0243181    10.62406
------------------------------------------------------------------------------

. logistic short_mem detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       9.59
                                                Prob > chi2     =     0.2952
Log likelihood =  -101.0564                     Pseudo R2       =     0.0453

------------------------------------------------------------------------------
  short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    detp_cr |   .9897483   .0064052    -1.59   0.111     .9772736    1.002382
       age |   .9827916   .0179825    -0.95   0.343     .9481709    1.018676
    levledu |   1.070982   .0760454     0.97   0.334     .9318417    1.230897
   hous_inc |   .9999202   .0000659    -1.21   0.226     .9997909    1.000049
      drink |   .7924221   .3146198    -0.59   0.558     .3639144    1.725496
      smoke |   1.152992   .4555978     0.36   0.719     .5314702    2.501344
  pest_pois |   2.345357   1.925956     1.04   0.299      .469052    11.72727
     lang12 |   1.216851   .8705882     0.27   0.784     .2993991    4.945658
      drugs |          1  (omitted)
      _cons |    .847082    1.15457    -0.12   0.903     .0585788    12.24927
------------------------------------------------------------------------------

. logistic perspire detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      10.94
                                                Prob > chi2     =     0.2053
Log likelihood = -79.837378                     Pseudo R2       =     0.0641

------------------------------------------------------------------------------
   perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    detp_cr |   .9912666   .0076967    -1.13   0.259     .9762955    1.006467
       age |   .9631372    .022339    -1.62   0.105     .9203339    1.007931
    levledu |   1.056828   .0930406     0.63   0.530      .889337    1.255862
   hous_inc |   .9999415   .0000806    -0.73   0.468     .9997835      1.0001
      drink |   .7977538   .3718436    -0.48   0.628     .3199725    1.988956
      smoke |   1.579586   .7463632     0.97   0.333     .6256709    3.987868
  pest_pois |   1.345941   1.274827     0.31   0.754     .2102804    8.614962
     lang12 |   .2962215    .226582    -1.59   0.112     .0661494    1.326499
      drugs |          1  (omitted)
      _cons |   2.627521    4.30323     0.59   0.555     .1060446    65.10345
------------------------------------------------------------------------------
```

```
. logistic button detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       5.44
                                                Prob > chi2     =     0.7097
Log likelihood = -31.923692                     Pseudo R2       =     0.0785

------------------------------------------------------------------------------
      button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     detp_cr |    1.00078    .010798     0.07   0.942     .9798385    1.022169
         age |   .9806048   .0406561    -0.47   0.637      .904072    1.063616
     levledu |   1.104913   .1789317     0.62   0.538       .80442    1.517655
    hous_inc |   .9998658    .00016    -0.84   0.402     .9995523    1.000179
       drink |   1.458112   1.371891     0.40   0.689     .2306339    9.218471
       smoke |   2.521017   2.319954     1.00   0.315     .4152039      15.307
   pest_pois |   2.577801   3.258115     0.75   0.454     .2164736    30.69685
      lang12 |   7.217726   20.05484     0.71   0.477     .0311381    1673.052
       drugs |         1  (omitted)
       _cons |   .0043243   .0163007    -1.44   0.149     2.67e-06     6.99113
------------------------------------------------------------------------------

. logistic reading detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       6.90
                                                Prob > chi2     =     0.6480
Log likelihood = -82.364664                     Pseudo R2       =     0.0402

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     detp_cr |   .9977224   .0062115    -0.37   0.714     .9856222    1.009971
         age |   .9503466   .0220755    -2.19   0.028     .9080495    .9946139
     levledu |   .9196566   .0735794    -1.05   0.295     .7861822    1.075792
    hous_inc |   .9999838   .0000756    -0.21   0.830     .9998356    1.000132
       drink |   .7852954   .3569631    -0.53   0.595     .3221898    1.914055
       smoke |   .8670651   .3890712    -0.32   0.751     .3598312    2.089318
   pest_pois |   .8393674   .9615676    -0.15   0.879     .0888848    7.926413
      lang12 |   .9229599   .7514291    -0.10   0.922      .187144    4.551869
       drugs |    2.66948   4.043532     0.65   0.517     .1371162    51.97139
       _cons |   5.252449   8.409843     1.04   0.300     .2277609     121.128
------------------------------------------------------------------------------

. logistic fam_mem detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      11.02
                                                Prob > chi2     =     0.2746
Log likelihood =  -83.90491                     Pseudo R2       =     0.0616
```

```
------------------------------------------------------------------------------
     fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     detp_cr |     .99431   .0066881    -0.85   0.396     .9812876    1.007505
         age |   1.020304   .0209706     0.98   0.328     .9800196    1.062245
     levledu |   1.225351   .1092216     2.28   0.023     1.028937    1.459259
    hous_inc |   .9998576   .0000844    -1.69   0.092     .9996922    1.000023
       drink |    .665154   .3041926    -0.89   0.373      .271422    1.630044
       smoke |   2.086053   .9895569     1.55   0.121     .8232703    5.285769
   pest_pois |   .8633907   .7975312    -0.16   0.874     .1412328    5.278119
      lang12 |   .6686838   .5092148    -0.53   0.597     .1503195    2.974583
       drugs |   5.142442   7.787403     1.08   0.280     .2643391    100.0409
       _cons |   .0554737   .0872131    -1.84   0.066     .0025461    1.208664
------------------------------------------------------------------------------

. logistic chest detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      20.84
                                                Prob > chi2     =     0.0134
Log likelihood = -91.986704                     Pseudo R2       =     0.1018

------------------------------------------------------------------------------
       chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     detp_cr |    .993225   .0062646    -1.08   0.281     .9810222     1.00558
         age |   .9903161   .0191027    -0.50   0.614     .9535745    1.028473
     levledu |   1.088339   .0817278     1.13   0.260     .9393855    1.260911
    hous_inc |   .9997161    .000095    -2.99   0.003      .99953    .9999022
       drink |   1.383156   .5839321     0.77   0.442     .6046669    3.163924
       smoke |    .665823   .2798575    -0.97   0.333     .2921348     1.51752
   pest_pois |   4.815282   4.332621     1.75   0.081     .8255447    28.08684
      lang12 |   1.000998   .7396015     0.00   0.999     .2352402    4.259468
       drugs |   1.112762   1.664387     0.07   0.943     .0593251    20.87212
       _cons |   .8857067   1.295099    -0.08   0.934     .0504249    15.55733
------------------------------------------------------------------------------

. logistic notes detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      13.86
                                                Prob > chi2     =     0.0854
Log likelihood = -78.374769                     Pseudo R2       =     0.0813

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     detp_cr |   .9964542   .0069282    -0.51   0.609     .9829674    1.010126
         age |   .9495243    .022344    -2.20   0.028     .9067253    .9943434
     levledu |   .9910586   .0834886    -0.11   0.915     .8402191    1.168977
```

```
    hous_inc |   .9999008    .000087    -1.14   0.254     .9997303    1.000071
       drink |   .5311506    .247966    -1.36   0.175      .212734    1.326168
       smoke |    .836944   .3886407    -0.38   0.701     .3368489    2.079494
   pest_pois |   8.529081   7.431604     2.46   0.014     1.546069    47.05174
      lang12 |   .8387474   .6523348    -0.23   0.821      .182646    3.851698
       drugs |          1  (omitted)
       _cons |    4.84687   7.860801     0.97   0.330     .2018165    116.4035
------------------------------------------------------------------------------

. logistic chek_door detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                             Number of obs   =        155
                                                LR chi2(8)      =       3.17
                                                Prob > chi2     =     0.9231
Log likelihood = -103.82703                     Pseudo R2       =     0.0150

------------------------------------------------------------------------------
  chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     detp_cr |    .999844   .0047708    -0.03   0.974      .990537    1.009238
        age |   .9771388    .017549    -1.29   0.198      .9433417    1.012147
     levledu |   .9757607   .0656914    -0.36   0.716      .8551409    1.113394
    hous_inc |   .9999593   .0000623    -0.65   0.514      .9998372    1.000082
       drink |   1.249856   .4812097     0.58   0.562      .5876744    2.658171
       smoke |   .8182215   .3121202    -0.53   0.599      .3874093    1.728111
   pest_pois |          1  (omitted)
      lang12 |   1.263979   .9011931     0.33   0.742      .3124996    5.112466
       drugs |   .8711717    1.28507    -0.09   0.926      .0483607    15.69334
       _cons |   1.871977   2.496316     0.47   0.638      .1371539    25.55014
------------------------------------------------------------------------------

. logistic q16_head detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.82
                                                Prob > chi2     =     0.5560
Log likelihood =  -94.32758                     Pseudo R2       =     0.0349

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     detp_cr |   .9995132   .0049838    -0.10   0.922     .9897927    1.009329
        age |   .9896012   .0182088    -0.57   0.570     .9545485    1.025941
     levledu |   1.056613   .0745763     0.78   0.435     .9201057    1.213373
    hous_inc |   .9998717   .0000641    -2.00   0.045     .9997462    .9999973
       drink |   1.222853   .5081766     0.48   0.628     .5415558    2.761245
       smoke |   1.028318   .4258524     0.07   0.946     .4566921    2.315429
   pest_pois |   2.332512   2.627395     0.75   0.452     .2564548     21.2147
```

```
     lang12 |   1.550608    1.08473     0.63   0.531     .3935886    6.108876
      drugs |          1  (omitted)
      _cons |   1.994112    2.70374     0.51   0.611     .1398422     28.4355
------------------------------------------------------------------------------

. logistic less_sex detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       5.26
                                                Prob > chi2     =     0.7298
Log likelihood = -104.63488                     Pseudo R2       =     0.0245

------------------------------------------------------------------------------
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    detp_cr |   .9960077   .0052321    -0.76   0.446     .9858055    1.006315
        age |   1.002523   .0175323     0.14   0.885     .9687431    1.037482
    levledu |   1.078325   .0738637     1.10   0.271     .9428523    1.233263
   hous_inc |   .9999025   .0000657    -1.48   0.138     .9997736    1.000031
      drink |   1.196331   .4673382     0.46   0.646     .5563338     2.57257
      smoke |   1.079835   .4165808     0.20   0.842     .5069665    2.300041
  pest_pois |   1.765313   1.446979     0.69   0.488     .3540913    8.800923
     lang12 |   1.466146   1.023554     0.55   0.584     .3731912    5.760004
      drugs |          1  (omitted)
      _cons |   .2767852   .3650986    -0.97   0.330     .0208617    3.672281
------------------------------------------------------------------------------

. logistic q16_score detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       5.23
                                                Prob > chi2     =     0.6313
Log likelihood = -52.800781                     Pseudo R2       =     0.0472

------------------------------------------------------------------------------
  q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    detp_cr |   .9986158   .0065725    -0.21   0.833     .9858166    1.011581
        age |   .9561864   .0242549    -1.77   0.077     .9098102    1.004927
    levledu |    .968482    .098712    -0.31   0.753     .7931098    1.182632
   hous_inc |   .9999105   .0000795    -1.13   0.260     .9997546    1.000066
      drink |   .6582365   .4075654    -0.68   0.499     .1955856    2.215272
      smoke |   1.126011   .6881335     0.19   0.846     .3399009    3.730209
  pest_pois |          1  (omitted)
     lang12 |   1.174207   1.211758     0.16   0.876     .1553539    8.874986
```

```
      drugs |          1  (omitted)
      _cons |   84.13151   168.6916     2.21   0.027     1.652798    4282.502
------------------------------------------------------------------------------

. logistic q16_score50 detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       9.25
                                                Prob > chi2     =     0.2355
Log likelihood = -100.48224                     Pseudo R2       =     0.0440

------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    detp_cr |   .9913503   .0057576    -1.50   0.135     .9801296    1.002699
       age |   .9831328   .0176739    -0.95   0.344     .9490958     1.01839
    levledu |   1.048885   .0722338     0.69   0.488     .9164485     1.20046
   hous_inc |   .9998952   .0000662    -1.58   0.113     .9997656    1.000025
      drink |    .796154   .3080284    -0.59   0.556     .3729675    1.699508
      smoke |    .906263   .3499616    -0.25   0.799     .4251626    1.931761
  pest_pois |          1  (omitted)
     lang12 |   .5858319    .430764    -0.73   0.467     .1386379    2.475506
      drugs |          1  (omitted)
      _cons |   3.381257   4.664929     0.88   0.377     .2263204    50.51645
------------------------------------------------------------------------------

. logistic q16_score75 detp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      14.12
                                                Prob > chi2     =     0.1181
Log likelihood = -83.484783                     Pseudo R2       =     0.0780

------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    detp_cr |   .9948369   .0066424    -0.78   0.438     .9819028    1.007941
       age |   .9828263   .0211247    -0.81   0.420     .9422827    1.025114
    levledu |   1.109293   .0954416     1.21   0.228     .9371529    1.313053
   hous_inc |   .9998498   .0000895    -1.68   0.093     .9996744    1.000025
      drink |   1.277151    .588671     0.53   0.596     .5174897    3.151973
      smoke |   1.310566   .6022169     0.59   0.556     .5325056    3.225475
  pest_pois |   3.638265   3.089676     1.52   0.128     .6887149    19.21981
     lang12 |    .449871   .3404959    -1.06   0.291     .1020552    1.983082
      drugs |   2.534493   3.808764     0.62   0.536     .1332691    48.20061
      _cons |   .6390872   1.008462    -0.28   0.777     .0289993    14.08424
------------------------------------------------------------------------------
```

```
. logistic tired dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      17.65
                                                Prob > chi2     =     0.0240
Log likelihood = -100.27367                     Pseudo R2       =     0.0809

------------------------------------------------------------------------------
       tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   1.004465   .0057329     0.78   0.435      .993291    1.015764
         age |   .9669707   .0173986    -1.87   0.062     .9334643     1.00168
     levledu |   1.048998   .0717232     0.70   0.484      .917435    1.199427
    hous_inc |   .9998265   .0000691    -2.51   0.012      .999691     .999962
       drink |   .4645921   .1894386    -1.88   0.060     .2089259    1.033121
       smoke |   1.401046   .5604091     0.84   0.399     .6397018    3.068509
   pest_pois |   2.133732   1.904236     0.85   0.396     .3710995    12.26844
     lang12 |   .6903715   .5150425    -0.50   0.619     .1599762    2.979274
      drugs |           1  (omitted)
      _cons |   10.01072   13.71901     1.68   0.093     .6822626    146.8856
------------------------------------------------------------------------------

. logistic hart_palp dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       9.21
                                                Prob > chi2     =     0.3252
Log likelihood = -103.07887                     Pseudo R2       =     0.0427

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   .9969471   .0058144    -0.52   0.600      .985616    1.008408
         age |   .9621953   .0177061    -2.09   0.036     .9281104     .997532
     levledu |   .9787212   .0666801    -0.32   0.752     .8563805    1.118539
    hous_inc |   .9999261   .0000654    -1.13   0.259     .9997978    1.000054
       drink |   .6162339   .2412818    -1.24   0.216     .2860645    1.327478
       smoke |   .8638129   .3369736    -0.38   0.707     .4021294    1.855554
   pest_pois |   2.996763   2.491366     1.32   0.187     .5874946    15.28625
     lang12 |   1.641224   1.141323     0.71   0.476      .419985    6.413597
      drugs |           1  (omitted)
      _cons |   3.798225   5.039482     1.01   0.314     .2819728    51.16279
------------------------------------------------------------------------------

. logistic tingling dedtp_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used
```

```
Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       8.34
                                                Prob > chi2     =     0.4013
Log likelihood = -100.60672                     Pseudo R2       =     0.0398

------------------------------------------------------------------------------
   tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dedtp_cr |   1.000582   .0057634     0.10   0.920      .989349    1.011942
         age |   .9871602   .0177748    -0.72   0.473     .9529298     1.02262
      levledu |   1.077502   .0772674     1.04   0.298     .9362214    1.240102
    hous_inc |   .9999742   .0000634    -0.41   0.684     .9998501    1.000098
       drink |   .6437023   .2564881    -1.11   0.269     .2947931    1.405571
       smoke |   .9323078   .3738152    -0.17   0.861      .424878    2.045759
   pest_pois |    2.95613   2.448861     1.31   0.191     .5828911    14.99201
      lang12 |   .4363699   .2983878    -1.21   0.225     .1142371    1.666873
       drugs |          1  (omitted)
       _cons |   1.447236    1.95037     0.27   0.784     .1031375    20.30778
------------------------------------------------------------------------------

. logistic irritated dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.22
                                                Prob > chi2     =     0.6221
Log likelihood = -103.70639                     Pseudo R2       =     0.0291

------------------------------------------------------------------------------
  irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    dedtp_cr |   .9959273   .0056798    -0.72   0.474     .9848571    1.007122
         age |   .9991353   .0173569    -0.05   0.960      .965689     1.03374
      levledu |   .9553204   .0638131    -0.68   0.494     .8380905    1.088948
    hous_inc |   .9999637   .0000631    -0.58   0.565     .9998401    1.000087
       drink |   .8765794    .338872    -0.34   0.733     .4108941    1.870047
       smoke |   .5711224   .2227431    -1.44   0.151      .265921    1.226608
   pest_pois |   2.422114   2.004567     1.07   0.285     .4783343    12.26472
      lang12 |   .6715966    .449198    -0.60   0.552     .1810429    2.491354
       drugs |          1  (omitted)
       _cons |    2.33836   3.030144     0.66   0.512     .1844544    29.64378
------------------------------------------------------------------------------

. logistic depress dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       2.70
                                                Prob > chi2     =     0.9749
Log likelihood = -110.14601                     Pseudo R2       =     0.0121

------------------------------------------------------------------------------
```

```
    depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
   dedtp_cr |   .9975993   .0051778    -0.46   0.643     .9875025    1.007799
        age |    1.00111   .0169362     0.07   0.948     .9684598    1.034861
    levledu |   .9809326   .0637499    -0.30   0.767     .8636153    1.114187
   hous_inc |   .9999465   .0000613    -0.87   0.383     .9998264    1.000067
      drink |   .7829771   .2966513    -0.65   0.518     .3726055    1.645314
      smoke |    1.062749   .4032877     0.16   0.873      .50515    2.235843
  pest_pois |    1.516158   1.238023     0.51   0.610     .3059803    7.512692
     lang12 |   .7331289   .4857321    -0.47   0.639     .2000873    2.686217
      drugs |   1.664872   2.515707     0.34   0.736     .0861333    32.18032
      _cons |   1.703177   2.147279     0.42   0.673     .1439157    20.15632
------------------------------------------------------------------------------
```

```
. logistic pr_concen dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =       6.13
                                                Prob > chi2     =     0.7269
Log likelihood = -88.578953                     Pseudo R2       =     0.0334

