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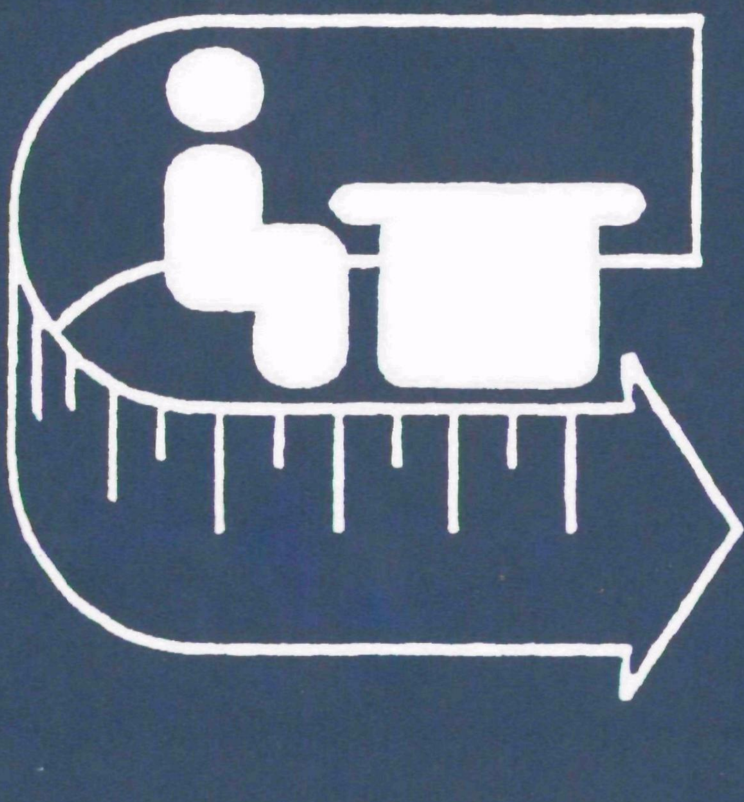
EPA Headquarters' Building Volume 3

Relating Employee Responses To The Follow-Up Questionnaire With Environmental Measurements Of Indoor Air Quality



INDOOR AIR QUALITY AND WORK ENVIRONMENT STUDY:

EPA HEADQUARTERS BUILDINGS

VOLUME III:

Relating Employee Responses to the Follow-Up Questionnaire with Environmental Measurements of Indoor Air Quality

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D I S C L A I M E R

Although the research described in this document has been funded wholly or in part by the United States Environmental Protection Agency, it has not been subjected to Agency review and therefore does not necessarily reflect the views of the Agency, and no official endorsement should be inferred. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

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TECHNICAL TEAMS

This study of indoor air quality and work environment was conducted by three technical teams representing multiple organizations. It was jointly developed and carried out at EPA headquarters and the Library of Congress Madison Building under the auspices of these teams working independently of both management and unions at both EPA and the Library of Congress.

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EXECUTIVE SUMMARY

Background

In recent years, employees in the three Headquarters building complexes occupied by the U.S. Environmental Protection Agency (EPA) have expressed concerns about indoor air pollution and work environment discomforts. Some of these concerns arose from incidents in which EPA employees became ill shortly after building renovations. In response to these continuing concerns, EPA decided to undertake a systematic study of the nature and spatial distribution of employees' health symptoms and comfort concerns and to attempt to determine if associations exist between employee responses and specific workplace conditions.

This research effort was integrated with a parallel study at the Library of Congress Madison Building, where employees were also reporting health symptoms and discomfort that they attributed to the building. The study team consisted of researchers from EPA, the National Institute of Occupational Safety and Health (NIOSH), the John B. Pierce Foundation at Yale University, and Westat, Inc., a health statistics consulting firm. The National Institute of Standards and Technology (NIST, formerly the National Bureau of Standards, NBS) was engaged to study the Madison Building's ventilation system. Both the EPA and the Library of Congress surveys made use of similar study designs and survey instruments; however, separate reports are being prepared for each agency.

Objectives

Specific objectives of the study were the following:

1. Survey the nature, magnitude, and spatial distribution of health symptoms and comfort concerns.
2. Characterize selected physical, chemical, and microbiological aspects of the building in selected locations during the survey period.

3. Generate hypotheses from any associations observed between health and comfort effects and environmental factors while taking into account factors that would confound or modify such associations.

4. Identify areas not in compliance with standards or guidelines.

This report, the third in a series of reports documenting the EPA portion of the study. addresses Objective 3.

Description of Buildings

The EPA Headquarters is housed in three separate office complexes located within a several mile radius in the Washington, DC, area: the Waterside Mall complex, the Fairchild Building, and the Crystal Mall Building. The Waterside Mall complex includes a central four-story shopping mall and two 12-story towers (East and West). It is located at 401 M Street, S.W. The original structure was built in 1970, and EPA took occupancy in 1971-1972. Three additional structures (Northeast mall, Southeast mall, and Southwest mall) were added during the 1980s. At the time of the study, EPA leased 1,004,450 ft^2 of office space, which was assigned to approximately 3700 EPA personnel. The Fairchild Building, a nine-story office building located at 499 South Capitol Street, S.W., near downtown Washington, DC, was first occupied by EPA during the 1979-1980 time frame. At the time of the study, four floors (121,015 ft^2) were leased to EPA, housing approximately 850 EPA employees. The Crystal Mall is a 14-floor office building located at 1921-31-41 Jefferson Davis Highway, Arlington, VA. At the time of the study, four floors (103,019 ft^2) of office space, leased initially to EPA during 1971-1972, were assigned to approximately 560 persons.

Study Design

An extensive questionnaire, the Employee Survey Questionnaire, was administered to all employees (approximately 5000) working in the three EPA complexes. Responses were obtained for 3955 employees. This questionnaire, administered in February 1989, asked about health symptoms present within the previous year and last week and their relationship to time at work. Also asked were extensive questions about demographic and personal factors, as well as descriptions of the work environment. The first report (Volume I) summarized the design, conduct, and descriptive statistics of this initial cross-sectional study.

The responses to the Employee Survey Questionnaire were used in selecting a set of environmental monitoring sites (rooms/areas). Monitoring was performed during normal working hours during the week of March 6-10, 1989. The monitoring results were presented in Volume II. In conjunction with the monitoring, a second survey, called the supplemental or follow-up survey, was administered to EPA employees in the vicinity of the monitoring sites. This follow-up survey asked about health symptoms on the day the questionnaire was administered, and the relationship of symptoms to the workday. The primary intent of the follow-up survey was to estimate the prevalence of work-related health symptoms in areas where environmental monitoring was being performed. The design, conduct, and results of the follow-up survey are presented in this report. The statistical analysis results are of three major types:

1. descriptive statistics characterizing the information reported by respondents to the follow-up questionnaire

2. descriptive statistics characterizing the environmental monitoring information obtained in offices of these respondents

3. statistical modeling results that relate the questionnaire response data to the environmental data.

The third item -- determining the association between the environmental factors measured at the EPA Headquarters Buildings and the reported health symptoms, perceived indoor air quality (IAQ), comfort concerns, mood states, and odors noticed -- is the main focus of this report.

Variables Used in the Statistical Analyses

The statistical analyses focus on those 384 individuals in the study who responded to both the first questionnaire and the follow-up questionnaire. The dependent (outcome) variables on each individual's data record were developed from the health, comfort, odor, overall air quality, and mood-state responses in the follow-up questionnaire. In some cases, the outcome variables for the analyses were formed by combining responses of several similar questionnaire items (e.g., several similar health symptoms) from the follow-up survey. The particular groupings were largely determined by examining results of principal components analyses that were applied to similar items from the first employee survey. Confounding variables, both personal (age, gender, smoking, etc.) and workstation (type of office, carpet in office, etc.), were taken from both the first and follow-up questionnaires. The choice of initial workstation and personal/medical variables to be included as potential confounders was primarily based upon results of prior studies (Burge et al., 1990; Skov and Valbjorn, 1987). Detailed definitions and summary statistics for the dependent and confounding variables are found in Chapter 4.

Also associated with each individual were various environmental variables that were measured in his/her workstation area on the same day the questionnaire was filled out. All individuals used in the analyses had temporal variables measured in their area (morning, midday, and afternoon measurements of temperature, humidity, carbon dioxide, and instantaneous respirable suspended particulates [RSP]). These data were available for 100 monitoring sites (383 employees). Approximately half of these employees (56 sites) also had microbiological and volatile organic compound (VOC) concentrations measured in their vicinity. Detailed summaries of the environmental variables are found in Chapter 5.

Study Limitations

Observational studies of this type have certain limitations that can affect the interpretation of results. Several such limitations specific to this study should be recognized. First, it is clear that inferences cannot be made to any buildings other than the three EPA buildings included in the study. In fact, with the exception of the data obtained solely by responses to the first questionnaire (approximately 4000 respondents among the 5000 employees), inferences cannot be extended beyond those areas of the buildings that were actually selected for monitoring, because the process used to select the monitoring sites was purposeful, rather than random (see Chapter 3). Second, inferences to other points in time are not possible. No sampling over time was used; rather the study provides simply a "snapshot" of the monitoring sites at the given point in time (essentially a single workday) that monitoring took place. Third, budget limitations mandated that monitoring be performed in the middle of a room occupied by perhaps several employees, rather than in the "breathing zone" of each individual. While this is a commonly used approximation, it is recognized that results from such indirect estimates of an individual's exposure may differ from measurements taken in a discrete breathing zones. Finally, the ability to detect associations was hampered by the small sample size, especially for those analyses relating to microbiological and VOC measurements.

In the case of persons with sensitivities to low levels of chemicals, it may be that different individuals experience different symptoms, even when exposed to the same substances (Ashford and Miller, 1989). This observation corresponds with the experiences reported by the most affected individuals who left EPA. If this was the case, attempts to correlate single symptoms or even clusters of symptoms with exposure measurements may be thwarted. The present report does not focus on the most affected individuals and was not statistically designed to address this problem.

In retrospect, it is unlikely that health effects would be detected with the limited data collected in this study. This is due to several factors: the study design, the limited variability of environmental pollutant concentrations (e.g., geometric standard deviations ranged between 1.6 and 2.1 $\mu g/m^3$), and low values of the environmental measures (e.g., geometric means ranged from 0.9 to 11.0 $\mu g/m^3$). The limited variability in the dependent variables that were considered also contributed to the problem. However, the study design did meet the stated study objectives utilizing the available time and resources. The limited variability of the results could not have been predicted before the study was conducted.

Statistical Analysis Methods

To determine whether there were associations between the outcome measures (the self-reported health symptoms [that began while at work], thermal comfort concerns, odors, mood-state measures, and air quality measures) and the environmental monitoring results, a series of (logistic) regression analyses was performed. The basic strategy consisted of five steps:

Step 1. Stepwise linear regression was used to select meaningful confounding variables from among the initially specified set. Separate models for each outcome measure were estimated for males and females.

Step 2. Using those confounders identified at step 1, regression models (Model A) were estimated and statistical tests were performed to identify those temporal variables associated with the self- reported outcome measures. All outcome variables were binary variables except the mood-state variables. Hence, all regression models were logistic, except for the mood states, for which ordinary linear regression was used.

Step 3. Interim models (Model B) were then fit for each outcome. These contained as independent variables the temporal variables and the workplace and personal confounders that were statistically significant in Model A. These variables were used as a set of core variables for subsequent models.

Step 4. Variables reflecting respondents' reported perceptions of thermal comfort and odor concerns were then added as independent variables to those of Model B (to form Model C) in order to test if these were associated with the outcome measures (self-reported health symptoms and perceived indoor air quality [IAQ]). Since some of the rooms were selected by the frequency with which high- and low-complaint health symptoms and high- and low-complaint comfort concerns occurred, these associations (or the strength of these associations) may have been unduly influenced by the monitoring-study design.

Step 5. The final set of models attempted to determine the association between microbiological (bacteria, fungi, and thermophiles) and VOC variables and the health symptoms, perceived IAQ, odors noticed, and mood state variables (Model D). These models contained the independent variables of Model B and 14 other independent variables (four VOC- related variables, integrated RSP concentration [log scale], and nine microbiological measures). Because of the number of variables and the fact that these environmental measurements were made at fewer sites, estimation of many of the models was not possible. Six of the nine microbiological variables were therefore dropped. The resultant model, referred to as Model D', was thus estimated. Because of the smaller sample size, less power for detecting associations is achievable for these models than for Models A and C.

Conclusions

The major findings are summarized below. A 0.01 level of statistical significance was used as a basis for judging the significance of the various associations. Use of a 0.01 level was judged appropriate because of the large number of statistical tests being performed. More false positive tests would be expected if a higher significance level such as 0.05 were used. However, results using both the 0.01 and 0.05 confidence level are shown in Tables 6-2 through 6-4. Complete results of the logistic regressions on symptom clusters, found in Appendices E through H, show the parameter estimates, the probability that the estimate is different from zero, the odds ratio, and the 99% confidence level. (Some of the health symptoms had low prevalences reported for both males and females; models tended to overfit in these cases. None of the tables in this section present results for these symptoms, which included chest symptoms [variable H8], chills and fever symptoms [H12], dizziness/lightheadedness [H15], and dry/itchy skin [H16]. Also, since variable H3 is a combination of variables H1 [nonspecific IAQ symptoms] and H2 [mucous membrane symptoms], results for H3 are also omitted.)

Model A (as described in Chapter 6) was used to test the temporal variables (temperature, relative humidity, carbon dioxide concentration, integrated RSP concentration, and temperature change) for significant associations with the employee-reported health, comfort, odor, perceived air quality, and mood-state variables. Statistically significant (0.01 level) results are summarized in Table ES-1. In areas that had higher measured CO_2 levels, males reported a significantly higher prevalence of nasal/cough symptoms. However, in this same model, temperature showed a negative association (at the 0.05 level) with the nasal/cough symptom prevalence; because the CO_2 and temperature variables are highly correlated with one another, it is unclear as to what extent either of these associations should be considered real. Both males and females more often reported too cool and/or too drafty conditions in areas that had lower temperatures measured. The sparseness of significant relationships among the outcome measures and the temporal measurements may be due to the limited degree of variability in the latter; for example, the humidity ranged from 18 to 38%, (see Table 5.2).

Model D′ tested whether levels of chemicals (VOCs), aerosols (RSP), or microbiologicals could be associated with the health symptoms, mood states, odors, and general perceptions of air quality reported by the participants. Statistically significant results are summarized in Table ES-2. Because of the small number of sites at which the measurements were made, this model has a reduced number of observations (about half as many as in Models A, B, and C) and correspondingly reduced power to detect associations. In fact, no strong ($p<0.01$) associations of VOC or RSP levels with any of the outcomes occurred simultaneously for both men and women.

For men, only one strong relationship with VOCs was observed: Men in areas with higher levels of aromatic compounds (e.g., toluene and xylene) were significantly more likely to complain of cosmetic and other odors. These chemicals are, in fact, used heavily in cosmetics and many other consumer products; however, the concentrations measured are hundreds of times below the known odor thresholds of these chemicals. It is possible that an accompanying highly odorous chemical (such as acetone or butyl acetate) was responsible for the odors (Fanger, 1988; Otto, et al., 1990).

For women, a strong relationship with RSP was observed: Indoor air quality was more often perceived as fair or poor by women in areas with lower levels of RSP. This result may be spurious, since the observed levels of RSP were extremely low, and no observable effects would be expected; also, the direction of the effect is counterintuitive. A strong negative association between thermophile levels and prevalence of mucous membrane symptoms was observed for women. It is possible that this association is fortuitous. However, one speculation is that the relationship between the thermophile concentration and mucous membrane irritation is an indirect measure of long term-local humidity. Thermophiles are known to increase in warm moist conditions. While the humidity measured during the study was uniformly low and varied very little, it is possible that greater variation occurs in the building over time. If this is so, the concentration of thermophiles may reflect variations in average local humidity. Areas which had consistently lower humidity may have lower thermophile concentrations. Similarly, areas with consistently lower humidity might be associated with increased mucosal symptoms.

We conclude that because of the relatively small number of sites monitored for VOCs, integrated RSP, and bioaerosols, the development of models that allowed testing of relationships between these measures and the various outcome measures was hampered (i.e., there was limited power to detect such effects). This limitation was compounded by the fact that the observed levels of the VOCs, integrated RSP, and microbiologicals were uniformly low across the monitoring sites compared to published American Society of Heating, Refrigerating, and Air-conditioning Engineers guidelines (ASHRAE 62-89) and the 10 public-access building study (Wallace et al., 1987).

This study was unable to establish consistent relationships between measured environmental parameters and self-reported health and thermal comfort perceptions among the sampled employees. (Some of the employees represented areas having high and low rates of health and comfort complaints, as established from a questionnaire administered a few weeks earlier.) This inability to find relationships does not preclude the possibility that such relationships might, in general, exist. It should be remembered, for instance, that measurements at a given office were made on only one day and that that day may have been atypical (for a number of reasons). For example, verbal reports of the unusually high airflow during the monitoring week were heard from many employees.

This study in general demonstrated a stronger association between employees' reported health symptoms and their perceived thermal comfort measures (including cosmetic/body odors) than between the reported health symptoms and the environmental measurements. Specifically, in Model C, females who reported cosmetic/body odors and hot/stuffy air tended to report health symptoms previously associated with poor indoor air quality (see Table ES-3). Employee-reported central nervous system symptoms were significantly associated with the use of chemicals at the workstation ($p<0.05$) and increased reports of cosmetic odors ($p<0.05$). Males' reporting of these same types of symptoms were more generally associated with complaints of dry air. There are several possible explanations for these interesting findings. First is the likelihood that the observed associations are partly due to the site selection procedure (i.e., since rooms were ranked on the basis of both health and thermal comfort indices, rooms having high values of both indices and rooms having low values of both indices were overrepresented in the monitoring study). Second is the possibility that human "sensors" of thermal comfort, with a great capacity for memory, are better "instruments" than mechanical/chemical sensors placed in fixed locations for short periods of time. A third explanation is that common psychological factors similarly influence perception of thermal comfort and the reporting of health symptom occurrences. According to this explanation, some people will report concerns whether the issue is air quality or health. A fourth possible explanation is that differential susceptibility exists among the employees. People's perception of thermal comfort may be affected by health symptoms that they are experiencing while at work (e.g., people who develop a headache in a room may be more likely to describe that room as being uncomfortable). That is, the perception of the environment reflects the risk of that environment to the individual. It is not clear which of these various explanations is most plausible.

In developing the above-described models, a number of personal and workstation variables were found to be significantly related to the health symptoms, perceived IAQ rating, comfort concerns, odors noticed, and mood states. Hundreds of tests were performed, and Table ES-4 summarizes only those that were significant at the 0.01 level (Model B).

Recommendations

Based on the results of the tests conducted here and the results from both Volumes I and Volume II, the following recommendations are made. Since measurements were made only in the winter while the humidity was low, mechanisms for humidifying the indoor air during the winter heating season should be considered. However, this recommendation should be carefully studied prior to implementation. Humidification of the supply air to any office building can increase the potential for additional airborne microbiological agents, which might increase the risk of injury to employees.

Because the effects of cosmetics, body, and non-fish foods odors on health symptoms are significant, the employees should be informed of these findings and encouraged to be sensitive to the concerns of their fellow employees regarding the use of scented cosmetics, etc.

Providing employees a way to have more control over their work areas may improve their perception of indoor comfort and air quality. For example, lack of privacy, meeting areas, furniture arrangement, wall decoration, and other basic design factors influence a worker's sense of autonomy and productivity.

TABLE ES-1. Dependent Variables Associated with Temporally Measured Variables in Model A (0.01 level of significance)

Increased prevalence of	was reported by	who worked in areas having
Nasal, Cough (H7) symptoms	males	increased Carbon Dioxide (T3)
Too Drafty/Too Cold (C4)	males females	decreased Temperature (T1) decreased Temperature (T1)

TABLE ES-2. Dependent Variables Associated with Volatile Organic Compounds, Integrated RSP, and Microbiological Variables in Model D' (0.01 level of significance)

Increased prevalence of	was reported by	who worked in areas having
Mucous Membrane (H2) symptoms	females	decreased Thermophiles (V8)
Fair/Poor IAQ (A1)	females	decreased RSP (V5)
Body, cosmetic or non-fish food odors (O2)	males	higher aromatic levels (V2)

TABLE ES-3. Dependent Variables Associated with Self-reported Comfort and Odor Concerns in Model C (0.01 level of significance)

Increased prevalence of	was reported by	who also reported
Mucous Membrane (H2) symptoms	males	Air Too Dry (C2)
Ergonomic (H5) symptoms	males	Air Too Dry (C2)
Eye Irritation (H9) symptoms	males males	Air Too Hot/Stuffy (C1) Air Too Dry (C2)
Throat (H10) symptoms	males	Air Too Dry (C2)
Tiredness (H11) symptoms	males	Air Too Cool/Drafty (C4)
Fair/Poor IAQ (A1)	males	Air Too Hot/Stuffy (C1)
Poor IAQ (A2)	males	Air Too Dry (C2)
Non-Specific IAQ (H1) symptoms*	females females	Cosmetic Odors (O2) Air Too Hot/Stuffy (C1)
Mucous Membrane (H2) symptoms	females	Air Too Hot/Stuffy (C1)
Headache & Nausea (H6) symptoms	females females	Cosmetic Odors (O2) Air Too Hot/Stuffy (C1)
Nasal, Cough (H7) symptoms	females	Air Too Hot/Stuffy (C1)
Eye Irritation (H9) symptoms	females	Air Too Hot/Stuffy (C1)
Tiredness (H11) symptoms	females	Air Too Hot/Stuffy (C1)
Nervous System (H14) symptoms	females	Cosmetic Odors (O2)
Fair/Poor IAQ (A1)	females females	Air Too Hot/Stuffy (C1) Air Too Dry (C2)

* These symptoms include headache, unusual fatigue or tiredness, and sleepiness or drowsiness.

TABLE ES-4. Dependent Variables Associated with Workstation Variables and Personal Variables in Model B* (0.01 level of significance)

Increased prevalence of	was reported by	who
Non-Specific IAQ (H1) symptoms**	males	were younger (age=P1)
	males	wore Contacts/Glasses (P12A)
Flu-like (H4) symptoms	males	were diag. Asthmatics (P13)
Nasal, Cough (H7) symptoms	males	had increased VDT use (W6)
	males	had more External Stress (P10)
Eye Irritation (H9) sympt.	males	had more External Stress (P10)
Too Drafty/Too Cold (C4)	males	had incr. Role Clarity (P9)
Cosmetic Odor (O2)	males	had more External Stress (P10)
	males	were Heavy Smokers (P11B)
Poor Air Quality (A2)	males	were in Glued Carpet (W8) offices
	males	wore Contact Lenses (P12B)
High Fatigue (M1) scores	males	wore Contact Lenses (P12B)
High Vigor (M2) scores	males	used Chemicals at Work (W5)
High Tension (M3) scores	males	had more Role Conflict (P5)

(continued)

* Results were generally similar for other models.

** These symptoms include headache, unusual fatigue, and sleepiness.

Table ES-4 Continued

Increased prevalence of	was reported by	who
Eye Irritation (H9) sympt.	females	worked in Encl. Offices (W2B)
Ergonomic (H13) symptoms	females	worked in Encl. Offices (W2B)
Cosmetic Odor (O2)	females	worked in Open Offices (W2B)
	females	had high VDT Use (W6)
Fair/Poor IAQ (A1)	females	had lower Role Conflict (P9)
Poor IAQ (A2)	females	had lower Job Satisf. (P4)
High Fatigue (M1) scores	females	had increased Workload (P7)
High Vigor (M2) scores	females	were older (age=P1)
High Tension (M3) scores	females	had increased Workload (P7)

1. INTRODUCTION

1.1 Background

In recent years, employees in the three Headquarters building complexes occupied by the U.S. Environmental Protection Agency (EPA) have expressed their concerns about indoor air pollution and work environment discomforts. Some of these concerns arose from incidents in which EPA employees became ill shortly after building renovations. In response to these continuing concerns, EPA decided to undertake a systematic study of the nature and spatial distribution of the employees' health symptoms and comfort concerns and to attempt to determine if associations exist between employee responses and specific workplace conditions.

1.2 Study Objectives

The goal of this study was to characterize the extent of building-related health, comfort, and environmental problems at the three EPA Headquarters buildings and, where possible, to suggest remedies.

The four specific objectives of the study were as follows:

1. Survey the nature, magnitude, and spatial distribution of health symptoms and comfort concerns.

2. Characterize selected physical, chemical, and microbiological aspects of the building in selected locations during the survey period.

3. Generate hypotheses from any associations observed between health and comfort effects and environmental factors while taking into account factors that would confound or modify such associations.

4. Identify areas not in compliance with standards or guidelines.

This is the third report documenting the study and addresses Objective 3. Volume IV will report the analyses of the employee responses of the last-year portion of the first questionnaire. The responses to the last-week portion of the first questionnaire were not analyzed. Volume III documents the results of a statistical investigation of the interrelationships among employees' responses, the environmental monitoring data, identified risk factors, and confounding factors. Two prior reports, Volumes I and II (U.S. Environmental Protection Agency, 1989a, 1990), addressed Objectives 1 and 2, respectively. Objective 4 was addressed by bringing to the attention of the Environmental Health and Safety Division (EHSD) the two rooms that had high environmental measures. One room had carbon dioxide measurements of 1350 and 1150 ppm, concentrations greater than the 1000-ppm maximum recommended by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE #62, 1989). One room had fungi measured at 883 colony-forming units (CFUs), which was considered high in relation to the outdoor and other indoor fungi concentrations. However, there are no standards set for microbiological measures.

1.3 Study Design and Limitations

The basic study design consisted of an extensive initial questionnaire, followed by environmental monitoring and concomitant follow-up survey. The first questionnaire, the Employee Survey Questionnaire, was administered to all employees working in the three EPA complexes: the Waterside Mall complex and the Fairchild Building in Washington, DC, and Crystal Mall in Arlington, VA. This questionnaire, administered in February 1989, asked about health symptoms present within the previous year and last week and their relationship to time at work. The analysis discussed in Volume IV deals only with the previous year response. Also asked were extensive questions about demographic and personal factors, as well as descriptions of the work environment. The first report (Volume I) summarized the design, conduct, and descriptive statistics of this initial cross-sectional study. Appendix A provides a copy of the questionnaire.

Environmental monitoring was performed at selected sites during normal working hours during the week of March 6-10, 1989. The monitoring results were presented in Volume II. Simultaneously with the monitoring study, a second survey questionnaire, the follow-up, was administered to selected EPA employees working in close proximity to the monitoring sites. The follow-up survey asked about health symptoms on the day the questionnaire was administered and about the relationship of symptoms to that workday. The questions on the follow-up survey were nearly identical to comparable questions on the first questionnaire. The primary intent of the follow-up survey was to estimate the prevalence of work-related health, comfort, and odor concerns in areas where environmental monitoring was being performed. The design, conduct, and results of the follow-up survey are presented in this report. The questionnaire is shown in Appendix B.

Observational studies of this type have certain limitations that can affect the interpretation of results. Several such limitations specific to this study should be recognized. First, it is clear that inferences cannot be made about any buildings other than the three EPA buildings included in the study. In fact, with the exception of the data obtained solely by responses to the first questionnaire (approximately 4000 respondents among the 5000 employees), inferences cannot be extended beyond those areas of the buildings that were actually selected for environmental monitoring. This is because a purposeful, rather than a random, process was used to select the monitoring sites. A second limitation is that inferences to other points in time are not possible. Longitudinal sampling was not conducted. Rather, the study provides a "snapshot" of the monitoring sites at the given point in time (essentially a single workday) that monitoring took place. A third limitation was that the monitoring was not carried out in the breathing zones of individuals. Rather, stationary sites were used. Because the follow-up questionnaires were administered to individuals in the room within approximately 30 ft of the monitoring location, the measured "exposure" is thus implicitly assumed to be applicable to all such employees.

It is recognized that different results might occur if breathing zone measurements had been obtained. Such differences have been noted in various other Total Exposure Assessment Methodology (TEAM) studies (e.g., Wallace, 1987).

1.4 Organization of Report

This report is organized as follows. Chapter 2 presents background information and a description of the EPA Headquarters buildings. Chapter 3 explains the monitoring and follow-up survey design. The next three chapters present results of statistical analyses. These are of three major types:

1. descriptive statistics characterizing the information reported by respondents to the follow-up survey (Chapter 4);

2. descriptive statistics characterizing the environmental monitoring information obtained in offices of these respondents (Chapter 5);

3. statistical modeling results that relate the questionnaire response data to the environmental data (Chapter 6).

The third item listed above is the main focus of this report. Chapter 7 gives the conclusions and recommendations for improvement of the indoor air quality in the buildings studied. A series of appendices contain the Employee Survey Questionnaire, the follow-up survey questionnaire, tabulations of responses to the follow-up questionnaire, and detailed modeling results.

2. BACKGROUND

2.1 Previous Indoor Air Quality Studies/Hypotheses

The quality of the air and the work environment in office buildings has become an increasingly important issue. Workers in numerous modern, apparently well-designed office buildings have raised concerns about their health. Concerns of workers in office buildings fall into several categories, including health symptoms associated with indoor air quality, comfort concerns, and ergonomic symptoms. Indoor air quality symptoms refer to a complex mix of occupant reported symptoms associated with acute discomfort (e.g., headache, fatigue, stuffy nose, sinus congestion, eye irritation, sore throat) that improve while away from work. Comfort issues include concerns about air movement, temperature, humidity, odors, and other physical comfort considerations (e.g., lighting, noise). Back pain/stiffness or pain/numbness in shoulders or hands are examples of symptoms associated with ergonomic stresses (repetitive motion or awkward postures).

Building-related illnesses, another important potential health problem among office workers, are diseases that are caused by specific building-related etiologic factors. For example, hypersensitivity pneumonitis can be caused by bioaerosols produced by microbial contamination of ventilation systems, water-damaged rugs, furniture, or ceilings. This respiratory illness is characterized by infiltrates seen on chest X-rays and nonspecific symptoms (fever, muscle aches, cough, and shortness of breath). Other building-related illnesses include toxic effects of overexposure to chemical agents such as carbon monoxide (initial symptoms of headache and nausea) and dermatitis caused by fibrous glass from ventilation duct linings. These symptoms can, of course, often occur for reasons unrelated to working in the building. Essential to the proper diagnosis of individuals with building-related illnesses are a physician's evaluation and measurement of environmental contaminants.

Information continues to be obtained by both labor and management on the health symptoms of EPA employees and the quality of indoor air at the EPA Headquarters. For example, both the National Federation of Federal Employees Local 2050 and the American Federation of Government Employees Local 3331 have accumulated information on the illnesses experienced by EPA employees. This information is provided in a supplement to Volume I (U.S. Environmental Protection Agency, 1989b).

This research effort was conducted concurrently with a parallel study at the Library of Congress Madison Building, where employees were also reporting health symptoms and discomfort concerns that they attributed to the building indoor air quality. The study team consisted of researchers from EPA, the National Institute of Occupational Safety and Health (NIOSH), the John B. Pierce Foundation at Yale University, and Westat, Inc., a health statistics consulting firm. At the time of the study, the National Institute of Standards and Technology (NIST, formerly the National Bureau of Standards, NBS) was conducting a long-term study of ventilation and air quality at the Madison Building, under contract to the Department of Energy. Both the EPA and the Library of Congress surveys made use of similar study designs and survey instruments, although separate reports are being prepared for each agency.

2.2 Description of the Environmental Protection Agency Headquarters Buildings

The EPA Headquarters is housed in three separate office complexes located within a several mile radius in the Washington, DC, area: the Waterside Mall complex, the Fairchild Building, and the Crystal Mall Building.