------------------------------------------------------------------------------
  pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
   dedtp_cr |   .9999989   .0061803    -0.00   1.000     .9879587    1.012186
        age |   .9688764   .0205379    -1.49   0.136     .9294475    1.009978
    levledu |   .9995676   .0777046    -0.01   0.996     .8583043    1.164081
   hous_inc |    .999983   .0000704    -0.24   0.810     .9998451    1.000121
      drink |   .8179247   .3630824    -0.45   0.651     .3426566    1.952394
      smoke |   1.596784   .7058789     1.06   0.290     .6713696    3.797788
  pest_pois |   1.427605   1.298667     0.39   0.696     .2400407    8.490458
     lang12 |   1.956253   1.743574     0.75   0.452     .3410072    11.22241
      drugs |   2.925289   4.484858     0.70   0.484     .1449317    59.04379
      _cons |   .4994625   .7727107    -0.45   0.654     .0240781    10.36057
------------------------------------------------------------------------------
```

```
. logistic short_mem dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       7.34
                                                Prob > chi2     =     0.5002
Log likelihood = -102.17923                     Pseudo R2       =     0.0347

------------------------------------------------------------------------------
 short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+----------------------------------------------------------------
   dedtp_cr |   .9945929   .0061844    -0.87   0.383     .9825454    1.006788
        age |   .9815934   .0177768    -1.03   0.305     .9473626    1.017061
    levledu |   1.068423   .0757857     0.93   0.351     .9297489    1.227781
   hous_inc |   .9999204   .0000658    -1.21   0.226     .9997915    1.000049
      drink |   .7732319   .3058039    -0.65   0.516     .3561802     1.67861
```

```
      smoke |   1.106405   .4374225     0.26   0.798     .5097859    2.401269
  pest_pois |   2.462154   2.027301     1.09   0.274     .4902848    12.36466
     lang12 |   1.391294    .977013     0.47   0.638     .3512987     5.51012
      drugs |          1  (omitted)
      _cons |   .7417829    .993104    -0.22   0.823     .0537876     10.2299
------------------------------------------------------------------------------

. logistic perspire dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       9.61
                                                Prob > chi2     =     0.2938
Log likelihood = -80.503489                     Pseudo R2       =     0.0563

------------------------------------------------------------------------------
    perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   .9965948   .0079819    -0.43   0.670     .9810727    1.012362
         age |   .9622986   .0221544    -1.67   0.095     .9198418    1.006715
     levledu |   1.056472   .0929857     0.62   0.533     .8890767    1.255384
    hous_inc |   .9999432   .0000805    -0.71   0.481     .9997856    1.000101
       drink |    .789348   .3681361    -0.51   0.612     .3164355    1.969028
       smoke |   1.539953    .729748     0.91   0.362     .6083353    3.898272
   pest_pois |   1.426799   1.340688     0.38   0.705     .2262215     8.99895
      lang12 |   .3500335   .2625643    -1.40   0.162     .0804661    1.522671
       drugs |          1  (omitted)
       _cons |   2.123731    3.43568     0.47   0.642     .0891379    50.59837
------------------------------------------------------------------------------

. logistic button dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       7.04
                                                Prob > chi2     =     0.5322
Log likelihood = -31.123179                     Pseudo R2       =     0.1016

------------------------------------------------------------------------------
     button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   .9657939   .0398037    -0.84   0.398     .8908478    1.047045
         age |   .9805142   .0411409    -0.47   0.639      .903106    1.064557
     levledu |   1.083727   .1808477     0.48   0.630     .7814025    1.503019
    hous_inc |   .9998696   .0001634    -0.80   0.425     .9995494     1.00019
       drink |   1.475812    1.40262     0.41   0.682     .2291102    9.506439
       smoke |   2.167262   2.002362     0.84   0.403     .3543847    13.25402
   pest_pois |   2.447106   3.106779     0.70   0.481     .2032313    29.46557
      lang12 |   23.54414   143.1657     0.52   0.603      .000157    3530340
       drugs |          1  (omitted)
```

```
      _cons |   .0021916   .0142761    -0.94   0.347     6.25e-09    768.3545
------------------------------------------------------------------------------

. logistic reading dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        162
                                        LR chi2(9)      =       7.20
                                        Prob > chi2     =     0.6166
Log likelihood = -82.213624             Pseudo R2       =     0.0419

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   .9954725    .00704    -0.64   0.521     .9817696    1.009367
         age |   .9508934   .0220721    -2.17   0.030     .9086021     .995153
     levledu |    .91857   .0738747    -1.06   0.291     .7846132    1.075397
    hous_inc |   .9999828   .0000757    -0.23   0.820     .9998345    1.000131
       drink |   .7903504   .3594721    -0.52   0.605     .3240939    1.927385
       smoke |   .8366147   .3780433    -0.39   0.693      .345057    2.028431
   pest_pois |    .815276   .9343788    -0.18   0.859     .0862486    7.706503
      lang12 |   .9156197   .7522875    -0.11   0.915     .1829594    4.582217
       drugs |   3.338186   5.383542     0.75   0.455     .1415028      78.751
       _cons |   5.452753   8.722301     1.06   0.289     .2371493    125.3747
------------------------------------------------------------------------------

. logistic fam_mem dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        162
                                        LR chi2(9)      =      10.52
                                        Prob > chi2     =     0.3097
Log likelihood = -84.150963             Pseudo R2       =     0.0589

------------------------------------------------------------------------------
     fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   1.003364   .0059151     0.57   0.569     .9918373    1.015024
         age |    1.01656    .020748     0.80   0.421      .976697    1.058049
     levledu |   1.221868   .1078126     2.27   0.023     1.027822    1.452549
    hous_inc |   .9998603   .0000843    -1.66   0.098     .9996951    1.000026
       drink |   .6475626   .2971024    -0.95   0.344     .2634812    1.591527
       smoke |   2.126954   1.016377     1.58   0.114     .8336938    5.426373
   pest_pois |   .9863912   .9087159    -0.01   0.988     .1621351    6.000967
      lang12 |   .8212362   .6045636    -0.27   0.789     .1940194    3.476091
       drugs |   3.471252    5.54372     0.78   0.436     .1517349    79.41216
       _cons |   .0455419   .0707414    -1.99   0.047     .0021688    .9563246
------------------------------------------------------------------------------

. logistic chest dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        162
                                        LR chi2(9)      =      19.96
                                        Prob > chi2     =     0.0182
Log likelihood = -92.428868             Pseudo R2       =     0.0974
```

```
------------------------------------------------------------------------------
       chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |    .996284   .0059756    -0.62   0.535     .9846405    1.008065
         age |   .9903295   .0190348    -0.51   0.613      .953716    1.028349
      levledu |   1.088832   .0818316     1.13   0.257     .9396984    1.261634
    hous_inc |   .9997164   .0000947    -2.99   0.003     .9995308    .9999021
       drink |   1.372149   .5793777     0.75   0.454      .599776    3.139161
       smoke |   .6528769   .2746877    -1.01   0.311      .286221    1.489227
    pest_pois |   4.968369   4.498809     1.77   0.077     .8422855     29.3068
      lang12 |   1.105204    .80276     0.14   0.890     .2661805    4.588903
       drugs |   1.164153   1.784923     0.10   0.921     .0576654    23.50199
       _cons |   .7594631   1.088549    -0.19   0.848     .0457581    12.60508
------------------------------------------------------------------------------

. logistic notes dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =      13.72
                                                Prob > chi2     =     0.0895
Log likelihood = -78.448062                     Pseudo R2       =     0.0804

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   1.002486   .0067514     0.37   0.712     .9893406    1.015806
         age |   .9484855   .0223051    -2.25   0.025     .9057604    .9932259
      levledu |   .9939657   .0834098    -0.07   0.943     .8432218    1.171658
    hous_inc |   .9999033   .0000867    -1.12   0.265     .9997333    1.000073
       drink |   .5200818   .2434804    -1.40   0.163     .2077662    1.301873
       smoke |   .8718527   .4097461    -0.29   0.770     .3470583      2.1902
    pest_pois |   9.193928   8.050001     2.53   0.011     1.652753    51.14396
      lang12 |   .9516076   .7127365    -0.07   0.947      .219242      4.1304
       drugs |          1  (omitted)
       _cons |   3.859913   6.110898     0.85   0.394     .1733728     85.9358
------------------------------------------------------------------------------

. logistic chek_door dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                             Number of obs   =        155
                                                LR chi2(8)      =       3.18
                                                Prob > chi2     =     0.9228
Log likelihood = -103.82496                     Pseudo R2       =     0.0151

------------------------------------------------------------------------------
   chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   .9996219   .0052482    -0.07   0.943     .9893883    1.009961
```

```
       age |    .977204   .0175479    -1.28   0.199     .9434089     1.01221
    levledu |   .9755661   .0657542    -0.37   0.714     .8548399    1.113342
   hous_inc |   .9999591   .0000624    -0.66   0.512     .9998369    1.000081
      drink |   1.250343   .4807576     0.58   0.561     .5884938    2.656542
      smoke |   .8153386   .3134782    -0.53   0.595     .3837703    1.732226
  pest_pois |          1  (omitted)
     lang12 |    1.26222   .8922804     0.33   0.742      .315798    5.044997
      drugs |   .8881704   1.337913    -0.08   0.937     .0463737    17.01065
      _cons |   1.882709   2.511679     0.47   0.635     .1377891    25.72478
------------------------------------------------------------------------------

. logistic q16_head dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       6.98
                                                Prob > chi2     =     0.5390
Log likelihood = -94.249371                     Pseudo R2       =     0.0357

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dedtp_cr |   1.002411    .006008     0.40   0.688     .9907045    1.014256
       age |   .9888433   .0181958    -0.61   0.542     .9538156    1.025157
    levledu |   1.058692   .0750492     0.80   0.421     .9213597    1.216494
   hous_inc |   .9998728   .0000643    -1.98   0.048     .9997468    .9999988
      drink |   1.208736   .5011895     0.46   0.648     .5362776    2.724414
      smoke |   1.051715   .4390063     0.12   0.904     .4640773    2.383451
  pest_pois |   2.443079   2.754381     0.79   0.428     .2680859    22.26389
     lang12 |   1.622032   1.134436     0.69   0.489     .4118475    6.388261
      drugs |          1  (omitted)
      _cons |   1.827136   2.494903     0.44   0.659     .1257415    26.54991
------------------------------------------------------------------------------

. logistic less_sex dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        160
                                                LR chi2(8)      =       5.50
                                                Prob > chi2     =     0.7032
Log likelihood = -104.51417                     Pseudo R2       =     0.0256

------------------------------------------------------------------------------
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
   dedtp_cr |   1.005031   .0054355     0.93   0.353     .9944338    1.015741
       age |   .9998448   .0175066    -0.01   0.993     .9661146    1.034753
    levledu |   1.083975   .0744675     1.17   0.240     .9474211    1.240211
   hous_inc |   .9999044   .0000661    -1.45   0.148     .9997748    1.000034
      drink |   1.157149   .4523105     0.37   0.709     .5378588    2.489487
```

```
      smoke |   1.134539   .4427293     0.32   0.746      .528027    2.437712
  pest_pois |   2.012997   1.658025     0.85   0.396      .400629    10.11448
     lang12 |   1.700403    1.15525     0.78   0.435     .4490009    6.439563
      drugs |          1  (omitted)
      _cons |   .2133658   .2804926    -1.18   0.240     .0162229    2.806221
------------------------------------------------------------------------------

. logistic q16_score dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       5.39
                                                Prob > chi2     =     0.6128
Log likelihood = -52.724448                     Pseudo R2       =     0.0486

------------------------------------------------------------------------------
   q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   1.003784   .0089282     0.42   0.671     .9864364    1.021436
         age |   .9549448   .0242062    -1.82   0.069     .9086607    1.003586
     levledu |   .9716222   .1000649    -0.28   0.780     .7940253    1.188942
    hous_inc |   .9999131   .0000797    -1.09   0.276     .9997568    1.000069
       drink |    .648486   .3992702    -0.70   0.482     .1940078    2.167614
       smoke |   1.144456   .6980144     0.22   0.825     .3462929     3.78229
   pest_pois |          1  (omitted)
      lang12 |   1.290655   1.388578     0.24   0.813      .156685    10.63147
       drugs |          1  (omitted)
       _cons |    71.3987   146.6504     2.08   0.038     1.274538    3999.703
------------------------------------------------------------------------------

. logistic q16_score50 dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        153
                                                LR chi2(7)      =       6.78
                                                Prob > chi2     =     0.4520
Log likelihood = -101.71454                     Pseudo R2       =     0.0323

------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   .9984792   .0055521    -0.27   0.784     .9876564    1.009421
         age |   .9816949   .0175118    -1.04   0.300     .9479655    1.016624
     levledu |   1.050473   .0720702     0.72   0.473      .918303    1.201665
```

```
   hous_inc |   .9998961   .0000659    -1.58   0.115      .999767    1.000025
      drink |   .7718625   .2971836    -0.67   0.501     .3629185    1.641613
      smoke |   .8996999   .3476605    -0.27   0.784     .4218692    1.918746
  pest_pois |          1  (omitted)
     lang12 |   .7280028   .5180373    -0.45   0.656      .18048    2.936547
      drugs |          1  (omitted)
      _cons |   2.536985   3.430947     0.69   0.491     .1791337    35.93013
------------------------------------------------------------------------------

. logistic q16_score75 dedtp_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        162
                                                LR chi2(9)      =      13.52
                                                Prob > chi2     =     0.1405
Log likelihood = -83.785103                     Pseudo R2       =     0.0747

------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    dedtp_cr |   .9983192   .0067162    -0.25   0.803     .9852421     1.01157
       age |   .9820445   .0210572    -0.85   0.398     .9416283    1.024195
     levledu |   1.109454   .0953974     1.21   0.227     .9373852    1.313109
    hous_inc |     .99985   .0000895    -1.68   0.094     .9996745    1.000025
      drink |    1.26661   .5846257     0.51   0.609     .5125734    3.129894
      smoke |   1.290697   .5944526     0.55   0.580     .5233456    3.183169
   pest_pois |   3.783545   3.220892     1.56   0.118     .7133131    20.06863
     lang12 |   .4993769   .3714863    -0.93   0.351     .1162037    2.146036
      drugs |   2.413231   3.733767     0.57   0.569     .1163093    50.07067
      _cons |   .5611598   .8745909    -0.37   0.711     .0264517    11.90473
------------------------------------------------------------------------------

. logistic tired cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      17.45
                                                Prob > chi2     =     0.0258
Log likelihood = -104.87557                     Pseudo R2       =     0.0768

------------------------------------------------------------------------------
      tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |   1.218427   .3065378     0.79   0.432     .7441321    1.995028
       age |   .9717315   .0171032    -1.63   0.103     .9387814    1.005838
     levledu |   1.077792   .0705271     1.14   0.252     .9480584    1.225278
    hous_inc |   .9998231   .0000687    -2.57   0.010     .9996884    .9999577
      drink |   .4794052   .1911741    -1.84   0.065     .2194149    1.047464
      smoke |   1.388078   .5379746     0.85   0.397     .6494043    2.966964
   pest_pois |   2.087682   1.861221     0.83   0.409     .3637449    11.98207
     lang12 |    .612862   .4543559    -0.66   0.509     .1433209    2.620691
      drugs |          1  (omitted)
      _cons |   6.458359   8.549281     1.41   0.159     .4823256    86.47767
```

```
------------------------------------------------------------------------------

. logistic hart_palp cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.59
                                                Prob > chi2     =     0.2951
Log likelihood = -107.16435                     Pseudo R2       =     0.0428

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dcca_cr |   1.025604   .2519157     0.10   0.918     .6337269    1.659807
       age |   .9563059   .0175062    -2.44   0.015     .9226026    .9912403
    levledu |   .9579304   .0620491    -0.66   0.507     .8437196    1.087601
   hous_inc |   .9999403   .0000645    -0.93   0.355     .9998138    1.000067
      drink |   .6561314   .2530681    -1.09   0.275     .3080951    1.397323
      smoke |   .8066104   .3047107    -0.57   0.569     .3846875    1.691296
  pest_pois |   3.294928   2.741805     1.43   0.152     .6449658    16.83276
     lang12 |   1.673649   1.147353     0.75   0.453     .4366483    6.415006
      drugs |          1  (omitted)
      _cons |   5.015391   6.454213     1.25   0.210     .4026331    62.47412
------------------------------------------------------------------------------

. logistic tingling cis_dcca_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.72
                                                Prob > chi2     =     0.2855
Log likelihood = -103.74629                     Pseudo R2       =     0.0447

------------------------------------------------------------------------------
   tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dcca_cr |   .8097527   .2090986    -0.82   0.414     .4881471    1.343242
       age |   .9932574   .0177345    -0.38   0.705     .9590996    1.028632
    levledu |   1.103446   .0777656     1.40   0.162     .9610864    1.266892
   hous_inc |   .9999751   .0000629    -0.40   0.693     .9998518    1.000098
      drink |   .6684351   .2638205    -1.02   0.307     .3083925    1.448821
      smoke |   .9820431   .3841913    -0.05   0.963     .4561698    2.114144
  pest_pois |   2.700861   2.224962     1.21   0.228     .5373843    13.57437
     lang12 |   .4491502   .3040121    -1.18   0.237     .1191919     1.69253
      drugs |          1  (omitted)
      _cons |   1.043511   1.376799     0.03   0.974     .0786011    13.85367
------------------------------------------------------------------------------

. logistic irritated cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
```

drugs dropped and 2 obs not used

Logistic regression Number of obs = 166
LR chi2(8) = 4.85
Prob > chi2 = 0.7732
Log likelihood = -107.76909 Pseudo R2 = 0.0220

irritated	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
cis_dcca_cr	1.025617	.2512701	0.10	0.918	.6345212	1.657771
age	1.003037	.0171535	0.18	0.859	.9699738	1.037227
levledu	.9819715	.0628254	-0.28	0.776	.8662436	1.11316
hous_inc	.9999623	.0000629	-0.60	0.549	.9998391	1.000086
drink	.918386	.3511905	-0.22	0.824	.4340363	1.943231
smoke	.6390509	.2426281	-1.18	0.238	.3036409	1.344964
pest_pois	2.466002	2.023795	1.10	0.271	.493663	12.31846
lang12	.6923531	.4531151	-0.56	0.574	.1919787	2.496906
drugs	1	(omitted)				
_cons	1.279013	1.595366	0.20	0.844	.1109521	14.74396

. logistic depress cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression Number of obs = 168
LR chi2(9) = 2.35
Prob > chi2 = 0.9845
Log likelihood = -114.5082 Pseudo R2 = 0.0102

depress	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
cis_dcca_cr	1.053476	.244469	0.22	0.822	.6684905	1.660175
age	1.000081	.016663	0.00	0.996	.9679493	1.033279
levledu	.979338	.0608397	-0.34	0.737	.8670681	1.106145
hous_inc	.9999495	.0000608	-0.83	0.406	.9998302	1.000069
drink	.8103442	.3025774	-0.56	0.573	.389795	1.684623
smoke	1.10777	.40848	0.28	0.781	.5377455	2.282035
pest_pois	1.545626	1.256235	0.54	0.592	.31425	7.602104
lang12	.7413372	.4842999	-0.46	0.647	.2060364	2.667397
drugs	1.385821	2.036706	0.22	0.824	.0777532	24.69996
_cons	1.562645	1.904312	0.37	0.714	.1433992	17.02841

. logistic pr_concen cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression Number of obs = 168
LR chi2(9) = 6.12
Prob > chi2 = 0.7283
Log likelihood = -92.497468 Pseudo R2 = 0.0320

pr_concen	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]