2.2.1 Building Description

2.2.1.1 Waterside Mall Complex

The Waterside Mall complex includes a central four-story shopping mall and two 12-story towers (East and West). It is located at 401 M Street, S.W. The original structure was built in 1970, and EPA took occupancy in 1971-1972. Three additional structures (Northeast mall, Southeast mall, and Southwest mall) were added during the 1980s. At the time of the study, EPA leased 1,004,450 ft^2 of office space, which was assigned to approximately 3700 EPA staff members. An underground parking garage (approximately 750-vehicle capacity) is located immediately below the Waterside Mall ground floor. The first floor of Waterside Mall is predominantly occupied by light commercial establishments such as restaurants, gift shops, and convenience stores. The second floor of the mall, originally designed for small shops and business, has been renovated (with 10-ft walls added) to accommodate offices. The second floor central area office ceilings are open bay, exposed to the communal space resulting from the original mall design. The third floor was originally designed for offices and has standard 8-ft enclosed ceilings. The mall is served by four pairs of elevators and stairways, one pair in each corner.

The East Tower and West Tower 12-story structures are nearly identical, each being designed for general office occupancy. Four elevator shafts are located in the center of each tower. Figure-8 hallways service the half-height windowed exterior offices and the enclosed interior offices. The third floor mall is connected to the fourth floor West Tower and East Tower by the 3100 hallway. All three buildings are connected by a hallway in the basement that runs beside the parking garage. The only other access among these three structures is via outdoor entrances.

Three- to five-story structures were added to three corners of the Waterside Mall complex over the years: Northeast (NE), Southwest (SW), and Southeast (SE) malls. The first floor of the three-story SE mall is a large grocery store, and several small businesses occupy the first floor of the three-story SW mall. The five-story NE mall (two underground floors) is occupied EPA office space.

A diversity of office designs exists in the second and third floors of the Waterside Mall, especially the second floor. The office design generally accommodates 6-12 workers and is centered around a single, large, administrative area occupied by one or more persons. Additional single-worker or two-person offices, accessible only through the central office area, complete the office design. In most cases, the attached office includes a privacy door. "Hallway" office designs include an initial reception area leading to a hall that services the individual office areas. Several of these "hallway" complexes are interlinked with similar office areas, which complicates the physical distinction between the end of one office area and the beginning of another. One hallway, about 100 ft long, intertwines through distinctively different renovated areas. Some small single or dual office spaces are also present. With the exception of the few offices on the exterior north and south section, the offices do not have individual windows.

The SW mall offices are similar in complexity to the second floor mall offices. NE and SE mall office areas are less complex, with small central offices serving two to six individual office areas. Full or half-height windows are included in the exterior SW, SE, and NE mall areas.

2.2.1.2 Fairchild Building

The Fairchild Building, a nine-story office building located at 499 South Capitol Street, S.W., near downtown Washington, DC, was first occupied by EPA during the 197c-1980 time frame. Four floors (121,015 ft^2) were leased to EPA housing approximately 850 EPA employees. The building offers no underground parking. One floor (the basement) houses an underground snack bar. The building is served by a central core elevator system. Figure-eight hallways provide access to the half-height windowed exterior and windowless interior offices located on each of the four EPA-leased floors. The majority of offices in the Fairchild building are large, multiple-occupancy, open-bay office areas. Half or three-quarter partitions separate work areas. A few individual or two-person offices exist along the exterior walls.

2.2.1.3 Crystal Mall

The Crystal Mall is a 14-floor office building located at 1921-31-41 Jefferson Davis Highway, Arlington, VA. Four floors (103,019 ft^2) of office space, leased initially to EPA during 1971-1972, were assigned to approximately 560 persons. The Crystal Mall building is part of a building complex that includes an underground interconnecting shopping area and a subsequently lower subground multilevel parking garage that can house in excess of 1000 vehicles. Central core elevators service the squared hallways that serve the exterior and interior offices. Interior offices are generally small and have only one to two occupants. Two types of exterior office areas exist: single or double-occupant offices and central office areas that include a reception area interior to and servicing multiple individual offices located on the exterior wall. Offices with exterior walls have half-height windows.

2.2.2 Ventilation System Description and Evaluation

The Waterside Mall complex ventilation systems includes 119 known air-handling units [AHUs], which are serviced by more than one contractor. Outside air, controlled by a mechanical damper at the central unit, mixes with the return indoor air drawn through the overhead plenum in each zone to make up the supply air. A constant volume of supply air is then provided to the individual offices. Thirty-six of the 119 AHUs supplying air to the monitoring locations were examined on the same day the heating, ventilating, and air conditioning [HVAC] system was providing supply air to one or more monitoring sites. The AHU data was not examined in this report but will be analyzed in Volume IV. The larger population responding to the first questionnaire being considered in the Volume IV analysis provides more power for testing the relationship between the AHUs and the employee health and comfort concerns.

The ventilation system evaluation performed during the environmental monitoring period was a component of an ongoing building ventilation system analysis of the Waterside Mall HVAC systems. The specific objective of the ventilation system evaluation was to determine the AHU ventilation rates. Ventilation parameters were measured at AHUs serving Waterside Mall environmental monitoring sites. This information could be compared to the ventilation rates prescribed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE, 1989).

No attempt was made to determine the instantaneous Waterside Mall total building ventilation rate, either in total outdoor cubic feet per minute (CFM) or in air changes per hour (ACH). This decision was based on the logistical problems associated with simultaneous airflow measurements at the multiple Waterside Mall complex AHUs with outdoor intakes located throughout the structure of the Waterside Mall. Also time and resources were not available to do tracer gas studies.

Resources necessary to conduct similar evaluations of the Fairchild and Crystal Mall buildings were not available. Therefore, no measurements or evaluations of either the Fairchild or Crystal Mall buildings' AHUs were conducted during the environmental monitoring study.

3. EPA HEADQUARTERS BUILDINGS ENVIRONMENTAL MONITORING AND FOLLOW-UP SURVEY DESIGN

Environmental monitoring was performed and a follow-up survey administered during a one-week period, March 6-10, 1989. Environmental monitoring sites were chosen according to the selection criteria outlined below. The follow-up survey was then administered to occupants in close proximity to those sites. Detailed descriptions of the site selection process, including algorithms used in the ranking and selection process, are provided in Volume I (U.S. Environmental Protection Agency, 1989a). The following subsections provide a brief summary.

3.1 Selection of Environmental Monitoring Sites

A health symptom index was computed for each employee from responses to the first questionnaire (Appendix A), and a standardized mean symptom score was computed for each room in the building. Similarly, a comfort index was computed for each employee from the questionnaire responses, and a standardized mean comfort score was computed for each room in the building. Rooms were independently ranked according to the standardized health and comfort indices. Rooms were selected by Yale University and Westat for environmental monitoring; the first rooms chosen were the rooms with the highest values for both indices (designated as high- complaint areas) and with the lowest values for both indices (designated as low-complaint areas). Results of these rankings were not revealed to the monitoring team or EPA management to avoid possible selection bias. In the selection of rooms, greater priority was given to the health symptom index than to the comfort index; and less priority was given to rooms with only one occupant.

Although the first questionnaire had been administered to the Fairchild and Crystal Mall EPA employees, the data for these two buildings had not been statistically evaluated, and the health symptom and comfort indexes had not been calculated prior to the initiation of the environmental monitoring program. Therefore, the site selection process for these two buildings differed from the site selection process at the Waterside Mall complex. A list of potential sites was provided by the EHSD and EPA unions. This list included those locations where the employees had reported concerns about the indoor air environment and locations where no employee concerns had been reported. Potential sampling locations were identified for each floor having EPA employees.

Each potential site was visited and evaluated for number of workers, suitability regarding electrical and space requirements, and the presence of obvious indoor pollutant sources. At the Fairchild and Crystal Mall buildings, the potential sites were also evaluated to ensure that they represented the typical EPA work areas available in the two buildings. In support of the overall study design criteria, rooms having obvious indoor emission sources (Xerox rooms, print shops, etc.) were deemed ineligible for selection as a site for environmental monitoring.

One of the survey-identified indoor locations at the Waterside Mall was selected for monitoring throughout the entire five-day sampling period to assess possible changes over the week. In addition, an outdoor location in the middle of the Waterside Mall 3 roof was selected for monitoring on each of the five days to assess the influence of outdoor contaminants on the indoor environment. The site was located as far as possible from the building exhaust vents.

In addition to the sites chosen in the manner described above, some special study sites were selected to be responsive to management and union requests. These sites are not considered in the analyses described in this report because no follow-up questionnaires were administered to employees at those sites.

3.2 Environmental Monitoring Study Design

Comfort and environmental parameters were monitored at the selected locations during routine employee working hours (between 7:00 a.m. and 5:00 p.m.) during the week of March 6-10, 1989. Four categories of monitoring locations were identified: primary, secondary, fixed, and special. Except where noted, monitoring was conducted on only one day at each primary, secondary, and special study location. Samples were collected during all five daytime sampling periods at the fixed indoor and fixed outdoor monitoring locations.

3.2.1 Primary Sites

Extensive monitoring was conducted at each primary site to characterize the magnitude and spatial differences of the comfort and environmental parameters. The following measurements were made.

- Temperature (T), relative humidity (RH), carbon monoxide (CO), carbon dioxide (CO_2), and respirable suspended particulate (RSP) measurements three times per day during the monitoring period: morning, midday, and afternoon
- Viable and nonviable microbiological samples
- Integrated 9-h RSP, volatile organic compound (VOC), and passive device formaldehyde samples
- Nicotine measurement by passive badges installed over the 5-day study period
- Integrated 9-h aldehyde and pesticide samples at selected sites daily

3.2.2 Secondary Sites

Measurements of T, RH, CO, CO_2, and RSP were taken three times (morning, midday, and afternoon) at each secondary site.

3.2.3 Fixed Indoor and Outdoor Sites

Samples were collected daily to determine daily changes in comfort and environmental parameters and the influence of the outside air on the indoor air quality. Protocols and types of samples were identical to those described above for the primary sites.

3.2.4 Number of Environmental Monitoring Sites and Monitoring Schedule

Environmental monitoring was conducted according to the following schedule: the Waterside Mall 3 (i.e., third floor) locations on Monday. March 6; half of the Waterside Mall 2 (i.e., second floor) locations and the Crystal Mall on Tuesday; the remaining half of the Waterside Mall 2 locations and the Fairchild Building on Wednesday; the West Tower on Thursday; and the East Tower on Friday, March 10. With the exception of the microbiological contaminants, environmental monitoring was conducted at 56 primary, 61 secondary, and 70 special sites, in addition to one fixed indoor site and one fixed outdoor site. The distribution of indoor environmental monitoring locations is shown below.

FACILITY	PRIMARY	SECONDARY	SPECIAL	TOTAL
Waterside Mall Complex	47[a]	38	67	152
Fairchild Building	5	12	2	19
Crystal Mall	5	11	1	17

[a] Includes the fixed indoor monitoring location.

The large number of Waterside Mall 2 monitoring locations necessitated that some environmental monitoring locations be sampled on both of the days when sample collection was scheduled for Waterside Mall 2.

A total of 79 viable airborne microbiological samples were collected. Fifty-three indoor and six outdoor microbiological samples were collected at the Waterside Mall. Five indoor samples and one outdoor microbiological sample were collected at both the Fairchild and Crystal Mall buildings. Eight quality control samples were collected at the Waterside Mall. Fourteen indoor and three outdoor fungal spore samples were collected at Waterside Mall. One indoor air fungal spore sample was collected at both the Fairchild and Crystal Mall buildings.

3.3 Follow-up Survey Design

The follow-up survey instrument was designed to acquire information about the activities and perceptions of the employees on the day of environmental sampling. The questions were nearly identical to comparable questions on the first questionnaire. The first part of the follow-up questionnaire asked about time spent at activities. The second part asked about environmental conditions (air movement, temperature, humidity, etc.) and odors noticed. The third part inquired about the same symptoms as in the initial questionnaire plus burning lungs. The fourth part inquired about feelings (worn out, listless, lively, etc.).

The follow-up survey was administered to employees at the same time as environmental monitoring was conducted. Resources were available for environmental sampling devices in approximately 100 locations (20 per day) for the temporal variables and about 50 locations (10 per day) for the continuously monitored variables. All employees within approximately 30 ft of a sampling site were assumed to be represented by the measurements at that site.

4. FOLLOW-UP SURVEY RESULTS

This chapter provides a tabulation of results for the follow-up survey (Appendix B), and describes the data processing needed to create the data files for these tabulations and subsequently described data analyses. Because data from both the first survey (Appendix A) and the follow-up survey are used, we refer to the former as Questionnaire 1 (or Q1) and the latter as Questionnaire 2 (or Q2). The emphasis of this chapter is on the health, comfort, odor, and mood state data provided by responses to Questionnaire 2 (parts III, II, II, and IV, respectively). These data were used to construct the main outcome (dependent) variables of the models. Summaries of data from other questionnaire items are of interest because such items represent potential confounders in the models that relate the outcomes to the exposure measures.

Because of the manner in which the employees for the monitoring study were selected, no inferences from the results presented herein can be made concerning the health and comfort concerns of the general population of EPA employees.

4.1 Data Sources and Merging of Data Files

Five major data files furnished information for the data analysis.

Q1 Data = one data record per respondent (3955 records)

Q2 Data = one data record per respondent (515 records, with 384 matching respondents to Q1)

E1 = temporal data (up to three measurements per day per monitoring site -- for temperature, humidity, CO, CO_2, and integrated RSP)

E2 = VOC data (one integrated 9-h measurement per day -- for nine VOCs, total VOC, and RSP)

E3 = microbiological data

As indicated above, 515 employees at the EPA Headquarters buildings completed Questionnaire 2. Of these, 384 (75%) matched with an employee-completed first questionnaire. Most of the remaining 131 employees had no matching first questionnaire and could not be used in these analyses. Environmental data can be associated with most of the 515 persons who completed the second questionnaire. However, since several key variables were available only from data arising from Questionnaire 1 (e.g., age, sex, etc.), we restricted the statistical analysis efforts to the other 384 respondents.[1] Hence, a first step in the data processing involved a merging of the Q1 and Q2 data files. This combined questionnaire file is referred to as the Q12 file.

The monitoring data are associated with locations (building, sector, room) and dates of sampling, whereas the questionnaire data are associated with employees in these locations on the day of sampling. Hence, prior to analysis, it was necessary to merge the data files containing these component types of data to form a single file containing one record per responding employee. This was accomplished by first developing a unique identification code (UIC) that identified monitoring locations and dates. Each record in the Q12, E1, E2, and E3 files was assigned a UIC based upon the available information. The development of the UIC was required because of the lack of consistency in the originally coded dates and locations (e.g., room numbers were not always recorded in a consistent manner). The contents and development of the E1, E2, and E3 data files are described in Chapter 5.

[1]Response distributions of the 384 respondents and of the 515 respondents were tabulated for comparison and were found to be similar. These results are given in Appendix C.

Available data are summarized below.

Source of Data	No. of Respondents	No. of UICs
Q2	515	
Q2 and Q1	384	
Q2, Q1, and E1	383	100
Q2, Q1, E1, E2, and E3	218	56

Table 4-1 presents the distribution of respondents and UICs by building and sector.

In addition to the major data files, several other types of information were available:

- Health Status Indicators. These indicators, which were based on responses to the health and comfort questions in Questionnaire 1, identify "low complaint" and "high complaint" locations (rooms) within the Waterside Mall complex. Low- and high- health-complaint areas within the complex are used in some of the tabulations of this chapter. The various sectors are identified as CC (Crystal Mall), FC (Fairchild), WC_HIGH (Waterside Complex, high-health complaint areas), and WC_LOW (Waterside Complex, low-health complaint areas). See Section 3.1 and Volume I for additional details.

- Carpet Data. Installation of the carpet data began in October 1987. These data, derived from information provided by William Hirzy, President of the National Federation of Federal Employees Local 2050 (Chamberlain memo, 1988), were added to the basic data file. A single variable was defined for analyzing the new carpet data (0=no new carpet; 1=new carpet, tacked down; 2=new carpet, glued down). From this variable, we created two binary variables for analysis: a carpet age indicator (1=new carpet, 0=otherwise), and a new-carpet-with-glue indicator (1=glued-down new carpet, 0=otherwise).

- Air Handling Unit Data. These data were reviewed, but were not included in the data files constructed for analysis. Accurate information on characteristics of the AHUs was not available within the time frame required for producing the final statistical analyses.

Other Environmental Monitoring Data:

- aldehyde data (available for only 19 monitoring sites)
- nicotine data (detected values at only six monitoring sites)

The aldehyde and nicotine data were not used in the statistical analyses because of the sparseness of the data as noted above.

4.2 Outcome Variables

This section describes the various types of outcome measures used in the statistical models and indicates how they were developed from the specific questionnaire items. Some summary statistics are also presented and discussed. For instance, means or proportions, reported separately by workstation location and by gender. All such statistics are presented purely for descriptive purposes. Since the sample drawn was not a random sample, this precludes the development of interferences to other areas or to employees not sampled. In addition, inferences cannot be made to other periods in time outside the period of the environmental monitoring study. Separate subsections are presented for health symptoms, thermal comfort, odors, air quality ratings, and mood states.

4.2.1 Employee-Reported Health Symptoms

Part III of Questionnaire 2 (see Appendix B) furnished information on the 33 individual health symptoms listed below:

a. headache	r. unusual fatigue or tiredness
b. nausea	s. sleepiness or drowsiness
c. runny nose	t. chills
d. stuffy nose/sinus congestion	u. fever
e. sneezing	v. aching muscles or joints
f. cough	w. problems with contact lenses
g. wheezing/whistling in chest	x. difficulty remembering things

h. shortness of breath
i. chest tightness
j. burning lungs
k. dry/itching/tearing eyes
l. sore/strained eyes
m. blurry/double vision
n. burning eyes
o. sore throat
p. hoarseness
q. dry throat
y. dizziness/lightheadedness
z. feeling depressed
aa. tension or nervousness
bb. difficulty concentrating
cc. dry or itchy skin
dd. upper back pain or stiffness
ee. lower back pain or stiffness
ff. shoulder/neck pain/numbness
gg. hand/wrist pain/numbness

Initially, two binary variables were constructed to indicate the presence or absence of each of the symptoms:

Y1 = 1 if "yes" response to symptom (first part of question) and began "this morning or afternoon at work;" Y1=0 otherwise.

Y2 = 1 if "yes" response to symptom (first part of question) and began "this morning at work;" Y2=0 otherwise.

One option for data analysis would have been to analyze each of these 66 variables separately. However, for most of the individual items, the prevalence of the symptom was relatively rare, thereby hindering the development of meaningful models.

Therefore, a method of grouping or clustering health symptoms was needed. Using only the data from the 384 respondents that had answered both the first and the follow-up questionnaire, a system of classification into clusters was developed. Binary variables associated with health symptom clusters (defined below) were then formed in the following generic way:

Y1_CLUS = 1 if any Y1 variable (i.e., the symptom began in the morning or afternoon at work) in the cluster is equal to 1; Y1_CLUS=0 otherwise.

Y2_CLUS = 1 if any Y2 variable (i.e., the symptom began in the morning at work) in the cluster is equal to 1; Y2_CLUS=0 otherwise.

Several ways for forming clusters were considered; the following two schemes were considered most meaningful (letters shown below refer to the specific symptoms listed above and in part III of Questionnaire 2). Scheme 1 grouped the health symptoms into five clusters. These were consistent with the scheme used in Volume I by both the EPA and NIOSH (U.S. Environmental Protection Agency, 1989a):

H1) Nonspecific indoor air quality (IAQ) symptoms (symptoms a, r, and s)
H2) Mucous membrane symptoms (symptoms c, d, k, n, and q)
H3) Combination of cluster 1 and 2
H4) Flu-like symptoms (symptoms f, g, h, i, u, and v)
H5) Ergonomic symptoms (symptoms dd, ee, ff, and gg).

Scheme 2 grouped the health symptoms into 11 clusters formed on the basis of a principal components analysis (PCA) that was applied to the corresponding health symptom data of Questionnaire 1 (Appendix A). In particular, a varimax rotation was used to perform a PCA on the five-point scales (from part II, question 7) through which respondents indicated the frequency of experiencing the various symptoms during the prior year.[2] All Q1 respondents with nonmissing data were included. The PCA used will be discussed more thoroughly in Volume IV. (A

[2]The symptoms "problems with contact lenses" and "burning lungs" were omitted. The former symptom applies to a very small subset of individuals; the latter symptom was not asked for in Questionnaire 1.

(A PCA analysis was performed on the binary responses of the 384 respondents of Q2. Similar results were obtained, though the clusters were less well defined because of the smaller sample sizes.) The clusters developed from the PCA were as follows:

H6) Headache or nausea (symptoms a and b)
H7) Nasal and cough symptoms (symptoms c, d, e, and f)
H8) Chest-related symptoms (symptoms g, h, and i)
H9) Eye-related symptoms (symptoms k, l, m, and n)
H10) Throat-related symptoms (symptoms o, p, and q)
H11) Tiredness (symptoms r and s)
H12) Chills or fever (symptoms t and u)
H13) Ergonomic (symptoms v, dd, ee, ff, and gg)
H14) Mental or nerve symptoms (symptoms x, z, aa, and bb)
H15) Dizziness/lightheadedness (symptom y)
H16) Dry or itchy skin (symptom cc)

The Y1_CLUS and Y2_CLUS variables generated for each of the 16 health-symptom clusters were then correlated with one another. Because those health symptoms reported as starting at work were usually reported as beginning "this morning at work" rather than "this afternoon at work," the two variables for each cluster were found to be closely related (e.g., in the health symptom results presented in Appendix C, the "started in afternoon" percentage for headache was 6.5% and tended to be about half the corresponding "started in the morning" percentage of 12.0.) The Y2_CLUS variables (i.e., those relying only on the reporting of symptoms starting in the morning) were thus dropped from further consideration; the 16 Y1_CLUS variables were retained for further analysis.

Table 4-2 summarizes the distributions of responses to the 16 health symptom cluster variates. The percentages of positive responses are shown separately for males and females and for each of the four work-station locations (CC, FC, WC_HIGH, and WC_LOW). For all symptom clusters, the overall percentage of female employees reporting work-associated health symptoms was greater than the percentage of male employees reporting the same symptom. The largest gender differences (female/male) were seen in headache/nausea (27.6/12.0%), nasal symptoms (44.3/28.3%), fatigue/tiredness (31.8/18.8%), and nervous system symptoms (31.8/17.8%). However, health symptom complaints have previously been reported as typically higher for women than men. A consistently higher percentage of health symptoms was reported by the sampled employees in the WC_HIGH areas, as compared to the WC_LOW areas. This suggests that the employees' responses were very similar from the first questionnaire to the second questionnaire. Among the H6 through H16 symptoms, the following symptoms were reported to be more than two times as prevalent in the high-complaint versus the low-complaint areas of Waterside Mall complex: headache/nausea, chest symptoms, eye symptoms, throat symptoms, nervous system symptoms, musculoskeletal symptoms (females only), chills/fever (females only), tiredness (males only), dizziness or lightheadedness (males only), and dry/itchy skin (males only). Recall that these two areas were previously selected on the basis of high and low rates of health symptom reporting in the first questionnaire. This suggests that the selection criteria were appropriate. Several of the symptoms were uncommon: chills and fever (0% in Fairchild Building), chest symptoms (less than 10% in Fairchild, Crystal Mall, and WC_LOW), and dizziness/lightheadedness (less than 10% at all locations). The low prevalence of these symptoms limited the development of subsequent models (i.e., developing meaningful models for these symptoms is hindered by the small sample size).

The population surveyed in this report is small (384). Therefore, comparisons of the response rates for the whole EPA Headquarters population being conducted in Volume IV will be more meaningful.

4.2.2 Perceived Thermal Comfort

Employee-reported thermal comfort experienced over the past year was ascertained in Questionnaire 1 (part III, questions 1a-1j). Respondents reported the level of acceptability of air movement, temperature, humidity, and stuffiness on a five-point scale ranging from never acceptable to always acceptable. To reduce the number of thermal parameters and to account for those that may be highly related to one another, a PCA was performed on these thermal comfort questions. The results of this analysis suggested the following four thermal comfort clusters:

1) C1 - too little air movement, too hot, too stuffy
2) C2 - too dry
3) C3 - too humid
4) C4 - too much air movement, too cold.

These clusters are consistent with data reported from chamber studies of occupant-reported assessments of thermal comfort under a range of thermal conditions found in buildings (Berglund et al., 1990).

PCA-developed thermal clusters were used to derive corresponding thermal comfort outcome measures from Questionnaire 2, part II, questions 1, 2, 3, and 5. Binary variables reflecting the thermal clustering were constructed. For example, the first cluster variable was assigned a value of 1 if the employee indicated that there was too little air movement, that it was too hot, and/or that it was too stuffy in either the morning or the afternoon.

The percentage of respondents to the follow-up questionnaire for which each thermal cluster variate was assigned a value of 1 is shown in Table 4-3. The percentages are presented by gender, by building, and by high- and low-complaint sectors within the Waterside Mall complex. Overall, only about 5% of the respondents reported the air too humid. Hence, this cluster (C3) was dropped from any additional statistical modeling analysis (Chapter 6) because of the small number of positive responses. The hot/stuffy air concerns (C1) were most frequently reported (about 50% overall), and the frequency for reporting dry air (C2) was second (about 45%). A marked difference in frequency of reporting hot/stuffy air, dry air, and cool/drafty air by designated high- and low-complaint areas in the Waterside Mall complex is evident in Table 4-3. Frequency of thermal clusters for the Crystal Mall and Fairchild Building were generally between levels observed for the high- and low-complaint sectors in the Waterside Mall complex. Except for the WC_LOW area, a higher percent of females generally reported hot/stuffy air, dry air, and cool/drafty air than males.

4.2.3 Self-Reported Odors

Information on odors noticed by employees at their workstations was obtained through responses to Questionnaire 2, part II, question 8. The resultant information was coded as a series of 16 binary responses indicating presence/absence of various types of odors. Clusters of these variates were defined, and associated binary variables for the clusters were constructed. If one or more of the component odors was reported, then the cluster variate received a value of 1. Otherwise, it received a value of 0. The following six clusters were indicated by PCA applied to the five-point scale data of Questionnaire 1:

Items	Description
l,m,n,o	other chemicals, pesticides, carpet cleaning, paint
a,b,e	body odor, cosmetics, food smells other than fishy
j,k	photocopying and printing processes
g,h	carpet and drapes
d,f,i	fishy smells, musty/damp smells, diesel exhaust
c	tobacco smoke

The clusters were then used as the basis for defining the odor-related outcome variables. However, diesel exhaust was isolated as a separate variable. Thus the following eight binary odor variables were considered.

O1 = 1 if odors from chemicals, pesticides, carpet cleaning, paint
O2 = 1 if body odor, cosmetics, food smells other than fishy
O3 = 1 if odors from photocopying and printing processes
O4 = 1 if odors from carpet and drapes
O5 = 1 if fishy smells, musty/damp smells
O6 = 1 if tobacco smoke odor
O7 = 1 if diesel exhaust
O8 = 1 if fishy smells, musty/damp smells, diesel exhaust

If the indicated odors were not reported, then the particular variable was assigned a zero value.

The percentage of respondents, by building and high- and low-complaint sectors (from Questionnaire 2), for which each odor cluster variate was assigned a 1 is shown in Table 4-4. The O2 cluster (body odor, cosmetics, and other food smells) will be called "cosmetic odors". Only the O2 cluster had an appreciable prevalence (about 35% across all buildings). The prevalence for the other PCA clusters was less than 12% and also had several zero cells. Hence, only the cosmetic odor (O2) variable was included as an odor outcome variable in the modeling analyses of Chapter 6. The high-complaint areas of Waterside Mall complex had only a slightly higher prevalence of cosmetic odors than the low-complaint areas. The Crystal Mall cosmetic odors response rate was similar to that for the WC_LOW area. The Fairchild Building employees reported the highest prevalence rate (about 45%). Again, females reported a prevalence (across all buildings) of 40% for cosmetic odors (O2), compared to 30% for males. Little difference in the male and female rates was evident for employees in the WC_LOW sector and in the Fairchild Building. Large gender differences for the cosmetic odor cluster were found for WC_HIGH and Crystal Mall employees but in opposite directions.

4.2.4 Self-Reported Overall Air Quality

The respondents were asked to report their perception of the overall air quality in the vicinity of their work station (Questionnaire 2, question 9) on the day of environmental monitoring. They were asked to choose one of four possible categories: poor, fair, good, or excellent. Based on the frequency of responses to the question, two binary variables were constructed from the data for use as outcome variables in the modeling analysis:

A1 = 1 if a poor or fair rating; A1 = 0 otherwise.

A2 = 1 if a poor rating; A2 = 0 otherwise.

Distributional results of the responses for these variables are given in Table 4-5. The air quality was rated poor (variable A2) by about 11% of the 366 respondents to question 9 (5.0% of the 180 males and 17.2% of the 186 females). It was rated as fair or poor by about 47% of the males and by about 65% of the females. The gender difference (i.e., females reporting less satisfaction) in ratings was present for all of the buildings. The high-complaint sector in the Waterside Mall had a higher percent of both males and females reporting fair and poor air quality than the low sector. Crystal Mall and Fairchild percentages for fair or poor air quality (0 to 60 %) generally fell between the levels reported for WC_HIGH and WC_LOW (2 to 75%).

4.2.5 Self-Reported Mood States

The mood-state information was derived from the employees' responses to the five-point scales in part IV of Questionnaire 2. A "1" corresponded to "not at all" and a "5" indicated "extremely." Items considered were as follows (letters indicate the questionnaire items):

a. worn out	c. lively	e. on edge
b. listless	d. active	f. shaky
l. fatigued	g. energetic	h. tense
o. exhausted	n. cheerful	j. uneasy
q. sluggish	t. alert	k. restless
s. weary	u. full of pep	m. nervous
x. bushed	v. carefree	p. anxious
	w. vigorous	r. panicky
		i. relaxed

Three combined mood-state scales derived from previous work of McNair et al., (1971) were developed representing fatigue, vigor, and tension, as follows.

M1 = Fatigue = (sum of items a,b,l,o,q,s,x)

M2 = Vigor = (sum of items c,d,g,n,t,u,v,w)

M3 = Tension = ([sum of items e,f,h,j,k,m,p,r] - item i)

In contrast with the binary variables defined for the health-symptom and comfort-concern clusters, the mood-state variables were treated as continuous variables. The fatigue scale could potentially range from 7 to 35 (35 = more fatigue); the vigor scale, from 8 to 40 (40 = more vigorous); and the tension scale, from 3 to 39 (39 = more tension).

There were no apparent differences between the overall gender means for the three mood-state variables (summarized in Table 4-6). Table 4-7 shows the means of the mood-state scales by gender and workstation location. Again, no apparent gender differences in means by gender were observed.

4.3 Potential Confounding Variables

Models for relating employee-reported health symptoms, comfort concerns, etc., to the exposure measurements can be influenced by a host of confounding factors (e.g., workplace, personal, or medical factors) that might modify the associations between the health and comfort outcomes and the measured environmental conditions. This section describes the various types of potential confounding variables considered for use in the statistical models and indicates how they were developed. Some summary statistics are also presented and discussed. For instance, means or proportions are reported separately by workstation location and by gender. Since the sample drawn was not a random sample, this precludes the development of inferences to other areas or to employees not sampled. In addition, inferences cannot be made to other periods in time outside the period of the environmental monitoring study.

Listed below are the Questionnaire 1 items from which potential confounding variables were constructed.

Q1 Item	Description
I 1.a	Type of work space
I 4.a	Years worked at current workstation
II 1.b	Use of contact lenses at work
II 2	Use of glasses at work
II 3 & II 6	Smoking status
II 16.a	Asthma (diagnosed by physician)
II 21	Employee age
II 22	Gender
V 4	Pay plan and grade

The rationale for including such factors as possible confounding effects is fairly obvious and is based on results of prior studies. For instance, it may be hypothesized that older individuals have a higher frequency of certain health symptoms or that females tend to report a higher rate of health symptoms (e.g., Skov and Valbjorn, 1987; Burge et al., 1987). It might also be hypothesized (e.g., Skov and Valbjorn, 1987; Wilson and Hedge, 1987) that employees in lower pay grades may experience more health problems due to several factors (e.g., poorer medical care). Persons wearing glasses or contact lenses may be more subject to eye irritation, headaches, and fatigue. With regard to type of workspace (e.g., open area or enclosed office), it might be hypothesized that those with less privacy may more frequently incur stress-related symptoms such as headaches (e.g., Skov and Valbjorn, 1987; Wilson and Hedge. 1987).

In addition, items from part IV of Questionnaire 1 were used to develop the seven psychosocial scales described below. Each scale was constructed so that higher values mean "more" and lower values mean "less" of the stated characteristic (e.g., a high score on "job satisfaction" indicates a high degree of satisfaction, a high score for "work load" indicates a perception of heavy work load).

Job Satisfaction. This measure indicates overall job satisfaction and lack of job stress, with higher values implying more satisfaction. Job satisfaction was measured by responses to items 1a, 1b, 1c, and 1d in Part IV of the Questionnaire 1 (see Appendix A). Item 1a has a four-point scale, and the remaining three items have three-point scales. In each case, lower values correspond to more satisfaction. An overall measure of job satisfaction is attained by a reverse scoring of each item followed by averaging.

$$\text{Job Satisfaction} = P4 = [(5-R1A)+(4-R1B)+(4-R1C)+(4-R1D)]/4$$
$$= (17-R1A-R1B-R1C-R1D)/4$$

Role Conflict. Respondents' perceptions of role conflict were sought via items 4a, 4b, and 4c, each of which consisted of a four-point scale indicating the frequency with which role conflicts occurred:

$$\text{Role Conflict} = P5 = (R4A+R4B+R4C)/3$$

Job Control. Having little job control, as measured by responses to items 5a, 5b, 5c, and 5d, has been associated with a host of psychological and physical health complaints. This five-point scale assesses control over work load, resources needed to do the job, policies and procedures at work, and workstation surroundings. The scale is defined as

$$\text{Job Control} = P6 = (R5A+R5B+R5C+R5D)/4$$

Work Load. Work load, as measured by items 6a, 6b, 6c, and 6d refers to the amount of work an individual has to do and the pace at which the individual must work. Such a measure of work load is one of the most commonly assessed indicators of job stress and has been linked to a variety of health complaints (e.g., Murphy and Hurrell, 1987):

Work Load = P7 = (R6A+R6B+R6C+R6D)/4

- Utilization of Abilities. This measure assesses the extent to which a worker is required to use skills and knowledge in completing his or her work. Underutilization of abilities is a highly prevalent stressor thought to produce a variety of health complaints. The measure is the average of the responses to items 6e, 6f, and 6g:

  Utilization of Abilities = P8 = (R6E+R6F+R6G)/3

- Role Clarity. Role clarity refers to a lack of certainty regarding expected role behaviors in the job environment. It is the average of the responses to items 6h, 6i, 6j, and 6k:

  Role Clarity = P9 = (R6H+R6I+R6J+R6K)/4

- External Stress. The seventh scale, reflecting external stress, is based on the yes/no responses to question 7, items a, b, c, d, e, and f, in part IV of Questionnaire 1 (1=no, 2=yes). This measure attempts to assess nonwork stresses that may tend to increase symptom reporting.

  External Stress = P10 = R7A+R7B+R7C+R7D+R7E+R7F-6

The psychosocial factors described above, which are partly personal and partly job-related, have been linked to a wide variety of health symptoms (Caplan et al., 1975; Murphy and Hurrell, 1987).

Second questionnaire items that were regarded as the main potential confounders are listed below:

Q2 Item	Description
I3	Hours spent at workstation today
I4	Gone outside today (yes/no)
I6	Hours spent at video display terminal (VDT)
I7.c	Used chemicals at workstation today (yes/no)

Employees spending long hours at their workstations or spending a large amount of time at a VDT might be hypothesized to have a higher incidence of eyestrain, muscle pain, or headaches than those who do not. Those using chemicals, particularly petroleum-based or chlorinated solvents, may experience central nervous effects. Persons going outdoors may do so for a number of reasons, including effects of their workstation environment. Thus, associations with reported health symptoms may be either positive or negative, depending on the efficacy of the action.

In addition to the questionnaire information, other possible confounders included the previously indicated carpet-related variables that identify rooms that had carpet installed since October 1987 (new carpet) and whether or not glue was used. Research suggests that vapors from new carpet and adhesive materials may lead to central nervous system complaints. A small group of employees began to report severe symptoms shortly after installation of the carpet began in October 1987. Most of these employees were subsequently assigned to alternate workspace. Since they were not working in the buildings at the time the monitoring study was conducted, they are not included in these analyses.

Workplace variables used as potential confounders are presented in Table 4-8. Table 4-9 provides the list of personal/medical confounders. The notation used in these tables -- workstation variables W1 through W8 and personal/medical variables P1 through P13 -- is employed throughout the remainder of the report.

Table 4-10 shows the distribution, by gender and workstation location, of the dichotomous variables used as potential confounding variables. Overall, 81% of the male respondents worked in enclosed offices (includes full-height partitioning). Almost all of the others worked in areas separated by mid-height partitions. Thirty-two percent of females worked in areas with mid-height partitions, 22% in open areas, and 46% in enclosed offices. Seventy percent of the males went outside on the day of sampling as compared to 53% of the females. Six percent of the males and 12% of the females used some form of chemicals at their workstation on the day of sampling. About a third of the responding employees worked in areas with new carpet (since 1987); about half of these were cases in which the carpet was glued down. The distribution of persons by pay grade showed more males in the higher pay grades. The overall rate of smokers was general low, and the highest number of heavy smokers was among Crystal Mall males. Eighty percent of males and 70% of females wear either contact lenses or glasses at least sometimes at work. Eleven percent of the males had doctor-diagnosed asthma, as compared to 7% for females.

Table 4-11 shows the summary of the distributions of the continuous potential confounding variables by gender. Females were slightly younger, on average, than males. Females showed slightly lower scores for job satisfaction, role conflict, and job control but slightly higher scores for work load, utilization of abilities, role clarity, and external stress.

Table 4-12 presents means of continuous potential confounding variables by gender and workstation location. Examination of the largest and smallest building averages for each variable reveals that the Crystal Mall males, on the average, are older, have higher role conflict (tied with WC_HIGH males), lower utilization of abilities, and lower role clarity than males at the other buildings. The females at Crystal Mall had the lowest average hours at workstation and average job control score, but the maximum utilization of abilities, role clarity, and external stress scale averages. Fairchild males, on average, spent the most hours at their workstation and at a video display terminal, but they had the lowest average role conflict score. Fairchild females were the youngest and had the lowest score on job satisfaction. The Waterside Complex high-complaint area males had the highest role conflict (tied with Crystal Mall males) and the highest job control score averages. The Waterside Complex low-complaint area males had the lowest work load score mean. Waterside Mall females, on average, spent less time at video display terminals, had the lowest external stress score, and the highest job satisfaction score.

TABLE 4-1. DISTRIBUTION OF QUESTIONNAIRE 2 RESPONDENTS BY BUILDING AND SECTOR

		Q1, Q2, and E1 Data		Q1, Q2, E1, E2, and E3 Data	
Building*	Sector	No. UICs	Number of Respondents	No. UICs	Number of Respondents
WC	W Tower	11	42	11	42
	SW Tower	3	16	1	9
	SE Tower	4	20	1	7
	NE Tower	8	40	2	11
	Mall 3	15	64	10	51
	Mall 2**	22	80	15	53
	E Tower	13	30	7	14
FC		10	58	4	18
CC		14	33	5	13
Total		100	383	56	218

* WC - Waterside Mall, FC - Fairchild Building, CC - Crystal Mall.

** Includes four UICs and 15 respondents associated with "fixed site."

TABLE 4-2. PERCENTAGE OF RESPONDING EMPLOYEES REPORTING HEALTH SYMPTOMS THAT BEGAN AT WORK ON THE DAY OF ENVIRONMENTAL MONITORING, BY GENDER AND WORKSTATION LOCATION

Symptom Cluster	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
SCHEME 1:						
H1 nonspecific IAQ	M	17.6	17.4	33.7	17.5	24.6
	F	31.3	40.0	56.0	25.6	44.3
H2 mucous membrane	M	41.2	39.1	58.1	36.8	48.2
	F	31.3	60.0	65.0	35.9	54.7
H3 combined H1, H2	M	47.1	43.5	62.8	42.1	53.4
	F	50.0	68.6	74.0	51.3	65.6
H4 flu-like	M	11.8	13.0	23.3	5.3	14.7
	F	6.2	17.1	25.0	12.8	19.3
H5 ergonomic	M	11.8	13.0	19.8	12.3	15.2
	F	31.3	22.9	24.0	10.3	21.4
SCHEME 2:						
H6 headache, nausea	M	5.9	4.3	18.6	7.0	12.0
	F	12.5	25.7	36.0	15.4	27.6
H7 nasal, cough	M	17.6	30.4	32.6	26.3	28.3
	F	25.0	40.0	54.0	33.3	44.3
H8 chest	M	5.9	8.7	11.6	1.8	7.3
	F	6.2	2.9	14.0	0.0	8.3
H9 eyes	M	29.4	26.1	51.2	17.5	35.6
	F	31.3	42.9	51.0	12.8	39.6
H10 throat	M	17.6	8.7	29.1	14.0	20.9
	F	12.5	14.3	37.0	15.4	26.0
H11 tiredness	M	17.6	17.4	26.7	10.5	18.8
	F	25.0	28.6	39.0	20.5	31.8

(continued)

TABLE 4-2. (continued)

Symptom Cluster	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
H12 chills, fever	M	5.9	0.0	10.5	5.3	6.8
	F	6.2	0.0	17.0	5.1	10.5
H13 ergonomic	M	17.6	17.4	22.1	12.3	17.3
	F	31.3	22.9	25.0	10.3	21.9
H14 nervous system	M	11.8	17.4	26.7	7.0	17.8
	F	18.8	25.7	41.0	20.5	31.8
H15 dizziness, light-headedness	M	0.0	0.0	9.3	0.0	4.7
	F	0.0	5.7	8.0	7.7	6.8
H16 dry, itchy skin	M	5.9	17.4	11.6	3.5	9.4
	F	0.0	11.4	20.0	10.3	14.6

Note: Sample sizes upon which the above percentages are based are given below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Sample Sizes:	M	17	23	86	57	191
	F	16	35	100	39	192

TABLE 4-3. PERCENTAGE OF RESPONDING EMPLOYEES REPORTING COMFORT CONCERNS ON THE DAY OF ENVIRONMENTAL MONITORING, BY GENDER AND WORKSTATION LOCATION

Comfort Concern	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
C1 too hot, stuffy	M	29.4	56.5	48.8	35.1	44.0
	F	50.0	80.0	62.0	33.3	57.8
C2 too dry	M	35.3	34.8	45.8	30.4	38.7
	F	62.2	55.9	54.1	28.2	49.2
C3 too humid	M	0.0	4.3	1.2	7.1	3.2
	F	0.0	5.9	8.2	2.6	5.8
C4 too cool, drafty	M	23.5	4.3	39.5	31.6	30.4
	F	12.5	20.0	42.4	31.6	33.2

Note: Sample sizes upon which the above percentages are based are given below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Range of Sample Sizes:	M	17	23	83-86	56-57	186-191
	F	16	34-35	98-100	38-39	189-192

TABLE 4-4. PERCENTAGE OF RESPONDING EMPLOYEES REPORTING ODORS ON THE DAY OF ENVIRONMENTAL MONITORING, BY GENDER AND WORKSTATION LOCATION

Type of Odor	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
01 chemicals, paint	M	5.9	0.0	8.1	1.8	5.2
	F	0.0	11.4	9.0	0.0	6.8
02 cosmetics, body, non-fish foods	M	41.2	43.5	26.7	28.1	29.8
	F	18.8	45.7	44.0	33.3	40.1
03 copying, printing	M	5.9	4.3	7.0	3.5	5.2
	F	12.5	8.6	9.0	0.0	7.3
04 carpet, drapes	M	0.0	0.0	4.7	0.0	2.1
	F	0.0	2.9	2.0	0.0	1.6
05 fishy, musty/damp	M	5.9	0.0	10.5	0.0	5.2
	F	0.0	2.9	7.0	0.0	4.2
06 tobacco smoke	M	0.0	0.0	3.5	5.3	3.1
	F	0.0	2.9	3.0	0.0	2.1
07 diesel exhaust	M	0.0	0.0	3.5	1.8	2.1
	F	0.0	2.9	2.0	0.0	1.6
08 combined 05, 07	M	5.9	0.0	10.5	1.8	5.8
	F	0.0	5.7	9.0	0.0	5.7

Note: Sample sizes upon which the above percentages are based are given below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Sample Sizes:	M	17	23	86	57	191
	F	16	35	100	39	192

TABLE 4-5. PERCENTAGE OF RESPONDING EMPLOYEES REPORTING AIR QUALITY CONCERNS ON THE DAY OF ENVIRONMENTAL MONITORING, BY GENDER AND WORKSTATION LOCATION

Air Quality Rating	Sex	% for CC	% for FC	% for WC_HIGH	% for WC_LOW	% for OVERALL
A1 poor or fair	M	35.3	50.0	55.4	33.3	47.2
	F	56.3	60.0	74.5	48.7	64.5
A2 poor	M	0.0	9.1	7.2	2.0	5.0
	F	6.2	28.6	20.2	5.1	17.2

Note: Sample sizes upon which the above percentages are based are given below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Sample Sizes:	M	17	22	83	51	180
	F	16	35	94	39	186

TABLE 4-6. SUMMARY OF DISTRIBUTIONS OF MOOD-STATE VARIABLES, BY GENDER

Mood-State	Sex	No. Employees	Min	Max	Mean	Std. Dev.
M1 fatigue	M	184	7.0	33.0	11.7	5.3
	F	185	7.0	35.0	12.3	6.1
M2 vigor	M	183	8.0	38.0	20.7	6.5
	F	185	8.0	40.0	19.2	6.7
M3 tension	M	183	3.0	35.0	9.1	5.6
	F	185	3.0	35.0	9.0	5.3

TABLE 4-7. MEANS OF MOOD-STATE SCALES, BY GENDER AND WORKSTATION LOCATION

Mood-State Scale	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
M1 fatigue	M	10.5	11.7	12.6	10.8	11.7
	F	11.0	11.8	13.5	10.4	12.3
M2 vigor	M	23.6	21.2	19.7	21.0	20.7
	F	19.9	19.4	18.3	20.6	19.2
M3 tension	M	8.5	10.6	9.7	7.9	9.1
	F	8.2	8.3	10.1	7.6	9.0

Note: Sample sizes upon which the above means are based are given below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Range of Sample Sizes:	M	17	23	81	54-55	183-184
	F	15	34	96-97	37-38	185

TABLE 4-8. DEFINITIONS OF WORKSTATION VARIABLES USED AS INDEPENDENT VARIABLES FOR MODELING HEALTH SYMPTOMS, COMFORT, ODOR, AND MOOD-STATE VARIABLES

Variable Code	Source[*]	Description
W1[-]	Q1:I4.a	Years at current workstation
W2A[--]	Q1:I1.a	Type of work space: 1 = stacks or mid-height partitioned cubicle 0 = other
W2B[--]	Q1:I1.a	Type of work space: 0 = enclosed office, floor-to-ceiling cubicle, stacks or mid-height partitioned cubicle 1 = other (e.g., open area, loading dock)
W3	Q2:I3	Hours spent at workstation on day of monitoring
W4	Q2:I4	Went outside on day of monitoring: 1=yes, 0=no
W5	Q2:I7c	Used chemicals at workstation today: 1=yes, 0=no
W6	Q2:I6	Hours spent at VDT
W7		New carpet at workstation (1987 or later): 1 = yes, 0=no
W8		New carpet, glued down: 1 = yes, 0 = no

[*] Source identifies the questionnaire (Q1 or Q2), the section of the questionnaire (Part I,II,III, or IV), and the specific question (e.g., question 4 part a).

[-] The variable W1, years at current workstation, was initially considered, but was dropped because 126 missing values (out of 383 cases) occurred.

[--] W2B was not defined for males because there were only five male respondents for whom W2B would have been equal to 1. For these five males, W2A was assigned a value of 1. Thus for males, W2A = 0 for enclosed offices or full-height partitions, and W2A = 1 otherwise.

TABLE 4-9. DEFINITIONS OF PERSONAL/MEDICAL VARIABLES USED AS INDEPENDENT VARIABLES FOR MODELING HEALTH SYMPTOMS, COMFORT CONCERNS, ODORS, AND MOOD-STATE VARIABLES

Variable Code	Source*	Description
P1	Q1:II21	Age (years)
P2	Q1:II22	Gender (separate models for males and females)
P3A	Q1:V4	Pay grade category: 1 = if medium pay grade (GS9-GS12, or equivalent) 0 = other
P3B	Q1:V4	Pay grade category: 1 = if high pay grade (GS13+, or equivalent) 0 = other
P4	Q1:IV1	Job satisfaction scale = (17-a-b-c-d)/4
P5	Q1:IV4	Role conflict scale = (a+b+c)/3
P6	Q1:IV5	Job control scale = (a+b+c+d)/4
P7	Q1:IV6	Work load scale = (a+b+c+d)/4
P8	Q1:IV6	Utilization of abilities scale =(e+f+g)/3
P9	Q1:IV6	Role clarity scale = (h+i+j+k)/4
P10	Q1:IV7	External stress scale = (a+b+c+d+e+f-6)

(continued)

TABLE 4-9 (Continued)

Variable Code	Source[*]	Description
P11A	Q1:II3 & Q1:II6	Tobacco smoking status: 1=smoker (1-10 cigarettes/day) 0=otherwise
P11B	Q1:II3 & Q1:II6	Tobacco smoking status: 1=smoker (11+ cigarettes/day) 0=otherwise
P12A	Q1:III1.b & Q1:II2	Contacts or glasses worn at work: 1 = yes 0 = no
P12B	Q1:III1.b	Contact lenses worn at work: 1 = yes, 0 = no
P13	Q1:II16.a	Asthma, diagnosed by physician: 1 = yes, 0 = no

[*] Source identifies the questionnaire (Q1 or Q2), the section of the questionnaire (Part I, II, III, or IV), and the specific question (e.g., 21).

Note: Letters a through k in the definitions of P4 through P9 refer to the five-point scale responses to subitems a, b, etc. Letters a through f in the definition of P10 refer to the yes/no responses to subitems, where 1 indicated a "no" response and 2 indicated a "yes" response.

TABLE 4-10. DISTRIBUTION OF DICHOTOMOUS VARIABLES USED AS POTENTIAL CONFOUNDING VARIABLES, BY GENDER AND WORKSTATION LOCATION

Potential Confounding Variate	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
W2A (1=stacks or mid-height partitions)	M	5.9	69.6	15.1	12.3	19.4
	F	14.3	74.3	24.0	20.5	31.6
W2B (1=open area, no specific workplace, loading dock)	M	.	.	.	.	.
	F	28.6	5.7	20.0	35.9	21.6
W4 (1=went outside today)	M	52.9	52.2	75.3	73.7	70.5
	F	50.0	22.9	65.7	48.7	52.9
W5 (1=used chemicals at workstation)	M	0.0	4.3	8.1	7.0	6.3
	F	6.3	17.1	13.0	10.3	12.5
W7 (1=new carpet)	M	0.0	73.9	32.6	14.0	27.7
	F	0.0	65.7	42.0	25.6	39.1
W8 (1=new carpet glued down)	M	0.0	73.9	8.1	0.0	12.6
	F	0.0	65.7	12.0	0.0	18.2
P3A (1=medium pay grade)	M	0.0	30.4	26.2	21.4	22.5
	F	20.0	42.9	37.0	22.9	34.2
P3B (1=high pay grade)	M	81.3	60.9	66.7	73.2	70.1
	F	46.7	25.7	35.0	31.4	33.2
P11A (1=light smoker)	M	0.0	8.7	4.7	5.3	4.7
	F	12.5	11.8	8.2	7.7	9.6
P11B (1=heavy smoker)	M	23.5	4.3	5.9	5.3	6.8
	F	6.3	14.7	3.1	5.1	5.9
P12A (1=wear contacts or glasses at work)	M	70.6	81.8	83.3	77.2	79.3
	F	75.0	67.6	64.0	82.1	69.6

(continued)

TABLE 4-10. (CONTINUED)

Potential Confounding Variate	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
P12B (1=wear contacts at work)	M	11.8	18.2	22.6	14.0	17.6
	F	18.8	26.5	26.0	23.1	25.1
P13 (1=have asthma)	M	23.5	0.0	9.3	16.4	11.1
	F	12.5	0.0	8.2	7.9	6.9

Note: Sample sizes upon which the above percentages are based are indicated below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Range of Sample Sizes:	M	16-17	23	84-86	53-57	187-191
	F	14-16	34-35	97-100	35-39	187-192

TABLE 4-11. SUMMARY OF DISTRIBUTIONS OF CONTINUOUS POTENTIAL CONFOUNDING VARIABLES, BY GENDER

Variable	Sex	No. Employees	Min	Max	Mean	Std. Dev.
W3 hours at workstation	M	191	0.0	9.5	4.4	1.9
	F	192	0.0	9.0	4.2	1.8
W6 hours at VDT	M	191	0.0	7.0	1.2	1.4
	F	192	0.0	7.0	1.3	1.8
P1 age (years)	M	188	17.0	78.0	41.9	10.4
	F	185	17.0	67.0	37.9	10.3
P4 job satisfaction scale	M	184	1.25	3.25	2.64	0.53
	F	179	1.25	3.25	2.63	0.54
P5 role conflict scale	M	186	1.00	4.00	1.74	0.70
	F	184	1.00	4.00	1.70	0.76
P6 job control scale	M	187	1.00	5.00	3.19	0.83
	F	184	1.00	5.00	3.08	0.96
P7 work load scale	M	186	1.00	5.00	3.61	0.90
	F	185	1.00	5.00	3.68	0.98
P8 utilization of abilities scale	M	187	1.00	5.00	3.26	1.01
	F	181	1.00	5.00	3.49	1.02
P9 role clarity clarity	M	186	1.00	5.00	3.60	0.90
	F	185	1.00	5.00	3.77	0.90
P10 external stress scale	M	187	0.00	5.00	1.65	1.13
	F	185	0.00	5.00	1.93	1.27

TABLE 4-12. MEANS VALUES FOR CONTINUOUS POTENTIAL CONFOUNDING VARIABLES, BY GENDER AND WORKSTATION LOCATION

Variable	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
W3 hours at workstation	M	4.4	4.8	4.5	4.0	4.4
	F	3.5	4.2	4.5	3.7	4.2
W6 hours at VDT	M	1.3	2.0	1.1	1.0	1.2
	F	1.7	1.8	1.3	0.6	1.3
P1 age (years)	M	46.2	38.5	40.3	45.2	41.9
	F	42.7	36.2	36.7	40.6	37.9
P4 job satisfaction scale	M	2.58	2.63	2.65	2.70	2.64
	F	2.72	2.57	2.61	2.72	2.63
P5 role conflict scale	M	1.81	1.56	1.81	1.74	1.74
	F	1.62	1.72	1.69	1.74	1.70
P6 job control scale	M	3.08	2.86	3.26	3.20	3.19
	F	2.66	2.88	3.16	3.20	3.08
P7 work load scale	M	3.73	3.57	3.73	3.46	3.61
	F	3.73	3.78	3.69	3.59	3.68
P8 utilization of abilities scale	M	2.98	3.23	3.21	3.39	3.26
	F	3.85	3.35	3.42	3.61	3.49
P9 role clarity scale	M	3.53	3.63	3.54	3.68	3.60
	F	3.95	3.71	3.73	3.88	3.77
P10 external stress scale	M	1.81	1.83	1.65	1.54	1.65
	F	2.31	1.94	1.96	1.69	1.93

Note: Sample sizes upon which the above means are based are given below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Range of Sample Sizes:	M	16-17	21-23	83-86	54-57	184-191
	F	15-16	32-35	92-100	35-39	179-192

5. ENVIRONMENTAL MONITORING RESULTS FOR RESPONDENTS TO THE FOLLOW-UP SURVEY

As reported in Chapter 4, there were three major categories of environmental measurements: File E1 (temporal data), File E2 (primarily VOC data), and File E3 (microbiological data). This chapter describes the contents of these files and presents summary statistics that characterize the distributions of the various measurements.

5.1 Temporal Data

The temporal data consisted of measurements of temperature, relative humidity, CO concentration, CO_2 concentration, and RSP concentration. The CO data were not used because only 55 of 514 values exceeded the limit of detection. "Instantaneous" measurements of these parameters were made three times (morning, noon, and afternoon) on the day sampling was scheduled at each primary and secondary site. Data from the special sites were not used for the analyses described in this report.

For each parameter, averages of the three temporal measurements were first constructed. These daily averages or transformations of the averages were then used to produce four exposure variables (T1-T4) in the initial set: average temperature (T1), relative humidity (T2), natural logarithm of the average CO_2 concentration (T3), and natural logarithm of the average RSP concentration (T4). An analogous set of variables based on averages of only the morning and noon measurements was also considered. The morning and noon measurements tended to be very highly correlated (temperature, 0.98; relative humidity, 0.96; CO_2 concentration, 0.98; RSP concentration, 0.97.) with the daily averages and were therefore dropped from further consideration.

In addition, two other variables were considered: T5=(temperature-$70°)^2$, and T6=temperature change (maximum temperature - minimum temperature).

T6 was retained as a candidate exposure variate; T5, however, was dropped from further consideration because of its high correlation (0.94) with average temperature (T1). A PCA performed on the temporal variates (T1, T2, T3, T4, T6) indicated a moderate association between CO_2 and temperature (correlation = 0.54), whereas the other measurements were essentially independent factors.

The rationale for including these variables as candidate variables is based on their potential associations with the outcome measures described in Chapter 4. In particular, the following types of associations might be anticipated:

- Temperature: In addition to the obvious associations that might exist between temperature and the comfort measures, associations with the health symptoms may also be hypothesized. For instance, high temperatures may lead to fatigue and sleepiness, and cold temperatures may lead to muscle pain.

- Relative Humidity: Dry air may lead to mucous membrane (eye, nose, throat) problems. Moist air may support the growth of molds and fungi, leading to respiratory symptoms (wheezing, flu-like illnesses).

- Carbon Dioxide: Elevated levels of carbon dioxide resulting from inadequate ventilation may lead to headaches and sleepiness.

- Respirable Particles: This is a measure of the "dustiness" of the monitored site. Elevated levels may affect the respiratory system, resulting in cough, dry throat, sneezing, or runny nose.

<u>Temperature Change</u>: Large daily variations in temperature may lead to difficulties in adjusting body temperature and may result in fever, chills, etc.

Temporal data were available for 100 UICs, and these data were associated with the 383 respondents providing the Q12 data. The variates are labeled T1-T4 and T6, as shown in Table 5-1.

Tables 5-2 and 5-3 provide summaries of the temporal data. Table 5-2 characterizes the overall distributions observed across all of the primary and secondary monitoring sites. The mean, standard deviation, minimum, and maximum are shown for each variable. The CO_2 and RSP are in natural log units. The geometric mean, in original units, is also shown for these two variables, along with their geometric standard deviation. The daily average temperatures across all sites and times ranged from 68 to 79°F. The largest temperature change, among the morning, midday, and afternoon measurements at a given monitoring location, was 8°F. The average humidity was uniformly low, the maximum relative humidity being 38%.

Table 5-3 presents the means of the temporal variables by gender and workstation location. These means are weighted by the number of individuals at each location responding to the first and second questionnaires. Fairchild females worked in areas that had the highest average temperature (77.4°F), and Waterside Complex high-complaint males worked in areas that had the lowest average temperature (72.9°F). The lowest average humidity (22.9%) was found for the work areas of the Crystal Mall females and the highest (25.7%) for those of the Waterside Complex low-complaint area females. The lowest average CO_2 level was also for work areas of Crystal Mall females, and the highest was for work areas of Fairchild females. The lowest average ln(RSP) was 2.17, corresponding to a geometric mean of 8.8 $\mu g/m^3$. This was found for both Waterside Complex high-complaint areas of females and Waterside Complex low-complaint areas of males. The highest average ln(RSP) was 2.48 observed for the work areas of Fairchild females (geometric mean = 11.9 $\mu g/m^3$). The smallest average temperature change (0.7°F) was found for the work areas of Fairchild males, and the largest was found for the high-complaint areas of the Waterside Complex females (2.2°F).

5.2 Volatile Organic Compound Data[3]

Concentrations of various VOCs were measured at both the primary and fixed monitoring sites. Many petroleum-based and/or chlorinated organic solvents have been associated with "sick building syndrome" (Molhave 1984; Otto et al., 1990). In particular, headaches, central nervous system complaints (difficulty concentrating, loss of memory), and unpleasant odor have been associated with the presence of organic chemicals. At each primary site, a single integrated air measurement was made covering approximately a 9h time frame). Many individually measured VOC concentrations fell below detection limits for all or almost all sample sites. Nine VOCs, however, had a sufficient number of measurable concentrations to warrant further consideration: 1,1,1-trichloroethane, benzene, trichloroethylene, toluene, tetrachloroethylene, ethylbenzene, o- and p-xylene (combined), methylene chloride, and n-octane. In addition, total VOCs (in ppmC or ppm carbon) and RSP concentrations were measured at the same subset of sites.[4] For these nine VOCs, "not detected" values were set equal to 0.5 times the limit of detection (LOD), "trace" values were set equal to 0.5 (limit of quantitation+LOD), and "not calculated" values were treated as missing values. For integrated RSP

[3]Some models will arbitrarily exclude these variables because data were available for only a subset of the respondents.

[4]In contrast to the instantaneous temporal measurements, this RSP measurement was an integrated measurement of approximately nine hours duration.

concentrations, all missing values and all values less than 10 $\mu g/m^3$ were set equal to 5 $\mu g/m^3$.

A PCA was applied to the data set consisting of the nine VOC concentration variables to determine if a reduced set of variables would be meaningful. The PCA results suggested that the nine specific VOC concentration variates could be reduced to two major components: (1) total of concentrations for 1,1,1-trichloroethane and tetrachloroethylene (V1) and (2) total of remaining seven VOC concentrations (V2). Methylene chloride was treated separately because of its chemical and physical properties and its weak association with the other six VOCs in V2. Five VOC-related variables were used for modeling. V1 comprises two solvents, while V2 consists principally of aromatic compounds.

V1=ln[total of concentrations ($\mu g/m^3$) for 1,1,1-trichloroethane and tetrachloroethylene]

V2=ln[total of concentrations ($\mu g/m^3$) for benzene, toluene, trichloroethylene, ethylbenzene, o- and p-xylene, and n-octane]

V3=ln[methylene chloride concentration ($\mu g/m^3$)]

V4=ln[total VOCs (in ppmC)]

V5=ln[integrated RSP concentration ($\mu g/m^3$)]

Factor V2 consisted of six organic compounds. Only toluene and n-octane had missing values. Toluene had five missing values for the Waterside Complex and the mean value substituted was 10.48. n-Octane had one missing value for the Waterside Complex, and the mean value substituted was 0.60. Imputed concentrations (equal to the overall mean values for Waterside Mall Complex) were substituted for these compounds V2 was constructed. This allowed the variable to be analyzed by using the best estimate of the actual value.