```
-------------+----------------------------------------------------------------
 cis_dcca_cr |   1.062491   .2793002     0.23   0.818     .6346982     1.77862
         age |   .9737934   .0200577    -1.29   0.197     .9352641     1.01391
     levledu |   1.033982   .0773646     0.45   0.655     .8929442    1.197296
    hous_inc |   .9999749   .0000698    -0.36   0.720     .9998382    1.000112
       drink |   .8031808   .3509029    -0.50   0.616     .3411383     1.89102
       smoke |   1.642371   .7041514     1.16   0.247     .7088047    3.805538
   pest_pois |   1.368506   1.239323     0.35   0.729     .2319506    8.074163
      lang12 |   2.013419   1.775771     0.79   0.427     .3574389     11.3414
       drugs |   2.787154   4.147285     0.69   0.491     .1508596    51.49309
       _cons |   .3005445   .4504188    -0.80   0.422     .0159307    5.670013
------------------------------------------------------------------------------

. logistic short_mem cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       7.20
                                                Prob > chi2     =     0.5148
Log likelihood = -106.08884                     Pseudo R2       =     0.0328

------------------------------------------------------------------------------
   short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |   .9973786   .2467502    -0.01   0.992     .6141492    1.619743
         age |   .9846808   .0175795    -0.86   0.387     .9508215    1.019746
     levledu |   1.099461    .075527     1.38   0.167     .9609634    1.257919
    hous_inc |     .99992   .0000655    -1.22   0.222     .9997916    1.000048
       drink |   .7676327   .3003218    -0.68   0.499     .3565635    1.652609
       smoke |   1.217712   .4697365     0.51   0.610     .5717297    2.593573
   pest_pois |   2.559133   2.102488     1.14   0.253     .5114201    12.80584
      lang12 |   1.503539   1.024937     0.60   0.550      .395244    5.719583
       drugs |          1  (omitted)
       _cons |   .4229042   .5476167    -0.66   0.506     .0334214    5.351295
------------------------------------------------------------------------------

. logistic perspire cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.50
                                                Prob > chi2     =     0.3018
Log likelihood = -83.319892                     Pseudo R2       =     0.0539

------------------------------------------------------------------------------
    perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |   .9823046   .2864318    -0.06   0.951     .5546806      1.7396
         age |   .9632572    .021803    -1.65   0.098     .9214581    1.006952
     levledu |   1.076439   .0915117     0.87   0.386     .9112252    1.271607
```

```
    hous_inc |   .9999509   .0000787    -0.62   0.533     .9997967    1.000105
       drink |   .7260773   .3350631    -0.69   0.488     .2938858    1.793854
       smoke |   1.550893   .7156882     0.95   0.342     .6277394    3.831638
   pest_pois |   1.569925   1.457945     0.49   0.627     .2543269    9.690936
      lang12 |   .3919488   .2801488    -1.31   0.190     .0965663    1.590864
       drugs |          1  (omitted)
       _cons |   1.528508   2.370521     0.27   0.784     .0731413     31.9428
------------------------------------------------------------------------------

. logistic button cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      11.42
                                                Prob > chi2     =     0.1792
Log likelihood = -29.276414                     Pseudo R2       =     0.1632

------------------------------------------------------------------------------
      button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |   3.031758   1.401977     2.40   0.016     1.224823    7.504399
         age |   .9679249   .0415077    -0.76   0.447     .8898964    1.052795
     levledu |   1.139837   .1966846     0.76   0.448     .8127621    1.598533
    hous_inc |   .9998562   .0001637    -0.88   0.380     .9995355    1.000177
       drink |   1.156767   1.126888     0.15   0.881     .1714079    7.806588
       smoke |   2.461147   2.348755     0.94   0.345     .3791465    15.97599
   pest_pois |   4.221417   5.639077     1.08   0.281     .3078942    57.87821
      lang12 |   6.294004   17.09992     0.68   0.498     .0306431     1292.77
       drugs |          1  (omitted)
       _cons |   .0021264   .0079845    -1.64   0.101     1.35e-06    3.340666
------------------------------------------------------------------------------

. logistic reading cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       8.95
                                                Prob > chi2     =     0.4418
Log likelihood =  -82.81368                     Pseudo R2       =     0.0513

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |   1.565963   .4263746     1.65   0.100      .918374    2.670198
         age |   .9475827   .0219819    -2.32   0.020     .9054638    .9916608
     levledu |   .9345311   .0729666    -0.87   0.386     .8019244    1.089066
    hous_inc |   .9999803    .000077    -0.26   0.798     .9998295    1.000131
       drink |   .7227616   .3326962    -0.71   0.481     .2932084    1.781615
       smoke |   .8887993   .4018593    -0.26   0.794     .3663901    2.156074
   pest_pois |    .972312    1.11929    -0.02   0.981     .1018436    9.282769
      lang12 |   .8854466   .7121595    -0.15   0.880      .18304    4.283303
       drugs |   2.153521    3.24027     0.51   0.610     .1128232    41.10547
       _cons |   3.387295   5.227927     0.79   0.429     .1644806    69.75758
```

```
------------------------------------------------------------------------------

. logistic fam_mem cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      10.61
                                                Prob > chi2     =     0.3031
Log likelihood = -85.724265                     Pseudo R2       =     0.0583

------------------------------------------------------------------------------
     fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  cis_dcca_cr |   1.082833   .3010479     0.29   0.775     .6279303    1.867289
        age |   1.017454   .0207351     0.85   0.396     .9776144    1.058916
     levledu |   1.228023   .1080966     2.33   0.020     1.033427    1.459263
    hous_inc |   .9998621   .0000844    -1.63   0.102     .9996966    1.000028
       drink |   .6593946   .3024646    -0.91   0.364     .2683483    1.620287
       smoke |   2.061216   .9681959     1.54   0.124     .8209117    5.175479
   pest_pois |   .9940608   .9126621    -0.01   0.995     .1644039    6.010544
      lang12 |   .7264569   .5340181    -0.43   0.664     .1719856    3.068511
       drugs |   4.290503   6.579212     0.95   0.342     .2124442    86.65057
       _cons |   .0445573   .0684918    -2.02   0.043     .0021902    .9064696
------------------------------------------------------------------------------

. logistic chest cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      20.15
                                                Prob > chi2     =     0.0170
Log likelihood = -96.153364                     Pseudo R2       =     0.0948

------------------------------------------------------------------------------
       chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  cis_dcca_cr |   .9554633   .2503081    -0.17   0.862     .5717681    1.596644
        age |   .9939612   .0188259    -0.32   0.749     .9577396    1.031553
     levledu |   1.117341   .0817652     1.52   0.129     .9680466     1.28966
    hous_inc |    .999722   .0000927    -3.00   0.003     .9995402    .9999037
       drink |   1.365048   .5684492     0.75   0.455      .603505    3.087559
       smoke |   .7110519   .2921318    -0.83   0.407     .3178262     1.59079
   pest_pois |   5.026182   4.534019     1.79   0.073     .8578003    29.45033
      lang12 |   1.214704   .8548195     0.28   0.782     .3058139    4.824848
       drugs |   .9643381   1.428179    -0.02   0.980     .0529182    17.57332
       _cons |   .4530499   .6317744    -0.57   0.570     .0294545    6.968506
------------------------------------------------------------------------------

. logistic notes cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      16.18
                                                Prob > chi2     =     0.0399
```

```
Log likelihood = -79.980636                     Pseudo R2       =     0.0919

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |   1.540087   .4431685     1.50   0.133     .8762083    2.706968
         age |   .9482782   .0219217    -2.30   0.022     .9062714    .9922321
     levledu |   1.018127   .0843077     0.22   0.828     .8655992    1.197532
    hous_inc |   .9998991   .0000862    -1.17   0.242     .9997301    1.000068
       drink |   .4645578   .2182454    -1.63   0.103     .1849917    1.166614
       smoke |   .8306001   .3841031    -0.40   0.688     .3355536    2.055995
   pest_pois |   10.32843   9.088695     2.65   0.008     1.840788    57.95154
      lang12 |   .8958357   .6764728    -0.15   0.884     .2039201     3.93547
       drugs |          1  (omitted)
       _cons |    2.61039   4.031652     0.62   0.534     .1264898    53.87102
------------------------------------------------------------------------------

. logistic chek_door cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                             Number of obs   =        161
                                                LR chi2(8)      =       3.18
                                                Prob > chi2     =     0.9224
Log likelihood = -107.73056                     Pseudo R2       =     0.0146

------------------------------------------------------------------------------
   chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |    1.17045   .2778458     0.66   0.507     .7350069    1.863864
         age |   .9810677   .0173021    -1.08   0.278     .9477357    1.015572
     levledu |   1.007469     .06511     0.12   0.908     .8876076    1.143517
    hous_inc |   .9999522   .0000623    -0.77   0.443     .9998301    1.000074
       drink |   1.209811   .4594733     0.50   0.616     .5746989       2.5468
       smoke |   .8542528   .3199873    -0.42   0.674     .4099605    1.780044
   pest_pois |          1  (omitted)
      lang12 |   1.258395   .8821916     0.33   0.743     .3184831    4.972189
       drugs |   .8244731   1.215334    -0.13   0.896     .0458609    14.82211
       _cons |   1.087426   1.400251     0.07   0.948     .0871624    13.56658
------------------------------------------------------------------------------

. logistic q16_head cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       6.79
                                                Prob > chi2     =     0.5592
Log likelihood = -99.003445                     Pseudo R2       =     0.0332

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
```

```
-------------+----------------------------------------------------------------
 cis_dcca_cr |   1.106672   .2903271     0.39   0.699     .6617784    1.850654
         age |   .9904084   .0178692    -0.53   0.593     .9559974    1.026058
     levledu |   1.057268   .0710545     0.83   0.407      .926786     1.20612
    hous_inc |   .9998772   .0000637    -1.93   0.054     .9997524    1.000002
       drink |    1.25744   .5090414     0.57   0.571     .5687234    2.780185
       smoke |   1.085659    .435775     0.20   0.838     .4943424     2.38429
   pest_pois |   2.400167   2.694151     0.78   0.435     .2659381    21.66219
      lang12 |   1.435419   .9877291     0.53   0.599      .372612    5.529689
       drugs |          1  (omitted)
       _cons |   1.700362   2.229374     0.40   0.686     .1301717     22.2109
------------------------------------------------------------------------------

. logistic less_sex cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       5.02
                                                Prob > chi2     =     0.7558
Log likelihood = -109.45062                     Pseudo R2       =     0.0224

------------------------------------------------------------------------------
    less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |   .8535008   .2090182    -0.65   0.518     .5281397    1.379301
         age |   1.000473   .0171857     0.03   0.978     .9673505     1.03473
     levledu |   1.075111   .0701978     1.11   0.267     .9459658    1.221888
    hous_inc |   .9999046    .000065    -1.47   0.142     .9997773    1.000032
       drink |   1.082006   .4137856     0.21   0.837     .5113394    2.289549
       smoke |   1.009768   .3792567     0.03   0.979     .4836381    2.108252
   pest_pois |   1.856107   1.521687     0.75   0.451     .3721902    9.256381
      lang12 |   1.750249   1.185434     0.83   0.409     .4640725    6.601062
       drugs |          1  (omitted)
       _cons |   .3110513   .3943158    -0.92   0.357     .0259283    3.731553
------------------------------------------------------------------------------

. logistic q16_score cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        159
                                                LR chi2(7)      =       6.05
                                                Prob > chi2     =     0.5337
Log likelihood = -53.128155                     Pseudo R2       =     0.0539

------------------------------------------------------------------------------
   q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
```

```
 cis_dcca_cr |   1.319628   .5346545     0.68   0.494     .5964615    2.919581
       age |   .9503436   .0247036    -1.96   0.050     .9031381    1.000016
    levledu |   .9570125   .0970924    -0.43   0.665     .7844407    1.167549
   hous_inc |   .9999027   .0000794    -1.22   0.221     .9997471    1.000058
      drink |   .6049954   .3757895    -0.81   0.418     .1790742    2.043954
      smoke |   1.107905   .6717324     0.17   0.866     .3376075    3.635744
  pest_pois |          1  (omitted)
     lang12 |    1.14167   1.192699     0.13   0.899     .1473308    8.846837
      drugs |          1  (omitted)
      _cons |   106.2102   215.9534     2.29   0.022     1.974457    5713.267
------------------------------------------------------------------------------

. logistic q16_score50 cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        159
                                                LR chi2(7)      =       7.14
                                                Prob > chi2     =     0.4140
Log likelihood = -105.50024                     Pseudo R2       =     0.0328

------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |   1.057873   .2576763     0.23   0.817     .6562932    1.705174
       age |   .9854969   .0173678    -0.83   0.407     .9520379    1.020132
    levledu |   1.080475   .0717481     1.17   0.244     .9486177     1.23066
   hous_inc |   .9998943   .0000657    -1.61   0.108     .9997657    1.000023
      drink |   .7725834   .2942143    -0.68   0.498     .3662619    1.629667
      smoke |   .9572328   .3603977    -0.12   0.908     .4576575     2.00214
  pest_pois |          1  (omitted)
     lang12 |   .7416719   .5199895    -0.43   0.670     .1876854    2.930846
      drugs |          1  (omitted)
      _cons |   1.517118   1.983825     0.32   0.750     .1169405     19.6822
------------------------------------------------------------------------------

. logistic q16_score75 cis_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      13.52
                                                Prob > chi2     =     0.1404
Log likelihood = -86.597405                     Pseudo R2       =     0.0724

------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dcca_cr |   1.118445   .3081595     0.41   0.685     .6517595    1.919296
       age |   .9813147   .0206946    -0.89   0.371     .9415809    1.022725
    levledu |   1.125321   .0940777     1.41   0.158     .9552462    1.325676
   hous_inc |   .9998586   .0000873    -1.62   0.105     .9996875     1.00003
```

```
      drink |   1.148741    .523565     0.30   0.761     .4701836    2.806575
      smoke |   1.258265   .5668146     0.51   0.610      .52039    3.042395
   pest_pois |   4.207801   3.565662     1.70   0.090     .799379    22.14918
     lang12 |   .5302386   .3819899    -0.88   0.379     .129198    2.176139
      drugs |    2.06436   3.097787     0.48   0.629    .1090107    39.09325
      _cons |   .4427068   .6676074    -0.54   0.589    .0230406    8.50626
------------------------------------------------------------------------------

. logistic tired trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      18.56
                                                Prob > chi2     =     0.0174
Log likelihood = -104.32139                     Pseudo R2       =     0.0817

------------------------------------------------------------------------------
       tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.441773    .423228     1.25   0.213     .8110155    2.563094
         age |     .97212   .0170067    -1.62   0.106     .9393525     1.00603
     levledu |   1.079607   .0709314     1.17   0.244     .9491632    1.227978
    hous_inc |   .9998275   .0000684    -2.52   0.012     .9996934    .9999616
       drink |   .4632262    .185381    -1.92   0.054      .21142    1.014939
       smoke |   1.366345   .5307481     0.80   0.422     .6381405    2.925528
    pest_pois |    2.1729   1.941504     0.87   0.385     .3771238    12.51974
      lang12 |   .5997991   .4460344    -0.69   0.492     .1396428     2.57628
       drugs |          1  (omitted)
       _cons |   5.609762    7.48175     1.29   0.196     .4108616    76.59376
------------------------------------------------------------------------------

. logistic hart_palp trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.97
                                                Prob > chi2     =     0.2670
Log likelihood = -106.97303                     Pseudo R2       =     0.0445

------------------------------------------------------------------------------
   hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.166506   .2881109     0.62   0.533     .7188729    1.892876
         age |   .9560654   .0174002    -2.47   0.014     .9225627    .9907848
     levledu |   .9585205   .0621592    -0.65   0.514     .8441152    1.088431
    hous_inc |   .9999417   .0000644    -0.91   0.365     .9998155    1.000068
       drink |   .6397722     .24794    -1.15   0.249     .2993279    1.367425
       smoke |   .7973075   .3020708    -0.60   0.550     .3794343    1.675387
    pest_pois |   3.402407   2.836673     1.47   0.142     .6639233    17.43631
      lang12 |   1.653277   1.136346     0.73   0.464     .4298235    6.359183
```

```
       drugs |          1  (omitted)
       _cons |   4.626394   5.976028     1.19   0.236     .3678955    58.17826
------------------------------------------------------------------------------

. logistic tingling trans_dcca_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.13
                                                Prob > chi2     =     0.3316
Log likelihood = -104.04081                     Pseudo R2       =     0.0420

------------------------------------------------------------------------------
     tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
trans_dcca_cr |   .9246689   .2403514    -0.30   0.763     .5555606    1.539009
          age |   .9916449   .0175305    -0.47   0.635     .9578743    1.026606
       levledu |   1.103199   .0775638     1.40   0.162     .9611857    1.266193
      hous_inc |   .9999709   .0000628    -0.46   0.643     .9998478    1.000094
         drink |   .6598305   .2608054    -1.05   0.293     .3040783     1.43179
         smoke |   .9790307   .3824912    -0.05   0.957     .4552457    2.105459
     pest_pois |   2.766346   2.279121     1.24   0.217     .5503305    13.90559
       lang12 |   .4414135   .2986122    -1.21   0.227     .1172237    1.662171
         drugs |          1  (omitted)
         _cons |    1.03907   1.373919     0.03   0.977     .0778282    13.87244
------------------------------------------------------------------------------

. logistic irritated trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       5.29
                                                Prob > chi2     =     0.7259
Log likelihood = -107.54934                     Pseudo R2       =     0.0240

------------------------------------------------------------------------------
    irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
trans_dcca_cr |   1.178976    .287951     0.67   0.500     .7304815    1.902835
          age |   1.002782   .0170369     0.16   0.870     .9699397    1.036736
       levledu |   .9822195   .0629458    -0.28   0.780     .8662815    1.113674
      hous_inc |   .9999638   .0000628    -0.58   0.564     .9998408    1.000087
         drink |    .89419   .3436973    -0.29   0.771     .4209746    1.899345
         smoke |    .629914   .2402608    -1.21   0.226     .2982753    1.330286
     pest_pois |   2.555158   2.100438     1.14   0.254     .5101495    12.79788
       lang12 |   .6796813   .4452575    -0.59   0.556     .1882285    2.454287
         drugs |          1  (omitted)
         _cons |    1.18103   1.480397     0.13   0.894     .1012274    13.77921
------------------------------------------------------------------------------
```

```
. logistic depress trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       2.48
                                                Prob > chi2     =     0.9814
Log likelihood =  -114.4456                     Pseudo R2       =     0.0107

------------------------------------------------------------------------------
     depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.104482   .2624668     0.42   0.676     .6932354    1.759691
         age |   1.000217   .0165382     0.01   0.990     .9683228    1.033163
      levledu |   .9794239   .0608666    -0.33   0.738     .8671065     1.10629
     hous_inc |   .9999511   .0000607    -0.81   0.420     .9998321     1.00007
        drink |   .8012412   .3002032    -0.59   0.554     .3844513     1.66988
        smoke |   1.101526   .4068125     0.26   0.793     .5341112    2.271738
    pest_pois |   1.565092   1.272821     0.55   0.582     .3179034    7.705217
      lang12 |   .7370108   .4815864    -0.47   0.640     .2047725    2.652626
        drugs |   1.384621   2.030283     0.22   0.824     .0781999    24.51634
        _cons |   1.503608   1.839606     0.33   0.739     .1366856    16.54043
------------------------------------------------------------------------------