Tables 5-4 and 5-5 provide summaries of the distributions of these five variables. Table 5-4 summarizes the overall distributions across monitoring sites, while Table 5-5 gives means by gender and workstation location. All of these variables are reported in natural log units, with geometric means in original concentration units. Aromatics were the most prevalent class of compounds. The highest concentrations of V2, V3, V4, and V5 (aromatics, methylene chloride, total VOCs in ppmC, and RSP, respectively) were found at the Fairchild building. The concentrations at Crystal Mall were generally lowest for all the variables except V2.

Most of the targeted VOCs have been measured by EPA in 10 other buildings (Wallace et al., 1987). Of these, three were new buildings that exhibited elevated levels of certain chemicals such as the xylenes and decane. The seven older buildings -- which included two office buildings, two homes for the elderly, a school, a hospital, and a nursing home -- are more directly comparable to the three EPA Headquarters buildings. The range of average concentration values noted in these seven buildings spans the range found in the EPA buildings for every compound measured except tetrachloroethylene, as shown below.

Compound	Range of Mean One-Day Concentrations for 3 EPA Buildings (from Report II)	Range of Mean Three-Day Concentrations for 7 Other Buildings (Wallace et al., 1987)
1,1,1-Trichloroethane	3 to 9 µg/m^3	3 to 41 µg/m^3
Tetrachloroethylene	2 to 7	1 to 6
Benzene	5 to 8	3 to 11
Trichloroethylene	1 to 3	ND to 11
Ethylbenzene	1 to 5	1 to 10
Xylenes	6 to 21	4 to 36
p-Dichlorobenzene	ND to 6	ND to 7
Styrene	ND to 2	1 to 2
n-Decane	ND to 6	1 to 27
n-Dodecane	ND	ND to 6

Sample sizes for the Waterside Mall, Crystal Mall, and Fairchild were 51, 5, and 5, respectively. Sample sizes for the seven other buildings ranged from 18 to 30. Toluene, n-octane, and methylene chloride were not measured in the prior studies.

Respirable particles were measured in 38 commercial buildings in the Pacific Northwest (Turk et al., 1987). The mean RSP value observed in no-smoking areas of those buildings was 19 $\mu g/m^3$, which is quite comparable to the means observed for the three EPA buildings (16 to 24 $\mu g/m^3$).

5.3 Microbiological Data[5]

At the primary and fixed monitoring sites, the presence and concentration of various bioaerosols were measured (variables V6 through V14 in Table 5-6). These organisms have been associated with specific building-related illnesses in other studies; such illnesses include hypersensitivity pneumonitis and allergic rhinitis. Some of these organisms also produce materials which can cause inflammation independent of sensitization. For example, gram-negative bacteria can produce an endotoxin, a lipopolysaccharide, which has recently been associated with lung inflammation in lifeguards at an indoor swimming pool (Milton et al., 1990).

At each primary site, a single air sample was obtained. Air samples were sent to a laboratory, where they were cultured, quantitated, and further identified. This is therefore an assay for viable organisms. While this is the current standard assay for microbiologicals in the environment, it does not quantitate nonviable organisms which may also cause health effects. The results were adjusted for the volume of air sampled and are expressed as logarithms of colony-forming units per cubic meter (Tables 5-7 and 5-8).

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[5]Some models will arbitrarily exclude these variables because data were available for only a subset of the respondents.

The variability in the concentration of microbiologicals at a single site was determined by repeat sampling on each of five days at one location. The concentration of total fungi ranged from 8 to 35 CFU/m^3, the concentration of human source bacteria ranged from 35 to 100 CFU/m^3, and the concentration of thermophilic bacteria ranged from 1 to 140 CFU/m^3. This was judged to be a low degree of variability for the fungi and human source bacteria and a moderate degree of variability for the thermophilic bacteria.

The results were compared to previous study data and guidelines published by the American College of Government and Industrial Hygienists (ACGIH), "Guidelines for the Assessment of Bioaerosols in the Indoor Environment," (1989). The ACGIH Guidelines state that for fungi:

> "Indoor levels must be interpreted with response to control environments, such as the outdoor air or interiors with no complaints or symptoms. In general, indoor levels should be lower than those outdoors and taxa should be similar indoors and out. In general, mechanically ventilated interiors, even those with minimal filtration, should have indoor fungus counts that are less than half of outdoor levels measured over the 24 hours previous to indoor sample collection. All interpretations of health risk due to saprophytic fungus spores should be made with the understanding that the outdoor aerosol routinely exceeds 1000 cfu/m^3 and may average near 10,000 cfu/m^3 in the summer months...levels of any saprophytic fungus less than 100 cfu/m^3 are not of concern."

In this study, the outdoor concentrations of fungi were 10-1000 times lower than indicated by ACGIH guidelines, and ranged from 1 to 113 CFU/m^3. The weather was extremely cold during the week of sampling and may have lowered the levels of outdoor samples. No technical factors were identified which would have artificially lowered the bioaerosol concentrations. The fungal concentrations in the indoor samples were low, with most values ranging from 1 to 45 CFU/m^3. A fungi concentration measured in one area was 883 CFU/m^3 (predominantly penicillium). Management was notified of this result. This finding was reviewed and determined not to have the potential for causing illness among the general work force. Repeat measurements by a management contractor have shown lower levels consistent with these measurements previously made in other areas. Three sites had fungal concentration of 105-120 CFU/m^3. According to the ACGIH guidelines, these three values are not of concern, as they are several times less than the 500 CFU/m^3 concentration which the ACGIH implies occurs routinely. This interpretation does not exclude the possibility that employees may have reacted to specific fungi. Allergic reactions can occur in a small percentage of the population in response to very low concentrations of an antigen.

The ACGIH guidelines for the interpretation of environmental bacterial concentrations propose four key questions:

1. Are environmental bacteria being selectively amplified in the building? They indicate that in the normal situation, human source bacteria (e.g., gram-positives such as micrococcus and staphyoloccus) should predominate.
2. What is the source of amplification?
3. Are human source organisms accumulating to inappropriate levels? The guidelines suggested by the ACGIH are that 4500 cfu/m^3 is the upper limit of normal for indoor bacterial aerosol in subartic homes.
4. Is there a significant health risk associated with exposure to these organisms? The ACGIH guidelines acknowledge that this is difficult to assess for any bioaerosol, including bacteria.

In the EPA study, staphylococci and micrococci were the dominant bacteria, which by item 1 above implies that environmental bacteria are not being selectively amplified in the building. By the third criteria, human source organism concentrations measured in EPA Headquarters (5-240 CFU/m^3) were very low compared to the guidelines-suggested 4500 CFU/m^3. The ACGIH guidelines do not have a separate section for the interpretation of data on thermophilic actinomycetes. They state that "actinomycetes are unusual in nonfarm, indoor environments, and their presence indicates that contamination is present." The fixed site sampling indicated the largest degree of variability with the thermophiles (1 to 140 CFU/m^3). Outdoor samples ranged from 1 to 70 CFU/m^3, and indoor samples ranged from 1 to 90 CFU/m^3. The health effects which may occur in association with exposure to thermophilic actinomycetes include hypersensitivity pneumonitis. The presence of low concentrations does not exclude the possibility that a small percentage of individuals may be sensitized and are reacting to these low concentrations. However, the risk of sensitization is thought to rise with increasing exposure. The low concentrations of thermophiles is consistent with the air sampling data showing low humidity, since these organisms can thrive in warm, damp environments. These data suggest that the range of concentrations of thermophilic actinomycetes in the indoor environment at the EPA Headquarters buildings is similar to the range of concentrations found outdoors. With current knowledge, no significant health risks to the general work force would be expected at the levels measured at the EPA buildings.

TABLE 5-1. TEMPORAL VARIABLES

VARIABLE	DESCRIPTION
T1	temperature (°F)
T2	relative humidity (%)
T3	ln[CO_2 concentration] ln(ppm)
T4	ln[RSP concentration] ln($\mu g/m^3$)
T6	temperature change [max(AM,noon,PM temperature)-min(AM,noon,PM temperature)] (°F)

NOTE: T5=(T1-70)**2 was originally considered but was dropped because of its high correlation with T1. T1-T4 are averages over AM, noon, and PM readings; averages over AM and noon were also considered but were highly correlated with T1-T4.

TABLE 5-2. SUMMARY OF OVERALL DISTRIBUTIONS OF TEMPORALLY MEASURED VARIABLES

Variable	No. UICs	Min	Max	Mean	Std. Dev.	Geom. Mean	Geom. Std. Dev.
T1 (temp. °F)	100	67.5	79.2	74.1	2.3		
T2 (humidity %)	100	18.0	38.0	24.4	4.4		
T3 (ln[CO_2])	100	5.95	6.75	6.33	0.18	561.2	1.2
T4 (ln[RSP])	97	0.00	3.58	2.21	0.82	9.1	2.3
T6 (temp. change °F)	100	0.0	8.0	1.6	1.4		

TABLE 5-3. MEANS OF TEMPORALLY MEASURED VARIABLES, BY GENDER AND WORKSTATION LOCATION

Variable	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
T1 (temp. °F)	M	75.2	77.0	72.9	73.7	73.8
	F	74.9	77.4	73.7	73.2	74.3
T2 (humidity %)	M	23.6	24.7	24.6	25.4	25.1
	F	22.9	25.3	24.3	25.7	24.7
T3 ($\ln[CO_2]$)	M	6.25	6.63	6.27	6.31	6.32
	F	6.21	6.64	6.30	6.34	6.36
T4 (ln[RSP])	M	2.33	2.37	2.31	2.17	2.26
	F	2.25	2.48	2.17	2.31	2.26
T6 (temp. change °F)	M	1.5	0.7	1.9	1.7	1.6
	F	1.8	1.0	2.2	1.6	1.8

Note: Sample sizes upon which the above means are based are given below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Range of Sample sizes:	M	17	23	83-86	56-57	187-191
	F	16	35	98-100	34-39	185-192

TABLE 5-4. SUMMARY OF OVERALL DISTRIBUTIONS OF VARIABLES IN VOC DATA FILE

Variable	No. UICs	Min	Max	Mean	Std. Dev.	Geom. Mean	Geom. Std. Dev.
V1	56	1.36	3.68	2.40	0.74	11.0	2.1
V2	56	2.49	4.38	3.11	0.45	22.4	1.6
V3	56	-1.83	2.07	0.68	0.81	2.0	2.2
V4	56	-1.10	1.95	-0.16	0.57	0.9	1.8
V5	56	1.61	4.00	2.29	0.75	9.9	2.1

TABLE 5-5. MEANS OF VARIABLES IN VOC DATA FILE, BY GENDER AND WORKSTATION LOCATION

Variable	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
V1	M	1.79	2.29	2.16	2.28	2.19
	F	1.71	2.30	2.45	2.56	2.40
V2	M	3.35	4.36	3.02	2.97	3.09
	F	3.09	4.33	2.98	2.93	3.14
V3	M	-0.22	2.02	0.95	0.50	0.75
	F	-0.14	1.80	0.65	0.36	0.67
V4	M	-0.73	0.75	-0.25	-0.28	-0.22
	F	-0.57	0.61	0.00	-0.35	-0.03
V5	M	2.33	2.38	2.15	2.28	2.25
	F	2.02	2.12	2.38	2.20	2.29

Note: Sample sizes upon which the above means are based are given below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Sample sizes:	M	5	4	46	37	100
	F	8	14	70	24	118

Definitions of Variables:
V1=ln[1,1,1-trichloroethane + tetrachloroethylene concn. ($\mu g/m^3$)]
V2=ln[benzene + trichloroethylene + toluene + ethylbenzene
+ o- and p-xylene + n-octane concn. ($\mu g/m^3$)]
V3=ln[methylene chloride concn. ($\mu g/m^3$)]
V4=ln[total VOCs (in ppmC)]
V5=ln[RSP concentration ($\mu g/m^3$)]

TABLE 5-6. VOLATILE ORGANIC AND MICROBIOLOGICAL VARIABLES

VARIABLE	DESCRIPTION
V1	ln[total of concentration for 1,1,1-trichloroethane and tetrachloroethylene]
V2	ln[total of concn. for benzene, trichloroethylene, toluene, ethylbenzene, o- and p-xylene, n-octane]
V3	ln[methylene chloride concn.]
V4	ln[total VOCs (in ppmC)]
V5	ln[RSP concentration]
V6	log[total fungi]
V7	log[total human source bacteria]
V8	log[total thermophiles]
V9	log[fungi #1 count]
V10	log[total of fungi #9,10,11 counts]
V11	log[total of fungi #5,6 counts]
V12	log[bacteria #7 count]
V13	log[total of bacteria #2,4 counts]
V14	log[bacteria #1 count]

Index to fungi:

1= Cladosporium	7=Stemphyllium
2=Torulopsis/Rhodotorula	8=Rhizopus
3=Sporobolomyces	9=Stachybotrys
4=Mucor	10=Paecilmyces
5=Penicillium	11=Verticillium
6=Aspergillus	12=Phoma
	13=not identified

Index to human source bacteria:

1=Staphylococcus	7=Micrococcus
2=Bacillus	8=Acinetobacter
3=Serratia	9=Aeromonas
4=Pseudomonas	10=Proteus
5=Micropolyspora	11=Klebsiella
6=Streptococcus	12=Alcaligenes
	13=not identified

Index to thermophiles:

1=Micropolyspora (Mps)	2=not identified

NOTE: Units for microbiological measurements are log (base 10) of colony-forming units per cubic meter of air.

NOTE: Zero values for microbiological measurements were replaced by 0.01 CFU/m^3 prior to summation and log transformation.

TABLE 5-7. SUMMARY OF OVERALL DISTRIBUTIONS OF VARIABLES IN MICROBIOLOGICAL DATA FILE

Variable	No. UICs	Min	Max	Mean	Std. Dev.
V6	56	-0.89	2.95	0.98	0.62
V7	56	0.71	2.27	1.62	0.30
V8	56	-1.70	2.15	0.84	0.95
V9	56	-2.00	1.68	-0.40	1.43
V10	56	-1.52	1.53	-1.32	0.66
V11	56	-1.70	2.95	-0.45	1.36
V12	56	-2.00	1.82	-0.51	1.52
V13	56	-1.70	1.49	-0.95	1.17
V14	56	-2.00	1.89	0.94	0.90

Definitions of Variables:

V6 = log[total fungi]
V7 = log[total human source bacteria]
V8 = log[total thermophiles]
V9 = log[fungi #1 count (cladisporium)]
V10 = log[total of fungi #9,10,11 counts (stachybotrys, paecilmyces, verticillium)]
V11 = log[total of fungi #5,6 counts (penicillium, aspergillus)]
V12 = log[bacteria #7 count (micrococcus)]
V13 = log[total of bacteria #2,4 counts (bacillus, pseudomonas)]
V14 = log[bacteria #1 count (staphylococcus)]

TABLE 5-8. MEANS OF VARIABLES IN MICROBIOLOGICAL DATA FILE, BY GENDER AND WORKSTATION LOCATION

Variable	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
V6	M	0.92	1.09	0.99	1.19	1.03
	F	1.13	0.82	0.69	1.21	0.84
V7	M	1.03	1.88	1.53	1.68	1.58
	F	1.41	1.61	1.64	1.73	1.64
V8	M	0.94	1.53	0.80	0.60	0.81
	F	0.85	1.05	0.73	0.83	0.81
V9	M	0.12	0.78	-0.52	-0.51	-0.47
	F	-0.20	0.43	-0.73	-0.09	-0.43
V10	M	-1.52	-1.52	-1.23	-1.52	-1.39
	F	-1.52	-1.52	-1.24	-1.52	-1.35
V11	M	-1.16	0.21	-0.90	-0.73	-0.87
	F	0.00	0.33	-0.53	-0.32	-0.37
V12	M	0.67	1.42	-0.57	-1.38	-0.85
	F	-0.20	0.99	-0.55	-1.11	-0.48
V13	M	-1.70	-1.70	-0.97	-1.04	-1.12
	F	-1.70	-1.70	-1.08	-0.57	-1.10
V14	M	-0.30	1.18	0.98	0.21	0.66
	F	0.95	1.09	1.11	0.71	1.02

Note: Sample sizes upon which the above means are based are given below. Two rooms in Waterside Mall Complex were not assigned a "high" or "low" health status code. Because the column labeled "overall" includes data for these rooms, the sample sizes for the other columns do not add to the "overall."

	Sex	CC	FC	WC_HIGH	WC_LOW	OVERALL
Sample sizes:	M	5	4	46	37	100
	F	8	14	70	24	118

6. RESULTS RELATING SURVEY DATA TO ENVIRONMENTAL MONITORING DATA

6.1 Analytical Objectives

A prime objective of the EPA Indoor Air Quality Study was to establish whether the employee-reported health, comfort, odor, mood state, and air quality measures are related to the environmental monitoring results. The following notation is used to generically describe the dependent (outcome) variables:

H = indicators for clusters of employee-reported health symptoms (H1-H16 defined in Section 4.2.1)

C = indicators for clusters of employee-reported comfort concerns (C1-C4 defined in Section 4.2.2)

O = indicators for clusters of employee-reported odors noticed (O1-O8 defined in Section 4.2.3)

A = indicators of employee-reported perception of overall air quality (A1 and A2 defined in Section 4.2.4)

M = employee-reported mood-state scales (M1-M3 defined in Section 4.2.5)

The independent variables can be similarly defined:

T = temporal measures (see Table 5-1)

V = VOC concentrations, integrated RSP, and microbiological measurements (see Table 5-6)

W = workstation data (see Table 4-8)

P = personal/medical data (see Table 4-9)

In each case, the W and P variables are confounders, which for the most part are associated with individuals. In contrast, the T and V variables are associated with monitoring locations.

Based upon the objectives indicated, a number of generic models can be postulated (Table 6-1). This type of generic representation is a convenient way of representing the various hypotheses of interest, that is, the specific analytical objectives. For example, the first model can be interpreted as "Is there an association between (one or more of) the temporally measured variates and a given health symptom, after controlling for workstation and personal characteristics?" However, an association between a variate X and an outcome Y does not necessarily imply a cause and effect relationship.

6.2 Analytical Approach

6.2.1 Basic Model Forms and Estimation Procedures

To determine if the various environmental measures are associated with the previously specified outcome variables, statistical models must be developed. Two major types of models were considered:

1) ordinary multiple regression models that relate continuous outcome variables to the independent variables, and

2) logistic multiple regression models that relate binary outcome variables to the independent variables.

6.2.1.1 Regression Models

In the first type of model, the mood states serve as the dependent variables. In this case, the model used to characterize the relationship ta kes the form

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_r X_r + \epsilon$$

where Y denotes the specific outcome variable (e.g., M1, M2, or M3); X1, X2, etc., denote the various independent variables (e.g., the T, V, W, and P variates previously defined) in the given model, the ßs denote parameters to be estimated, and ϵ denotes an error term. In other words, after adjustment for the other independent variables, the expected value of Y is assumed to be linearly related to each X variate included in the model specification. For such models, the variability in the error term is generally assumed to be homogeneous. As a result, ordinary least squares (OLS) is typically employed as the method for estimating the unknown model parameters (i.e., the ßs). Tests of hypotheses concerning the ßs assume also that the parameter estimates are approximately normally distributed. Such tests are therefore only approximate. Typically, the tests concern whether a particular ß parameter is or is not zero (i.e., whether the corresponding X variate is or is not related to the outcome measure). Since parsimonious models are usually desirable, a revised model that excludes the extraneous X terms (i.e., those terms having ßs not significantly different from zero) would then typically be used (and reestimated).

The estimates of the ß coefficients represent the estimated change that occurs in the outcome measure because of a change of one unit in the independent variable. For those X variates that take on only 0 and 1 values, the associated ß estimate represents the incremental change in going from the 0 category to the 1 category. Estimated standard errors for the estimated ßs can be used to provide approximate confidence intervals for the ßs. For instance, a 99% confidence interval for β_i is given by

$$\text{est}(\beta_i) \pm 2.576[\text{standard error of est}(\beta_i)].$$

Such an interval is said to cover, with approximately 99% confidence, the β_i parameter value.

6.2.1.2 Logistic Regression Models

The second type of model offers a way of relating a binary outcome variate to a given set of independent variables. Let Y be a variable taking on values of 0 and 1 only (e.g., one of the H, C, O, or A variables previously defined). Then the logistic model assumes that p, the (true) probability that Y takes on a value of 1, can be modeled as

$$p \equiv Pr[Y=1] = 1/\{1 + \exp[-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_r X_r)]\},$$

or, equivalently, that the expected value of the (natural) logarithm of the odds ratio, $\ln[p/(1 - p)]$, can be represented as

$$\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_r X_r.$$

Maximum likelihood estimation is usually invoked to estimate the ßs in the model. Hypothesis tests regarding the ßs can be used to address questions such as "Are different levels of the X variate associated with different proportions, p?" Since such tests rely on the assumption that the estimated parameters are asymptotically normally distributed, they should be regarded as approximate. Predictions of incremental changes in odds ratios can be obtained by exponentiating the estimated ßs. If the ß is associated with a continuous X variate such as age, then $\exp[\beta]$ is interpreted as the factor by which the odds ratio is estimated to change when a change of one unit in X occurs. If X is a binary variable, then $\exp[\beta]$ is the relative odds ratio for category 1 versus category 0. To represent the effect of tertiary variables, two binary variables (e.g., P3A and P3B) are employed in the model. The interpretation in this case is illustrated below (using P3 [pay grade category]).

P3=1 ==> P3A=0 and P3B=0

P3=2 ==> P3A=1 and P3B=0

P3=3 ==> P3A=0 and P3B=1

The coefficient on P3A is the incremental difference between the first and second category, and the coefficient on P3B is the incremental difference between the first and third category. That is, the first category is the baseline category, and the reported odds ratios are relative to that group. In a manner similar to the OLS regressions, estimated standard errors for the estimated ßs can be used to provide approximate confidence intervals for the ßs. Exponentiation of the end points of the 99% confidence interval -- that is, $\exp\{est(\beta_i) \pm 2.576[\text{standard error of } est(\beta_i)]\}$ -- provides an interval that covers, with approximately 99% confidence, the true relative odds ratio (in the case of a dichotomous X variable) or the per-unit increment in the odds ratio (in the case of a continuous X variate).

6.2.2 Choice of Dependent Variables

The initial candidate set of 33 outcome variables, as described in Chapter 4, consisted of 16 health symptom measures, four comfort concern measures, three mood-state measures, eight odor measures, and two air quality ratings. After the study objectives and the descriptive results were reviewed, several of the variables were dropped -- namely, humid air (C3) and all of the odor variates except cosmetic odors (O2). These were eliminated because of the low prevalence of positive responses. The small sample size is not sufficient for adequate modeling, since there are so few individuals in any one of the categories. The same problem potentially exists for some of the other variables (e.g., flu-like symptoms (H4), headache/nausea (H6), chest symptoms (H8), chills/fever (H12), dizziness/light-headedness (H15), dry/itchy skin (H16), and poor air quality (A2)); attempts were nevertheless made to model these variates.

6.2.3 Modeling Strategy

6.2.3.1 Strategy for Health Symptoms Outcomes

Based upon the results shown in Chapter 4 which indicated large gender differences for some of the outcome measures and different male and female distributions for other variables (e.g., type of workstation), a decision was made to develop separate models for males and females. This is equivalent to an overall model in which gender is included and in which gender is allowed to interact with each of the other independent variables appearing in the model. The decision to use separate gender models was supported by the results of the linear modeling exercise, in that gender interactions were often apparent (i.e., only rarely were similar significant effects evidenced for both males and females).

A basic modeling strategy was developed for each of the outcome variables. Figure 6-1 depicts the strategy for the health symptom outcome measures.

The first step was to use stepwise linear regression to determine which of the confounding variates were pertinent. The confounding variables were workstation characteristics (Table 4-8) and personal/medical characteristics (Table 4-9). The paired variates associated with workstation, pay grade, and smoking status were treated simultaneously in the stepwise procedure, so that both members of the pair either entered or failed to enter the model. The temporal variables (T1, T2, T3, T4, T6) were included in the model and were not allowed to be dropped at this stage, because testing hypotheses concerning these variables was a primary objective. For each health symptom measure (e.g., nonspecific IAQ [H1]), the stepwise procedure was used to arrive at a model for males and a model for females. Results of applying the stepwise procedure are summarized in Section 6.3.1

The second step involved estimation of a logistic regression model that contained as independent variables the five temporal variables, as well as those workstation (W) and personal (P) variables that were identified by the stepwise regression procedure as statistically significant at the 0.10 level of significance in either the male or the female model. This model is designated as Model A in Figure 6-1. The purpose of this model is to test for the effects of the temporal variables on the reported health symptoms.

The next step involved building a more parsimonious model, upon which subsequent models could be based. This model (Model B in Figure 6-1) contained the subset of the temporal, workstation, and personal variables in Model A that were found to be statistically significant in either the male or female model. This model was also fit via logistic regression methods.

Model C was then developed. Model C added four variables [hot/stuffy air (C1), dry air (C2), cool/drafty air (C4), and cosmetic odors (O2)] to Model B. This step examined the association between employee-reported comfort and odor variables and the health symptom outcome measures. The comfort and odor variables were not included as independent variables in Models A or B because those models were designed to test for effects of the objective measurements on health. Comfort and odor perceptions are subjective variables that depend on temperature and other measurable parameters. However, it is of interest to explore whether health effects could be predicted from a knowledge of comfort complaints; Model C was therefore used to test this hypothesis. However, since the rooms at which monitoring was performed were selected partly on the basis of matching comfort and odor complaints, the applicability of Model C may be limited.

In parallel with Model C, the strategy called for a fourth type of model -- Model D -- to be estimated. This model augmented the VOC and microbiological variables (V1-V14) onto the terms in Model B. Its purpose was to test for the effects of these measures on the health outcomes. As indicated in section 4.1.1 and Table 4-1, a significant reduction in sample size occurred for Model D estimation as contrasted with the other types of models. The VOC and microbiological data needed for Model D were obtained for only 56 UICs as compared to 100 UICs for the other models. Because of this reduced sample size and the larger number of independent variables, many of which were intercorrelated and exhibited highly skewed distributions, a number of problems were encountered in the estimation of the parameters for model D. A revised model was used, subsequently referred to as Model D', which excluded the microbiological variables V9 through V14. This tended to reduce the estimation difficulties.

In terms of testing for associations, the strategy described above obviously places the highest priority on testing of the temporal measures. This was regarded as appropriate for two reasons. One was the aforementioned problem of including the employee-reported comfort and odor variables. The second was the large reduction in sample size when the V variables were included. Without this problem, it would have been logical to have developed a single model involving W, P, T, and V variables from the outset.

6.2.3.2 Strategies for Other Outcomes

Modeling strategies similar to that described above were employed for testing associations with the other types of outcome variables. In particular, the strategy for perceived air quality variables (A1 and A2) was identical to that shown for the health variates. The cosmetic odors and the mood-state variates were also treated the same, except that Model C was omitted. Ordinary regression, rather than logistic regression, was employed for the mood-state variables since they were considered to be continuous. The comfort variables (C1, C2, and C4) were modeled only up through the Model B step. As a candidate independent variable in the models for comfort, the O2 variate was added and treated like one of the temporal variates (i.e., it was forced into the stepwise regressions and the Model A logistic regressions).

6.3 Summary of Modeling Results

6.3.1 Stepwise Regression Results: Selection of Relevant Confounders

As indicated in Section 6.2.3, the initial step of modeling for each dependent variable consisted of performing a stepwise regression to decide which of the potential confounders (i.e., workstation and personal variables) should be retained in the model. The temporally measured variates (T1-T4 and T6) were forced into the stepwise regressions. Actually, four stepwise regressions per outcome variable were conducted, because separate regressions were performed for males and females and because two different criteria were employed for entry and retention of the workstation (W) and personal (P) variables. First, the stepwise procedure (using SAS)[6] was executed by using a 0.10 significance level for initial entry of a variable into the model and for retention of such a variable in the model (after inclusion of other variables). Then the procedure was invoked again, but with a 0.05 level for entry/retention in the model. Those workstation and personal variables passing the second criterion are identified with an "M" (males) or "F" (females) in Table 6-2. Those passing the first (i.e., statistically significant at the 0.10 level) but not the second criterion are identified with an "m" or "f." Variables associated with tertiary factors -- namely, type of workstation (W2A and W2B), pay grade (P3A and P3B), and smoking status (P11A and P11B) -- were treated simultaneously (i.e., both members of the pair were either included in a model or excluded from it).

It should be noted that all of the workstation and personal variables defined in Tables 4-8 and 4-9 were allowed as candidate explanatory variates in

[6]SAS is the registered trademark of SAS Institute, Inc., Cary, NC.

the stepwise regressions. However, for some of the outcome measures, P12A, P12B, and/or P13 (glasses or contacts at work, contacts at work, and asthma, respectively) had been previously considered and rejected a priori as potential confounders. (In particular, P12A and P12B were not considered viable predictors for outcomes H4, H5, H7, H8, H12, H13, H14, H15, H16, C1, C2, C4, or O2; similarly, P13 was not considered a viable predictor for H5, H6, H9, H10, H13, H14, H15, or H16.) As noted in Table 6-2, these variables were not retained in the subsequent models (Models A, B, etc.), even though they were sometimes found by the stepwise procedure to be statistically significant (these cases are highlighted by asterisks in Table 6-2).

After the stepwise regression results were reviewed, the decision was made to use 0.10 as the significance level criterion for retaining a workstation (W) or personal/medical (P) variate in the next step of the modeling strategy. That is, with the exceptions noted in the prior paragraph, the candidate confounders for Model A (see Figure 6-1) consisted of those variates identified with either a small or capital "m" or "f" in Table 6-2. This 0.10 criterion, in contrast to a more stringent criterion such as 0.05 or 0.01, was adopted because of the recognition that significance levels emanating from this stepwise approach must be regarded as approximations -- because of the lack of strict adherence to underlying assumptions. For instance, most of the outcome variates are dichotomous-valued, but the stepwise procedure, which is founded on classical OLS methodology, treats the outcome measures as continuous variables having a homogeneous error variance structure. Note that use of the 0.10 criterion permits nonsignificant independent variables to be declared as significant about 10% of the time (false positives). For example, if we exclude the first five dependent variables because of their redundancy with H6 through H16, then there are 20 dependent variables. Multiplying this times the 20 independent variables and 2 sexes results in 800 hypothesis tests concerning the terms in the models. By chance, then, we would expect about 80 of these tests to indicate significance, even if none of the terms were pertinent predictors. Among the last 20 dependent variables, there are actually 111 terms that were found to be significant at the 0.10 level or the 0.05 level. Many of the terms indicated for inclusion in Model A are probably unnecessary (i.e., false positives).

The results in the table also support the notion of building separate models for males and females. Only rarely was significance achieved for both genders. Even in those cases where an effect was identified for both, the direction of the effect was sometimes opposite. Even though separate models were fit for males and females, we elected to use a common set of terms for both genders (i.e., the union of those terms found significant at the 0.10 level) in order to facilitate comparisons among the models (e.g., an estimated odds ratio for a given effect would thus be available for both sexes).

6.3.2 Hypothesis Testing Results

A summary of the hypothesis testing results is given in Appendix D. Detailed results showing the parameter estimates and associated statistics for each of the models fitted are presented in Appendices E, F, G, and H -- for Models A, B, C, and D', respectively. This subsection abstracts information from these appendices and furnishes a concise presentation of the major results. Detailed discussions of the results shown in this subsection are presented in the remaining portions of this chapter.

Table 6-3 summarizes the major hypothesis testing results that address the objectives listed in Table 6-1. The table indicates, for each dependent variable, the results for Model A (tests for effects of temporally measured variates [T1-T4 and T6]), Model C (tests for comfort and odor effects [O2, C1, C2, and C4]), and Model D' (tests for variables derived from the VOC data file [V1-V5], and for microbiologicals [V6-V8]). Tabular entries M or m indicate significance of an effect at the 0.01 or 0.05 significance level, respectively, for males. Entries F or f are defined similarly for the female models. An attached negative sign indicates that the estimated coefficient for the specific model term was negative (i.e., a negative association between the independent and dependent variable).

The rightmost part of Table 6-3 provides information regarding the adequacy of the logistic regression models. The significance of the likelihood ratio statistic (LRS) is indicated. A plus sign (or an "N") indicates that the model tends to overfit the data (i.e., too many parameters); these cases occur when the dependent variable exhibits a low prevalence rate (say, less than 12%). Adequate modeling of such a variable requires a larger sample size than that available in this study, and interpretation of the modeling results, if attempted at all, should therefore be made with caution. A minus sign in this part of the table indicates that the model does not explain as much of the variability as might be expected and that other predictors might be found that would account for more of the variation. With this caveat, the presence of a minus sign should not adversely affect the interpretation of the modeling results.

The results of Table 6-3 indicate that very few significant effects of the temporal, VOC, and microbiological measured variates (T and V variables) on the health, comfort, odor, air quality, or mood-state measures were observed. In fact, at the 0.01 level of significance, only three effects for males and four effects for females were detected.[7] Among the temporal, VOC, and microbiological variables, only two significant effects common to both males and females were found: (1) a (negative) temperature (T1) effect for cool/drafty air (C4) (0.01 level), indicating that employees reported the air to be too cool and drafty when measured temperatures were low (relative to other monitoring locations); and (2) a (negative) total fungi (V6) effect for throat symptoms

[7]For hypothesis testing, the use of a 0.01 rather than a 0.05 significance level is recommended, because of the large number of tests being performed (i.e., there will be fewer false positives).

(H10) (0.05 level), indicating that employees reported a higher prevalence of throat symptoms when total fungi levels were low.

The Model C results show a number of strong associations between the outcome measures (health and air quality) and the comfort and odor measures. At least for the comfort measures, the strength of these associations may be partly due to the manner in which the environmental monitoring sites were selected. As described in Section 3.1, the initial design called for including sites with high prevalences of both health and thermal comfort complaints, as reported in the first questionnaire, and to include sites with low prevalences of both health and thermal comfort. Had this design been explicitly carried out, and if respondents to the second questionnaire maintained the same pattern of complaints as in the first questionnaire, then the design itself would have induced an apparent association between thermal comfort and health measures, even if no such associations existed for the overall employee population. Actually, this design was only partly implemented; it was not used at all for the Crystal Mall and Fairchild buildings; and at Waterside Mall complex, the health complaint index was given priority over the comfort index. Hence, even at Waterside Mall, some low-discomfort/high-health-complaint areas and some high-discomfort/low-health-complaint areas were included. Nevertheless, at Waterside, the high-discomfort/high-health-complaint areas and the low-discomfort/low-health-complaint areas were overrepresented.

In addition to the major hypotheses of interest, the models furnished information on which confounders were most relevant for each outcome variable. This information is presented in summary form in Table 6-4. Although this information is given only for Model B, which was derived from Model A, the results for the confounders in the other model types were generally similar to those shown in this table, as can be seen in Appendix D.

The results summarized above are described more fully in the subsections that follow. In that discussion, reference to both 0.01 and 0.05 significance levels is made. For the reasons previously stated, more credence should, we believe, be given to effects significant at the 0.01 level.

6.4 Discussion of Modeling Results: Health Symptoms

The employee-reported health symptom cluster outcome variables were evaluated in Model A for the temporal measures (temperature, humidity, etc.). Model C evaluated the effects of odor and comfort variables on the health symptom clusters.

6.4.1 Discussion of Models A and C

6.4.1.1 Nonspecific Indoor Air Quality Symptoms (H1)

This group of symptoms included headache, unusual fatigue, and sleepiness. No significant effects for the temporal variates were found. Males showed a significant decrease in symptoms with age ($p<0.01$). Men who wore glasses or contact lenses showed a higher prevalence of symptoms ($p<0.01$). For females, no independent variables were significant at the 0.01 level, although females with asthma showed an increase in symptoms ($p<0.05$).

When the comfort and odor indices were added as independent variables (Model C), the three variables above retained their significant status, providing some indication of the stability of the results. For females, reports of hot and stuffy air and reports of increased odor of cosmetics, etc., were significantly ($p<0.01$) associated with these general indoor air quality symptoms. At the 0.05 level of significance, both men and women reported that cold or drafty air was also associated with increased prevalence of headache and fatigue. At this same level of significance, females reporting dry air had more symptoms.

6.4.1.2 Mucous Membrane Symptoms (H2)

This group of symptoms included eye, nose, and throat symptoms. Again, none of the five temporal variables achieved the 0.01 level of significance, nor did any of the personal and workstation factors, for either men or women. At the 0.05 level for men, hours spent at a VDT screen and an external stress index both were associated with increased symptoms. At this level for women ($p<0.05$), high pay and low job satisfaction were both associated with increased symptom frequencies. The first result appears to be at odds with intuition and with the results of previous building studies. It should be noted that the models for both men and women have extremely low significance levels for the likelihood ratio statistic, which indicates that the models explain very little of the observed variation.

When odor and comfort variables were added (Model C), complaints of dry air were highly significantly ($p<0.01$) associated with increased mucosal membrane complaints among men. Also among men, the external stress index continued to be significant at the 0.05 level, but the variable measuring time spent at a VDT dropped below the 0.05 criterion for significance. For women, hot and stuffy air was associated with mucosal membrane complaints at $p<0.01$, while dry air was significant at $p<0.05$. Odors of cosmetics and body odor were associated ($p<0.05$) with increased symptoms among women. The pay grade and job satisfaction variables continued to be significant at $p<0.05$.

6.4.1.3 Combined General IAQ and Mucous Membrane Symptoms (H3)

This variable is simply the union of the first two health variables. In model A, younger males reported more symptoms ($p<0.05$). Time spent at a VDT was associated with more symptoms in males ($p<0.05$). Females in open work areas reported fewer symptoms ($p<0.05$). Those indicating role conflicts reported more symptoms.

In Model C, males complaining of dry air reported more symptoms ($p<0.01$). Time spent at a VDT continued to be significant at $p<0.05$ for males, but age was no longer significant. Females reporting body and cosmetic odors reported more symptoms, as did those complaining of hot and stuffy air ($p<0.01$). Females at open work areas reported fewer symptoms ($p<0.05$), and those reporting lower job satisfaction reported higher health complaints ($p<0.05$). Finally, women reporting dry air also reported higher symptoms ($p<0.05$).

6.4.1.4 Flu-Like Symptoms (H4)

This group of symptoms included fever, cough, aching muscles or joints, wheezing, shortness of breath, and chest tightness. Model A for males had an LRS significance exceeding 0.99, indicating a poor overall fit of the model; this was primarily due to the low prevalence of the symptom (14.7% of the males). The model for females showed no effects of the five temporal variables nor of any of the personal or work-space variables at the chosen level of 0.01 significance. At the 0.05 level, an increased daily change in temperature and a measure of role ambiguity were both associated with increased symptom frequency.

Model C for males continued to have an unacceptable LRS significance level (>0.99). Model C for women indicated that areas with higher levels of RSP were associated with higher frequencies of wheezing, cough, and other symptoms associated with dusty areas. This RSP variable had shown only marginal significance ($p<0.10$) in Model A. Also at the 0.05 level, females' complaints that the air was too cold and drafty were associated with increased flu-like symptoms.

6.4.1.5 Back, Neck, and Shoulder Pain (H5 and H13)

This group of symptoms included back pain, neck and shoulder pain, and pain/numbness in hands or wrists (H5). H13 included all of these plus muscle and joint pain. These symptoms are characteristics not normally associated with air quality and therefore would not be expected to show associations with temperature, humidity, etc. In fact, no associations with any of these variables were noted at the 0.01 level of significance. For females, temperature and CO_2 levels showed effects for H5 at the 0.05 level, but with opposite signs (increased symptom frequencies were associated with increasing temperature and decreasing CO_2). Because these two variables were collinear, it is likely that the effects are spurious. For males, new carpet was associated with increased symptoms at the 0.05 level, but for females, new carpet was associated with decreased symptoms (H5 at the 0.10 level, H13 at the 0.05 level). Females working in open areas were less likely to report pain than those in enclosed offices, again at the 0.05 level of significance. Males feeling less control over their jobs reported higher frequencies of these symptoms ($p<0.05$ for H5; $p<0.10$ for H13). Males reporting higher workloads reported higher symptom frequencies ($p<0.10$ for H5; $p<0.05$ for H13).

In Model C for males, the significance level associated with the LRS was 0.9898, indicative of model overfitting (too many parameters for too few observations). With that caveat, increased symptom frequency was associated at a high level of significance ($p<0.01$) with perceptions that the air was too dry. At a lower level of significance ($p<0.05$), more complaints of pain were received from areas with new carpet. For women, no variables appeared at the 0.01 level of significance. At the 0.05 level, four variables showed associations with pain symptoms: Women in closed offices were more likely to report symptoms than women in open areas; women in areas with new carpet reported fewer pain symptoms than those in areas without new carpet; women in areas that were perceived to be cold and drafty reported more symptoms of muscle pain; and women reporting higher odor levels also reported higher symptom frequencies.

6.4.1.6 Headache and Nausea (H6)

These symptoms showed no associations with the temporal variables at the 0.01 level of significance for either males or females. Younger males and those with high workloads were more likely to report symptoms ($p<0.05$). Increased workload was also associated with these symptoms among females, together with increased time spent at the workstation ($p<0.05$).

When the comfort variables were added (Model C), the model for men became overspecified (LRS = 0.9999) because of the low prevalence of the symptoms (12% of the males). The model for women showed a strong association ($p<0.01$) of headache and nausea with complaints of hot and stuffy air and reports of odor. Among the 91 females not reporting hot and stuffy air, for instance, only eight (9%) reported the H6 symptoms; among the 111 who did report hot and stuffy air, 45 (or 41%) of the females reported headache or nausea. At a lower level of significance, the increased workload and increased time at the workstation continued to be associated with headache and nausea among women. Areas for which females reported dry air (variable C2) were also associated with these symptoms ($p<0.05$).

6.4.1.7 Nasal Symptoms and Cough (H7)

Although CO_2 showed a strong association with these symptoms among males, the collinearity of CO_2 and temperature (which showed an effect in the opposite direction, with $p<0.05$) makes it impossible to conclude that a true association has been observed. Time spent at a VDT (variable W6) and a measure of external stress (variable P10) were both associated with increased symptom frequency ($p<0.01$) among males. Pay grade also appeared to be associated with symptom prevalence, with males in intermediate levels (GS9 through GS12, or equivalent) exhibiting lower reported symptom frequencies than those below GS9 ($p<0.05$). The model for females explains only a small amount of variability (LRS = 0.01), and only two variables are indicated as significant at the 0.05 level of significance in Model A: (1) a negative association of reported symptom prevalence with P8, the use of abilities scale, and (2) a negative association of symptom prevalence with P11B, heavy smokers versus nonsmokers.

When the comfort and odor variables were considered, both the W6 and P10 variables continued to be significantly associated with males' reported symptom frequencies ($p<0.01$). Among the comfort and odor variables, only the dry air variable was directly associated ($p<0.05$) with symptoms for males. Among women, areas perceived as hot and stuffy were again associated with an increased symptom frequency ($p<0.01$): a 56% prevalence among those reporting hot or stuffy air, as compared to 28% among those who did not. Interestingly, areas perceived as cold and drafty were also associated with symptoms, although at a lower level of significance (a 59% rate of symptom reporting among females who complained of cold or drafty air, as compared to a 37% rate among the others). As was found in Model A, women who were more satisfied with the utilization of their abilities were less likely ($p<0.05$) to report symptoms.

6.4.1.8 Chest Tightness, Shortness of Breath (H8)

Because of the rarity of these symptoms (14 of 183 males, or 7.7%; 16 of 190 females, or 8.4%), meaningful models for both model types A and C could not be developed.

6.4.1.9 Eye Irritation (H9)

For this cluster of four symptoms, none of the temporal variables achieved a 0.01 level of significance. For males, the external stress index was associated with increased symptom frequency at the 0.01 level. Females in open areas were less likely than those in enclosed offices to report eye irritation ($p<0.01$). At a lower level of significance ($p<0.05$), women with contact lenses reported more symptoms and women in areas with new glued-down carpet reported fewer symptoms.

When comfort variables were considered (Model C), both males and females reporting hot, stuffy air also reported more eye symptoms at the 0.01 level of significance. For males, other variables appearing at this level of significance were the external stress index and problems with dry air. Females wearing contact lenses at work also reported significantly ($p<0.01$) higher symptom frequencies. Females in open areas reported significantly ($p<0.01$) lower symptom frequencies than women in enclosed offices.

On the basis of a significance level of 0.05, males reporting drafty or cold conditions had higher symptom frequencies. For females at this level of significance, time spent at the workstation was associated with increased eye irritation, as was working in areas with perceived dry air ($p<0.05$). Women reporting lower job satisfaction reported higher levels of eye irritation.

6.4.1.10 Throat Symptoms (H10)

These symptoms included sore throat, dry throat, and hoarseness. No temporal or other variables achieved the 0.01 level of significance for this set of symptoms. For males, a measure of role conflict was associated with increased symptom frequencies ($p<0.05$).

However, when the comfort variables were added (Model C), a very strong association ($p<0.01$) was noted between complaints of throat symptoms and complaints of dry air reported by men. Among women, the effect of dry air was only marginal ($p<0.10$). Among men, the measure of role conflict was strongly ($p<0.01$) associated with increased symptom frequency, while the perception of odors was negatively associated ($p<0.05$) with throat symptoms.

6.4.1.11 Fatigue and Sleepiness (H11)

None of the Model A variables were associated with these symptoms at the 0.01 level of significance. Time spent at the workstation was associated with increased symptom frequency for men ($p<0.05$). Temperature change during the day was associated ($p<0.05$) with increased symptom frequency among women. Younger women reported more fatigue and sleepiness symptoms than older women ($p<0.05$).

When comfort variables were added (Model C), cold and drafty air was highly significantly ($p<0.01$) associated with fatigue among men, whereas hot and stuffy air was associated with fatigue among women ($p<0.01$). Time spent at the workstation continued to be significantly associated ($p<0.05$) with fatigue and sleepiness among men, although it again did not appear significant among women. Younger women, as in Model A, reported significantly more fatigue and sleepiness symptoms than older women. Women with asthma and women who reported cold and drafty air in their workplace were also more likely to report fatigue.

6.4.1.12 Chills and Fever (H12)

Models of types A and C could not be developed for these symptoms for either men or women. This was due primarily to the low symptom frequencies reported -- namely, 13 of 183 males (7.1%), and 20 of 190 females (10.5%).

6.4.1.13 Central Nervous System Symptoms (H14)

Increased levels of respirable particles were associated with increased frequency of feeling depressed or nervous and difficulty remembering among males ($p<0.05$). Since RSP levels were extremely low and would not be expected to affect the central nervous system, this association may be spurious. Although for females no variable achieved the 0.01 level of significance, the use of chemicals (including VOCs) at the workstation was associated with high symptom frequency ($p<0.05$). This finding provides some support to the hypothesis that increased levels of VOCs at low absolute concentrations found in buildings can have deleterious effects on concentration, memory, and mood.

A perception of increased workload on the part of females and the role conflict index for males also showed associations with increased symptom frequency at the 0.05 level.

Upon the addition of the comfort and odor variables, a highly significant ($p<0.01$) relationship was noted for females between increased reports of odors (including cosmetics) and increased frequency of central nervous system symptoms. This is possibly an indication of a lower odor threshold accompanying increased sensitivity to chemicals. Women who reported using chemicals at their workstation were also more likely to report central nervous system symptoms ($p<0.05$). Less powerful relationships were noted between central nervous system symptoms and complaints about air quality (either too hot and stuffy or too cold and drafty). Women who perceived high workloads were also more likely to report these symptoms.

Model C for males resulted in no new relationships, although the strong relationship with RSP concentrations again appeared at the 0.01 level of significance.

6.4.1.14 Dizziness (H15) and Dry/Itchy Skin (H16)

Because of low symptom frequencies, neither Model A nor Model C (for men or women) was acceptable for either of these symptoms. Only 8 of 183 males (4.4%) and 13 of 190 females (6.8%) reported dizziness. Seventeen of 183 males (9.3%) reported dry skin, as compared to 28 of 190 females (14.7%).

6.4.2 Discussion of Model D'

In Model D', the subjective comfort and odor indices of Model C were replaced by the objective measures of environmental variables; the significant temporal measures of Model A and the relevant workplace and personal/medical confounders (i.e., those appearing in Models B and C) were also retained. The newly included variables consisted of four variables dealing with volatile organic chemicals (chlorinated solvents, aromatics, methylene chloride, and total VOCs), an integrated measure of RSP, and three variables dealing with microbiological aerosols (total fungi, total bacteria, total thermophiles). Explicit definitions are given in Table 5-6. Since these measurements were made at a smaller number of sites than the temporal measurements, the data set has about half the observations and therefore the statistical tests have less power to detect associations.

6.4.2.1 Headache, Fatigue, and Sleepiness (H1)

Younger men and men who wear glasses or contact lenses were significantly ($p<0.01$) more likely to report headache and fatigue. Increased levels of chlorinated solvents (variable V1) and decreased levels of human source bacteria were also associated ($p<0.05$) with these symptoms in men. In women, no significant associations were noted.

6.4.2.2. Mucous Membrane Symptoms (H2)

Total thermophilic bacteria levels were significantly ($p<0.01$) associated with decreased frequency of mucous membrane symptoms in women. The likely reason for this is discussed under the section on eye irritation below. Women who reported higher job satisfaction were less likely to report these symptoms ($p<0.05$). No other variables achieved significance at the 0.05 level for either men or women.

6.4.2.3 General Symptoms (H3 = H1 and H2 combined)

No variables were significantly associated with these symptoms in men. Women in open areas reported significantly ($p<0.01$) fewer symptoms than those in enclosed offices. Total thermophiles were again associated with fewer symptoms among women, as discussed below in the section on eye irritation. Increased levels of aromatic VOCs (variable V2) were associated ($p<0.05$) with increased symptom frequency among women. Women in the lowest pay grades reported significantly ($p<0.05$) higher symptom frequencies than those in the medium (GS9-12) pay grades.

6.4.2.4 Flu-Like Symptoms (H4)

Among men, those who felt their job utilized their abilities well were less likely ($p<0.05$) to report such symptoms. Among women, no variables achieved the 0.05 level of significance.

6.4.2.5 Back, Neck, and Shoulder Pain (H5 and H13)

Among men, no variables achieved the 0.05 level of significance. Among women, those in open areas reported significantly ($p<0.01$) fewer symptoms than those in enclosed offices. Both chlorinated solvents and total VOCs were associated ($p<0.05$) with increased symptom frequency.

6.4.2.6 Headache and Nausea (H6)

The model for men was overfit (significance of the likelihood ratio = 0.999). Women spending more time at their workstations reported a higher frequency of headache and nausea ($p<0.05$).

6.4.2.7 Nasal Irritation, Cough (H7)

Men in areas with higher CO_2 and lower total VOCs were more likely to report these symptoms ($p<0.05$). Men reporting more external stress also reported high symptom frequency ($p<0.05$). Women spending more time at their workstation and those who felt their abilities were under-utilized reported higher symptom frequencies ($p<0.05$). Women in areas with higher levels of fungi reported fewer symptoms ($p<0.05$).

6.4.2.8 Wheezing, Shortness of Breath (H8)

Because of low symptom frequencies, both models for men and women were overfit (significance level of LRS exceeded 0.99).

6.4.2.9 Eye Irritation (H9)

For males, no variables achieved the 0.01 level of significance; time spent at the workstation was associated with eye irritation at the $p<0.05$ level. For females, time spent at the workstation was highly significantly associated with eye irritation complaints. Women in enclosed offices were also much more likely ($p<0.01$) to report eye irritation than women in open areas. At a lower level of significance ($p<0.05$), women in areas with more thermophiles reported less eye irritation. Since thermophiles thrive under moist warm conditions, these results are consistent with eye irritation occurring more often in areas with dry air.

6.4.2.10 Throat Symptoms (H10)

Both men and women in areas with higher total fungi levels reported fewer throat symptoms ($p<0.05$).

6.4.2.11 Unusual Fatigue, Sleepiness (H11)

Men spending more time at their workstation reported higher levels of fatigue and sleepiness ($p<0.05$). For women, a significant relationship ($p<0.05$) was noted between increased relative humidity and increased fatigue.

6.4.2.12 Chills and Fever (H12)

Because of low symptom frequencies, both models for men and women were overfit (LRS > 0.99).

6.4.2.13 Central Nervous System Symptoms (H14)

For males, no variables achieved the 0.05 level of significance. For females, those who reported using chemicals at their workstation, and those in areas with higher levels of methylene chloride (a common solvent used in many consumer products) reported higher prevalence of depression, nervousness, and memory loss. The association of these symptoms with volatile organic compounds has been made in other studies, and it was suggested by Models A and C above. It has also been noted that females appear to show higher sensitivity to chemicals and greater effects on the central nervous system than males. Thus both the positive findings for females and the negative findings for males are consistent with expectations.

6.4.2.14 Dizziness (H15)

Models were overfit for this symptom because of low symptom frequencies for both men and women.

6.4.2.15 Dry, Itchy Skin (H16)

The model for men was overfit because of low symptom frequency. The model for women failed to include any variables significant at $p<0.05$.

6.5 Discussion of Modeling Results: Thermal Comfort

The employee-reported thermal comfort cluster outcome variables used in the logistic multiple regression models were C1 (too little air movement, too hot, too stuffy), C2 (too dry), and C4 (too much air movement, too cold). Outcome variable C3 (too humid) was not used because of a low percent of respondents reporting the effect (about 3% for males and 6% for females). The thermal comfort outcomes were evaluated only in Model A. In this model, the effects of O2 (body odor, cosmetics, and other food smells) on the outcome variables for males and females were tested, in addition to the effects of the temporally measured variables (temperature, etc.) and the workstation and personal characteristics.

For C1 (hot and stuffy air) and C2 (dry air), the significance level for the LRS for both the male and female models was less than 0.01, indicating that those models accounted for only a limited amount of the variability in these two thermal comfort outcomes. Lower pay grades and age and higher temperatures were associated at the 5% significance level with an increase in males reporting the hot and stuffy air. The O2 odor cluster was found to be associated with hot and stuffy air for males at the 0.10 level. No independent variables were found to be significant below the 5% level for the female, hot-and-stuffy-air model, although the absence of an open workstation, a lower age, and higher carbon dioxide levels were found to be associated with hot and stuffy air for females at the 0.10 level.

Dry air (C2) was not found to be associated with any of the independent temporal, workstation, or personal variables at the 0.01 level. At the 5% significance level, male asthmatics were less likely to report dry air, while females in higher pay grades were more likely to report dry air. The meaning of these associations is not clear. A positive association for O2 for the females' dry-air model was found (10% level).

Males and females in office spaces with lower temperatures ($p<0.01$) and males in offices where maximum daily temperature differences are greatest (5% level) are likely to report the C4 thermal comfort cluster (too much air movement, too cold). For males, higher perceptions of role clarity (1% level) and greater role conflict (5% level) were also associated with complaints of cool and drafty air.

6.6 Discussion of Modeling Results: Odors

The one odor outcome variable, O2 (body odor, cosmetics, and food smells other than fishy smells), was evaluated in Models A and D' for males and females.

6.6.1 Model A

For this model, higher external stress and heavy smoking (greater than 10 cigarettes a day) were found to be related to males' reporting of the odor cluster at the 0.01 significance level. At less extreme levels of significance, there was also evidence of an increased awareness of the odors for males with asthma and for males in areas with higher carbon dioxide concentrations and higher percent relative humidities.

For females, open workstations and hours working at a VDT were associated with O2 in Model A at the 1% level. Women with higher perceived levels of job control and less clarity in their work roles tended to notice the O2 odors more ($p<0.05$).

6.6.2 Model D'

Inclusion of the VOC and microbiological variables (Model D') had little or no impact on the importance of the open workstation, hours at workstation, job control, utilization of abilities, and carbon dioxide variables observed in Model A. Half-height partitions were associated with lower odor reporting for males (1%) in Model D', while heavy smoking for males no longer appeared statistically significant. External stress for males and hours at a VDT for males were not significant in Model D'. Among the VOC and microbiological variables, V2 (aromatics, trichloroethylene, octane) was found to be significantly related ($p<0.01$) to the odor cluster for males, while total volatiles (variable V4) was significant at the 5% level for females. These chemicals are used heavily in cosmetics and many other consumer products; however, the concentrations measured are hundreds of times below the known odor thresholds of these chemicals. It is possible that an accompanying highly odorous chemical (such as acetone or butyl acetate) was responsible for the odors. Thermophiles were weakly associated with O2 for females (10% level). These results should be viewed with caution, since the model results appear unstable (e.g., extremely large odds-ratios).

6.7 <u>Discussion of Modeling Results: Air Quality Acceptability</u>

Both measures of employee-reported air quality acceptability. A1 (poor or fair) and A2 (poor), were evaluated for associations with the temporally measured parameters (Model A), the comfort parameters (Model C), and the volatile and microbiological variables (Model D'). In each case, the models controlled for potential confounders (workstation and personal characteristics).

6.7.1 Poor or Fair Air Quality Rating (A1)

The significance levels for the likelihood ratio statistics for the male Models A and D' were less than 0.01 for outcome variable A1. The temporal variables were not associated with this air quality acceptability measure for the models evaluated, except for a weak negative association with temperature for the male Models A and C. For males, there was a strong association between type of workstation and reports of poor or fair air quality (A1). Males not occupying enclosed work areas more frequently reported concern about the air quality. Lack of role clarity was a consistently significant factor across all models for women ($p<0.05$) for the A1 outcome.

The most striking associations were those observed between the thermal comfort clusters and A1 (poor or fair air quality) in Model C. Subjective respondent judgments of C1 (too little air, too hot, stuffy) were positively associated with overall poor or fair air quality judgements for males and females ($p<0.01$). Male and female reports of dry air (C2) were associated with A1 (1% level for women and at the 5% level for males). Too much air or too cold (C4) were also positively associated with A1 for females (5% level). Overall acceptability of air quality by the responding employees appeared to be closely associated with the acceptability of the thermal environment.

VOC and microbiological variables (Model D') were not strongly associated with A1. Total human sources of bacteria showed a weak association (10% level) with A1 for women. Lower levels of integrated RSP were associated with A1 for women.

6.7.2 Poor Air Quality Rating (A2)

All the models for males for perceived poor air had LRS significance levels approaching 1.0, indicating that the reported prevalence was too low to be modeled effectively. These models cannot be interpreted. In addition, the number of female respondents reporting poor air quality (A2) was only 32, making the results of these models also difficult to interpret.

6.8 Discussion of Modeling Results: Mood-State Scales

6.8.1 Fatigue (M1)

Model A had no highly significant effects due to any of the temporal variables. There was a significant positive effect ($p<0.01$) due to contact lens for males. Females with a higher workload had higher fatigue scores ($p<0.01$), and those whose abilities were used less had higher fatigue scores ($p<0.05$). These relationships tended to hold true for Model D' also. There were no significant effects due to VOCs. The comfort and odor variables (Model C) were not tested for the mood-state scores.

6.8.2 Vigor (M2)

Among the temporally measured variates, only two associations appeared significant ($p<0.05$) in Model A: a positive relationship for temperature and vigor among males, a negative relationship between ln(RSP) and vigor for females. There was also a positive association with vigor among males who used chemicals at their workstation ($p<0.01$) and among males who had a higher role clarity score ($p<0.05$). Male contact lens wearers had a negative association with vigor. There was a positive association between age ($p<0.01$) and vigor for females.

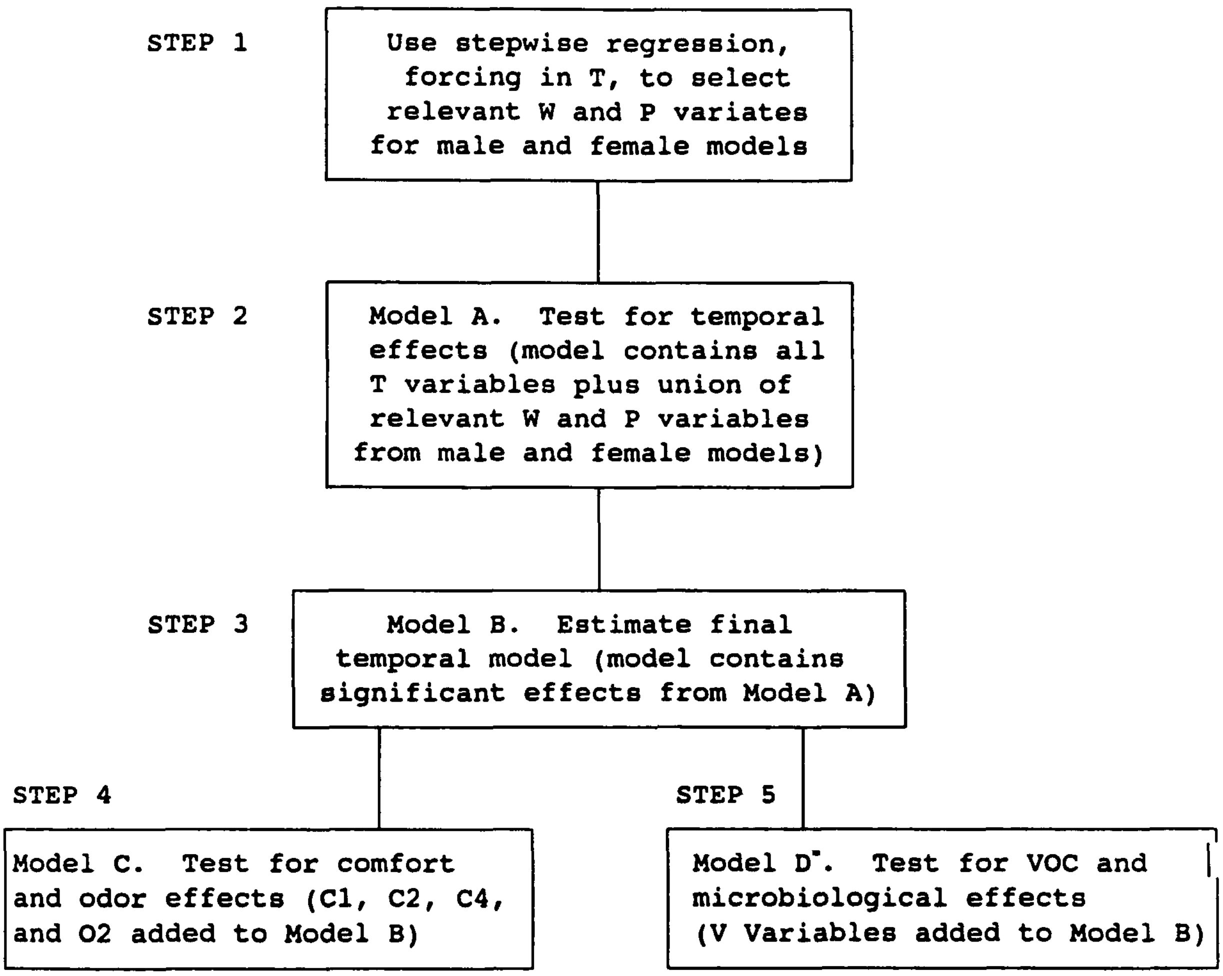
In model D', solvents (V1) showed a negative association ($p<0.05$) with vigor for males. Females had a weak positive association with thermophiles ($p<0.10$). Older women had higher vigor scale scores ($p<0.01$) than younger women.