. logistic pr_concen trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       6.13
                                                Prob > chi2     =     0.7270
Log likelihood = -92.490862                     Pseudo R2       =     0.0321

------------------------------------------------------------------------------
   pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   .9331534   .2536171    -0.25   0.799     .5477838    1.589633
         age |   .9747568   .0199211    -1.25   0.211     .9364837    1.014594
      levledu |   1.034026   .0773088     0.45   0.654     .8930822    1.197213
     hous_inc |   .9999755   .0000696    -0.35   0.725     .9998391    1.000112
        drink |   .8222981    .360005    -0.45   0.655     .3486344    1.939493
        smoke |   1.653872   .7080968     1.18   0.240     .7146019    3.827714
    pest_pois |    1.32627   1.200942     0.31   0.755     .2248361    7.823444
      lang12 |   2.043178    1.80317     0.81   0.418     .3623213    11.52176
        drugs |   2.943505   4.367336     0.73   0.467     .1606647    53.92736
        _cons |   .3131371   .4720952    -0.77   0.441     .0163094    6.012183
------------------------------------------------------------------------------

. logistic short_mem trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       7.48
                                                Prob > chi2     =     0.4856
Log likelihood = -105.95006                     Pseudo R2       =     0.0341
```

```
------------------------------------------------------------------------------
   short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.139054   .2829835     0.52   0.600     .6999618    1.853594
        age |    .984232   .0174398    -0.90   0.370     .9506374    1.019014
     levledu |   1.100593   .0757522     1.39   0.164     .9616999    1.259545
    hous_inc |   .9999204   .0000653    -1.22   0.223     .9997924    1.000049
       drink |   .7484442   .2943126    -0.74   0.461     .3462894    1.617631
       smoke |    1.20606   .4665146     0.48   0.628     .5650887    2.574075
   pest_pois |   2.644857   2.174509     1.18   0.237     .5279271    13.25044
     lang12 |   1.482009   1.011369     0.58   0.564     .3890131    5.645954
       drugs |          1  (omitted)
       _cons |   .3921146   .5099293    -0.72   0.472      .030652    5.016104
------------------------------------------------------------------------------

. logistic perspire trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.64
                                                Prob > chi2     =     0.2910
Log likelihood = -83.249148                     Pseudo R2       =     0.0547

------------------------------------------------------------------------------
    perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.110716   .3030777     0.38   0.700     .6506359    1.896128
        age |   .9629188   .0216838    -1.68   0.093     .9213436     1.00637
     levledu |   1.078123   .0918989     0.88   0.378      .912246    1.274161
    hous_inc |   .9999515   .0000785    -0.62   0.537     .9997978    1.000105
       drink |   .7083158   .3291098    -0.74   0.458     .2849227    1.760868
       smoke |   1.539096   .7127999     0.93   0.352     .6209396    3.814888
   pest_pois |   1.608278   1.498168     0.51   0.610     .2590816    9.983568
     lang12 |   .3871511   .2770875    -1.33   0.185     .0952068     1.57432
       drugs |          1  (omitted)
       _cons |   1.412721    2.19984     0.22   0.824     .0667722    29.88942
------------------------------------------------------------------------------

. logistic button trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      10.76
                                                Prob > chi2     =     0.2160
Log likelihood = -29.606857                     Pseudo R2       =     0.1537

------------------------------------------------------------------------------
      button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |    2.46878   1.211268     1.84   0.065     .9437435    6.458191
```

```
         age |    .978403   .0413534    -0.52   0.605     .9006182    1.062906
      levledu |   1.122377   .1907339     0.68   0.497      .804429    1.565993
     hous_inc |   .9998978   .0001597    -0.64   0.522     .9995849    1.000211
       drink |    1.08418   1.080891     0.08   0.935     .1536322    7.651043
       smoke |    2.35922   2.296725     0.88   0.378     .3500379    15.90091
    pest_pois |   4.038172   5.211726     1.08   0.279     .3218187    50.67088
      lang12 |   5.907014   15.19272     0.69   0.490     .0382028    913.3569
       drugs |          1  (omitted)
       _cons |   .0021423   .0078502    -1.68   0.093     1.63e-06    2.818042
------------------------------------------------------------------------------

. logistic reading trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       9.51
                                                Prob > chi2     =     0.3918
Log likelihood = -82.535853                     Pseudo R2       =     0.0545

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |    1.62823    .460218     1.72   0.085     .9356735    2.833396
         age |   .9498861   .0219513    -2.22   0.026     .9078222     .993899
      levledu |   .9335526    .073283    -0.88   0.381     .8004243    1.088823
     hous_inc |   .9999931   .0000759    -0.09   0.927     .9998443    1.000142
       drink |    .701359   .3256609    -0.76   0.445     .2822951    1.742519
       smoke |   .8689885   .3961465    -0.31   0.758     .3556117    2.123499
    pest_pois |   .9967251   1.146919    -0.00   0.998     .1044981    9.506975
      lang12 |   .8788165   .7049415    -0.16   0.872     .1824349    4.233391
       drugs |   2.393328   3.577261     0.58   0.559      .127858    44.79986
       _cons |   2.965565    4.61138     0.70   0.484     .1407701    62.47477
------------------------------------------------------------------------------

. logistic fam_mem trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      10.53
                                                Prob > chi2     =     0.3091
Log likelihood = -85.764602                     Pseudo R2       =     0.0579

------------------------------------------------------------------------------
     fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.007536   .2778975     0.03   0.978     .5867904    1.729968
         age |   1.018276   .0205826     0.90   0.370     .9787232    1.059427
      levledu |   1.227963   .1081133     2.33   0.020      1.03334    1.459243
     hous_inc |    .999864   .0000842    -1.62   0.106      .999699    1.000029
       drink |   .6666857   .3073699    -0.88   0.379     .2700733    1.645737
       smoke |   2.071056   .9727892     1.55   0.121     .8248535    5.200045
    pest_pois |   .9773951   .8980437    -0.02   0.980     .1614265    5.917872
      lang12 |   .7335703   .5393773    -0.42   0.673     .1736093    3.099635
       drugs |   4.480231    6.79386     0.99   0.323     .2293672     87.5124
       _cons |   .0448737   .0694005    -2.01   0.045     .0021654    .9299039
------------------------------------------------------------------------------
```

```
. logistic chest trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        168
                                        LR chi2(9)      =      20.17
                                        Prob > chi2     =     0.0169
Log likelihood = -96.144103             Pseudo R2       =     0.0949

------------------------------------------------------------------------------
       chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   .9444655   .2454298    -0.22   0.826     .5675341    1.571738
         age |   .9937067   .0186645    -0.34   0.737      .95779     1.03097
      levledu |   1.117062   .0817187     1.51   0.130     .9678489    1.289279
     hous_inc |   .9997202   .0000928    -3.01   0.003     .9995382    .9999021
        drink |   1.371698   .5730436     0.76   0.449     .6048654    3.110701
        smoke |   .7131274   .2932072    -0.82   0.411      .318559     1.59641
    pest_pois |   5.009825   4.521372     1.79   0.074     .8543037    29.37871
       lang12 |   1.215657   .8555794     0.28   0.781     .3060096    4.829329
        drugs |   .9561302   1.410306    -0.03   0.976     .0530863    17.22074
        _cons |    .463846    .650186    -0.55   0.584     .0297318    7.236472
------------------------------------------------------------------------------

. logistic notes trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        166
                                        LR chi2(8)      =      18.37
                                        Prob > chi2     =     0.0186
Log likelihood = -78.886577             Pseudo R2       =     0.1043

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.817552   .5584115     1.94   0.052     .9953363    3.318974
         age |    .950053   .0220028    -2.21   0.027     .9078924    .9941713
      levledu |    1.01928    .085639     0.23   0.820     .8645225     1.20174
     hous_inc |   .9999118   .0000851    -1.04   0.300      .999745    1.000079
        drink |   .4354025   .2082856    -1.74   0.082     .1704894    1.111948
        smoke |   .8117655   .3818953    -0.44   0.658     .3228365    2.041167
    pest_pois |   10.99425   9.710468     2.71   0.007     1.946964    62.08311
       lang12 |   .8786305   .6665429    -0.17   0.865     .1986422    3.886343
        drugs |          1  (omitted)
        _cons |   2.094645    3.28652     0.47   0.637     .0967312    45.35804
------------------------------------------------------------------------------

. logistic chek_door trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                     Number of obs   =        161
```

```
                                LR chi2(8)      =       4.73
                                Prob > chi2     =     0.7859
Log likelihood = -106.95641                     Pseudo R2       =     0.0216

------------------------------------------------------------------------------
   chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.426296   .3761898     1.35   0.178     .8505558    2.391755
         age |   .9809445   .0171904    -1.10   0.272     .9478239    1.015222
      levledu |   1.007834   .0654311     0.12   0.904     .8874153    1.144593
     hous_inc |   .9999569   .0000622    -0.69   0.489      .999835    1.000079
        drink |   1.162404   .4448424     0.39   0.694     .5490465    2.460962
        smoke |   .8369293   .3156045    -0.47   0.637     .3996706     1.75257
    pest_pois |          1  (omitted)
       lang12 |   1.218468   .8566384     0.28   0.779     .3071716    4.833342
        drugs |   .8041224   1.191178    -0.15   0.883     .0440965    14.66358
        _cons |   .9595314   1.241612    -0.03   0.975     .0759667    12.11979
------------------------------------------------------------------------------

. logistic q16_head trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        166
                                LR chi2(8)      =       6.66
                                Prob > chi2     =     0.5742
Log likelihood = -99.071962                     Pseudo R2       =     0.0325

------------------------------------------------------------------------------
    q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.032484    .283752     0.12   0.907     .6024932    1.769353
         age |   .9912289   .0177166    -0.49   0.622     .9571062    1.026568
      levledu |    1.05749   .0709993     0.83   0.405     .9271014    1.206217
     hous_inc |   .9998793   .0000633    -1.91   0.057     .9997553    1.000003
        drink |   1.269255   .5150932     0.59   0.557     .5729431    2.811812
        smoke |    1.08698   .4364546     0.21   0.835     .4948105    2.387834
    pest_pois |   2.361987    2.65088     0.77   0.444     .2617981    21.31025
       lang12 |   1.453212    .998743     0.54   0.587     .3778566    5.588957
        drugs |          1  (omitted)
        _cons |   1.699582   2.232357     0.40   0.686     .1295122    22.30352
------------------------------------------------------------------------------

. logistic less_sex trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        166
                                LR chi2(8)      =       4.87
                                Prob > chi2     =     0.7713
Log likelihood = -109.52329                     Pseudo R2       =     0.0218
```

```
------------------------------------------------------------------------------
    less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   .8780668   .2195012    -0.52   0.603     .5379503     1.43322
         age |   .9994314   .0170172    -0.03   0.973     .9666287    1.033347
      levledu |   1.074783   .0700717     1.11   0.269     .9458578    1.221282
     hous_inc |   .9999008    .000065    -1.53   0.127     .9997733    1.000028
        drink |   1.083657   .4152913     0.21   0.834     .5113106    2.296672
        smoke |    1.01251   .3802025     0.03   0.974     .4850307    2.113634
    pest_pois |   1.862869   1.527961     0.76   0.448     .3732592    9.297242
      lang12 |   1.741456   1.179323     0.82   0.413     .4618218    6.566752
       drugs |          1  (omitted)
       _cons |   .3226293   .4100949    -0.89   0.373      .026714    3.896443
------------------------------------------------------------------------------

. logistic q16_score trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        159
                                                LR chi2(7)      =       6.00
                                                Prob > chi2     =     0.5399
Log likelihood = -53.154686                     Pseudo R2       =     0.0534

------------------------------------------------------------------------------
   q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
trans_dcca_cr |   1.349607   .6408476     0.63   0.528      .532136    3.422882
         age |   .9519091   .0243235    -1.93   0.054     .9054101    1.000796
      levledu |   .9592575    .096567    -0.41   0.679     .7874919    1.168488
     hous_inc |   .9999072   .0000795    -1.17   0.243     .9997515    1.000063
        drink |   .6047156   .3741384    -0.81   0.416     .1798505     2.03325
        smoke |   1.096882   .6620741     0.15   0.878      .33603    3.580487
    pest_pois |          1  (omitted)
      lang12 |   1.151391   1.200756     0.14   0.892     .149117    8.890347
       drugs |          1  (omitted)
       _cons |   93.88723   189.2725     2.25   0.024      1.8056    4881.928
------------------------------------------------------------------------------

. logistic q16_score50 trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        159
                                                LR chi2(7)      =       7.27
                                                Prob > chi2     =     0.4015
```

```
Log likelihood = -105.43857                     Pseudo R2       =     0.0333

------------------------------------------------------------------------------
  q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
trans_dcca_cr |   1.108439   .2730544     0.42   0.676     .6839519    1.796379
          age |   .9856371   .0172262    -0.83   0.408      .952446    1.019985
       levledu |   1.080734   .0718367     1.17   0.243      .948723    1.231115
      hous_inc |   .9998961   .0000654    -1.59   0.112      .999768    1.000024
         drink |   .7639137   .2919371    -0.70   0.481     .3612013     1.61562
         smoke |   .9522223   .3590356    -0.13   0.897     .4547709    1.993811
     pest_pois |          1  (omitted)
        lang12 |   .7354261   .5157098    -0.44   0.661     .1860557    2.906934
         drugs |          1  (omitted)
         _cons |   1.460634   1.916715     0.29   0.773     .1115715    19.12183
------------------------------------------------------------------------------

. logistic q16_score75 trans_dcca_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      14.29
                                                Prob > chi2     =     0.1124
Log likelihood = -86.213671                     Pseudo R2       =     0.0765

------------------------------------------------------------------------------
  q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
trans_dcca_cr |   1.293897   .3496665     0.95   0.340     .7618483     2.19751
          age |   .9815867   .0205518    -0.89   0.375     .9421213    1.022705
       levledu |   1.127705   .0948368     1.43   0.153     .9563385    1.329777
      hous_inc |   .9998635   .0000866    -1.58   0.115     .9996938    1.000033
         drink |    1.1072   .5089469     0.22   0.825     .4497322    2.725826
         smoke |   1.233675   .5599242     0.46   0.644     .5068376    3.002845
     pest_pois |   4.410741   3.748435     1.75   0.081     .8339203    23.32914
        lang12 |   .5233804   .3780805    -0.90   0.370     .1270354    2.156304
         drugs |    2.03753   3.068715     0.47   0.637     .1064421    39.00271
         _cons |   .3873993   .5880434    -0.62   0.532     .0197742    7.589614
------------------------------------------------------------------------------

. logistic tired cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      19.02
                                                Prob > chi2     =     0.0148
Log likelihood = -104.09202                     Pseudo R2       =     0.0837

------------------------------------------------------------------------------
       tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dbva_cr |   1.910197   .8464948     1.46   0.144     .8014419    4.552858
         age |   .9701222    .017182    -1.71   0.087     .9370239     1.00439
```

```
    levledu |    1.07894   .0711399     1.15   0.249     .9481424    1.227782
   hous_inc |   .9998093   .0000708    -2.69   0.007     .9996704    .9999481
      drink |   .4612597   .1850605    -1.93   0.054     .2101057    1.012636
      smoke |   1.400267   .5448158     0.87   0.387     .6531691    3.001901
  pest_pois |   2.179594   1.952709     0.87   0.384      .376513    12.61744
     lang12 |   .6228262   .4634186    -0.64   0.525     .1448852    2.677379
      drugs |          1  (omitted)
      _cons |   6.530003   8.705537     1.41   0.159     .4787686    89.06376
------------------------------------------------------------------------------

. logistic hart_palp cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.67
                                                Prob > chi2     =     0.2887
Log likelihood = -107.12212                     Pseudo R2       =     0.0432

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   1.141461   .4893464     0.31   0.758      .492662    2.644678
       age |   .9559893   .0174577    -2.46   0.014     .9223779    .9908256
    levledu |   .9581637    .062099    -0.66   0.510     .8438649    1.087944
   hous_inc |   .9999379   .0000652    -0.95   0.340     .9998101    1.000066
      drink |   .6501149   .2513812    -1.11   0.265     .3046873    1.387158
      smoke |   .8070517   .3049333    -0.57   0.570     .3848457    1.692451
  pest_pois |   3.329257   2.772909     1.44   0.149     .6507122    17.03357
     lang12 |   1.681114    1.15323     0.76   0.449     .4382077    6.449324
      drugs |          1  (omitted)
      _cons |   4.954096   6.367831     1.24   0.213     .3988945    61.52771
------------------------------------------------------------------------------

. logistic tingling cis_dbva_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.25
                                                Prob > chi2     =     0.3220
Log likelihood = -103.98205                     Pseudo R2       =     0.0426

------------------------------------------------------------------------------
   tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   .8161688   .3633814    -0.46   0.648     .3410366    1.953255
       age |   .9923203   .0176705    -0.43   0.665     .9582842    1.027565
    levledu |   1.103202   .0775639     1.40   0.162      .961189    1.266197
   hous_inc |   .9999754   .0000633    -0.39   0.697     .9998513    1.000099
      drink |   .6633893   .2619116    -1.04   0.299     .3059899    1.438235
      smoke |   .9737586   .3801335    -0.07   0.946     .4530659    2.092865
```

```
  pest_pois |   2.752088   2.266174     1.23   0.219     .5479622     13.8221
     lang12 |   .4379347   .2959599    -1.22   0.222     .1164556    1.646866
      drugs |          1  (omitted)
      _cons |   1.018171   1.340844     0.01   0.989     .0770657     13.4518
------------------------------------------------------------------------------

. logistic irritated cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       5.30
                                                Prob > chi2     =     0.7248
Log likelihood = -107.54407                     Pseudo R2       =     0.0241

------------------------------------------------------------------------------
  irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
cis_dbva_cr |    1.33511   .5671117     0.68   0.496     .5807029    3.069588
        age |   1.001936   .0171033     0.11   0.910     .9689692    1.036025
     levledu |   .9819349   .0629272    -0.28   0.776     .8660311    1.113351
    hous_inc |   .9999565   .0000638    -0.68   0.496     .9998315    1.000082
       drink |    .895387   .3439252    -0.29   0.774     .4217524    1.900921
       smoke |   .6379432   .2427768    -1.18   0.238     .3025849    1.344983
   pest_pois |   2.544435    2.09188     1.14   0.256     .5079079     12.7467
      lang12 |    .692113   .4528081    -0.56   0.574     .1919936    2.494981
       drugs |          1  (omitted)
       _cons |   1.254672   1.564544     0.18   0.856     .1089189    14.45296
------------------------------------------------------------------------------

. logistic depress cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       3.42
                                                Prob > chi2     =     0.9450
Log likelihood = -113.97322                     Pseudo R2       =     0.0148

------------------------------------------------------------------------------
    depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
cis_dbva_cr |    1.53786   .6265544     1.06   0.291     .6920232    3.417535
        age |   .9984062   .0166441    -0.10   0.924     .9663115    1.031567
     levledu |   .9786674   .0610032    -0.35   0.729     .8661184    1.105842
    hous_inc |    .999941    .000062    -0.95   0.342     .9998195    1.000063
       drink |   .7800555   .2929945    -0.66   0.508      .373601    1.628707
       smoke |    1.10843   .4101761     0.28   0.781     .5366858    2.289268
   pest_pois |   1.614752   1.316501     0.59   0.557     .3266814    7.981548
      lang12 |   .7417876   .4851217    -0.46   0.648     .2058743    2.672741
       drugs |   1.251945   1.851261     0.15   0.879     .0690091    22.71244
       _cons |   1.543972   1.886341     0.36   0.722     .1408276    16.92743
------------------------------------------------------------------------------

. logistic pr_concen cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
```

```
Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       6.84
                                                Prob > chi2     =     0.6538
Log likelihood = -92.135174                     Pseudo R2       =     0.0358

------------------------------------------------------------------------------
  pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   1.497177   .6810012     0.89   0.375     .6139008    3.651304
         age |   .9723519   .0199133    -1.37   0.171     .9340955    1.012175
      levledu |   1.034437   .0777345     0.45   0.652     .8927686    1.198585
    hous_inc |   .9999671   .0000711    -0.46   0.644     .9998279    1.000106
       drink |    .774601   .3411941    -0.58   0.562     .3266955    1.836593
       smoke |   1.649333   .7110953     1.16   0.246     .7084679    3.839692
   pest_pois |   1.421885   1.290445     0.39   0.698     .2400762     8.42132
      lang12 |   2.034382   1.794822     0.80   0.421     .3609649    11.46569
       drugs |   2.560322   3.831059     0.63   0.530     .1363406    48.07993
       _cons |   .2918206   .4360115    -0.82   0.410     .0156073     5.45636
------------------------------------------------------------------------------

. logistic short_mem cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       7.69
                                                Prob > chi2     =     0.4644
Log likelihood = -105.84644                     Pseudo R2       =     0.0350

------------------------------------------------------------------------------
  short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   1.349753   .5802095     0.70   0.485     .5812376    3.134402
         age |   .9832447   .0175052    -0.95   0.343     .9495269     1.01816
      levledu |   1.100971   .0758587     1.40   0.163     .9618925    1.260158
    hous_inc |   .9999126   .0000667    -1.31   0.190     .9997818    1.000043
       drink |    .744173   .2927307    -0.75   0.453     .3442247    1.608814
       smoke |   1.217727    .47095     0.51   0.611     .5706266    2.598651
   pest_pois |   2.664293   2.192892     1.19   0.234     .5308675    13.37143
      lang12 |   1.506145    1.02843     0.60   0.549     .3950452    5.742311
       drugs |          1  (omitted)
       _cons |   .4062038   .5249109    -0.70   0.486     .0322694    5.113244
------------------------------------------------------------------------------

. logistic perspire cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.66
                                                Prob > chi2     =     0.2900
```

```
Log likelihood =  -83.24222                     Pseudo R2       =     0.0548

------------------------------------------------------------------------------
   perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   1.224023   .6168359     0.40   0.688     .4558622    3.286588
       age |    .962535    .021658    -1.70   0.090     .9210084    1.005934
    levledu |   1.078674    .092028     0.89   0.375     .9125762    1.275003
   hous_inc |   .9999463   .0000796    -0.67   0.500     .9997903    1.000102
      drink |   .7095078   .3291684    -0.74   0.459      .285793     1.76142
      smoke |   1.551353   .7177946     0.95   0.343     .6264247    3.841958
  pest_pois |   1.603632   1.492498     0.51   0.612     .2587574    9.938405
     lang12 |   .3919716   .2805018    -1.31   0.191     .0964095    1.593637
      drugs |          1  (omitted)
      _cons |   1.443169   2.235094     0.24   0.813     .069347    30.03356
------------------------------------------------------------------------------

. logistic button cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      12.57
                                                Prob > chi2     =     0.1276
Log likelihood = -28.700334                     Pseudo R2       =     0.1796

------------------------------------------------------------------------------
     button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   8.926605   7.520004     2.60   0.009     1.712427    46.53295
       age |   .9692575   .0403827    -0.75   0.454     .8932543    1.051728
    levledu |   1.156919   .2077744     0.81   0.417     .8136413    1.645025
   hous_inc |   .9998153   .0001671    -1.10   0.269     .9994878    1.000143
      drink |   .9922198   .9975614    -0.01   0.994     .1383006    7.118555
      smoke |   2.678365    2.62278     1.01   0.314     .3929467    18.25601
  pest_pois |   4.431831   6.031443     1.09   0.274      .307717    63.82855
     lang12 |    7.34657   20.76409     0.71   0.480     .0288588    1870.212
      drugs |          1  (omitted)
      _cons |   .0018178   .0069534    -1.65   0.099     1.01e-06    3.277679
------------------------------------------------------------------------------

. logistic reading cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      11.39
                                                Prob > chi2     =     0.2502
Log likelihood = -81.596526                     Pseudo R2       =     0.0652

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   2.953523   1.412177     2.27   0.024     1.157052    7.539247
       age |   .9468271   .0218153    -2.37   0.018      .905021    .9905644
```

```
    levledu |   .9347637   .0739286    -0.85   0.394     .8005382    1.091495
   hous_inc |   .9999639   .0000795    -0.45   0.650     .9998081     1.00012
      drink |   .6894096   .3229351    -0.79   0.427     .2752676    1.726631
      smoke |   .8972172   .4120818    -0.24   0.813     .3647121    2.207217
  pest_pois |    .996365   1.151787    -0.00   0.997     .1033806    9.602798
     lang12 |   .9385462   .7599198    -0.08   0.938     .1919804    4.588328
      drugs |   2.012265   3.071337     0.46   0.647     .1010389    40.07574
      _cons |   3.299086   5.094074     0.77   0.439     .1599797    68.03344
------------------------------------------------------------------------------
```

. logistic fam_mem cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

```
Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      11.11
                                                Prob > chi2     =     0.2680
Log likelihood = -85.474591                     Pseudo R2       =     0.0610

------------------------------------------------------------------------------
    fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   1.453976   .7093802     0.77   0.443     .5588103    3.783118
       age |   1.016325   .0206068     0.80   0.425     .9767283    1.057527
    levledu |   1.229714   .1087318     2.34   0.019     1.034047    1.462405
   hous_inc |   .9998541   .0000856    -1.70   0.088     .9996863    1.000022
      drink |   .6377088   .2949488    -0.97   0.331     .2575909    1.578754
      smoke |   2.076599   .9787202     1.55   0.121     .8244673    5.230362
  pest_pois |   1.025026   .9408744     0.03   0.979     .1695955      6.1952
     lang12 |    .731068   .5371701    -0.43   0.670     .1731875    3.086022
      drugs |   4.019523   6.256823     0.89   0.371     .1901898    84.94969
      _cons |   .0435817   .0669118    -2.04   0.041      .00215    .8834287
------------------------------------------------------------------------------
```

. logistic chest cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

```
Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      20.18
                                                Prob > chi2     =     0.0168
Log likelihood = -96.138013                     Pseudo R2       =     0.0950

------------------------------------------------------------------------------
      chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   1.120511   .5151713     0.25   0.805      .455055    2.759106
       age |   .9929466    .018734    -0.38   0.708     .9568992    1.030352
    levledu |   1.118005   .0818512     1.52   0.128      .968558    1.290511
   hous_inc |   .9997182   .0000932    -3.02   0.003     .9995355    .9999009
      drink |   1.344008   .5605061     0.71   0.478     .5934935      3.0436
      smoke |   .7061546   .2900943    -0.85   0.397     .3156596    1.579722
  pest_pois |   5.170376   4.670762     1.82   0.069     .8801814    30.37191
     lang12 |   1.213648   .8556517     0.27   0.784     .3047716    4.832934
      drugs |   .9026984   1.341298    -0.07   0.945     .0490639    16.60822
      _cons |   .4418067   .6143228    -0.59   0.557     .0289504    6.742327
------------------------------------------------------------------------------
```

```
. logistic notes cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        166
                                        LR chi2(8)      =      18.12
                                        Prob > chi2     =     0.0203
Log likelihood = -79.009501             Pseudo R2       =     0.1029

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  cis_dbva_cr |   2.826513   1.432128     2.05   0.040      1.04705    7.630182
         age |   .9480734    .021728    -2.33   0.020      .9064296    .9916304
     levledu |   1.022757   .0858865     0.27   0.789      .8675456    1.205737
    hous_inc |   .9998809   .0000889    -1.34   0.180      .9997068    1.000055
       drink |   .4422279   .2115131    -1.71   0.088      .1731909     1.12919
       smoke |   .8484219   .3978266    -0.35   0.726      .3384401    2.126874
   pest_pois |   10.85713   9.636752     2.69   0.007      1.906301    61.83561
     lang12 |   .9502803   .7230289    -0.07   0.947      .2138985    4.221781
      drugs |         1  (omitted)
      _cons |   2.410661   3.722325     0.57   0.569      .1168928    49.71467
------------------------------------------------------------------------------

. logistic chek_door cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                     Number of obs   =        161
                                        LR chi2(8)      =       3.82
                                        Prob > chi2     =     0.8728
Log likelihood = -107.41111             Pseudo R2       =     0.0175

------------------------------------------------------------------------------
   chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  cis_dbva_cr |   1.538875   .6397744     1.04   0.300      .6812766    3.476028
         age |   .9802881   .0172638    -1.13   0.258       .947029    1.014715
     levledu |   1.007089   .0652467     0.11   0.913      .8869942    1.143444
    hous_inc |   .9999455   .0000633    -0.86   0.390      .9998214     1.00007
       drink |   1.186157   .4524527     0.45   0.654      .5616373    2.505117
       smoke |   .8567514   .3216847    -0.41   0.681       .410444    1.788363
   pest_pois |         1  (omitted)
     lang12 |   1.282791   .8996054     0.36   0.723      .3245032    5.070992
      drugs |   .7856648   1.162572    -0.16   0.871      .0432204    14.28189
      _cons |   1.093327   1.408446     0.07   0.945      .0875418    13.65478
------------------------------------------------------------------------------

. logistic q16_head cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used
```

```
Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       6.65
                                                Prob > chi2     =     0.5748
Log likelihood = -99.074747                     Pseudo R2       =     0.0325

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   1.041401   .4698243     0.09   0.928     .4301319    2.521358
       age |    .991143   .0178365    -0.49   0.621     .9567935    1.026726
    levledu |   1.057447   .0710091     0.83   0.406     .9270419    1.206197
   hous_inc |   .9998783   .0000641    -1.90   0.058     .9997528    1.000004
      drink |   1.271176   .5157078     0.59   0.554     .5739562    2.815351
      smoke |   1.089281   .4371084     0.21   0.831     .4960987    2.391726
  pest_pois |   2.357675    2.64601     0.76   0.445     .2613267    21.27082
     lang12 |   1.458963   1.000762     0.55   0.582     .3803384    5.596523
      drugs |          1  (omitted)
      _cons |   1.720897   2.251486     0.41   0.678     .1324676     22.3563
------------------------------------------------------------------------------

. logistic less_sex cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       5.54
                                                Prob > chi2     =     0.6989
Log likelihood = -109.19008                     Pseudo R2       =     0.0247

------------------------------------------------------------------------------
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   .6587733   .2856828    -0.96   0.336      .281582    1.541228
       age |   1.001006    .017223     0.06   0.953     .9678122    1.035338
    levledu |    1.07509   .0701747     1.11   0.267     .9459848    1.221816
   hous_inc |   .9999107   .0000652    -1.37   0.170     .9997829    1.000038
      drink |   1.101869   .4223668     0.25   0.800     .5198144    2.335669
      smoke |    1.00463   .3773403     0.01   0.990     .4811646     2.09758
  pest_pois |   1.832306    1.50248     0.74   0.460     .3672973    9.140676
     lang12 |   1.717807    1.16223     0.80   0.424     .4561107    6.469612
      drugs |          1  (omitted)
      _cons |   .3117562    .396048    -0.92   0.359     .0258505    3.759777
------------------------------------------------------------------------------

. logistic q16_score cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used
```

```
Logistic regression                             Number of obs   =        159
                                                LR chi2(7)      =       5.87
                                                Prob > chi2     =     0.5549
Log likelihood = -53.218386                     Pseudo R2       =     0.0523

------------------------------------------------------------------------------
  q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
 cis_dbva_cr |   1.457624   1.005563     0.55   0.585     .3770789    5.634546
         age |   .9509539   .0247703    -1.93   0.054     .9036234    1.000763
      levledu |   .9580771   .0967106    -0.42   0.671     .7861007    1.167677
    hous_inc |   .9999007   .0000798    -1.24   0.214     .9997442    1.000057
       drink |   .6079208   .3772472    -0.80   0.423     .1801487    2.051459
       smoke |   1.117036   .6752404     0.18   0.855     .3416035    3.652687
   pest_pois |          1  (omitted)
      lang12 |   1.192978   1.240752     0.17   0.865     .1553618    9.160533
       drugs |          1  (omitted)
       _cons |   106.4175   216.0733     2.30   0.022     1.989329    5692.712
------------------------------------------------------------------------------

. logistic q16_score50 cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        159
                                                LR chi2(7)      =       8.17
                                                Prob > chi2     =     0.3176
Log likelihood = -104.98606                     Pseudo R2       =     0.0375

------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dbva_cr |   1.556515   .6634801     1.04   0.299     .6750256    3.589108
         age |   .9836708   .0173574    -0.93   0.351     .9502325    1.018286
      levledu |   1.081187   .0721422     1.17   0.242     .9486469    1.232246
    hous_inc |   .9998842   .0000672    -1.72   0.085     .9997524    1.000016
       drink |   .7438566   .2852526    -0.77   0.440     .3508102    1.577271
       smoke |   .9581144   .3621386    -0.11   0.910     .4567606    2.009769
   pest_pois |          1  (omitted)
      lang12 |   .7392362   .5194029    -0.43   0.667     .1865138    2.929917
       drugs |          1  (omitted)
       _cons |   1.502764   1.971164     0.31   0.756     .1149148    19.65194
------------------------------------------------------------------------------

. logistic q16_score75 cis_dbva_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      15.59
                                                Prob > chi2     =     0.0759
Log likelihood = -85.561325                     Pseudo R2       =     0.0835
```

```
------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 cis_dbva_cr |   2.055675   .9843075     1.50   0.132     .8042266     5.25449
         age |   .9791218   .0204529    -1.01   0.312     .9398443    1.020041
     levledu |   1.130984   .0957471     1.45   0.146     .9580656    1.335112
    hous_inc |    .999841    .000089    -1.79   0.074     .9996667    1.000015
       drink |   1.088162   .5021058     0.18   0.855     .4404815    2.688189
       smoke |   1.256499    .572253     0.50   0.616     .5146309    3.067812
   pest_pois |    4.59386   3.928258     1.78   0.075     .8596195    24.54987
      lang12 |   .5399493    .392587    -0.85   0.397     .1298555    2.245151
       drugs |   1.762636   2.725106     0.37   0.714     .0851474    36.48834
       _cons |   .4013536   .6045399    -0.61   0.544     .0209606    7.685136
------------------------------------------------------------------------------

. logistic tired fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      17.48
                                                Prob > chi2     =     0.0254
Log likelihood =   -104.858                     Pseudo R2       =     0.0770

------------------------------------------------------------------------------
      tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     fpba_cr |   1.161488   .2188012     0.79   0.427     .8029071    1.680212
         age |   .9733688    .01694    -1.55   0.121     .9407269    1.007143
     levledu |   1.082891   .0714132     1.21   0.227     .9515922    1.232307
    hous_inc |   .9998197   .0000694    -2.60   0.009     .9996838    .9999556
       drink |   .4756321   .1906688    -1.85   0.064     .2167934    1.043509
       smoke |   1.416964    .550628     0.90   0.370     .6615832    3.034822
   pest_pois |   2.093753   1.865252     0.83   0.407     .3652744    12.00139
      lang12 |   .6356612    .470796    -0.61   0.541     .1488648     2.71431
       drugs |          1  (omitted)
       _cons |    5.78997   7.719517     1.32   0.188     .4244298    78.98537
------------------------------------------------------------------------------

. logistic hart_palp fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       9.78
                                                Prob > chi2     =     0.2805
Log likelihood = -107.06688                     Pseudo R2       =     0.0437

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
```

```
    fpba_cr |   .9218202   .1670969    -0.45   0.653     .6461752     1.31505
        age |   .9563888   .0174457    -2.44   0.015     .9227998    .9912003
    levledu |   .9552778   .0621416    -0.70   0.482     .8409271    1.085178
   hous_inc |    .999944   .0000648    -0.86   0.387     .9998171    1.000071
      drink |   .6685188   .2576987    -1.04   0.296     .3140472     1.42309
      smoke |   .8034182    .303764    -0.58   0.563     .3829229    1.685668
  pest_pois |   3.196203   2.658936     1.40   0.162     .6259155    16.32123
    lang12 |   1.665435   1.139527     0.75   0.456     .4356289    6.367054
     drugs |          1  (omitted)
     _cons |   5.555794   7.248431     1.31   0.189     .4307409    71.65989
------------------------------------------------------------------------------

. logistic tingling fpba_cr  age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      11.22
                                                Prob > chi2     =     0.1894
Log likelihood = -102.99302                     Pseudo R2       =     0.0517

------------------------------------------------------------------------------
   tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    fpba_cr |   .7281688   .1671871    -1.38   0.167     .4642979    1.142003
        age |   .9916556   .0177046    -0.47   0.639     .9575552     1.02697
    levledu |   1.097752   .0776131     1.32   0.187     .9557029    1.260915
   hous_inc |   .9999842   .0000636    -0.25   0.804     .9998596    1.000109
      drink |   .6704889   .2655107    -1.01   0.313     .3085457    1.457014
      smoke |   .9806391   .3866212    -0.05   0.960     .4528135    2.123729
  pest_pois |   2.578355   2.125859     1.15   0.251      .512301    12.97658
    lang12 |   .4241172   .2872567    -1.27   0.205     .1124509    1.599591
     drugs |          1  (omitted)
     _cons |   1.329544   1.773942     0.21   0.831     .0972722     18.1726
------------------------------------------------------------------------------

. logistic irritated fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       4.95
                                                Prob > chi2     =     0.7629
Log likelihood = -107.72034                     Pseudo R2       =     0.0225

------------------------------------------------------------------------------
  irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    fpba_cr |   .9425602   .1708941    -0.33   0.744     .6606616    1.344742
        age |   1.003267   .0170513     0.19   0.848     .9703973     1.03725
    levledu |   .9803096   .0629075    -0.31   0.757     .8644517    1.111695
   hous_inc |   .9999651   .0000631    -0.55   0.580     .9998415    1.000089
```