6.8.3 Tension (M3)

There was a negative association between percent relative humidity ($p<0.05$) and the tension score for males. Females had no significant associations between temporal variables and their tension scores. Males with higher role conflict scores ($p<0.01$) also had higher tension scores, while those that used chemicals at work ($p<0.05$) had lower tension scores. There was a positive relationship between doctor-diagnosed asthma ($p<0.05$) and higher workload ($p<0.01$) for females' tension scores, but a negative association between job control ($p<0.05$) and females' tension scores.

The only variable that was significant at the 0.05 level for the D' model was the job control variable for females, which was negatively associated with tension scores.

FIGURE 6-1. MODELING STRATEGY FOR HEALTH SYMPTOM OUTCOMES



Exposure Measures:

T= temporal measurements={T1-T4,T6}

V=VOC and microbiological measurements={V1-V14}

Potential Confounders:

W=workstation-related responses={W2A,W2B,W3-W8}

P=personal traits={P1,P3A,P3B,P4-P10,P11A,P11B,P12A,P12B,P13}

* Some of the microbiologicals were dropped because of overfitting. The resultant model was called D', which is the model discussed in this report.

TABLE 6-1. LISTING OF MAJOR ANALYTIC OBJECTIVES

Generic Model	Purpose of Model
H = f(T,W,P)	Test for temporal-variate effects (T) on self-reported health symptom outcomes (H); adjust for workstation (W) and personal/medical (P) variates
H = f(T,V,W,P)	Test for VOC and microbiological effects (V) on self- reported health symptom outcomes; adjust for W, P, and T variates
H = f(T,C,O,W,P)	Test for self-reported comfort (C) and odor (O) effects on self-reported health symptom outcomes; adjust for W, P, and T variates
C = f(T,O,W,P)	Test for temporal-variate effects and self- reported odor effects on self-reported comfort measures; adjust for W and P variates
M = f(T,W,P)	Test for temporal-variate effects on self- reported mood-state scales (M); adjust for W and P variates
M = f(T,V,W,P)	Test for VOC and microbiological effects on self- reported mood-state scales; adjust for W, P, and T variates
O = f(T,W,P)	Test for temporal-variate effects on self- reported odor measures; adjust for W and P variates
O = f(T,V,W,P)	Test for VOC and microbiological effects on self- reported odor measures; adjust for W, P, and T variates
A = f(T,W,P)	Test for temporal-variate effects on self- reported air quality ratings (A); adjust for W and P variates
A = f(T,V,W,P)	Test for VOC and microbiological effects on self- reported air quality ratings; adjust for W, P, and T variates
A = f(T,C,O,W,P)	Test for self-reported comfort and odor effects on self-reported air quality ratings; adjust for W, P, and T variates

TABLE 6-2. SUMMARY OF STEPWISE REGRESSION RESULTS

Dependent Variable	Independent Variables: Office Type W2A,B	Work Hrs W3	Went Out W4	Used Chem W5	VDT Hrs W6	New Rugs W7	With Glue W8	Age P1	Pay Grade P3A,B	Psychosocial Scales P4	P5	P6	P7	P8	P9	P10	Smoking P11A,B	Glass/ C.Lens P12A	Con-tacts P12B	Asthma P13
H1 non-spec. IAQ		M						M										M		F
H2 mucous membrane					mf				f	f	F					M				
H3 comb. H1, H2	F				M			M	M	F	F					f				
H4 flu-like		m			m			m	m					M	F					M*
H5 ergonomic	F					Mf						m	m							M
H6 headache, nausea		F						m					MF					m		
H7 nasal, cough		f			M		f		f					f		M	f			
H8 chest	M	m				m			MF					m	M	m				M
H9 eyes	F	Mf					f	m		F						M		M	f	
H10 throat											MF									
H11 tiredness		M						Mf												f
H12 chills, fever				F						f					f					
H13 ergonomic	F					MF						M	m	f						M*
H14 nervous system				F							M		F							
H15 dizziness, etc.		F			m			f					F	F		m				m*
H16 dry/itchy skin											M	M	MF		MF				m*	
C1 too hot, stuffy	F							M	m								m		m*	
C2 too dry									m										m*	m
C4 too cool, drafty											m			m	m				F	
O2 cosmetics,	F	mF			f							F			MF	M	M			m
A1 poor or fair air	m	m													F					
A2 poor air				M			M			F				F					Mf	
M1 fatigue						m	F				m		F	F					M	F
M2 vigor				MF				F							M				M	
M3 tension	f			M							M	F	F							f

KEY: M=statistically significant at 0.05 level, for males. m=same, but at 0.10 level.
F=statistically significant at 0.05 level, for females. f=same, but at 0.10 level.

* Statistically significant but not regarded as a candidate confounding variable.

TABLE 6-3. SUMMARY OF HYPOTHESIS TESTING RESULTS

Dependent Variable	MODEL A TESTS: temp T1	%RH T2	CO_2 T3	RSP T4	T T6	MODEL C TESTS: odor and comfort O2	C1	C2	C4	MODEL D' TESTS: VOC measures V1	V2	V3	V4	RSP V5	biologics V6	V7	V8	SIGNIFICANCE OF LRS, FOR MODEL: A M	A F	C M	C F	D' M	D' F
H1 non-spec. IAQ						F	F	f	mf	m						-m			-				
H2 mucous membrane						f	F	Mf									-F	-	-			-	
H3 comb. H1, H2						F	F	Mf			f						-F	-				-	
H4 flu-like					f			m	f									+		+			
H5 ergonomic	f		-f			f		M	f	f			f										
H6 headache, nausea						F	F	f										+		+		+	
H7 nasal, cough	-m		M				F	m	f				-m		-f				-				
H8 chest					f		f											+	+	+	+	+	+
H9 eyes							MF	Mf	m								-f	-					
H10 throat						-m		M							-mf								
H11 tiredness					f		F		Mf														
H12 chills, fever	-m				m				F									+	+	+	+	N	+
H13 ergonomic	f					f		m	f	f			f										
H14 nervous system				m		F	f		f			f											
H15 dizziness, etc.				m		f												+	+	+	+	+	+
H16 dry/itchy skin			m		f			M										+	+	+	+	N	
C1 too hot, stuffy	m						XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	-	-	X	X	X	X
C2 too dry							XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	-	-	X	X	X	X
C4 too cool, drafty	-MF				m		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX			X	X	X	X
O2 cosmetics, etc.		m				XXX	XXX	XXX	XXX		M		-f							X	X		
A1 poor or fair air							MF	mF	f					-F				-				-	
A2 poor air							f	M							-f			+		+		+	
M1 fatigue						XXX	XXX	XXX	XXX									N/A					
M2 vigor	m			-f		XXX	XXX	XXX	XXX	-m								N/A					
M3 tension		-m				XXX	XXX	XXX	XXX									N/A					

KEY: M=statistically significant at 0.01 level, for males. m=same, but at 0.05 level.
F=statistically significant at 0.01 level, for females. f=same, but at 0.05 level.
Negative sign indicates a negative association between the independent and dependent variable.

Significance of LRS: - is <0.01 (underfit); + is >0.99 (overfit); N = model not estimable.

XXX's means the variables were not in the model.

TABLE 6-4. SUMMARY OF MODEL B RESULTS FOR POTENTIAL CONFOUNDERS

Dependent Variable	Independent Variables: Office Type		Work Hrs	Went Out	Used Chem	VDT Hrs	New Rugs	With Glue	Age	Pay Grade		Psychosocial Scales							Smoking		Glass/ Con- C.Lens tacts		Asthma
	W2A	W2B	W3	W4	W5	W6	W7	W8	P1	P3A	P3B	P4	P5	P6	P7	P8	P9	P10	P11A	P11B	P12A	P12B	P13
H1 non-spec. IAQ									-M												M		f
H2 mucous membrane						m				i	f	-f						m					
H3 comb. H1, H2	i	-f				m			-m														
H4 flu-like			m						-m	-m	-m						-f						M
H5 ergonomic	i	-f					m																
H6 headache, nausea			f						-m						mf								
H7 nasal, cough						M				-m	i					-f		M					
H8 chest	-M*	i								-m	-M					-M							M
H9 eyes	i	-F	m									-f						M				f	
H10 throat													m										
H11 tiredness			m						-f														
H12 chills, fever					f																		
H13 ergonomic	i	-F					-f																
H14 nervous system					f								m		f								
H15 dizziness, etc.									-f						f	-f							
H16 dry/itchy skin													m	M	-m+F		-F						
C1 too hot, stuffy									-m	i	-m												
C2 too dry										i	f												
C4 too cool, drafty																	M						
O2 cosmetics, etc.	i	F				F								f			-m-f	M	i	M			
A1 poor/fair air	m-f	i															-F						
A2 poor air					m			M				-F				f						M	
M1 fatigue							m								F	-f						M	
M2 vigor					M				F								m					-m	
M3 tension													M	-f	F								f

KEY: M=statistically significant at 0.01 level, for males. m=same, but at 0.05 level.
F=statistically significant at 0.01 level, for females. f=same, but at 0.05 level.
i=term included, though not significant, because of inclusion of other independent variable in the pair.

* Parameter was considered infinite by estimation procedure; hence no hypothesis test was performed.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

The third objective of the Indoor Air Quality and Work Environment Study, which is the subject of this report, was to determine if an association between self-reported responses (health symptoms, comfort concerns, odors noticed, perceived indoor air quality, and mood states) and objective environmental measurements (temperature, humidity, CO_2, RSP, selected VOCs, and microbiologicals) could be determined. This objective was addressed by estimating linear or logistic regression models that allowed the effects of interest to be tested. The major findings are summarized below. Tests were conducted at both the 0.01 and 0.05 level of statistical significance. A 0.01 level of statistical significance was used as a basis for judging the significance of the various associations to reduce the number of false positives.

Logistic regression was used to test for significant associations between the temporal variables (temperature, relative humidity, carbon dioxide concentration, integrated RSP concentration, and temperature change) and the employee-reported health, comfort, odor, perceived air quality, and mood-state variables (described in Chapter 6). This analysis is referred to as Model A. In areas that had increased CO_2 levels, males reported a significantly higher prevalence of nasal/cough symptoms. However, in this same model, temperature showed a negative association (at the 0.05 level) with the nasal/cough symptom prevalence. Because the CO_2 and temperature variates are highly correlated with one another, it is unclear as to what extent either of these associations should be considered real. Both males and females more often reported too cool and/or too drafty conditions in areas that had lower temperatures measured. The sparseness of significant relationships among the outcome measures and the temporal measurements may be due to the limited degree of variability in the latter.

Model D' tested whether levels of chemicals (VOCs), aerosols (RSP), or microbiologicals could be associated with the health symptoms, mood states, odors, and general perceptions of air quality reported by the employees. Because of the small number of sites at which the measurements were made, this model has a reduced number of observations (about half as many as in Models A, B, and C) and correspondingly reduced power to detect associations. In fact, no strong ($p<0.01$) associations of VOC or RSP levels occurred simultaneously with any of the outcomes for both men and women.

For men, only one strong relationship with VOCs was observed. Men in areas with higher levels of aromatic compounds (e.g., toluene and xylene) were significantly more likely to complain of cosmetic and other odors. These chemicals are in fact used heavily in cosmetics and many other consumer products. However, the concentrations measured in the environmental samples collected are hundreds of times below the known odor thresholds for these chemicals. It may be possible, however, that an accompanying highly odorous chemical (such as acetone or butyl acetate) was responsible for the odor.

For women, a strong relationship with RSP was observed. Indoor air quality was more often perceived as fair or poor by women in areas with lower levels of RSP. This result appears spurious, since the reverse would be expected and the observed levels of RSP were extremely low. A strong negative association between thermophile levels and prevalence of mucous membrane symptoms was also observed for women. Thermophile level may be an indirect measure of humidity (thermophiles tend to thrive in moist air), and this relationship may be indicate an association between dry air and mucous membrane irritation. However, the lack of a detectable effect of the measured relative humidity argues against this interpretation.

We conclude that because of the relatively small number of sites where VOCs, integrated RSP, and bioaerosols were measured, the development of models that allowed testing of relationships between these measures and the various outcome measures was hampered (i.e., there was limited power to detect such effects). This was compounded by the fact that the observed levels of the VOCs, integrated RSP, and microbiologicals were uniformly low across the monitoring sites as compared to the results from the 10 public-access building study (Wallace et al., 1987) and other published guidelines (ASHRAE 62-1989).

The statistical analyses conducted in this study did not establish consistent relationships between measured environmental parameters and employee-reported health and thermal comfort employees. Employees were selected from areas having high- and low-complaint rates of health and comfort complaints in a ratio of 2:1, as determined from an extensive questionnaire administered a few weeks earlier. This inability to find relationships does not preclude the possibility that such relationships might, in general, exist. It should be remembered, for instance, that measurements at a given office were made on only one day, and on that day the indoor air quality may have been atypical for a number of reasons. For example, comments suggesting an unusually high airflow during the monitoring week were heard from some employees and a snow storm occurred during the week of the study.

In general, this study demonstrated a stronger association between employees' reported health symptoms and their perceived thermal comfort measures (including cosmetic/body odors) than between the reported health symptoms and the environmental measurements. However, the problems with the small number of environmental measurements and their limited variability may have had an impact on this finding. Specifically, in Model C, females who reported cosmetic/body odors and hot/stuffy air tended to report health symptoms previously associated with poor indoor air quality. Males' reporting of these same types of symptoms were more generally associated with complaints of dry air. There are several possible explanations for these interesting findings. First may be the possibility that the observed associations are partly due to the site selection procedure. Rooms were ranked on the basis for both health and thermal comfort indices, and rooms having high values for both indices and rooms having low values of both indices were overrepresented in the monitoring sample. Second is the possibility that human "sensors" of thermal comfort, with a great capacity for memory, are better "instruments" than mechanical/chemical sensors placed in fixed locations for short periods of time. A third explanation is that common psychological factors similarly influence perception of thermal comfort and the reporting of health symptom occurrences. According to this explanation, some people will report concerns whether the issue is air quality or health. A fourth possible explanation is that individuals have differential susceptibility. People's perception of thermal comfort may be affected by the health symptoms that they are experiencing while at work (e.g., people who develop a headache in a room may be more likely to describe that room as being uncomfortable). The perception of the environment reflects the risk of that environment to the individual. It is not clear which of these various explanations is most plausible.

7.2 Recommendations

Based on the results of the tests conducted here and the results from both Volumes I and Volume II, the following recommendations are made. Since measurements were made only in the winter while the humidity was low, mechanisms for humidifying the indoor air during the winter heating season should be considered. However, this recommendation should be carefully studied prior to implementation. Humidification of the supply air to any office building can increase the potential for increased airborne microbiological agents, which might increase the risk of injury to employees.

Because the effects of cosmetics, body, and non-fish food odors on health symptoms were significant, the employees should be informed of these findings and encouraged to be sensitive to the concerns of their fellow employees regarding the use of scented cosmetics, etc.

Providing employees a way to have more control over their work areas may improve their perception of indoor comfort and air quality. For example, lack of privacy, meeting areas, furniture arrangement, wall decoration, and other basic design factors influence a worker's sense of autonomy and productivity.

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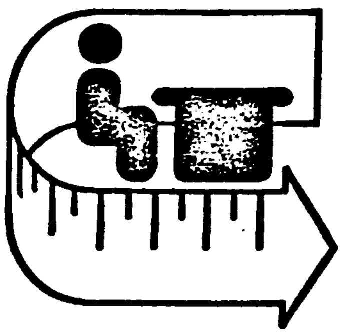
APPENDIX A

INDOOR AIR QUALITY AND WORK ENVIRONMENT SURVEY

EPA HEADQUARTERS

INDOOR AIR QUALITY AND WORK ENVIRONMENT SURVEY

EPA HEADQUARTERS



We are investigating the air quality and work environment in this building. We need information about your work environment and how it affects you. This information is not available anywhere else. Therefore, we must rely on your answers to this survey, along with monitoring of environmental conditions in this building, to clearly analyze the situation. We need your participation, regardless of how satisfied you are with the air quality or your work environment.

Attach Label Here

DO NOT PUT YOUR NAME ON YOUR QUESTIONNAIRE OR THE RETURN ENVELOPE PROVIDED. PLEASE PUT YOUR COMPLETED QUESTIONNAIRE IN THE RETURN ENVELOPE. SEAL IT AND TAKE IT TO ONE OF THE RETURN BOXES NEAR THE ELEVATORS AND BUILDING EXITS.

PLEASE READ BEFORE COMPLETING QUESTIONNAIRE

Many questions in the questionnaire concern either last week or last year. By "LAST YEAR" we mean the 12-month period ending today. If you have worked in the building for less than one year, answer the "LAST YEAR" questions only for the part of the year that you worked in this building.

Please report your ACTUAL EXPERIENCES LAST WEEK even if last week was unusual for you. By "LAST WEEK" we mean any or all days worked from last Monday through Friday.

CONFIDENTIALITY

To protect your privacy, the identification for your questionnaire is the bar-code label on the cover. The bar-code cannot be read by EPA computers or staff. Additionally, the survey forms will be gathered by staff from Westat, Inc., an independent survey research firm, and processed away from EPA. Your name and other information necessary for the survey and analysis that might identify you, such as your room and telephone number, will not be disclosed to individuals, unions, or management of EPA. Reports of the survey will not give your name, nor will data be presented in such a way that you, or anyone else, could be identified.

STUDY SPONSORS AND ORGANIZATION

The study has been developed and is being conducted by the National Institute for Occupational Safety and Health (NIOSH), the John B. Pierce Foundation Laboratory at Yale University, and Westat, Inc. It is being managed by EPA and NIOSH, and is being supported by funds from EPA.

PART I. DESCRIPTION OF YOUR WORKSTATION

This section asks you to describe your workstation. Your answers to these questions will help us to construct a picture of your work surroundings.

By WORKSTATION we mean your desk, office, cubicle, or place that is your primary work area. This description is obvious for many people, but more difficult for those whose jobs require them to move about the building. If you do move about the building, your workstation is the specific location where you spend more time than any other single location. If your workstation has been relocated, use the location where you are now.

1. There are many different types of workstations. Please check the categories that best describe the space in which your current workstation is located.

   a. Type of space *(Check one)*

      1. ☐ Enclosed office with door
      2. ☐ Cubicle with floor to ceiling bookcases or partitions and no door
      3. ☐ Cubicle surrounded by mid-height bookcases or partitions
      4. ☐ Open office area
      5. ☐ Stacks (e.g., books or periodicals)
      6. ☐ Loading dock, laboratory, copy center, or print shops
      7. ☐ Work all around the building
      8. ☐ Other (specify) ________________

      ____

   b. Type of space sharing *(Check one)*

      1. ☐ Single occupant
      2. ☐ Shared with one other person
      3. ☐ Shared with two or more other persons
      4. ☐ Other *(describe)* ________________

      ____

2. How many years of service do you have with EPA? *(Enter number of months if less than one year.)*

   ________ years ______ months

3. a. How many years have you been working in this building? *(Enter number of months if less than one year.)*

   ________ years ______ months

   b. During a typical week, how many hours do you spend in this building?

   ________ hours per week

4. a. How many years have you worked at your current workstation? *(Enter number of months if less than one year.)*

   ________ years ______ months

   b. During an average workday, how many hours do you spend at your workstation?

   ________ hours per day

5. How many days did you work in this building last week?

   ________ days last week

6. What time do you usually:

		AM	PM
a.	Arrive at work ____:____	☐	☐
b.	Leave work ____:____	☐	☐

c. Varies *(describe)* ______________________

____

7. Which of the following items are presently located within 15 feet of your workstation? *(Check "no" or "yes" for each item.)*

		No 1	Yes 2
a.	Metal desk	☐	☐
b.	Wood or composition desk	☐	☐
c.	Metal bookshelves or bookcases	☐	☐
d.	Wood or composition bookshelves or bookcases	☐	☐
e.	File cabinet(s)	☐	☐
f.	Other metal furniture	☐	☐
g.	Other wood or composition furniture	☐	☐
h.	Fabric-covered partitions	☐	☐
i.	Portable humidifier	☐	☐
j.	Laser printer	☐	☐
k.	Photocopy machine	☐	☐
l.	Live plants	☐	☐

8. Is there carpeting on most or all of the floor at your workstation?

1. ☐ No
2. ☐ Yes

9. During a typical day LAST WEEK, how much time did you spend working with each of the following items? *(If you worked with an item at all, but less than 1 hour, enter 1 hour per day.)*

		Hours per day
a.	Computer or word processor with screen/keyboard	____
b.	Photocopy machine	____
c.	Photographic developing and processing	____
d.	Printing processing (press, binding materials, etc.)	____
e.	Other chemicals such as glues, adhesives, cleansers, white out, rubber cement, pesticides, etc.	____

NOTE: If you have worked in this building for less than a year, answer the following questions for the part of the year that you worked in this building.

10. Were any of the following items regularly used at your workstation during the LAST YEAR: *(Check "no" or "yes" for each item.)*

		No 1	Yes 2
a.	Portable fan	☐	☐
b.	Portable air filter, or cleaner, or negative-ion generator	☐	☐
c.	Portable heater	☐	☐
d.	Desk lamp	☐	☐

11. **During the LAST YEAR (and since you've been in your current workstation) have any of the following changes taken place within 15 feet of your current workstation?** *(Check "no" or "yes" for each item.)*

	No 1	Yes 2
a. New carpeting	☐	☐
b. New drapes or curtains	☐	☐
c. New furniture	☐	☐
d. New equipment, such as a computer	☐	☐
e. Walls painted	☐	☐
f. Rearranged walls	☐	☐

12. **At any time during the LAST YEAR, have you noticed evidence of new or continuing water leaks from the ceiling, floors, walls, or pipes near your workstation?**

1. ☐ No
2. ☐ Yes

PART II. INFORMATION ABOUT YOUR HEALTH AND WELL-BEING

This section asks questions about the status of your health and well-being. Your answers to these questions will help us construct a profile of the health status of the employees in this building. Please answer all the questions even if you don't associate these health conditions with your work.

1\. a. Do you wear contact lenses?

1. ☐ Never ⟶ Go to Q.2
2. ☐ Sometimes
3. ☐ Often
4. ☐ Always

b. Do you wear contact lenses at work?

1. ☐ Never
2. ☐ Sometimes ⟶ Go to Q.2
3. ☐ Often ⟶ Go to Q.2
4. ☐ Always ⟶ Go to Q.2

c. If never worn at work, why?

____

____

____

2\. During work, how often do you wear eyeglasses (NOT including contacts) for close-up work?

1. ☐ Never
2. ☐ Sometimes
3. ☐ Often
4. ☐ Always

3\. Which of the following best describes your history of smoking tobacco products such as cigarettes, cigars or pipes?

1. ☐ Never smoked ⟶ Go to Q.7
2. ☐ Former smoker ⟶ Go to Q.7
3. ☐ Current smoker

4\. Do you smoke tobacco products at your workstation?

1. ☐ Never
2. ☐ Sometimes
3. ☐ Often

5\. Do you smoke tobacco products elsewhere at work?

1. ☐ Never
2. ☐ Sometimes
3. ☐ Often

6\. In a typical 24 hour day, how many CIGARETTES do you usually smoke?

1. ☐ None
2. ☐ 1 to 5
3. ☐ 6 to 10
4. ☐ 11 to 20
5. ☐ 21 to 30
6. ☐ 31 or more

7. Please answer the three questions to the right about each symptom listed below, even if you believe the symptom is not related to the building.
(For each symptom, answer the first question. If the response is "never," go down to the next symptom.)

Symptom	Please indicate how often during the LAST YEAR you have experienced this symptom while working in this building. Never	Rarely	Sometimes	Often	Always	Please indicate how many days LAST WEEK you experienced this symptom while working in this building. (Fill in No. of days)	Does the symptom usually change when not at work? Gets Worse	Stays Same	Gets Better
a. headache	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
b. nausea	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
c. runny nose	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
d. stuffy nose/sinus congestion	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
e. sneezing	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
f. cough	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
g. wheezing or whistling in chest	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
h. shortness of breath	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
i. chest tightness	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
j. dry, itching, or tearing eyes	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
k. sore/strained eyes	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
l. blurry/double vision	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
m. burning eyes	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
n. sore throat	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
o. hoarseness	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
p. dry throat	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
q. unusual fatigue or tiredness	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐
r. sleepinesss or drowsiness	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	____	1 ☐	2 ☐	3 ☐

7. *(continued)*

(For each symptom, answer the first question. If the response is "never," go down to the next symptom.)

	Please indicate how often during the LAST YEAR you have experienced this symptom while working in this building.					Please indicate how many days LAST WEEK you experienced this symptom while working in this building.	Does the symptom usually change when not at work?		
	Never	Rarely	Some-times	Often	Always	(Fill in No. of days)	Gets Worse	Stays Same	Gets Better
s. chills	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
t. fever	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
u. aching muscles or joints	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
v. problems with contact lenses	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
w. difficulty remembering things ...	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
x. dizziness/lightheadedness	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
y. feeling depressed	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
z. tension or nervousness	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
aa. difficulty concentrating	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
bb. dry or itchy skin	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
cc. pain or stiffness in upper back ..	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
dd. pain or stiffness in lower back ..	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
ee. pain or numbness in shoulder/neck	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐
ff. pain or numbness in hands or wrists	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	______	1 ☐	2 ☐	3 ☐

NOTE: The next four questions (Questions 8-11) refer to your symptoms described in Question 7. If you reported that you never experienced any of these symptoms, go to Question 12.

8. How often during the LAST YEAR have any of your symptoms reduced your ability to work in this building?

1. ☐ Never
2. ☐ Rarely
3. ☐ Sometimes
4. ☐ Often
5. ☐ Always

9. a. Have any of your symptoms caused you to stay home from work or leave work early during the LAST YEAR?

1. ☐ Never ——→ *Go to Q.10*
2. ☐ Rarely
3. ☐ Sometimes
4. ☐ Often

b. Which symptoms?

____

____

____

10. In which season(s) are you bothered more by the symptoms you reported in Question 7? *(Check all that apply.)*

1. ☐ Winter
2. ☐ Spring
3. ☐ Summer
4. ☐ Fall
5. ☐ No relation to seasons

11. a. Do you associate any of the symptoms you reported in Question 7 with your work in this building?

1. ☐ No ——→ *Go to Q.12*
2. ☐ Yes

b. Have these symptoms:

1. ☐ improved over the last year
2. ☐ become worse over the last year
3. ☐ stayed the same

12. During the LAST YEAR, have you had an illness in which you had repeated episodes of THREE OR MORE of the following symptoms at the same time: wheezing, cough, shortness of breath, fever, chills, aching joints/muscles?

1. ☐ No
2. ☐ Yes

13. During the LAST YEAR, have you had any chest illnesses, such as bronchitis or pneumonia, that have kept you off work, indoors at home, or in bed?

1. ☐ No
2. ☐ Yes

14. Has a physician ever told you that you have, or had, eczema?

1. ☐ No
2. ☐ Yes

15. During the LAST YEAR, have you had any episodes of wheezing (whistling in the chest) WITHOUT fever, or chills, or sore throat?

1. ☐ No
2. ☐ Yes

16. a. Has a physician ever told you that you have, or had, asthma?

1. ☐ No ⟶ Go to Q.17
2. ☐ Yes

b. In what year was it first diagnosed?

19 ______

c. Have you had an asthma attack during the LAST YEAR?

1. ☐ No
2. ☐ Yes

17. Comparing your health since working in this building with your health before you began to work in this building . . .

a. . . . do you have infections (e.g., colds, flu, bronchitis, etc.) . . .

1. ☐ more frequently?
2. ☐ less frequently?
3. ☐ with the same frequency?

b. . . . do your infections (e.g., colds, flu, bronchitis, etc.) tend to . . .

1. ☐ last longer?
2. ☐ last a shorter amount of time?
3. ☐ last about the same amount of time?

18. Do you believe you are or may be allergic to any of the following? *(Check "no" or "yes" for each item.)*

	No 1	Yes 2
a. pollen or plants	☐	☐
b. animals	☐	☐
c. dust	☐	☐
d. molds	☐	☐
e. Other *(specify)* ______	☐	☐

19. During the LAST YEAR, how often do you believe you have experienced EYE, NOSE, THROAT, OR RESPIRATORY IRRITATION at your workstation from:

	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
a. Tobacco smoke	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b. Fumes from a photocopying machine	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. Fumes from printing processing (press, binding materials, etc.)	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
d. Fumes from other chemicals such as adhesives, glues, cleansers, white out, rubber cement, etc.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
e. Fumes from pesticides	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
f. Fumes from new carpeting	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
g. Fumes from new drapes, curtains, or furniture	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
h. Fumes from paint	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
i. Fumes from cleaning of carpets, drapes, or other furnishings	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
j. Other *(specify)* ______	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

20. Do you consider yourself especially sensitive to any of the items in Question19?

1. ☐ No
2. ☐ Yes

21. How old are you?

_______ years

22. Are you:

1. ☐ Male ——→ **Go to Part III on pg. 11**
2. ☐ Female

Women working in office buildings have occasionally reported patterns of gynecological or women's health problems. The following questions have been included to help sort out some of these issues in this building.

As with the rest of the questions in this survey, your responses are entirely voluntary and will be kept confidential.

23. During the LAST YEAR have you menstruated (had a period)?

1 ☐ No ——→ **Go to Q.29**
2. ☐ Yes

24. How often during the LAST YEAR has your period been regular? (By regular, we mean your periods come about once a month, you can usually predict when they will come plus or minus 4 days, and each time they last about the same number of days.)

1. ☐ Never
2. ☐ Rarely
3. ☐ About half the time
4. ☐ Often
5. ☐ Always

25. a. How many days does your menstrual flow (period) typically last?

_______ days

b. During the last year, what was the LONGEST period you had?

_______ days

c. During the last year, what was the SHORTEST period you had?

_______ days

26. a. How many days does your cycle typically last? (Count from the first day of one period to the first day of the next.)

_______ days

b. During the last year, what was the LONGEST cycle you had?

_______ days

c. During the last year, what was the SHORTEST cycle you had?

_______ days

27. How often during the LAST YEAR has there been bleeding or spotting between your periods?

1. ☐ Never
2. ☐ 1 - 3 times
3. ☐ 4 - 6 times
4. ☐ 7 - 9 times
5. ☐ 10 or more times

28. a. Some women experience menstrual symptoms, such as headaches, weight gain, irritability, cramping, breast tenderness, or back pain. How often have you experienced any of these menstrual symptoms during the LAST YEAR?

1. ☐ Never ——→ Go to Q.29
2. ☐ 1 - 3 times
3. ☐ 4 - 6 times
4. ☐ 7 - 9 times
5. ☐ 10 or more times

b. When you experience these symptoms, typically how severe are they?

1. ☐ Mild; could be ignored at times
2. ☐ Moderate; pain, bloating, or mood change noticeably present
3. ☐ Severe; difficult to do most tasks
4. ☐ Extreme; incapacitating

29. During the LAST YEAR have you been . . .
(Check "no" or "yes" for each item.)

	No 1	Yes 2
a. Pregnant or nursing?	☐	☐
b. Taking birth control pills? ...	☐	☐
c. Going through menopause (change of life)?	☐	☐
d. Post-menopausal (completed menopause)? ...	☐	☐
e. Taking estrogen replacement therapy?	☐	☐

30. a. During the LAST YEAR have you been taking hormones prescribed by a physician?