```
      drink |   .9328325   .3568561    -0.18   0.856     .440733    1.974385
      smoke |   .6377151   .2421691    -1.18   0.236     .3029613    1.342351
  pest_pois |   2.404902   1.973438     1.07   0.285     .4815155    12.01115
     lang12 |   .6924544   .4527978    -0.56   0.574     .1922154    2.494561
      drugs |          1  (omitted)
      _cons |   1.366824   1.722718     0.25   0.804     .1155778    16.16406
------------------------------------------------------------------------------
```

. logistic depress fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

```
Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       2.36
                                                Prob > chi2     =     0.9843
Log likelihood = -114.50327                     Pseudo R2       =     0.0102

------------------------------------------------------------------------------
     depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     fpba_cr |   .9587008   .1653367    -0.24   0.807     .6837316    1.344252
         age |   1.000629   .0165285     0.04   0.970     .9687522    1.033554
     levledu |   .9784541   .0609216    -0.35   0.726     .8660481    1.105449
    hous_inc |   .9999521    .000061    -0.79   0.432     .9998325    1.000072
       drink |   .8239115   .3075181    -0.52   0.604     .3964393    1.712318
       smoke |   1.108538   .4086263     0.28   0.780     .5382483    2.283065
   pest_pois |   1.505136   1.222841     0.50   0.615     .3062109    7.398279
      lang12 |   .7453554   .4862243    -0.45   0.652     .2075351    2.676919
       drugs |   1.449351    2.12587     0.25   0.800     .0817811    25.68585
       _cons |   1.639535   2.015802     0.40   0.688     .1472894    18.25029
------------------------------------------------------------------------------
```

. logistic pr_concen fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

```
Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       6.89
                                                Prob > chi2     =     0.6483
Log likelihood = -92.108654                     Pseudo R2       =     0.0361

------------------------------------------------------------------------------
   pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     fpba_cr |   .8200735   .1870456    -0.87   0.384      .524454    1.282325
         age |   .9746974   .0200232    -1.25   0.212     .9362322    1.014743
     levledu |   1.030825   .0772525     0.41   0.685     .8900075    1.193922
    hous_inc |   .9999849    .00007    -0.22   0.829     .9998476    1.000122
       drink |   .8308754   .3626647    -0.42   0.671     .3531825    1.954667
       smoke |   1.651367   .7099593     1.17   0.243     .7110385    3.835253
   pest_pois |    1.26837   1.150486     0.26   0.793     .2143662    7.504745
      lang12 |   1.992337   1.768946     0.78   0.438     .3496248    11.35333
       drugs |   3.171978   4.744136     0.77   0.440     .1691373    59.48685
       _cons |   .3600071   .5480998    -0.67   0.502     .0182131    7.116055
------------------------------------------------------------------------------
```

. logistic short_mem fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly

```
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        166
                                        LR chi2(8)      =       8.77
                                        Prob > chi2     =     0.3623
Log likelihood = -105.30715             Pseudo R2       =     0.0400

------------------------------------------------------------------------------
  short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     fpba_cr |   .7768187   .1658456    -1.18   0.237     .5112036    1.180444
        age |    .984749   .0175675    -0.86   0.389     .9509124     1.01979
     levledu |   1.093497   .0754121     1.30   0.195     .9552462    1.251757
    hous_inc |   .9999313   .0000659    -1.04   0.297     .9998022     1.00006
       drink |   .7896482   .3094442    -0.60   0.547     .3663263    1.702155
       smoke |   1.220782   .4743464     0.51   0.608     .5700273    2.614451
   pest_pois |   2.379144   1.956375     1.05   0.292     .4747622    11.92245
      lang12 |   1.465406   .9997134     0.56   0.575     .3848223    5.580274
       drugs |          1  (omitted)
       _cons |   .5403475   .7107318    -0.47   0.640     .0410268    7.116699
------------------------------------------------------------------------------

. logistic perspire fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        166
                                        LR chi2(8)      =      11.14
                                        Prob > chi2     =     0.1937
Log likelihood = -82.498256             Pseudo R2       =     0.0633

------------------------------------------------------------------------------
    perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     fpba_cr |   .7213432   .1971705    -1.20   0.232     .4221592    1.232559
        age |   .9621835   .0220217    -1.68   0.092     .9199755    1.006328
     levledu |   1.069255   .0911741     0.79   0.432     .9046916    1.263754
    hous_inc |   .9999641   .0000793    -0.45   0.651     .9998088     1.00012
       drink |   .7359512   .3399654    -0.66   0.507     .2976082    1.819924
       smoke |   1.578884   .7335475     0.98   0.326     .6351599    3.924799
   pest_pois |   1.461447   1.359065     0.41   0.683     .2361633    9.043855
      lang12 |   .3672303   .2637153    -1.39   0.163     .0898823    1.500386
       drugs |          1  (omitted)
       _cons |   2.212883   3.511371     0.50   0.617     .0986925    49.61726
------------------------------------------------------------------------------

. logistic button fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        166
```

```
                                LR chi2(8)      =       7.17
                                Prob > chi2     =     0.5186
Log likelihood = -31.400439                     Pseudo R2       =     0.1024

------------------------------------------------------------------------------
      button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     fpba_cr |   1.473742   .4106728     1.39   0.164     .8535441    2.544587
         age |   .9826774   .0402536    -0.43   0.670     .9068659    1.064826
     levledu |    1.15038   .1919447     0.84   0.401     .8294985    1.595391
    hous_inc |   .9998529   .0001599    -0.92   0.358     .9995394    1.000166
       drink |   1.342675   1.260062     0.31   0.754     .2133744    8.448884
       smoke |   2.899005    2.70233     1.14   0.254     .4664392    18.01785
   pest_pois |   3.078641     3.9494     0.88   0.381     .2491176     38.0464
      lang12 |   6.802142   18.72439     0.70   0.486     .0308693    1498.872
       drugs |          1  (omitted)
       _cons |   .0018773   .0071308    -1.65   0.098     1.10e-06    3.211388
------------------------------------------------------------------------------

. logistic reading fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        168
                                LR chi2(9)      =       6.41
                                Prob > chi2     =     0.6978
Log likelihood = -84.081929                     Pseudo R2       =     0.0367

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     fpba_cr |   1.075299   .2080143     0.38   0.707     .7359806    1.571059
         age |   .9522915   .0217742    -2.14   0.033      .910557    .9959388
     levledu |   .9372189   .0727101    -0.84   0.403     .8050154    1.091133
    hous_inc |   .9999846    .000076    -0.20   0.839     .9998356    1.000134
       drink |   .7619678   .3466012    -0.60   0.550     .3124246    1.858353
       smoke |   .9119139   .4068058    -0.21   0.836     .3803924    2.186129
   pest_pois |   .9154233   1.046823    -0.08   0.938     .0973283    8.610033
      lang12 |   .9404218   .7476761    -0.08   0.938     .1979614    4.467502
       drugs |   2.641239   3.927964     0.65   0.514     .1431954    48.71768
       _cons |   3.408421   5.322939     0.79   0.432     .1596724     72.7573
------------------------------------------------------------------------------

. logistic fam_mem fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        168
                                LR chi2(9)      =      10.72
                                Prob > chi2     =     0.2952
Log likelihood = -85.670184                     Pseudo R2       =     0.0589

------------------------------------------------------------------------------
     fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     fpba_cr |   .9020882   .2182467    -0.43   0.670     .5614532    1.449387
         age |   1.018453   .0206254     0.90   0.367     .9788194    1.059691
     levledu |   1.225919    .108075     2.31   0.021     1.031386    1.457143
```

```
   hous_inc |   .9998687   .0000849    -1.55   0.122     .9997022    1.000035
      drink |   .6739837   .3081157    -0.86   0.388     .2751171     1.65113
      smoke |   2.079361   .9781071     1.56   0.120     .8270556    5.227875
  pest_pois |   .9484068   .8708348    -0.06   0.954     .1568247    5.735547
     lang12 |   .7257855   .5343044    -0.44   0.663     .1714652    3.072138
      drugs |   4.729359   7.135095     1.03   0.303     .2458161    90.99011
      _cons |   .0494013   .0768589    -1.93   0.053     .0023412    1.042423
------------------------------------------------------------------------------

. logistic chest fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      24.34
                                                Prob > chi2     =     0.0038
Log likelihood = -94.060225                     Pseudo R2       =     0.1145

------------------------------------------------------------------------------
       chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    fpba_cr |   .6236445   .1614754    -1.82   0.068     .3754414    1.035934
       age |   .9944058   .0190448    -0.29   0.770     .9577706    1.032442
    levledu |   1.109989   .0821597     1.41   0.159     .9600942    1.283285
   hous_inc |   .9997355   .0000953    -2.78   0.006     .9995487    .9999223
      drink |   1.413248   .5957108     0.82   0.412     .6186158    3.228613
      smoke |   .7125071   .2978012    -0.81   0.417     .3140646    1.616439
  pest_pois |   4.449138   3.999382     1.66   0.097     .7640487    25.90781
     lang12 |   1.130095   .7987122     0.17   0.863     .2828234    4.515593
      drugs |   1.203286   1.819873     0.12   0.903     .0620862    23.32076
      _cons |    .690318    .986191    -0.26   0.795     .0419778    11.35217
------------------------------------------------------------------------------

. logistic notes fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      14.72
                                                Prob > chi2     =     0.0649
Log likelihood = -80.712141                     Pseudo R2       =     0.0835

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    fpba_cr |   1.189484   .2332685     0.88   0.376     .8098982    1.746976
       age |   .9519612   .0218875    -2.14   0.032     .9100147    .9958411
    levledu |   1.018667   .0844879     0.22   0.824     .8658321    1.198479
   hous_inc |   .9999034   .0000851    -1.13   0.257     .9997366     1.00007
      drink |    .47827   .2230896    -1.58   0.114     .1917031     1.19321
      smoke |    .85875   .3938525    -0.33   0.740     .3495234    2.109878
  pest_pois |   9.748839   8.501817     2.61   0.009     1.764545    53.86083
     lang12 |   .9457265   .7046071    -0.07   0.940     .2195754     4.07331
      drugs |         1  (omitted)
      _cons |   2.512542    3.94413     0.59   0.557     .1158555    54.48912
```

```
------------------------------------------------------------------------------

. logistic chek_door fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                             Number of obs   =        161
                                                LR chi2(8)      =       2.98
                                                Prob > chi2     =     0.9356
Log likelihood = -107.83156                     Pseudo R2       =     0.0136

------------------------------------------------------------------------------
  chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     fpba_cr |   1.088193   .1893995     0.49   0.627     .7736679    1.530584
         age |   .9827226   .0171063    -1.00   0.317     .9497604    1.016829
     levledu |    1.01044   .0654847     0.16   0.873     .8899098    1.147296
    hous_inc |   .9999515   .0000625    -0.78   0.438     .9998289    1.000074
       drink |   1.216989   .4621496     0.52   0.605     .5781551    2.561705
       smoke |    .864711   .3236674    -0.39   0.698     .4152028    1.800867
   pest_pois |         1  (omitted)
      lang12 |   1.297123   .9058371     0.37   0.710     .3300275    5.098143
       drugs |   .8720037   1.278869    -0.09   0.926     .0492218    15.44826
       _cons |   1.011488   1.313084     0.01   0.993     .0794248    12.88147
------------------------------------------------------------------------------

. logistic q16_head fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       6.67
                                                Prob > chi2     =     0.5722
Log likelihood = -99.062936                     Pseudo R2       =     0.0326

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     fpba_cr |   .9671438   .1803728    -0.18   0.858     .6710293    1.393929
         age |   .9913678   .0176783    -0.49   0.627     .9573176    1.026629
     levledu |    1.05659   .0711421     0.82   0.414     .9259625    1.205644
    hous_inc |   .9998806   .0000637    -1.88   0.061     .9997559    1.000005
       drink |   1.286932   .5217859     0.62   0.534      .581348    2.848884
       smoke |   1.086763   .4363991     0.21   0.836     .4946833    2.387494
   pest_pois |   2.317445   2.602327     0.75   0.454      .256549    20.93383
      lang12 |   1.459989   1.000396     0.55   0.581     .3811531    5.592419
       drugs |         1  (omitted)
       _cons |   1.778874   2.346502     0.44   0.662     .1340695    23.60262
------------------------------------------------------------------------------

. logistic less_sex fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
```

```
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        166
                                        LR chi2(8)      =       6.46
                                        Prob > chi2     =     0.5954
Log likelihood = -108.72648             Pseudo R2       =     0.0289

------------------------------------------------------------------------------
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    fpba_cr |   .7679614   .1575383    -1.29   0.198     .5137187    1.148031
        age |   .9992878   .0171096    -0.04   0.967     .9663101    1.033391
    levledu |   1.068961   .0699438     1.02   0.308     .9402998    1.215226
   hous_inc |   .9999132   .0000654    -1.33   0.185      .999785    1.000041
      drink |   1.099177   .4216854     0.25   0.805     .5182209    2.331419
      smoke |   .9983104   .3778399    -0.00   0.996     .4754484    2.096176
  pest_pois |   1.772169   1.454021     0.70   0.486     .3549074     8.84902
     lang12 |   1.681652   1.141949     0.77   0.444     .4443408    6.364382
      drugs |          1  (omitted)
      _cons |   .3853493   .4939309    -0.74   0.457     .0312469    4.752289
------------------------------------------------------------------------------

. logistic q16_score fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        159
                                        LR chi2(7)      =       5.64
                                        Prob > chi2     =     0.5823
Log likelihood = -53.333545             Pseudo R2       =     0.0502

------------------------------------------------------------------------------
  q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    fpba_cr |   .9260534   .2469895    -0.29   0.773     .5490482     1.56193
        age |   .9541708   .0239336    -1.87   0.061     .9083963    1.002252
    levledu |   .9608859   .0971467    -0.39   0.693      .78816    1.171465
   hous_inc |   .9999098   .0000802    -1.13   0.261     .9997526    1.000067
      drink |   .6527974   .4065672    -0.68   0.493     .1925944    2.212653
      smoke |   1.118745   .6802992     0.18   0.854      .339721    3.684169
  pest_pois |          1  (omitted)
     lang12 |    1.25481   1.294458     0.22   0.826     .1661428    9.477077
      drugs |          1  (omitted)
      _cons |   101.0008   202.0924     2.31   0.021     2.000579    5099.101
------------------------------------------------------------------------------

. logistic q16_score50 fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used
```

```
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        159
                                        LR chi2(7)      =       8.26
                                        Prob > chi2     =     0.3103
Log likelihood = -104.94299             Pseudo R2       =     0.0379

------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    fpba_cr |   .8160017   .1601273    -1.04   0.300     .5554645    1.198742
        age |   .9861291   .0172806    -0.80   0.425     .9528348    1.020587
    levledu |   1.074746   .0715959     1.08   0.279     .9431956    1.224644
   hous_inc |   .9999047   .0000658    -1.45   0.147     .9997757    1.000034
      drink |   .8037861   .3064159    -0.57   0.567     .3807581    1.696805
      smoke |   .9547198   .3614977    -0.12   0.903     .4545426     2.00529
  pest_pois |          1  (omitted)
     lang12 |   .7436556   .5197246    -0.42   0.672     .1890105    2.925889
      drugs |          1  (omitted)
      _cons |   1.857066   2.455283     0.47   0.640     .1391322    24.78716
------------------------------------------------------------------------------

. logistic q16_score75 fpba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        168
                                        LR chi2(9)      =      13.75
                                        Prob > chi2     =     0.1316
Log likelihood = -86.483585             Pseudo R2       =     0.0736

------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    fpba_cr |   .8691062   .2024818    -0.60   0.547     .5505065    1.372092
        age |   .9823022   .0206995    -0.85   0.397     .9425584    1.023722
    levledu |   1.120365   .0938292     1.36   0.175     .9507638    1.320221
   hous_inc |    .999867    .000088    -1.51   0.131     .9996945    1.000039
      drink |   1.180205    .536662     0.36   0.716     .4840603    2.877499
      smoke |   1.272106   .5737545     0.53   0.594     .5255433    3.079204
  pest_pois |   3.916675   3.302903     1.62   0.105     .7500768     20.4517
     lang12 |   .5248527   .3771069    -0.90   0.370     .1283656    2.145982
      drugs |   2.363362   3.516655     0.58   0.563     .1279242    43.66243
      _cons |   .5330587   .8169333    -0.41   0.681     .0264409    10.74669
------------------------------------------------------------------------------

. logistic tired pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        166
                                        LR chi2(8)      =      16.89
```

```
                                  Prob > chi2     =     0.0313
Log likelihood = -105.15711                       Pseudo R2       =     0.0743

------------------------------------------------------------------------------
       tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   .9976696   .0096005    -0.24   0.808     .9790292    1.016665
         age |   .9742195   .0170582    -1.49   0.136     .9413533    1.008233
      levledu |   1.076001   .0705056     1.12   0.264     .9463181    1.223455
    hous_inc |   .9998271   .0000682    -2.54   0.011     .9996934    .9999608
       drink |    .494587   .1959936    -1.78   0.076     .2274735    1.075362
       smoke |   1.394677   .5399341     0.86   0.390     .6530405    2.978565
   pest_pois |   1.965416   1.740524     0.76   0.445     .3464587    11.14956
      lang12 |   .6356921   .4683206    -0.61   0.539     .1500232    2.693614
       drugs |          1  (omitted)
       _cons |   6.665921   8.794152     1.44   0.150     .5022215    88.47592
------------------------------------------------------------------------------

. logistic hart_palp pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                               Number of obs   =        166
                                  LR chi2(8)      =       9.61
                                  Prob > chi2     =     0.2932
Log likelihood = -107.15168                       Pseudo R2       =     0.0429

------------------------------------------------------------------------------
   hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   1.001745   .0090649     0.19   0.847     .9841345     1.01967
         age |   .9560369    .017583    -2.44   0.015     .9221886    .9911277
      levledu |   .9584254   .0621829    -0.65   0.513     .8439799     1.08839
    hous_inc |   .9999412   .0000644    -0.91   0.361     .9998149    1.000067
       drink |   .6572881   .2527149    -1.09   0.275     .3093747    1.396454
       smoke |   .8102747   .3063626    -0.56   0.578      .386185    1.700079
   pest_pois |   3.298941   2.742365     1.44   0.151     .6468181    16.82546
      lang12 |   1.675501   1.147815     0.75   0.451     .4375446     6.41604
       drugs |          1  (omitted)
       _cons |   5.048407   6.491607     1.26   0.208     .4060859    62.76114
------------------------------------------------------------------------------

. logistic tingling pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                               Number of obs   =        166
                                  LR chi2(8)      =       9.04
                                  Prob > chi2     =     0.3389
Log likelihood = -104.08433                       Pseudo R2       =     0.0416

------------------------------------------------------------------------------
```

```
   tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     pba_cr |   1.000749   .0099001     0.08   0.940     .9815315    1.020342
        age |   .9912586   .0176181    -0.49   0.621     .9573222    1.026398
     levledu |   1.104143   .0779139     1.40   0.160     .9615248    1.267916
    hous_inc |   .9999713   .0000628    -0.46   0.648     .9998482    1.000094
      drink |    .650189   .2556379    -1.09   0.274     .3008629    1.405111
      smoke |   .9752239   .3815093    -0.06   0.949     .4530153    2.099403
   pest_pois |   2.823259    2.32305     1.26   0.207     .5628079    14.16254
     lang12 |   .4367813   .2952951    -1.23   0.220     .1160891    1.643375
      drugs |          1  (omitted)
      _cons |   .9919276   1.305078    -0.01   0.995     .0752584    13.07389
------------------------------------------------------------------------------

. logistic irritated pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       4.94
                                                Prob > chi2     =     0.7641
Log likelihood = -107.72611                     Pseudo R2       =     0.0224

------------------------------------------------------------------------------
  irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     pba_cr |    .997308   .0087486    -0.31   0.759     .9803075    1.014603
        age |   1.004059   .0172441     0.24   0.814     .9708241    1.038432
     levledu |   .9803938   .0628853    -0.31   0.758     .8645736    1.111729
    hous_inc |    .999962   .0000628    -0.60   0.545      .999839    1.000085
      drink |   .9232373   .3512772    -0.21   0.834     .4379703    1.946176
      smoke |   .6355188   .2414645    -1.19   0.233     .3017974    1.338262
   pest_pois |   2.431324   1.992892     1.08   0.278     .4876805    12.12133
     lang12 |   .6975371    .455982    -0.55   0.582     .1937021    2.511888
      drugs |          1  (omitted)
      _cons |   1.292447   1.610352     0.21   0.837      .112419    14.85887
------------------------------------------------------------------------------

. logistic depress pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       2.83
                                                Prob > chi2     =     0.9706
Log likelihood = -114.26935                     Pseudo R2       =     0.0122

------------------------------------------------------------------------------
    depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     pba_cr |    .993539   .0093954    -0.69   0.493      .975294    1.012125
        age |   1.002277   .0167326     0.14   0.892     .9700122    1.035614
     levledu |   .9761881   .0608848    -0.39   0.699     .8638615     1.10312
    hous_inc |   .9999485   .0000608    -0.85   0.397     .9998294    1.000068
      drink |   .8203689   .3048639    -0.53   0.594     .3959928    1.699539
```

```
      smoke |   1.094521   .4039998     0.24   0.807     .5309286    2.256378
  pest_pois |   1.496096   1.214135     0.50   0.620     .3049149    7.340743
     lang12 |   .7537327    .491863    -0.43   0.665     .2097727     2.70823
      drugs |   1.458638    2.13599     0.26   0.797     .0826935    25.72907
      _cons |   1.599296   1.949593     0.39   0.700     .1466516    17.44097
------------------------------------------------------------------------------
```

```
. logistic pr_concen pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       7.65
                                                Prob > chi2     =     0.5699
Log likelihood = -91.730608                     Pseudo R2       =     0.0400

------------------------------------------------------------------------------
  pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     pba_cr |   .9709882    .029054    -0.98   0.325     .9156809    1.029636
        age |   .9755072   .0200527    -1.21   0.228     .9369859    1.015612
    levledu |   1.034944   .0772082     0.46   0.645      .894162    1.197892
   hous_inc |   .9999734   .0000699    -0.38   0.703     .9998364     1.00011
      drink |    .825767   .3575329    -0.44   0.658     .3534372    1.929314
      smoke |   1.647192   .7030085     1.17   0.242     .7136058    3.802159
  pest_pois |   1.329019   1.200289     0.31   0.753     .2263484    7.803415
     lang12 |   2.001253   1.761951     0.79   0.431     .3563558    11.23881
      drugs |   3.146199   4.675005     0.77   0.440     .1709888    57.89018
      _cons |   .3440946   .5174721    -0.71   0.478     .0180545     6.55799
------------------------------------------------------------------------------
```

```
. logistic short_mem pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       7.21
                                                Prob > chi2     =     0.5142
Log likelihood =  -106.0863                     Pseudo R2       =     0.0329

------------------------------------------------------------------------------
 short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     pba_cr |   1.000741   .0102028     0.07   0.942     .9809425     1.02094
        age |   .9845183   .0175321    -0.88   0.381     .9507488    1.019487
    levledu |   1.099806   .0757013     1.38   0.167     .9610072    1.258652
   hous_inc |   .9999201   .0000654    -1.22   0.222      .999792    1.000048
      drink |   .7668641   .2990234    -0.68   0.496      .357116    1.646749
      smoke |   1.219036   .4705891     0.51   0.608     .5720367     2.59782
  pest_pois |    2.56629    2.10505     1.15   0.251     .5141515    12.80915
     lang12 |   1.502244   1.02339     0.60   0.550     .3952459    5.709706
      drugs |          1  (omitted)
      _cons |   .4213934    .54546    -0.67   0.504     .0333331    5.327212
------------------------------------------------------------------------------
```

```
. logistic perspire pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      10.42
                                                Prob > chi2     =     0.2370
Log likelihood = -82.862098                     Pseudo R2       =     0.0591

------------------------------------------------------------------------------
    perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   1.010895   .0100731     1.09   0.277     .9913436    1.030832
         age |   .9608168   .0219025    -1.75   0.080     .9188336    1.004718
     levledu |   1.082138   .0931371     0.92   0.359      .914159    1.280984
    hous_inc |   .9999537   .0000787    -0.59   0.556     .9997995    1.000108
       drink |      .7118   .3310349    -0.73   0.465     .2860829    1.771022
       smoke |   1.589399   .7411173     0.99   0.320     .6372764    3.964038
   pest_pois |   1.637233    1.52354     0.53   0.596      .264252    10.14385
     lang12 |   .3842018   .2758744    -1.33   0.183     .0940498    1.569498
      drugs |          1  (omitted)
      _cons |   1.460395   2.283636     0.24   0.809     .0681454    31.29708
------------------------------------------------------------------------------

. logistic button pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       7.13
                                                Prob > chi2     =     0.5230
Log likelihood = -31.420658                     Pseudo R2       =     0.1019

------------------------------------------------------------------------------
      button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   1.020041   .0133144     1.52   0.128     .9942757    1.046473
         age |   .9752282   .0410625    -0.60   0.551     .8979786    1.059123
     levledu |   1.142134   .1907111     0.80   0.426     .8233516    1.584342
    hous_inc |   .9998754   .0001616    -0.77   0.441     .9995588    1.000192
       drink |   1.445974   1.431004     0.37   0.709     .2078603    10.05888
       smoke |   2.803287   2.692179     1.07   0.283     .4267795     18.4133
   pest_pois |   2.963272   3.775246     0.85   0.394     .2439663    35.99259
     lang12 |   7.079193   20.45627     0.68   0.498     .0245654    2040.063
      drugs |          1  (omitted)
      _cons |   .0028942   .0113162    -1.49   0.135     1.36e-06    6.160978
------------------------------------------------------------------------------

. logistic reading pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =       6.98
```

```
                                  Prob > chi2     =     0.6387
Log likelihood = -83.796939                       Pseudo R2       =     0.0400

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   1.008537   .009373     0.91   0.360     .9903329    1.027077
         age |    .949166   .0221922   -2.23   0.026     .9066517    .9936738
     levledu |   .9375937   .0731424   -0.83   0.409     .8046588     1.09249
    hous_inc |   .9999901   .0000758   -0.13   0.896     .9998416    1.000139
       drink |   .7628056   .3486468   -0.59   0.554     .3114332     1.86837
       smoke |   .9247836   .4153795   -0.17   0.862      .383452     2.23033
   pest_pois |   .9277122   1.061465   -0.07   0.948     .0985121    8.736486
      lang12 |   .9242997   .7380013   -0.10   0.921     .1932753    4.420276
       drugs |   2.645616   3.956097    0.65   0.515     .1411532    49.58643
       _cons |   3.795146   5.923535    0.85   0.393     .1780973    80.87228
------------------------------------------------------------------------------

. logistic fam_mem pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        168
                                  LR chi2(9)      =      10.55
                                  Prob > chi2     =     0.3079
Log likelihood = -85.756629               Pseudo R2       =     0.0579

------------------------------------------------------------------------------
     fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   .9982878   .0136177    -0.13   0.900     .9719512    1.025338
         age |   1.018489   .0206152     0.91   0.365     .9788746    1.059706
     levledu |   1.226785   .1082582     2.32   0.021     1.031939    1.458422
    hous_inc |   .9998636   .0000843    -1.62   0.105     .9996984    1.000029
       drink |   .6689769   .3050464    -0.88   0.378     .2736983    1.635122
       smoke |   2.065091   .9698301     1.54   0.123     .8226003    5.184293
   pest_pois |   .9715696   .8906511    -0.03   0.975     .1611261     5.85844
      lang12 |   .7357547   .5404287    -0.42   0.676     .1743837    3.104275
       drugs |   4.504452    6.82153     0.99   0.320     .2315179    87.63939
       _cons |    .045655   .0703764    -2.00   0.045     .0022252    .9367023
------------------------------------------------------------------------------

. logistic chest pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        168
                                  LR chi2(9)      =      20.12
                                  Prob > chi2     =     0.0172
Log likelihood = -96.165302               Pseudo R2       =     0.0947

------------------------------------------------------------------------------
       chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   1.000809   .0099698     0.08   0.935     .9814578    1.020541
         age |   .9933418    .018744    -0.35   0.723     .9572753    1.030767
     levledu |   1.118187   .0821428     1.52   0.128     .9682431    1.291351
    hous_inc |   .9997213   .0000925    -3.01   0.003      .99954    .9999026
```

```
      drink |   1.357003   .5634057     0.74   0.462     .6014167    3.061864
      smoke |   .7089968    .291128    -0.84   0.402     .3170475    1.585493
  pest_pois |   5.098963   4.591647     1.81   0.070     .8729107    29.78475
     lang12 |   1.209599   .8517813     0.27   0.787     .3042552    4.808889
      drugs |   .9352063     1.3789    -0.05   0.964     .0519837    16.82472
      _cons |   .4457417    .620857    -0.58   0.562     .0290721    6.834242
------------------------------------------------------------------------------

. logistic notes pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =      14.00
                                                Prob > chi2     =     0.0818
Log likelihood = -81.070712                     Pseudo R2       =     0.0795

------------------------------------------------------------------------------
       notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   .9974167   .0157554    -0.16   0.870     .9670098     1.02878
         age |   .9515852   .0220422    -2.14   0.032     .9093493    .9957828
     levledu |   1.010499   .0826468     0.13   0.898     .8608309     1.18619
    hous_inc |   .9999088    .000085    -1.07   0.283     .9997423    1.000075
       drink |   .4963157   .2292828    -1.52   0.129     .2006913    1.227403
       smoke |   .8430278   .3847714    -0.37   0.708     .3446195    2.062262
   pest_pois |   9.124356   7.914997     2.55   0.011     1.666558    49.95557
      lang12 |   .9280648   .6898609    -0.10   0.920     .2161984    3.983862
       drugs |          1  (omitted)
       _cons |   3.258136    5.02739     0.77   0.444     .1583224    67.04956
------------------------------------------------------------------------------

. logistic chek_door pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                             Number of obs   =        161
                                                LR chi2(8)      =       2.80
                                                Prob > chi2     =     0.9460
Log likelihood =  -107.9195                     Pseudo R2       =     0.0128

------------------------------------------------------------------------------
   chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   .9975892   .0099577    -0.24   0.809     .9782621    1.017298
         age |   .9833612   .0172622    -0.96   0.339     .9501034    1.017783
     levledu |   1.007286   .0650865     0.11   0.911     .8874665    1.143283
    hous_inc |   .9999547   .0000619    -0.73   0.464     .9998334    1.000076
       drink |   1.238934   .4677192     0.57   0.570     .5911596    2.596519
       smoke |   .8577065    .320777    -0.41   0.682     .4120923    1.785184
   pest_pois |          1  (omitted)
      lang12 |    1.2966    .904829     0.37   0.710     .3302155    5.091137
```

```
      drugs |   .9084199    1.33049    -0.07   0.948     .0514754    16.03146
      _cons |   1.101437    1.41849     0.08   0.940     .0882545     13.7462
------------------------------------------------------------------------------

. logistic q16_head pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       8.90
                                                Prob > chi2     =     0.3509
Log likelihood = -97.950219                     Pseudo R2       =     0.0435

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     pba_cr |   .9832985   .0136903    -1.21   0.226     .9568288      1.0105
        age |   .9948734   .0181462    -0.28   0.778     .9599357     1.031083
    levledu |   1.053846   .0720521     0.77   0.443     .9216802     1.204965
   hous_inc |   .9998741   .0000637    -1.98   0.048     .9997493     .9999989
      drink |   1.297078   .5275539     0.64   0.522     .5844684     2.878531
      smoke |   1.057429   .4291631     0.14   0.891     .4772948     2.342696
  pest_pois |   2.229053   2.499467     0.71   0.475     .2475464      20.0717
     lang12 |   1.501058   1.029688     0.59   0.554     .3912867     5.758376
      drugs |          1  (omitted)
      _cons |   1.750379   2.304631     0.43   0.671     .1325562     23.1134
------------------------------------------------------------------------------

. logistic less_sex pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        166
                                                LR chi2(8)      =       5.31
                                                Prob > chi2     =     0.7239
Log likelihood = -109.30336                     Pseudo R2       =     0.0237

------------------------------------------------------------------------------
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     pba_cr |   .9902179   .0134561    -0.72   0.469     .9641925     1.016946
        age |   1.000575   .0171666     0.03   0.973     .9674889     1.034794
    levledu |    1.07294    .070093     1.08   0.281     .9439916     1.219502
   hous_inc |   .9998995   .0000651    -1.54   0.122      .999772     1.000027
      drink |   1.062922   .4036703     0.16   0.872     .5049364     2.237514
      smoke |   .9910184   .3719151    -0.02   0.981     .4749391     2.067881
  pest_pois |    1.87794    1.53589     0.77   0.441     .3780236      9.3292
     lang12 |   1.726605   1.167103     0.81   0.419     .4590088     6.494789
      drugs |          1  (omitted)
      _cons |   .3103703   .3915544    -0.93   0.354     .0261835     3.679019
------------------------------------------------------------------------------
```

```
. logistic q16_score pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        159
                                                LR chi2(7)      =       8.87
                                                Prob > chi2     =     0.2622
Log likelihood = -51.719491                     Pseudo R2       =     0.0790

------------------------------------------------------------------------------
  q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     pba_cr |   .9805782   .0128345    -1.50   0.134     .9557429    1.006059
        age |   .9606202   .0250622    -1.54   0.124      .912734    1.011019
     levledu |   .9341009   .1022648    -0.62   0.533     .7537109    1.157665
    hous_inc |   .9999004   .0000798    -1.25   0.212      .999744    1.000057
      drink |   .6266251   .4010143    -0.73   0.465     .1787615    2.196553
      smoke |   1.019491   .6417187     0.03   0.976     .2968892     3.50084
   pest_pois |          1  (omitted)
     lang12 |   1.340298   1.393468     0.28   0.778     .1746755     10.2842
      drugs |          1  (omitted)
      _cons |   114.4458   237.3644     2.29   0.022     1.964174    6668.372
------------------------------------------------------------------------------

. logistic q16_score50 pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        159
                                                LR chi2(7)      =       7.11
                                                Prob > chi2     =     0.4179
Log likelihood = -105.51947                     Pseudo R2       =     0.0326

------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     pba_cr |   .9988424   .0096209    -0.12   0.904     .9801626    1.017878
        age |   .9863338   .0173453    -0.78   0.434     .9529169    1.020923
     levledu |   1.079895   .0718299     1.16   0.248     .9479014    1.230268
    hous_inc |   .9998953   .0000654    -1.60   0.109     .9997671    1.000023
      drink |   .7793968   .2954323    -0.66   0.511     .3707734    1.638358
      smoke |   .9575402   .3605999    -0.12   0.908     .4577235    2.003138
   pest_pois |          1  (omitted)
     lang12 |   .7507159   .5247418    -0.41   0.682     .1907636    2.954308
      drugs |          1  (omitted)
      _cons |   1.530572   2.000586     0.33   0.745     .1181034     19.8356
```

```
------------------------------------------------------------------------------

. logistic q16_score75 pba_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        168
                                                LR chi2(9)      =      14.11
                                                Prob > chi2     =     0.1186
Log likelihood = -86.304068                     Pseudo R2       =     0.0756

------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      pba_cr |   1.009392   .0098049     0.96   0.336     .9903568    1.028794
         age |   .9806407   .0207202    -0.93   0.355     .9408592    1.022104
     levledu |   1.131868   .0958967     1.46   0.144     .9586902    1.336328
    hous_inc |   .9998628   .0000873    -1.57   0.116     .9996918    1.000034
       drink |   1.161219    .531809     0.33   0.744      .473244    2.849331
       smoke |   1.290509   .5847071     0.56   0.574     .5310023    3.136358
   pest_pois |   4.226105   3.571217     1.71   0.088      .806572    22.14305
      lang12 |   .5297642   .3820064    -0.88   0.378     .1289115    2.177076
       drugs |   2.151179   3.192528     0.52   0.606     .1173337     39.4394
       _cons |   .4267296   .6507871    -0.56   0.577     .0214794    8.477813
------------------------------------------------------------------------------

. logistic tired tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        168
                                                LR chi2(8)      =      17.18
                                                Prob > chi2     =     0.0283
Log likelihood = -106.89351                     Pseudo R2       =     0.0744

------------------------------------------------------------------------------
      tired | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     tcpy_cr |   1.005722   .0072768     0.79   0.430     .9915603    1.020086
         age |   .9682187   .0166342    -1.88   0.060     .9361591    1.001376
     levledu |   1.065443    .069437     0.97   0.331     .9376825    1.210611
    hous_inc |   .9998785   .0000593    -2.05   0.041     .9997622    .9999948
       drink |   .4590112   .1808361    -1.98   0.048     .2120686    .9935053
       smoke |   1.352104   .5195276     0.79   0.432     .6367182    2.871261
   pest_pois |   2.306775   2.041809     0.94   0.345     .4069831    13.07477
      lang12 |   .5755125   .4211363    -0.76   0.450     .1371452    2.415066
       drugs |           1  (omitted)
       _cons |   7.802647   10.26565     1.56   0.118     .5920356    102.8338
------------------------------------------------------------------------------

. logistic hart_palp tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used
```

```
Logistic regression                             Number of obs   =        168
                                                LR chi2(8)      =      12.59
                                                Prob > chi2     =     0.1269
Log likelihood = -106.26808                     Pseudo R2       =     0.0559

------------------------------------------------------------------------------
  hart_palp | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     tcpy_cr |   1.007874   .0094524     0.84   0.403      .989517    1.026572
         age |   .9556311   .0174357    -2.49   0.013     .9220614    .9904228
     levledu |   .9604941    .063062    -0.61   0.539     .8445169    1.092398
    hous_inc |   .9999279    .000061    -1.18   0.237     .9998083    1.000047
       drink |   .6861333   .2664608    -0.97   0.332     .3205113    1.468837
       smoke |   .8437477   .3237809    -0.44   0.658     .3977145    1.790003
   pest_pois |   3.196172   2.639829     1.41   0.159     .6332765    16.13121
     lang12 |   1.626186   1.117383     0.71   0.479     .4229544    6.252398
      drugs |          1  (omitted)
      _cons |   4.624955   6.004609     1.18   0.238     .3630672    58.91528
------------------------------------------------------------------------------