1. ☐ No ——→ Go to Q.31
2. ☐ Yes

b. Specify what kind(s) and what they were prescribed for.

____

____

____

31. a. Has a physician ever told you that you had . . . *(Check "no" or "yes" for each item.)*

	No 1	Yes 2	Year First Diagnosed
Fibroids?	☐	☐	____
Cysts?	☐	☐	____
Enlarged uterus?	☐	☐	____

——→ *If all are "no," go to Part III*

b. Have there been noticeable changes during the last year? *(Check one box for each item.)*

	Decreased In Size 1	Increased In Size 2	No Change 3	Other, Specify Below 4
Fibroids ...	☐	☐	☐	☐
Cysts	☐	☐	☐	☐
Enlarged uterus	☐	☐	☐	☐

Specify ______________________________

____

____

PART III. INFORMATION ABOUT YOUR PRESENT WORK ENVIRONMENT

This section asks you to report specific responses to the physical environment at your present workstation. You or a co-worker may have altered your work environment with a portable fan, heater, humidifier, etc. If so, please tell us how your work environment would have been without this equipment.

1. At your present workstation, HOW OFTEN . . . *(Please check one box for last year and one box for last week.)*

	. . . during the LAST YEAR					. . . during the LAST WEEK				
	Never	Rarely	Some-times	Often	Always	Never	Rarely	Some-times	Often	Always
a. was there too much air movement?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b. was there too little air movement?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. did you want to adjust the air movement?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
d. was the temperature too hot?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
e. was the temperature too cold?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
f. did you want to adjust the temperature?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
g. was it too humid? . . .	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
h. was it too dry?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
i. did you want to adjust the humidity?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
j. was the air too stuffy?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
k. was it too noisy?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
l. was it too quiet?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
m. was the work area too dusty?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

2. During the LAST YEAR, how often, if at all, have you noticed any of these types of ODORS at your present workstation? *(Check one box for each item.)*

	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
a. Body odor	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b. Cosmetics, such as perfume or after-shave	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. Tobacco smoke	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
d. Fishy smells	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
e. Other food smells	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
f. Musty or damp basement smells	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
g. Odors from new carpet	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
h. Odors from new drapes or curtains	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
i. Odors from diesel or other engine exhaust	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
j. Odors from a photocopying machine	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
k. Odors from printing processing (press, binding materials, etc.)	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

2. *(continued)*

	NEVER	RARELY	SOMETIMES	OFTEN	ALWAYS
l. Odors from other chemicals such as adhesives, glues, cleansers, white out, rubber cement, pesticides, etc.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
m. Odors from pesticides	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
n. Odors from cleaning of carpets, drapes, or other furnishings	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
o. Odors from paint	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
p. Other unpleasant odors *(describe)* ____________	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

3. In which seasons would you most like to adjust the physical conditions around your workstation? *(Check all that apply)*

	None	Winter	Spring	Summer	Fall
a. Air movement	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b. Temperature	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. Humidity	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
d. Odors	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

4. **Please rate the lighting at your workstation.**

1. ☐ Much too dim
2. ☐ A little too dim
3. ☐ Just right
4. ☐ A little too bright
5. ☐ Much too bright

5. a. **Do you experience a reflection or "glare" in your field of vision when at your workstation?**

1. ☐ Never ⟶ Go to Q.6
2. ☐ Sometimes
3. ☐ Often
4. ☐ Always

b. **Where does the reflection or glare come from?** *(Check all that apply)*

1. ☐ Window, sunlight, outside reflection
2. ☐ Overhead fluorescent lights
3. ☐ Video display screen and/or reflections when looking at screen
4. ☐ Desk lamp
5. ☐ Other *(specify)* ______________

6. **Can you see out an outside window from your workstation?**

1. ☐ No
2. ☐ Yes

7. a. **How comfortable is the chair at your workstation?**

1. ☐ Reasonably comfortable
2. ☐ Somewhat uncomfortable
3. ☐ Very uncomfortable
4. ☐ Don't have one specific chair ⟶ Go to Q.8

b. **Is your chair easily adjustable?**

1. ☐ No
2. ☐ Yes
3. ☐ Not adjustable

8. **How comfortable is the current set-up of your desk or work table (that is, height and general arrangement of the table, chair, and equipment you work with)?**

1. ☐ Reasonably comfortable
2. ☐ Somewhat uncomfortable
3. ☐ Very uncomfortable
4. ☐ Don't have one specific desk or work table

9. a. **During the LAST YEAR, how many times per week did you go outdoors, weather permitting, during work hours (for lunch, break, or other reasons)?**

___ time(s) per week ⟶ If zero, go to Q.10

b. **How many of these times did you go outdoors primarily to get some fresh air?**

___ time(s) per week for fresh air

NOTE: The next four questions concern the overall physical environment at your workstation, that is, the air quality, temperature, light, noise, odor, etc.

10. During the LAST WEEK, how satisfied were you with the physical environment at your workstation?

1. ☐ Very satisfied
2. ☐ Somewhat satisfied
3. ☐ Not too satisfied
4. ☐ Not at all satisfied

11. During the LAST YEAR, how satisfied were you with the overall physical environment at your workstation?

1. ☐ Very satisfied
2. ☐ Somewhat satisfied
3. ☐ Not too satisfied
4. ☐ Not at all satisfied

12. During the LAST YEAR, has the overall physical environment in the vicinity of your workstation:

1. ☐ Improved
2. ☐ become worse
3. ☐ stayed the same

13. During a typical work day, does the overall physical environment in the vicinity of your workstation:

1. ☐ Improve during the day
2. ☐ become worse during the day
3. ☐ stay the same

PART IV. CHARACTERISTICS OF YOUR JOB

This section asks you to describe your job in terms of specific qualities. In order to gain a better understanding of your work environment, we would like to know how you feel about your job situation. As stated before, your responses will be kept confidential.

1. We would like you to think about the TYPE OF WORK YOU DO IN YOUR JOB. *(Check one box for each statement)*

   a. All in all, how satisfied are you with your job?

      1. ☐ Very satisfied
      2. ☐ Somewhat satisfied
      3. ☐ Not too satisfied
      4. ☐ Not at all satisfied

   b. Knowing what you know now, if you had to decide again whether to take the job you now have, what would you decide? Would you . . .

      1. ☐ Decide without hesitation to take the same job
      2. ☐ Have some second thoughts
      3. ☐ Decide definitely not to take the same job

   c. If you were free right now to go into any type of job you wanted, what would your choice be? Would you . . .

      1. ☐ Take the same job
      2. ☐ Take a different job
      3. ☐ Not want to work

   d. If a friend of yours told you he/she was interested in working in a job like yours, what would you tell him/her? Would you . . .

      1. ☐ Strongly recommend it
      2. ☐ Have doubts about recommending it
      3. ☐ Advise against it

2. How satisfied are you with your salary?

   1. ☐ Very satisfied
   2. ☐ Somewhat satisfied
   3. ☐ Not too satisfied
   4. ☐ Not at all satisfied

3. How satisfied are you with your opportunity for advancement at EPA?

   1. ☐ Very satisfied
   2. ☐ Somewhat satisfied
   3. ☐ Not too satisfied
   4. ☐ Not at all satisfied

4. Conflicts can occur in any job. For example, someone may ask you to do work in a way which is different from what you think is best, or you may find that it is difficult to satisfy everyone. HOW OFTEN do you face problems in your work like the ones listed below? *(Check one box for each statement)*

	RARELY OR NEVER	SOMETIMES	FAIRLY OFTEN	VERY OFTEN
a. Persons equal in rank and authority over you ask you to do things which conflict.	1 ☐	2 ☐	3 ☐	4 ☐
b. People in a good position to see if you do what they ask give you things to do which conflict with one another.	1 ☐	2 ☐	3 ☐	4 ☐
c. People whose requests should be met give you things which conflict with other work you have to do.	1 ☐	2 ☐	3 ☐	4 ☐

5. The next series of questions asks HOW MUCH influence you now have in each of several areas at work. By influence we mean the degree to which you control what is done by others and have freedom to determine what you do yourself. *(Check one box for each question)*

	VERY LITTLE	LITTLE	A MODERATE AMOUNT	MUCH	VERY MUCH
a. How much influence do you have over the amount of work you do?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b. How much influence do you have over the availability of materials you need to do your work?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. How much do you influence the policies and procedures in your work group?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
d. How much influence do you have over the arrangement of furniture and other work equipment at your workstation?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

6. The next series of questions asks HOW OFTEN certain things happen at your job. *(Check one box for each question)*

	RARELY	OCCASIONALLY	SOMETIMES	FAIRLY OFTEN	VERY OFTEN
a. How often does your job require you to work very fast?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
b. How often does your job require you to work very hard?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
c. How often does your job leave you with little time to get things done?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
d. How often is there a great deal to be done?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
e. How often does your job let you use the skills and knowledge you learned in school?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
f. How often are you given a chance to do the things you do best?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

6. *(Continued)*

	RARELY	OCCASIONALLY	SOMETIMES	FAIRLY OFTEN	VERY OFTEN
g. How often can you use the skills from your previous experience and training?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
h. How often are you clear on what your job responsibilities are?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
i. How often can you predict what others will expect of you on the job?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
j. How much of the time are your work objectives well defined?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
k. How often are you clear about what others expect of you on the job?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

7. In order to better understand your responsibilities outside your normal working day, the next series of questions deals with other significant aspects of your life. *(Check "no" or "yes" for each question)*

	No 1	Yes 2
a. Do you have children at home?	☐	☐
b. Do you have major responsibility for childcare duties?	☐	☐
c. Do you have major responsibility for housecleaning duties?	☐	☐
d. Do you have major responsibility for the care of an elderly or disabled person on a regular basis?	☐	☐
e. Are you taking courses for credit toward a degree or a diploma?	☐	☐
f. Do you have a regular commitment of five hours or more per week, paid or unpaid, outside of this job? *(Include volunteer work, charitable work, second job, etc.)*	☐	☐

PART V. CONCLUDING QUESTIONS

This section concludes this survey. Your answers to these questions, like your answers to the previous questions, will be kept confidential. This information is needed for statistical purposes.

1. What day of the week did you complete this survey?

   1. ☐ Monday
   2. ☐ Tuesday
   3. ☐ Wednesday
   4. ☐ Thursday
   5. ☐ Friday

2. Which of the following best describes your current living and financial arrangements?

   1. ☐ Live alone, sole provider of rent/mortgage, utilities, food, and other living expenses.
   2. ☐ Live alone, but receive assistance from one or more others in paying rent/mortgage, utilities, food, and other living expenses.
   3. ☐ Live with one or more other persons, but sole provider of rent/mortgage, utilities, food, and other living expenses.
   4. ☐ Live with one or more other persons who help to pay rent/mortgage, utilities, food, and other living expenses.

3. What is the highest grade you completed in school?

   1. ☐ 8th grade or less
   2. ☐ 9th, 10th, or 11th grade
   3. ☐ High school graduate
   4. ☐ 2 years of college or Associate Degree
   5. ☐ Bachelor's or technical degree
   6. ☐ Some graduate work
   7. ☐ Graduate or professional degree

4. a. What is your pay plan and grade (e.g., GS-5, GM-14, SES-2, WG-2, etc.)?

   ____

   b. Which of the following best describes your job duties and responsibilities? *(If more than one applies, check the ONE box for the job duties on which you spend the most time.)*

   1. ☐ Managerial (such as administrator, manager, etc.)
   2. ☐ Professional (such as engineer, scientist, lawyer, etc.)
   3. ☐ Technical (such as technician, programmer, etc.)
   4. ☐ Administrative Support (such as clerical, computer operator, etc.)
   5. ☐ Service (such as health services, food preparation, janitorial, etc.)
   6. ☐ Craftsman (such as mechanic, repairer, etc.)
   7. ☐ Operator or laborer
   8. ☐ *Other (specify)*______________________

   ____

The following information is needed so that your workstation can be located within this building. This is necessary so that we can relate your responses to the air measurements that will be taken in a few weeks. As with the rest of the questions in this survey, this information will be kept confidential. Please tell us:

5. a. Your room number

   ____

   b. Your workstation telephone number (your direct or private number.)

   ____

6. Is there anything else you would like to tell us about environmental or health matters in this building? If so, please use this space provided for that purpose.

Please put your completed questionnaire in the return envelope provided. Seal it and take it to one of the return boxes located near the elevators and building exits.

PLEASE READ THE NEXT PAGE

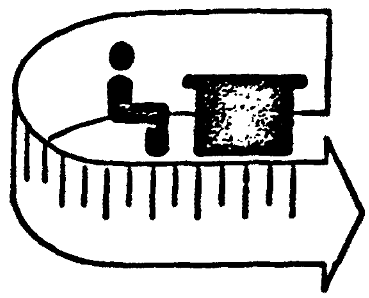
In a few weeks we plan to conduct air measurements in this building. At that time people whose workstations are close to the air measurement locations will be asked a few additional questions. You may be recontacted at that time.

Thank you very much for your time and patience in filling out this questionnaire.

APPENDIX B

INDOOR AIR QUALITY AND WORK ENVIRONMENT FOLLOW-UP SURVEY

EPA HEADQUARTERS



INDOOR AIR QUALITY AND WORK ENVIRONMENT FOLLOWUP SURVEY

EPA HEADQUARTERS

Measurements of a variety of environmental conditions are being taken in your work area throughout the day TODAY. To help determine how these measurements relate to your comfort and health, please complete the attached questionnaire. Your participation in this part of the evaluation of this building is, of course, voluntary.

Your completed questionnaire will be collected by and analyzed by Westat and Yale investigators and WILL NOT BE SEEN BY EPA MANAGEMENT OR UNION REPRESENTATIVES.

So that we may combine your responses to this questionnaire with the questionnaire distributed three weeks ago, we need you to print your name below. As soon as we have matched your questionnaires, we will remove this cover sheet and save this questionnaire without your name on it. At that time, we will also remove your name from the final combined data file.

YOUR FULL NAME: ______________________________
(please print) FIRST MIDDLE LAST

Please complete this questionnaire even if you did not complete the questionnaire distributed previously.

After you complete this questionnaire, please place it in the attached envelope and seal it. A study investigator will collect it from you.

THANK YOU FOR YOUR PARTICIPATION IN THIS SURVEY.

Date: ____/____/____

Cart No.: ____________

Location: ____ ____ ____ ____

(To be completed by investigators)

INDOOR AIR QUALITY AND WORK ENVIRONMENT STUDY

I. Your answers to the following questions will allow a better interpretation of the environmental measurements taken TODAY in the area around your workstation.

1. Did you complete and return the yellow-covered Indoor Air Quality and Work Environment questionnaire distributed during the weeks of February 13 and 21, 1989?

   1. ☐ No
   2. ☐ Yes

2. Have you been in this building at least 4 hours yet TODAY?

   1. ☐ No
   2. ☐ Yes

3. How many hours (to the nearest 1/2 hour) have you spent <u>at your workstation</u> TODAY? *(Enter 0 if you have not been at your workstation today.)*

   ______ hours this morning (before 12:00 noon)

   ______ hours this afternoon (between 12:00 noon and time you complete this questionnaire)

4. Since you arrived at work TODAY, have you gone outside (for lunch, break, or other reason)?

   1. ☐ No
   2. ☐ Yes

5. How many hours (to the nearest 1/2 hour) have you spent TODAY working at a photocopy machine?

   ________ hours

6. How many hours (to the nearest 1/2 hour) have you spent TODAY working at a video display terminal?

   ________ hours

7. During the day TODAY, have you or anyone else performed any of the following activities at or near your workstation? *(Check "no" or "yes" for each item.)*

	No 1	Yes 2
a. Smoked tobacco	☐	☐
b. Used a humidifier	☐	☐
c. Used a cleanser, glue, white out, or other strong-smelling chemical	☐	☐
d. Used a computer or word processor	☐	☐
e. Used a printer	☐	☐

II. For the following, please check the response that best describes your work environment TODAY . . .
(Please check one box for this morning and one box for this afternoon.)

	This MORNING	This AFTERNOON
1. Has the AIR MOVEMENT been:	1. ☐ too much 2. ☐ too little 3. ☐ just right	1. ☐ too much 2. ☐ too little 3. ☐ just right
2. Has the TEMPERATURE been:	1. ☐ too hot 2. ☐ too cold 3. ☐ just right	1. ☐ too hot 2. ☐ too cold 3. ☐ just right
3. Has the HUMIDITY been:	1. ☐ too humid 2. ☐ too dry 3. ☐ just right	1. ☐ too humid 2. ☐ too dry 3. ☐ just right
4. Has the NOISE LEVEL been:	1. ☐ too loud 2. ☐ too quiet 3. ☐ just right	1. ☐ too loud 2. ☐ too quiet 3. ☐ just right
5. Has the air been TOO STUFFY?	1. ☐ No 2. ☐ Yes	1. ☐ No 2. ☐ Yes
6. Has your work area been TOO DUSTY?	1. ☐ No 2. ☐ Yes	1. ☐ No 2. ☐ Yes

7. a. Would you like to adjust any of the above conditions?

1. ☐ No ——→ *Go to Q.8*
2. ☐ Yes

b. If yes, which condition(s) would you adjust?

____

____

____

8. Have you noticed any of these types of ODORS at your workstation TODAY? *(Check one box for each item.)*

	No 1	Yes 2
a. Body odor	☐	☐
b. Cosmetics, such as perfume or after-shave	☐	☐
c. Tobacco smoke	☐	☐
d. Fishy smells	☐	☐
e. Other food smells	☐	☐
f. Musty or damp basement smells	☐	☐
g. Odors from new carpet	☐	☐
h. Odors from new drapes or curtains	☐	☐
i. Odors from diesel or other engine exhaust	☐	☐
j. Odors from a photo-copying machine	☐	☐
k. Odors from printing processing (press, binding materials, etc.)	☐	☐
l. Odors from other chemicals such as adhesives, glues, cleansers, white out, rubber cement, pesticides, etc.	☐	☐
m. Odors from pesticides	☐	☐
n. Odors from cleaning of carpets, drapes, or other furnishings	☐	☐
o. Odors from paint	☐	☐
p. Other unpleasant odors *(describe)* ______________	☐	☐

9. How would you judge the overall air quality in this building TODAY?

1. ☐ Excellent
2. ☐ Good
3. ☐ Fair
4. ☐ Poor

III. Have you experienced any of the following symptoms while at work in this building TODAY? *(For each symptom, answer "no" or "yes." If your response is "no," go down to the next symptom.)*

			IF YES, when did this symptom begin?		
	NO	YES	BEFORE ARRIVING AT WORK	THIS MORNING AT WORK	THIS AFTERNOON AT WORK
a. headache	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
b. nausea	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
c. runny nose	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
d. stuffy nose/sinus congestion	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
e. sneezing	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
f. cough	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
g. wheezing or whistling in chest	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
h. shortness of breath	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
i. chest tightness	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
j. burning lungs	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
k. dry, itching, or tearing eyes	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
l. sore/strained eyes	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
m. blurry/double vision	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
n. burning eyes	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
o. sore throat	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
p. hoarseness	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
q. dry throat	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
r. unusual fatigue or tiredness	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
s. sleepiness or drowsiness	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
t. chills	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
u. fever	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
v. aching muscles or joints	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
w. problems with contact lenses	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
x. difficulty remembering things	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
y. dizziness/lightheadedness	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
z. feeling depressed	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
aa. tension or nervousness	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
bb. difficulty concentrating	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
cc. dry or itchy skin	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
dd. pain or stiffness in upper back	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
ee. pain or stiffness in lower back	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
ff. pain or numbness in shoulder/neck	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐
gg. pain or numbness in hands or wrists	1. ☐	2. ☐	1. ☐	2. ☐	3. ☐

IV. The quality of indoor air and other working conditions may influence the way a person feels. For each of the following, please indicate how you have been feeling TODAY. *(Check one box for each item.)*

	Not at all	A little	Moderately	Quite a lot	Extremely
a. worn out	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
b. listless	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
c. lively	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
d. active	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
e. on edge	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
f. shaky	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
g. energetic	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
h. tense	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
i. relaxed	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
j. uneasy	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
k. restless	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
l. fatigued	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
m. nervous	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
n. cheerful	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
o. exhausted	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
p. anxious	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
q. sluggish	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
r. panicky	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
s. weary	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
t. alert	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
u. full of pep	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
v. carefree	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
w. vigorous	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐
x. bushed	1. ☐	2. ☐	3. ☐	4. ☐	5. ☐

V. What time is it now?

_____:_____ PM

Thank you for your time and patience in filling out this questionnaire. Your answers to this questionnaire, like the previous questionnaire, will be kept confidential.

APPENDIX C

TABULATIONS OF RESPONSES TO THE

INDOOR AIR QUALITY AND WORK ENVIRONMENT FOLLOW-UP SURVEY

EPA HEADQUARTERS

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QI1: Completed questionnaire 1.					
	No	7	110	1.8	21.7
	Yes	374	396	98.2	78.3
		---------	---------		
		381	506		
QI2: 4+ hours in building today.					
	No	48	61	12.5	11.9
	Yes	335	453	87.5	88.1
		---------	---------		
		383	514		
QI3A: AM hours at workstation					
	0.0	21	29	5.5	5.6
	0.5	5	8	1.3	1.6
	1.0	24	27	6.2	5.2
	1.5	5	10	1.3	1.9
	2.0	56	69	14.6	13.4
	2.5	20	23	5.2	4.5
	3.0	86	116	22.4	22.5
	3.5	32	46	8.3	8.9
	4.0	85	113	22.1	21.9
	4.5	15	22	3.9	4.3
	5.0	31	44	8.1	8.5
	5.5	2	4	0.5	0.8
	6.0	1	2	0.3	0.4
	7.0	0	1	0.0	0.2
	8.0	1	1	0.3	0.2
		---------	---------		
		384	515		
QI3B: PM hours at workstation.					
	0.0	118	161	30.7	31.3
	0.5	12	23	3.1	4.5
	0.7	1	1	0.3	0.2
	1.0	86	105	22.4	20.4
	1.2	1	1	0.3	0.2
	1.5	24	33	6.2	6.4
	2.0	79	96	20.6	18.6
	2.5	17	24	4.4	4.7
	3.0	24	36	6.2	7.0
	3.2	0	1	0.0	0.2
	3.5	7	7	1.8	1.4
	4.0	14	18	3.6	3.5
	4.5	0	2	0.0	0.4
	5.0	1	5	0.3	1.0
	5.5	0	1	0.0	0.2
	7.0	0	1	0.0	0.2
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
Q14: Gone outside.					
	No	147	203	38.5	39.7
	Yes	235	308	61.5	60.3
		---------	---------		
		382	511		
Q15: Hours at photo-copier.					
	0.0	280	377	72.9	73.2
	0.1	0	1	0.0	0.2
	0.2	5	8	1.3	1.6
	0.5	79	97	20.6	18.8
	1.0	12	22	3.1	4.3
	1.5	0	1	0.0	0.2
	2.0	5	6	1.3	1.2
	3.5	1	1	0.3	0.2
	5.0	1	1	0.3	0.2
	6.0	1	1	0.3	0.2
		---------	---------		
		384	515		
Q16: Hours at VDT.					
	0.0	142	210	37.0	40.8
	0.2	1	1	0.3	0.2
	0.5	60	70	15.6	13.6
	1.0	57	67	14.8	13.0
	1.5	11	16	2.9	3.1
	2.0	46	55	12.0	10.7
	2.5	8	8	2.1	1.6
	3.0	17	25	4.4	4.9
	3.5	4	5	1.0	1.0
	4.0	11	19	2.9	3.7
	4.5	5	6	1.3	1.2
	5.0	9	13	2.3	2.5
	5.5	3	3	0.8	0.6
	6.0	5	11	1.3	2.1
	6.5	1	2	0.3	0.4
	7.0	4	4	1.0	0.8
		---------	---------		
		384	515		
Q17A: Exposed to smoke.					
	No	374	498	97.4	96.7
	Yes	10	17	2.6	3.3
		---------	---------		
		384	515		
Q17B: Used humidifier.					
	No	372	502	96.9	97.5
	Yes	12	13	3.1	2.5
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QI7C: Used chemicals.					
	No	348	461	90.6	89.5
	Yes	36	54	9.4	10.5
		---------	---------		
		384	515		
QI7D: Used computer/ WP.					
	No	66	101	17.2	19.6
	Yes	318	414	82.8	80.4
		---------	---------		
		384	515		
QI7E: Used printer.					
	No	143	203	37.2	39.4
	Yes	241	312	62.8	60.6
		---------	---------		
		384	515		

The following questions relate to perceived thermal comfort.

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QII1A: AM air movement.					
	Too much	42	56	11.5	11.6
	Too little	134	186	36.7	38.4
	Okay	189	242	51.8	50.0
		---------	---------		
		365	484		
QII1B: PM air movement.					
	Too much	32	44	10.7	10.9
	Too little	117	159	39.0	39.6
	Okay	151	199	50.3	49.5
		---------	---------		
		300	402		
QII2A: AM temperature.					
	Too hot	55	78	14.9	15.9
	Too cold	102	137	27.6	27.8
	Okay	212	277	57.5	56.3
		---------	---------		
		369	492		
QII2B: PM temperature.					
	Too hot	50	71	16.4	17.5
	Too cold	64	90	21.0	22.2
	Okay	191	244	62.6	60.2
		---------	---------		
		305	405		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QII3A: AM humidity.					
	Too humid	15	18	4.1	3.7
	Too dry	155	217	42.3	44.8
	Okay	196	249	53.6	51.4
		---------	---------		
		366	484		
QII3B: PM humidity.					
	Too humid	13	15	4.3	3.7
	To dry	133	185	44.0	46.2
	Okay	156	200	51.7	50.0
		---------	---------		
		302	400		
QII4A: AM noise level.					
	Too loud	105	146	28.6	29.9
	Too quiet	9	9	2.5	1.8
	Okay	253	334	68.9	68.3
		---------	---------		
		367	489		
QII4B: PM noise level.					
	Too loud	85	115	28.1	28.5
	Too quiet	9	11	3.0	2.7
	Okay	209	278	69.0	68.8
		---------	---------		
		303	404		
QII5A: AM air too stuffy.					
	No	225	289	60.6	58.5
	Yes	146	205	39.4	41.5
		---------	---------		
		371	494		
QII5B: PM air too stuffy.					
	No	184	235	59.7	57.2
	Yes	124	176	40.3	42.8
		---------	---------		
		308	411		
QII6A: AM too dusty.					
	No	279	362	75.4	73.7
	Yes	91	129	24.6	26.3
		---------	---------		
		370	491		
QII6B: PM too dusty.					
	No	232	303	76.1	74.8
	Yes	73	102	23.9	25.2
		---------	---------		
		305	405		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QII7A: Like to adjust work environment conditions.					
	No	103	135	28.7	28.4
	Yes	256	341	71.3	71.6
		---------	---------		
		359	476		
QII7B_1: Like to adjust air movement.					
	No	249	347	69.4	72.9
	Yes	110	129	30.6	27.1
		---------	---------		
		359	476		
QII7B_2: Like to adjust temperature.					
	No	243	338	67.7	71.0
	Yes	116	138	32.3	29.0
		---------	---------		
		359	476		
QII7B_3: Like to adjust humidity.					
	No	271	375	75.5	78.8
	Yes	88	101	24.5	21.2
		---------	---------		
		359	476		
QII7B_4: Like to adjust noise level.					
	No	309	416	86.1	87.4
	Yes	50	60	13.9	12.6
		---------	---------		
		359	476		
QII7B_5: Like to adjust air stuffiness.					
	No	308	413	85.8	86.8
	Yes	51	63	14.2	13.2
		---------	---------		
		359	476		
QII7B_6: Like to adjust dustiness.					
	No	329	442	91.6	92.9
	Yes	30	34	8.4	7.1
		---------	---------		
		359	476		

The following questions ask whether certain types of odors were noticed.

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QII8A: Body.					
	No	371	498	96.6	96.7
	Yes	13	17	3.4	3.3
		---------	---------		
		384	515		
QII8B: Cosmetics.					
	No	310	414	80.7	80.4
	Yes	74	101	19.3	19.6
		---------	---------		
		384	515		
QII8C: Tobacco smoke.					
	No	374	502	97.4	97.5
	Yes	10	13	2.6	2.5
		---------	---------		
		384	515		
QII8D: Fishy.					
	No	377	504	98.2	97.9
	Yes	7	11	1.8	2.1
		---------	---------		
		384	515		
QII8E: Other foods.					
	No	289	382	75.3	74.2
	Yes	95	133	24.7	25.8
		---------	---------		
		384	515		
QII8F: Musty/damp.					
	No	370	496	96.4	96.3
	Yes	14	19	3.6	3.7
		---------	---------		
		384	515		
QII8G: New carpet.					
	No	377	505	98.2	98.1
	Yes	7	10	1.8	1.9
		---------	---------		
		384	515		
QII8H: New drapes.					
	No	383	514	99.7	99.8
	Yes	1	1	0.3	0.2
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QII8I: Diesel/engine exhaust.					
	No	377	503	98.2	97.7
	Yes	7	12	1.8	2.3
		---------	---------		
		384	515		
QII8J: Photocopying machine.					
	No	362	484	94.3	94.0
	Yes	22	31	5.7	6.0
		---------	---------		
		384	515		
QII8K: Printing processing.					
	No	379	505	98.7	98.1
	Yes	5	10	1.3	1.9
		---------	---------		
		384	515		
QII8L: Chemicals.					
	No	365	481	95.1	93.4
	Yes	19	34	4.9	6.6
		---------	---------		
		384	515		
QII8M: Pesticides.					
	No	382	511	99.5	99.2
	Yes	2	4	0.5	0.8
		---------	---------		
		384	515		
QII8N: Cleaning.					
	No	378	505	98.4	98.1
	Yes	6	10	1.6	1.9
		---------	---------		
		384	515		
QII8O: Paint.					
	No	378	505	98.4	98.1
	Yes	6	10	1.6	1.9
		---------	---------		
		384	515		
QII8P: Other.					
	No	358	472	93.2	91.7
	Yes	26	43	6.8	8.3
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QII9: Overall air quality.					
	Excel.	14	17	3.8	3.5
	Good	148	184	40.3	37.6
	Fair	164	227	44.7	46.4
	Poor	41	61	11.2	12.5
		---------	---------		
		367	489		

Health Symptoms

> The following questions ask (1) whether a particular health symptom was experienced on the day of monitoring (no/yes) and (2) when the symptom began: 1=prior to work; 2=in the morning at work; 3=in the afternoon at work.