. logistic tingling tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        168
                                                LR chi2(8)      =       9.55
                                                Prob > chi2     =     0.2981
Log likelihood = -103.49258                     Pseudo R2       =     0.0441

------------------------------------------------------------------------------
    tingling | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
     tcpy_cr |     .99817   .0047391    -0.39   0.700     .9889246    1.007502
         age |   .9874341   .0175075    -0.71   0.476     .9537094    1.022351
     levledu |   1.086488   .0763592     1.18   0.238     .9466767    1.246947
    hous_inc |   .9999526   .0000595    -0.80   0.425     .9998361    1.000069
       drink |   .6949395   .2746901    -0.92   0.357     .3202513    1.508006
       smoke |    .920556    .361413    -0.21   0.833     .4264479    1.987167
   pest_pois |   3.017784   2.483336     1.34   0.180      .601498    15.14057
     lang12 |    .421584   .2871124    -1.27   0.205     .1109655    1.601696
      drugs |          1  (omitted)
      _cons |   1.378184   1.828265     0.24   0.809     .1023584    18.55627
------------------------------------------------------------------------------

. logistic irritated tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        168
                                                LR chi2(8)      =       9.82
                                                Prob > chi2     =     0.2780
Log likelihood = -106.23312                     Pseudo R2       =     0.0442
```

```
------------------------------------------------------------------------------
  irritated | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   1.021037   .0126598     1.68   0.093     .9965234    1.046154
        age |   1.002028   .0171392     0.12   0.906     .9689929     1.03619
     levledu |   .9907941   .0648735    -0.14   0.888      .871465    1.126463
    hous_inc |   .9999692   .0000581    -0.53   0.597     .9998553    1.000083
      drink |   .9260327   .3604848    -0.20   0.844     .4317892    1.986008
      smoke |    .62429   .2430561    -1.21   0.226     .2910626    1.339018
   pest_pois |   2.371667   1.957493     1.05   0.295     .4704365    11.95656
     lang12 |   .7081791   .4680138    -0.52   0.602     .1939144    2.586283
      drugs |          1  (omitted)
      _cons |   .9605086   1.215263    -0.03   0.975     .0804519    11.46743
------------------------------------------------------------------------------

. logistic depress tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        170
                                                LR chi2(9)      =       4.25
                                                Prob > chi2     =     0.8940
Log likelihood = -114.52929                     Pseudo R2       =     0.0182

------------------------------------------------------------------------------
    depress | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   1.006594   .0079362     0.83   0.405     .9911587    1.022269
        age |   .9992147   .0164227    -0.05   0.962     .9675396    1.031927
     levledu |   .9895067   .0618616    -0.17   0.866     .8753942    1.118494
    hous_inc |   .9999494    .000057    -0.89   0.375     .9998376    1.000061
      drink |    .854946   .3191978    -0.42   0.675     .4112812    1.777209
      smoke |   1.169569   .4342838     0.42   0.673     .5648828    2.421551
   pest_pois |   1.530266   1.240352     0.52   0.600     .3124846    7.493857
     lang12 |   .7134301   .4672612    -0.52   0.606     .1976318    2.575408
      drugs |   1.478567   2.166366     0.27   0.790     .0836909    26.12186
      _cons |   1.341115   1.643372     0.24   0.811      .121457    14.80845
------------------------------------------------------------------------------

. logistic pr_concen tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        170
                                                LR chi2(9)      =      15.20
                                                Prob > chi2     =     0.0857
Log likelihood = -86.315821                     Pseudo R2       =     0.0809

------------------------------------------------------------------------------
  pr_concen | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   .9285615   .0325677    -2.11   0.035     .8668745    .9946382
        age |   .9662309   .0207348    -1.60   0.109     .9264342    1.007737
     levledu |   1.024999   .0787463     0.32   0.748     .8817167    1.191564
    hous_inc |   .9999514   .0000697    -0.70   0.486     .9998148    1.000088
      drink |   .8642976   .3833358    -0.33   0.742     .3623564    2.061535
      smoke |    1.79447   .7919086     1.32   0.185     .7556082    4.261629
```

```
  pest_pois |   1.886777   1.796826     0.67   0.505     .2918095    12.19949
     lang12 |   1.979078   1.789879     0.75   0.450     .3362295    11.64903
      drugs |   3.134573    4.68982     0.76   0.445     .1669726    58.84526
      _cons |    .716668   1.127571    -0.21   0.832     .0328154    15.65156
------------------------------------------------------------------------------
Note: 1 failure and 0 successes completely determined.

. logistic short_mem tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        168
                                                LR chi2(8)      =       6.36
                                                Prob > chi2     =     0.6069
Log likelihood = -107.96214                     Pseudo R2       =     0.0286

------------------------------------------------------------------------------
   short_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     tcpy_cr |   .9989658   .0039251    -0.26   0.792     .9913024    1.006688
         age |   .9843647   .0171379    -0.91   0.365     .9513416    1.018534
     levledu |   1.092376   .0743472     1.30   0.194     .9559586    1.248259
    hous_inc |    .999959   .0000569    -0.72   0.472     .9998474    1.000071
       drink |   .7498882    .290149    -0.74   0.457     .3512748    1.600833
       smoke |    1.14596   .4381692     0.36   0.722     .5416316     2.42457
   pest_pois |   2.720187   2.224894     1.22   0.221       .5475    13.51491
     lang12 |   1.449634   .9790901     0.55   0.582     .3857914    5.447085
      drugs |         1  (omitted)
      _cons |   .4377304   .5622101    -0.64   0.520     .0353138    5.425863
------------------------------------------------------------------------------

. logistic perspire tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        168
                                                LR chi2(8)      =      11.07
                                                Prob > chi2     =     0.1979
Log likelihood = -83.037702                     Pseudo R2       =     0.0625

------------------------------------------------------------------------------
    perspire | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     tcpy_cr |    .999747   .0047599    -0.05   0.958     .9904611     1.00912
         age |   .9657398   .0216394    -1.56   0.120     .9242451    1.009097
     levledu |    1.10027   .0950049     1.11   0.268     .9289679    1.303161
    hous_inc |   .9999406   .0000742    -0.80   0.424     .9997951    1.000086
       drink |   .8248679    .382962    -0.41   0.678     .3320446    2.049144
       smoke |   1.762119   .8230713     1.21   0.225     .7054168    4.401741
   pest_pois |   1.424207   1.324895     0.38   0.704     .2299995    8.818996
     lang12 |   .3676273   .2648877    -1.39   0.165     .0895548    1.509131
      drugs |         1  (omitted)
```

```
       _cons |   1.072308   1.670015     0.04   0.964      .050659    22.69774
------------------------------------------------------------------------------

. logistic button tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        168
                                                LR chi2(8)      =       5.81
                                                Prob > chi2     =     0.6686
Log likelihood = -32.190471                     Pseudo R2       =     0.0828

------------------------------------------------------------------------------
      button | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     tcpy_cr |   .9996876   .0092456    -0.03   0.973     .9817297    1.017974
         age |   .9803861    .040298    -0.48   0.630     .9045012    1.062638
     levledu |   1.111829    .174174     0.68   0.499     .8178858    1.511414
    hous_inc |   .9998566   .0001607    -0.89   0.372     .9995417    1.000172
       drink |   1.495792   1.412808     0.43   0.670     .2349053    9.524657
       smoke |   2.542307   2.335547     1.02   0.310     .4200034    15.38874
   pest_pois |   2.640469    3.33433     0.77   0.442     .2222293    31.37334
      lang12 |   7.611927   21.97956     0.70   0.482     .0265238    2184.504
       drugs |          1  (omitted)
       _cons |   .0038539   .0147323    -1.45   0.146     2.15e-06    6.915042
------------------------------------------------------------------------------

. logistic reading tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        170
                                                LR chi2(9)      =       7.55
                                                Prob > chi2     =     0.5802
Log likelihood = -83.994278                     Pseudo R2       =     0.0430

------------------------------------------------------------------------------
     reading | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     tcpy_cr |   .9932751   .0125894    -0.53   0.594     .9689044    1.018259
         age |   .9509095   .0216321    -2.21   0.027     .9094427    .9942671
     levledu |   .9345653    .072243    -0.88   0.381     .8031761    1.087448
    hous_inc |   .9999627    .000072    -0.52   0.605     .9998217    1.000104
       drink |   .8119741   .3692664    -0.46   0.647     .3329937    1.979923
       smoke |   .8780615   .3942289    -0.29   0.772     .3642131    2.116871
   pest_pois |   .8924757   1.019282    -0.10   0.921     .0951597    8.370273
      lang12 |   .9813096    .787944    -0.02   0.981     .2033914    4.734559
       drugs |   2.475867   3.686262     0.61   0.543     .1337804    45.82073
       _cons |   4.285943   6.653281     0.94   0.348     .2044957    89.82734
------------------------------------------------------------------------------

. logistic fam_mem tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        170
                                                LR chi2(9)      =      13.12
```

```
                                  Prob > chi2     =     0.1573
Log likelihood = -86.191358       Pseudo R2       =     0.0707

------------------------------------------------------------------------------
    fam_mem | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   .9910274   .0134395    -0.66   0.506     .9650334    1.017722
        age |   1.020227   .0204935     1.00   0.319     .9808411    1.061195
    levledu |   1.266342   .1133784     2.64   0.008      1.06253    1.509249
   hous_inc |   .9998543   .0000811    -1.80   0.072     .9996953    1.000013
      drink |   .7077854   .3236034    -0.76   0.450     .2888867    1.734106
      smoke |   2.248387   1.062386     1.71   0.086     .8905731    5.676396
  pest_pois |   .9508969   .8705086    -0.05   0.956     .1580855    5.719721
     lang12 |   .7472366   .5514197    -0.39   0.693     .1759211    3.173937
      drugs |   4.225272   6.437515     0.95   0.344     .2132977    83.69957
      _cons |   .0337278   .0522378    -2.19   0.029     .0016205    .7019947
------------------------------------------------------------------------------

. logistic chest tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                     Number of obs   =        170
                                  LR chi2(9)      =      21.79
                                  Prob > chi2     =     0.0096
Log likelihood = -94.591306       Pseudo R2       =     0.1033

------------------------------------------------------------------------------
      chest | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   .9980428   .0038729    -0.50   0.614     .9904808    1.005662
        age |   .9892151   .0187057    -0.57   0.566     .9532238    1.026565
    levledu |   1.098901   .0806181     1.29   0.199     .9517268    1.268834
   hous_inc |   .9997114   .0000944    -3.06   0.002     .9995264    .9998964
      drink |   1.437729   .6086296     0.86   0.391     .6271053    3.296201
      smoke |   .6765004   .2815421    -0.94   0.348     .2992401    1.529383
  pest_pois |   5.451267   4.903498     1.89   0.059     .9350367    31.78091
     lang12 |   1.141762   .8122446     0.19   0.852     .2831618    4.603803
      drugs |   .9259793   1.365574    -0.05   0.958     .0514404    16.66857
      _cons |   .6289111   .8836338    -0.33   0.741     .0400528    9.875202
------------------------------------------------------------------------------

. logistic notes tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts failure perfectly
      drugs dropped and 2 obs not used


Logistic regression                     Number of obs   =        168
                                  LR chi2(8)      =      14.50
                                  Prob > chi2     =     0.0695
Log likelihood = -80.037491       Pseudo R2       =     0.0831

------------------------------------------------------------------------------
      notes | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   .9992366   .0044312    -0.17   0.863     .9905892     1.00796
```

```
       age |   .9493572   .0220694    -2.24   0.025     .9070725     .993613
    levledu |    1.00457   .0829021     0.06   0.956     .8545452    1.180934
   hous_inc |    .999891   .0000831    -1.31   0.190     .9997283    1.000054
      drink |   .5364752   .2516497    -1.33   0.184     .2139282    1.345337
      smoke |   .8663586   .3997813    -0.31   0.756     .3506797     2.14035
  pest_pois |   9.176835   7.966224     2.55   0.011     1.674103    50.30413
    lang12 |   .8929318   .6738425    -0.15   0.881     .2034544    3.918948
      drugs |           1  (omitted)
      _cons |   3.687346   5.766096     0.83   0.404     .1720463    79.02824
------------------------------------------------------------------------------

. logistic chek_door tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used


Logistic regression                             Number of obs   =        163
                                                LR chi2(8)      =       6.52
                                                Prob > chi2     =     0.5887
Log likelihood = -106.75476                     Pseudo R2       =     0.0297

------------------------------------------------------------------------------
  chek_door | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   .9856967   .0134231    -1.06   0.290     .9597359     1.01236
       age |    .979811   .0171618    -1.16   0.244     .9467453    1.014032
    levledu |   1.008734   .0656222     0.13   0.894     .8879783     1.14591
   hous_inc |   .9999413   .0000587    -1.00   0.317     .9998263    1.000056
      drink |   1.372912   .5253957     0.83   0.408     .6484837    2.906609
      smoke |    .874448    .332503    -0.35   0.724     .4150212    1.842458
  pest_pois |           1  (omitted)
    lang12 |   1.244082   .8821435     0.31   0.758      .309946     4.99358
      drugs |   .8388884   1.229171    -0.12   0.905     .0474779    14.82235
      _cons |   1.380073   1.798877     0.25   0.805     .1072483    17.75879
------------------------------------------------------------------------------

. logistic q16_head tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        168
                                                LR chi2(8)      =       8.87
                                                Prob > chi2     =     0.3537
Log likelihood = -100.29984                     Pseudo R2       =     0.0423

------------------------------------------------------------------------------
   q16_head | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   1.011388   .0147476     0.78   0.437     .9828924     1.04071
       age |   .9935797   .0175399    -0.36   0.715      .95979    1.028559
    levledu |   1.039057   .0698833     0.57   0.569     .9107317    1.185463
   hous_inc |   .9998724   .0000593    -2.15   0.031     .9997561    .9999886
      drink |   1.211109   .4858841     0.48   0.633     .5516836    2.658742
```

```
      smoke |   1.090958   .4358947     0.22   0.828     .4985501    2.387303
  pest_pois |   2.264287   2.538159     0.73   0.466     .2516372    20.37456
     lang12 |   1.466982   1.004037     0.56   0.576     .3835678    5.610574
      drugs |          1  (omitted)
      _cons |   1.696715   2.225039     0.40   0.687     .1298254    22.17472
------------------------------------------------------------------------------

. logistic less_sex tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        168
                                                LR chi2(8)      =       5.22
                                                Prob > chi2     =     0.7337
Log likelihood = -110.37362                     Pseudo R2       =     0.0231

------------------------------------------------------------------------------
   less_sex | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   .9980065   .0040052    -0.50   0.619     .9901873    1.005887
        age |   1.000527   .0168588     0.03   0.975     .9680244    1.034122
    levledu |   1.067456   .0691772     1.01   0.314     .9401283    1.212028
   hous_inc |   .9998941   .0000622    -1.70   0.089     .9997722    1.000016
      drink |   1.079739    .410873     0.20   0.840     .5121663    2.276284
      smoke |   1.091465   .4089856     0.23   0.815     .5236654    2.274918
  pest_pois |   1.829334   1.492901     0.74   0.459     .3695184    9.056286
     lang12 |   1.653009   1.124752     0.74   0.460     .4356069    6.272719
      drugs |          1  (omitted)
      _cons |   .3095574   .3910327    -0.93   0.353     .0260318    3.681106
------------------------------------------------------------------------------

. logistic q16_score tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        161
                                                LR chi2(7)      =       5.16
                                                Prob > chi2     =     0.6405
Log likelihood = -53.812917                     Pseudo R2       =     0.0457

------------------------------------------------------------------------------
  q16_score | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
------------+-----------------------------------------------------------------
    tcpy_cr |   1.003241   .0113564     0.29   0.775     .9812284    1.025748
        age |   .9547863   .0239119    -1.85   0.065     .9090516    1.002822
    levledu |   .9614702   .0965922    -0.39   0.696     .7896262    1.170712
   hous_inc |   .9999288   .0000752    -0.95   0.344     .9997814    1.000076
      drink |   .5731381   .3515374    -0.91   0.364     .1722543     1.90699
      smoke |   1.175049   .7083478     0.27   0.789     .3605215    3.829841
```

```
  pest_pois |          1  (omitted)
      lang12 |   1.226586   1.286683     0.19   0.846      .156961    9.585267
       drugs |          1  (omitted)
       _cons |   89.51341   180.3212     2.23   0.026     1.726541    4640.868
------------------------------------------------------------------------------

. logistic q16_score50 tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs
note: pest_pois != 0 predicts success perfectly
      pest_pois dropped and 7 obs not used

note: drugs != 0 predicts success perfectly
      drugs dropped and 2 obs not used


Logistic regression                             Number of obs   =        161
                                                LR chi2(7)      =       8.45
                                                Prob > chi2     =     0.2946
Log likelihood = -105.72306                     Pseudo R2       =     0.0384

------------------------------------------------------------------------------
 q16_score50 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     tcpy_cr |   .9976842   .0041917    -0.55   0.581     .9895024    1.005934
         age |   .9838537   .0171127    -0.94   0.349     .9508786    1.017972
     levledu |   1.082115    .072182     1.18   0.237     .9494983    1.233253
    hous_inc |   .9998886   .0000619    -1.80   0.072     .9997673     1.00001
       drink |   .8495923   .3232721    -0.43   0.668     .4030196    1.790997
       smoke |   .9615369   .3626707    -0.10   0.917     .4591043     2.01382
  pest_pois |          1  (omitted)
      lang12 |   .7252813   .5094813    -0.46   0.647     .1830506    2.873703
       drugs |          1  (omitted)
       _cons |   1.634429   2.149898     0.37   0.709     .1240826    21.52885
------------------------------------------------------------------------------

. logistic q16_score75 tcpy_cr age levledu hous_inc drink smoke pest_pois lang12 drugs

Logistic regression                             Number of obs   =        170
                                                LR chi2(9)      =      15.52
                                                Prob > chi2     =     0.0777
Log likelihood = -84.993259                     Pseudo R2       =     0.0836

------------------------------------------------------------------------------
 q16_score75 | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     tcpy_cr |   .9967299   .0075748    -0.43   0.666     .9819936    1.011687
         age |   .9814794   .0207728    -0.88   0.377     .9415983     1.02305
     levledu |   1.116841   .0934904     1.32   0.187     .9478459    1.315968
    hous_inc |   .9998379   .0000891    -1.82   0.069     .9996631    1.000013
       drink |   1.315762    .609745     0.59   0.554     .5305388    3.263155
       smoke |   1.311092   .5996632     0.59   0.554     .5349499    3.213313
  pest_pois |   4.025098   3.406057     1.65   0.100      .766453    21.13817
      lang12 |   .5008667   .3652498    -0.95   0.343     .1199488    2.091455
       drugs |   2.170693   3.225023     0.52   0.602     .1180208    39.92438
       _cons |   .5231992    .797262    -0.43   0.671      .026399    10.36922
```

```
------------------------------------------------------------------------------

.
end of do-file

. exit, clear
```