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIA1: Headache.					
	No	301	387	78.4	75.1
	Yes	83	128	21.6	24.9
		---------	---------		
		384	515		
QIIIA2: Headache started.					
	NA	301	387	78.4	75.1
	1	12	18	3.1	3.5
	2	46	77	12.0	15.0
	3	25	33	6.5	6.4
		---------	---------		
		384	515		
QIIIB1: Nausea:					
	No	367	486	95.6	94.4
	Yes	17	29	4.4	5.6
		---------	---------		
		384	515		
QIIIB2: Nausea started.					
	NA	367	486	95.6	94.4
	1	5	7	1.3	1.4
	2	8	15	2.1	2.9
	3	4	7	1.0	1.4
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIC1: Runny nose.					
	No	279	363	72.7	70.5
	Yes	105	152	27.3	29.5
		---------	---------		
		384	515		
QIIIC2: Runny nose started.					
	NA	279	363	72.7	70.5
	1	49	61	12.8	11.8
	2	49	79	12.8	15.3
	3	7	12	1.8	2.3
		---------	---------		
		384	515		
QIIID1: Stuffy nose.					
	No	213	285	55.5	55.3
	Yes	171	230	44.5	44.7
		---------	---------		
		384	515		
QIIID2: Stuffy nose started.					
	NA	213	285	55.5	55.3
	1	81	105	21.1	20.4
	2	78	110	20.3	21.4
	3	12	15	3.1	2.9
		---------	---------		
		384	515		
QIIIE1: Sneezing.					
	No	306	406	79.7	78.8
	Yes	78	109	20.3	21.2
		---------	---------		
		384	515		
QIIIE2: Sneezing started.					
	NA	306	406	79.7	78.8
	1	25	34	6.5	6.6
	2	45	65	11.7	12.6
	3	8	10	2.1	1.9
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIF1: Cough.					
	No	324	432	84.4	83.9
	Yes	60	83	15.6	16.1
		---------	---------		
		384	515		
QIIIF2: Cough started.					
	NA	324	432	84.4	83.9
	1	30	40	7.8	7.8
	2	26	37	6.8	7.2
	3	4	6	1.0	1.2
		---------	---------		
		384	515		
QIIIG1: Wheezing.					
	No	366	491	95.3	95.3
	Yes	18	24	4.7	4.7
		---------	---------		
		384	515		
QIIIG2: Wheezing started.					
	NA	366	491	95.3	95.3
	1	9	12	2.3	2.3
	2	8	9	2.1	1.7
	3	1	3	0.3	0.6
		---------	---------		
		384	515		
QIIIH1: Shortness of breath.					
	No	358	480	93.2	93.2
	Yes	26	35	6.8	6.8
		---------	---------		
		384	515		
QIIIH2: Shortness of breath started.					
	NA	358	480	93.2	93.2
	1	8	11	2.1	2.1
	2	14	17	3.6	3.3
	3	4	7	1.0	1.4
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIII1: Chest tightness.					
	No	357	481	93.0	93.4
	Yes	27	34	7.0	6.6
		---------	---------		
		384	515		
QIIII2: Chest tightness started.					
	NA	357	481	93.0	93.4
	1	11	14	2.9	2.7
	2	14	17	3.6	3.3
	3	2	3	0.5	0.6
		---------	---------		
		384	515		
QIIIJ1: Burning lungs.					
	No	375	504	97.7	97.9
	Yes	9	11	2.3	2.1
		---------	---------		
		384	515		
QIIIJ2: Burning lungs started.					
	NA	375	504	97.7	97.9
	1	4	4	1.0	0.8
	2	5	5	1.3	1.0
	3	0	2	0.0	0.4
		---------	---------		
		384	515		
QIIIK1: Dry eyes.					
	No	263	353	68.5	68.5
	Yes	121	162	31.5	31.5
		---------	---------		
		384	515		
QIIIK2: Dry eyes started.					
	NA	263	353	68.5	68.5
	1	19	27	4.9	5.2
	2	82	112	21.4	21.7
	3	20	23	5.2	4.5
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIL1: Sore eyes.					
	No	279	376	72.7	73.0
	Yes	105	139	27.3	27.0
		---------	---------		
		384	515		
QIIIL2:Sore eyes started.					
	NA	279	376	72.7	73.0
	1	16	17	4.2	3.3
	2	59	81	15.4	15.7
	3	30	41	7.8	8.0
		---------	---------		
		384	515		
QIIIM1: Blurry vision.					
	No	359	477	93.5	92.6
	Yes	25	38	6.5	7.4
		---------	---------		
		384	515		
QIIIM2: Blurry vision started.					
	NA	359	477	93.5	92.6
	1	7	9	1.8	1.7
	2	14	24	3.6	4.7
	3	4	5	1.0	1.0
		---------	---------		
		384	515		
QIIIN1: Burning eyes.					
	No	306	416	79.7	80.8
	Yes	78	99	20.3	19.2
		---------	---------		
		384	515		
QIIIN2: Burning eyes started.					
	NA	306	416	79.7	80.8
	1	11	15	2.9	2.9
	2	48	59	12.5	11.5
	3	19	25	4.9	4.9
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIO1: Sore throat.					
	No	345	456	89.8	88.5
	Yes	39	59	10.2	11.5
		---------	---------		
		384	515		
QIIIO2: Sore throat started.					
	NA	345	456	89.8	88.5
	1	19	28	4.9	5.4
	2	11	20	2.9	3.9
	3	9	11	2.3	2.1
		---------	---------		
		384	515		
QIIIP1: Hoarseness.					
	No	353	469	91.9	91.1
	Yes	31	46	8.1	8.9
		---------	---------		
		384	515		
QIIIP2: Hoarseness started.					
	NA	353	469	91.9	91.1
	1	14	18	3.6	3.5
	2	14	25	3.6	4.9
	3	3	3	0.8	0.6
		---------	---------		
		384	515		
QIIIQ1: Dry throat.					
	No	278	368	72.4	71.5
	Yes	106	147	27.6	28.5
		---------	---------		
		384	515		
QIIIQ2: Dry throat started.					
	NA	278	368	72.4	71.5
	1	26	33	6.8	6.4
	2	57	82	14.8	15.9
	3	23	32	6.0	6.2
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIR1: Fatigue.					
	No	314	422	81.8	81.9
	Yes	70	93	18.2	18.1
		384	515		
QIIIR2: Fatigue started.					
	NA	314	422	81.8	81.9
	1	13	19	3.4	3.7
	2	34	46	8.9	8.9
	3	23	28	6.0	5.4
		384	515		
QIIIS1: Sleepiness.					
	No	287	384	74.7	74.6
	Yes	97	131	25.3	25.4
		384	515		
QIIIS2: Sleepiness started.					
	NA	287	384	74.7	74.6
	1	14	22	3.6	4.3
	2	44	59	11.5	11.5
	3	39	50	10.2	9.7
		384	515		
QIIIT1: Chills.					
	No	344	453	89.6	88.0
	Yes	40	62	10.4	12.0
		384	515		
QIIIT2: Chills strated.					
	NA	344	453	89.6	88.0
	1	8	12	2.1	2.3
	2	26	41	6.8	8.0
	3	6	9	1.6	1.7
		384	515		
QIIIU1: Fever.					
	No	381	509	99.2	98.8
	Yes	3	6	0.8	1.2
		384	515		
QIIIU2: Fever started.					
	NA	381	509	99.2	98.8
	1	2	2	0.5	0.4
	2	0	3	0.0	0.6
	3	1	1	0.3	0.2
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIV1: Aching muscles.					
	No	338	455	88.0	88.3
	Yes	46	60	12.0	11.7
		---------	---------		
		384	515		
QIIIV2: Aching muscles started.					
	NA	338	455	88.0	88.3
	1	25	31	6.5	6.0
	2	15	21	3.9	4.1
	3	6	8	1.6	1.6
		---------	---------		
		384	515		
QIIIW1*: Problem with contact lenses.					
	No	57	57	67.9	67.9
	Yes	27	27	32.1	32.1
		---------	---------		
		84	84		
QIIIW2*: Problem with contact lenses started.					
	NA	57	57	67.9	67.9
	1	2	2	2.4	2.4
	2	21	21	25.0	25.0
	3	4	4	4.8	4.8
		---------	---------		
		84	84		
QIIIX1: Difficulty remembering.					
	No	365	485	95.1	94.2
	Yes	19	30	4.9	5.8
		---------	---------		
		384	515		
QIIIX2: Difficulty remembering started.					
	NA	365	485	95.1	94.2
	1	3	6	0.8	1.2
	2	10	14	2.6	2.7
	3	6	10	1.6	1.9
		---------	---------		
		384	515		

* Defined for wearers of contact lenses.

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIY1: Dizziness.					
	No	357	476	93.0	92.4
	Yes	27	39	7.0	7.6
		---------	---------		
		384	515		
QIIIY2: Dizziness started.					
	NA	357	476	93.0	92.4
	1	5	6	1.3	1.2
	2	16	24	4.2	4.7
	3	6	9	1.6	1.7
		---------	---------		
		384	515		
QIIIZ1: Depressed.					
	No	349	461	90.9	89.5
	Yes	35	54	9.1	10.5
		---------	---------		
		384	515		
QIIIZ2: Depression started.					
	NA	349	461	90.9	89.5
	1	8	13	2.1	2.5
	2	20	29	5.2	5.6
	3	7	12	1.8	2.3
		---------	---------		
		384	515		
QIIIAA1: Tension.					
	No	323	436	84.1	84.7
	Yes	61	79	15.9	15.3
		---------	---------		
		384	515		
QIIIAA2: Tension started.					
	NA	323	436	84.1	84.7
	1	11	18	2.9	3.5
	2	42	50	10.9	9.7
	3	8	11	2.1	2.1
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIBB1: Difficulty concentrating.					
	No	319	434	83.1	84.3
	Yes	65	81	16.9	15.7
		---------	---------		
		384	515		
QIIIBB2: Difficulty concentrating started.					
	NA	319	434	83.1	84.3
	1	6	8	1.6	1.6
	2	48	59	12.5	11.5
	3	11	14	2.9	2.7
		---------	---------		
		384	515		
QIIICC1: Dry skin.					
	No	298	400	77.6	77.7
	Yes	86	115	22.4	22.3
		---------	---------		
		384	515		
QIIICC2: Dry skin started.					
	NA	298	400	77.6	77.7
	1	40	58	10.4	11.3
	2	35	44	9.1	8.5
	3	11	13	2.9	2.5
		---------	---------		
		384	515		
QIIIDD1: Pain upper back.					
	No	341	460	88.8	89.3
	Yes	43	55	11.2	10.7
		---------	---------		
		384	515		
QIIIDD2: Pain upper back started.					
	NA	341	460	88.8	89.3
	1	9	13	2.3	2.5
	2	20	23	5.2	4.5
	3	14	19	3.6	3.7
		---------	---------		
		384	515		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIIIEE1: Pain lower back.					
	No	327	438	85.2	85.0
	Yes	57	77	14.8	15.0
		---------	---------		
		384	515		
QIIIEE2: Pain lower back started.					
	NA	327	438	85.2	85.0
	1	19	25	4.9	4.9
	2	29	37	7.6	7.2
	3	9	15	2.3	2.9
		---------	---------		
		384	515		
QIIIFF1: Pain shoulder/ neck.					
	No	333	449	86.7	87.2
	Yes	51	66	13.3	12.8
		---------	---------		
		384	515		
QIIIFF2: Pain shoulder/ neck started.					
	NA	333	449	86.7	87.2
	1	17	20	4.4	3.9
	2	23	31	6.0	6.0
	3	11	15	2.9	2.9
		---------	---------		
		384	515		
QIIIGG1: Pain hands or wrists.					
	No	364	484	94.8	94.0
	Yes	20	31	5.2	6.0
		---------	---------		
		384	515		
QIIIGG2: Pain hands or wrists started.					
	NA	364	484	94.8	94.0
	1	12	15	3.1	2.9
	2	7	13	1.8	2.5
	3	1	3	0.3	0.6
		---------	---------		
		384	515		

The following questions ask for ratings of feelings: 1=not at all; 2=a little; 3=moderately; 4=quite a lot; 5=extremely.

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIVA: Worn out.					
	1	156	215	41.9	43.3
	2	128	171	34.4	34.5
	3	56	73	15.1	14.7
	4	24	28	6.5	5.6
	5	8	9	2.2	1.8
		372	496		
QIVB: Listless.					
	1	237	322	66.8	67.8
	2	73	96	20.6	20.2
	3	35	45	9.9	9.5
	4	9	11	2.5	2.3
	5	1	1	0.3	0.2
		355	475		
QIVC: Lively.					
	1	75	94	20.4	19.3
	2	79	105	21.5	21.5
	3	164	221	44.6	45.3
	4	47	63	12.8	12.9
	5	3	5	0.8	1.0
		368	488		
QIVD: Active.					
	1	61	76	16.4	15.5
	2	66	87	17.8	17.8
	3	170	232	45.8	47.3
	4	64	81	17.3	16.5
	5	10	14	2.7	2.9
		371	490		
QIVE: On edge.					
	1	240	327	64.7	66.3
	2	77	97	20.8	19.7
	3	36	47	9.7	9.5
	4	11	13	3.0	2.6
	5	7	9	1.9	1.8
		371	493		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIVF: Shaky.					
	1	322	425	87.3	86.7
	2	34	43	9.2	8.8
	3	10	17	2.7	3.5
	4	0	1	0.0	0.2
	5	3	4	0.8	0.8
		---------	---------		
		369	490		
QIVG: Energetic.					
	1	83	111	22.4	22.6
	2	75	97	20.3	19.7
	3	163	221	44.1	44.9
	4	43	56	11.6	11.4
	5	6	7	1.6	1.4
		---------	---------		
		370	492		
QIVH: Tense.					
	1	204	277	55.4	56.5
	2	100	130	27.2	26.5
	3	40	52	10.9	10.6
	4	19	24	5.2	4.9
	5	5	7	1.4	1.4
		---------	---------		
		368	490		
QIVI: Relaxed.					
	1	85	109	23.0	22.2
	2	83	113	22.4	23.0
	3	155	206	41.9	41.9
	4	35	51	9.5	10.4
	5	12	13	3.2	2.6
		---------	---------		
		370	492		
QIVJ: Uneasy.					
	1	252	338	68.7	69.4
	2	77	100	21.0	20.5
	3	25	34	6.8	7.0
	4	7	8	1.9	1.6
	5	6	7	1.6	1.4
		---------	---------		
		367	487		
QIVK: Restless.					
	1	242	317	65.8	65.1
	2	70	98	19.0	20.1
	3	41	51	11.1	10.5
	4	11	16	3.0	3.3
	5	4	5	1.1	1.0
		---------	---------		
		368	487		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIVL: Fatigues.					
	1	175	232	47.6	47.7
	2	122	170	33.2	35.0
	3	38	44	10.3	9.1
	4	25	31	6.8	6.4
	5	8	9	2.2	1.9
		---------	---------		
		368	486		
QIVM: Nervous.					
	1	269	361	72.9	73.8
	2	72	87	19.5	17.8
	3	20	32	5.4	6.5
	4	3	4	0.8	0.8
	5	5	5	1.4	1.0
		---------	---------		
		369	489		
QIVN: Cheerful.					
	1	61	82	16.5	16.8
	2	67	91	18.1	18.6
	3	172	226	46.5	46.2
	4	54	73	14.6	14.9
	5	16	17	4.3	3.5
		---------	---------		
		370	489		
QIVO: Exhausted.					
	1	211	286	57.2	58.4
	2	106	133	28.7	27.1
	3	29	41	7.9	8.4
	4	15	21	4.1	4.3
	5	8	9	2.2	1.8
		---------	---------		
		369	490		
QIVP: Anxious.					
	1	227	311	61.7	63.6
	2	99	122	26.9	24.9
	3	24	34	6.5	7.0
	4	14	16	3.8	3.3
	5	4	6	1.1	1.2
		---------	---------		
		368	489		
QIVQ: Sluggish.					
	1	200	271	54.1	55.2
	2	112	144	30.3	29.3
	3	41	50	11.1	10.2
	4	9	16	2.4	3.3
	5	8	10	2.2	2.0
		---------	---------		
		370	491		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIVR: Panicky.					
	1	337	439	91.8	90.1
	2	17	26	4.6	5.3
	3	8	16	2.2	3.3
	4	2	2	0.5	0.4
	5	3	4	0.8	0.8
		---------	---------		
		367	487		
QIVS: Weary.					
	1	208	284	56.5	58.1
	2	113	142	30.7	29.0
	3	27	37	7.3	7.6
	4	13	19	3.5	3.9
	5	7	7	1.9	1.4
		---------	---------		
		368	489		
QIVT: Alert.					
	1	59	75	16.1	15.4
	2	51	68	13.9	14.0
	3	169	223	46.0	45.9
	4	71	97	19.3	20.0
	5	17	23	4.6	4.7
		---------	---------		
		367	486		
QIVU: Full of pep.					
	1	102	133	27.6	27.1
	2	82	110	22.2	22.4
	3	149	197	40.3	40.1
	4	31	43	8.4	8.8
	5	6	8	1.6	1.6
		---------	---------		
		370	491		
QIVV: Carefree.					
	1	163	205	44.5	42.4
	2	75	108	20.5	22.4
	3	101	136	27.6	28.2
	4	17	21	4.6	4.3
	5	10	13	2.7	2.7
		---------	---------		
		366	483		
QIVW: Vigorous.					
	1	110	148	29.8	30.2
	2	76	102	20.6	20.8
	3	148	193	40.1	39.4
	4	26	35	7.0	7.1
	5	9	12	2.4	2.4
		---------	---------		
		369	490		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
QIVX: Bushed.					
	1	183	256	49.7	52.4
	2	127	160	34.5	32.7
	3	33	40	9.0	8.2
	4	14	19	3.8	3.9
	5	11	14	3.0	2.9
		---------	---------		
		368	489		
QV: Time of day (pm).					
	1	84	115	22.4	23.3
	2	136	167	36.3	33.8
	3	60	79	16.0	16.0
	4	9	13	2.4	2.6
	5	1	1	0.3	0.2
	9	1	1	0.3	0.2
	10	12	14	3.2	2.8
	11	33	43	8.8	8.7
	12	36	58	9.6	11.7
	14	3	3	0.8	0.6
		---------	---------		
		375	494		
FATIGUE SCALE	7 low	98	135	26.5	27.5
	8	33	45	8.9	9.2
	9	27	36	7.3	7.3
	10	23	33	6.2	6.7
	11	29	38	7.8	7.7
	12	36	44	9.7	9.0
	13	18	26	4.9	5.3
	14	24	27	6.5	5.5
	15	16	22	4.3	4.5
	16	7	12	1.9	2.4
	17	7	8	1.9	1.6
	18	7	9	1.9	1.8
	19	5	5	1.4	1.0
	20	8	9	2.2	1.8
	21	7	10	1.9	2.0
	22	1	2	0.3	0.4
	23	2	4	0.5	0.8
	24	2	3	0.5	0.6
	25	3	3	0.8	0.6
	26	2	2	0.5	0.4
	27	2	3	0.5	0.6
	28	4	5	1.1	1.0
	29	1	1	0.3	0.2
	30	2	2	0.5	0.4
	31	1	1	0.3	0.2
	32	1	2	0.3	0.4
	33	2	2	0.5	0.4
	35 high	2	2	0.5	0.4
		---------	---------		
		370	491		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
VIGOR SCALE	8 low	20	25	5.4	5.1
	9	9	10	2.4	2.0
	10	13	17	3.5	3.5
	11	14	19	3.8	3.9
	12	11	15	3.0	3.1
	13	4	6	1.1	1.2
	14	12	14	3.3	2.9
	15	10	13	2.7	2.7
	16	17	24	4.6	4.9
	17	21	24	5.7	4.9
	18	11	17	3.0	3.5
	19	16	25	4.3	5.1
	20	18	22	4.9	4.5
	21	29	38	7.9	7.8
	22	26	35	7.0	7.2
	23	19	28	5.1	5.7
	24	35	52	9.5	10.6
	25	14	20	3.8	4.1
	26	19	23	5.1	4.7
	27	12	13	3.3	2.7
	28	10	10	2.7	2.0
	29	4	7	1.1	1.4
	30	6	8	1.6	1.6
	31	7	8	1.9	1.6
	32	4	6	1.1	1.2
	33	3	3	0.8	0.6
	35	0	1	0.0	0.2
	36	1	1	0.3	0.2
	38	2	2	0.5	0.4
	40 high	2	3	0.5	0.6
		---------	---------		
		369	489		

VARIABLE	VALUE	Q1&Q2 FREQUENCY	Q2 FREQUENCY	Q1&Q2 PERCENT	Q2 PERCENT
TENSION SCALE	3 low	6	8	1.6	1.6
	4	23	28	6.2	5.7
	5	76	103	20.6	21.1
	6	39	58	10.6	11.9
	7	54	68	14.6	13.9
	8	32	44	8.7	9.0
	9	21	31	5.7	6.3
	10	20	23	5.4	4.7
	11	19	23	5.1	4.7
	12	9	11	2.4	2.2
	13	12	16	3.3	3.3
	14	9	11	2.4	2.2
	15	6	8	1.6	1.6
	16	4	4	1.1	0.8
	17	6	9	1.6	1.8
	18	6	8	1.6	1.6
	19	7	11	1.9	2.2
	20	2	4	0.5	0.8
	21	5	6	1.4	1.2
	22	3	3	0.8	0.6
	24	2	2	0.5	0.4
	25	1	2	0.3	0.4
	26	1	1	0.3	0.2
	29	2	2	0.5	0.4
	31	1	1	0.3	0.2
	33	1	2	0.3	0.4
	35 high	2	2	0.5	0.4
		---------	---------		
		369	489		

APPENDIX D

SUMMARY OF MODELING RESULTS

The following pages provide a summary of the hypothesis tests conducted in conjunction with the estimation of models relating health, comfort, odor, air quality ratings, and mood states to various environmental measurements and to workplace and personal/medical variables. Results are given for models A, B, C, and D' as defined and described in section 6.2.3. The results presented here were abstracted from the detailed modeling results given in Appendices E, F, G, and H.

There is a separate page for each dependent variable, which is indicated at the top of the page, along with the key for interpreting the results. Independent variables are listed at the left, and the statistical significance of such variables is indicated for each of the four models. Variables included in a model are indicated by the presence of a slash (/). (Note that all temporally measured variables appear in Model A, that all comfort and odor variables appear in Model C, and that all VOC and microbiological variables appear in Model D'.) Plus or minus signs preceding the slash indicate that the term was statistically significant for the male-specific model; plus or minus signs following the slash apply similarly for the female-specific model. Plus signs indicate a positive association between the independent and dependent variables, while minus signs indicate a negative association. The number of plus or minus signs signifies the level of statistical significance, with one sign meaning 0.10, two signs (i.e., ++ or --) meaning 0.05, and three signs meaning 0.01.

With the exception of the mood-state variables (M1, M2, and M3, for which ordinary rather than logistic regressions were performed), the significance of the likelihood ratio statistic (denoted LRSS) is shown at the bottom of each page for each model (first for males, then for females). Also given are the sample sizes (n) used in the model estimation (males/females). For the mood-state variables, adjusted R^2 statistics are reported.

DEPENDENT VARIABLE (M/F): H1 NONSPECIFIC INDOOR AIR QUALITY

H1: NONSPECIFIC IAQ (a,r,s): Headache; unusual fatigue or tiredness; sleepiness or drowsiness

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>0.10;
. = variable not used; ======= = variable not included in model;

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	/	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	---/	---/	---/	---/
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	++/	+++/	+++/	+++/
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	/++	/++	/++	/
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/+	/+	/	++/
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/+++	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/+++	=======
C2	Too dry (1=yes)	=======	=======	/++	=======
C4	Too much air/too cold (1=yes)	=======	=======	++/++	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	++/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	+/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	--/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F) (a = <.01)	.29/a	.06/a	.31/.18	.64/.02
	n= (M/F)	180/174	184/181	180/177	97/111

DEPENDENT VARIABLE (M/F): H2 MUCOUS MEMBRANE

H2: MUCOUS MEMBRANE (c,d,k,n,q): Runny nose; stuffy nose/sinus congestion; dry itching tearing eyes; burning eyes; dry throat

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10; . = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	.	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	++/+	++/+	+/	/
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	/	/	/	/
P3B	Pay Grade (GS13-15)	/++	/++	/++	/+
P4	Job Satisfaction (higher = more)	/--	/--	/--	/--
P5	Role Conflict (higher = more)	/+	/	/	/
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	++/	++/	++/	/
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (pm - am) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/++	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/+++	=======
C2	Too dry (1=yes)	=======	=======	+++/++	=======
C4	Too much air/too cold (1=yes)	=======	=======	/	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/---
	LRSS (M/F) (a = <.01)	a/a	a/a	.03/.04	a/.05
	n= (M/F)	173/167	177/173	173/169	95/105

DEPENDENT VARIABLE (M/F): H3 MUCOUS MEMBRANE AND NON-SPECIFIC IAQ

H3: MUCOUS MEMBRANE AND NON-SPECIFIC IAQ (a, r, s, c, d, k, n, q): HA; fatigue/tired; sleepiness; runny nose; stuffy nose; tearing eyes; burning eyes; dry throat

Key: +++/--- = p<.01; ++/-- = .01>p<.05; +/- = .05>p<.10 ; / = p>.10
. = var. not used; ======= = var. not included in model; I = Infinity

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	/	/	/	/
W2B	Workstation-open (1=yes)	/--	/--	/--	/---
W3	Hours at Workstation (hrs)	.	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	++/	++/	++/	/
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	---/	--/	-/	/
P3A	Pay Grade (GS9-12)	-/	/	/	/--
P3B	Pay Grade (GS13-15)	/	/	/	/
P4	Job Satisfaction (higher = more)	/-	/-	/--	/-
P5	Role Conflict (higher = more)	/++	/+	/	+/
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	/	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/+++	=======
C1	Too little air/hot, stuffy (1=yes)	=======	=======	/+++	=======
C2	Too dry (1=yes)	=======	=======	+++/++	=======
C4	Too much air/too cold (1=yes)	=======	=======	+/+	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/++
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/---
LRSS	(M/F) (a = <.01)	a/.09	a/.09	.03/.81	a/.74
n=	(M/F)	172/160	177/167	173/163	95/103

DEPENDENT VARIABLE (M/F): H4 FLU-LIKE

H4: FLU-LIKE (f,g,h,i,u,v): Fever; aching muscles/joints; cough; wheezing/whistling in chest; shortness or breath; chest tightness

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10
. = var not used;n=var not estimable;======= = var not in model;
-I = -(infinity)

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	++/	++/	+/	/
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	/	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	--/	--/	-/	/
P3A	Pay Grade (GS9-12)	--/-	--/-	/	/-
P3B	Pay Grade (GS13-15)	/	--/	/	/
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	--/	-/	-/	--/
P9	Role Clarity (higher = more)	/--	/--	/-	/
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	+++/	+++/	+++/	+/-I
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/+	+/++	++/+++	/
T6	Temp Diff (1pm - am1) (oF.)	/++	/++	/+	/
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/+	=======
C2	Too dry (1=yes)	=======	=======	++/	=======
C4	Too much air/too cold (1=yes)	=======	=======	/++	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/+
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F; b = >.99; NE=Not Est)	b/.75	b/.78	b/.97	.99/.60
	n= (M/F)	176/164	176/164	172/161	92/99

DEPENDENT VARIABLE (M/F): H5 ERGONOMIC

H5: ERGONOMIC (dd,ee,ff,gg): pain/stiffness in upper back; pain/stiffness in lower back; pain/numbness in shoulders/neck; pain/numbness in hands/wrists

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10
. = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	/	/	-/	/
W2B	Workstation-open (1=yes)	/--	/--	/--	/---
W3	Hours at Workstation (hrs)	.	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	++/-	++/-	++/--	/
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	--/	-/-	-/	/
P7	Workload (higher = more)	+/	/	+/	/
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/++	/+	/+	/
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/--	/	/-	/
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/++	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/	=======
C2	Too dry (1=yes)	=======	=======	+++/	=======
C4	Too much air/too cold (1=yes)	=======	=======	/++	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/++
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/++
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
LRSS	(M/F)	.92/.69	.94/.56	.99/.87	.48/.42
n=	(M/F)	182/174	186/181	183/177	98/112

DEPENDENT VARIABLE (M/F): H6 HEADACHE AND NAUSEA

H6: HEADACHE, NAUSEA (a,b)

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10

. = variable not used; ======= = variable not needed for model;

I = Infinity

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	/++	/++	/++	/++
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	--/	--/	-/	/
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	++/++	++/++	++/++	/
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	+/	+/	/	I/
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	+/	++/	++/	++/
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/+++	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/+++	=======
C2	Too dry (1=yes)	=======	=======	/++	=======
C4	Too much air/too cold (1=yes)	=======	=======	/	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F) (b = >.99)	b/.04	b/.09	b/.75	b/.18
	n= (M/F)	178/170	182/177	179/173	96/110

DEPENDENT VARIABLE (M/F): H7 NASAL; COUGH

H7: NASAL; COUGH (c,d,e,f): runny nose; stuffy nose/sinus congestion; sneezing; cough

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10
. = var not used; -I = -(infinity); ======= = var not in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	/+	/+	/	/++
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	+++/	+++/+	++/	/
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	/-	/-	/--	-I/
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	--/	--/	-/	/
P3B	Pay Grade (GS13-15)	/	/	/	/
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	/--	/--	/--	/--
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	+++/	+++/	+++/	++/
P11A	Moderate smoking (<10cigs/d)	/	/	/	/
P11B	Heavy smoking (>10 cigs/d)	/--	/-	/-	/
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	--/	--/	-/	/
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	+++/	+/	+/	++/
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/+++	=======
C2	Too dry (1=yes)	=======	=======	++/	=======
C4	Too much air/too cold (1=yes)	=======	=======	/++	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	--/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/--
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F) (a = <.01)	.17/a	.14/a	.21/.02	.04/.06
	n= (M/F)	178/167	182/172	178/169	98/104

DEPENDENT VARIABLE (M/F): H8 CHEST

H8: CHEST (g,h,i): wheezing/whistling in chest; shortness of breath; chest tightness

Key: +++/--- = p(.01; ++/-- = .01(p(.05; +/- = .05(p(.10; / = p).10; . = variable not used; ======= = variable not included in model; -I = -(infinity)

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	-I/	-I/	-I/	-I/
W2B	Workstation-open (1=yes)	/	/	/	/-I
W3	Hours at Workstation (hrs)	/	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	/	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	-/	--/	-/+	/
P3B	Pay Grade (GS13-15)	/	---/	-/++	/++
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	-/	---/	--/	--/
P9	Role Clarity (higher = more)	/	.	.	.
P10	External Stress (higher = more)	/	.	.	.
P11A	Moderate smoking ((10cigs/d)	.	.	.	.
P11B	Heavy smoking ()10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	+++/	+++/	+++/	++/-I
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/++	/+++	/+++	/+
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/+	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/++	=======
C2	Too dry (1=yes)	=======	=======	/	=======
C4	Too much air/too cold (1=yes)	=======	=======	/	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	+/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/+
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F) (b =).99)	b/b	b/b	b/b	b/b
	n= (M/F)	176/169	182/175	178/172	97/108

DEPENDENT VARIABLE (M/F): H9 EYES

H9: EYES (k,l,m,n): Dry itching or tearing eyes; sore/strained eyes; blurry/double vision; burning eyes

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10;
. = variable not used; ======= = variable not included in model;
-I = -(infinity)

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	/	/	-/	-/
W2B	Workstation-open (1=yes)	/---	/---	/---	/---
W3	Hours at Workstation (hrs)	+/+	++/+	+/++	++/+++
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	/--	/-	/--	-I/-
P1	Age (yrs)	/	.	.	.
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	/-	-/--	/--	-/-
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	+++/	+++/	+++/	/+
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	/	.	.	.
P12B	Contact lens only (1=yes)	/++	/++	/+++	/
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	+/	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	+++/+++	=======
C2	Too dry (1=yes)	=======	=======	+++/++	=======
C4	Too much air/too cold (1=yes)	=======	=======	++/	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/--
-----LRSS	(M/F)	.01/.02	.05/.03	.24/.35	.11/.18
n=	(M/F)	175/163	180/175	176/171	95/106

DEPENDENT VARIABLE (M/F): H10 THROAT

H10: THROAT (o,p,q): Sore throat; dry throat; hoarseness

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10;
. = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	.	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	++/+	++/+	+++/+	/
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	--/	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/	=======
C2	Too dry (1=yes)	=======	=======	+++/+	=======
C4	Too much air/too cold (1=yes)	=======	=======	/	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	+/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	--/--
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F)	.53/.09	.90/.55	.70/.31	.56/.20
	n= (M/F)	182/177	186/184	182/180	99/112

DEPENDENT VARIABLE (M/F): H11 TIREDNESS

H11: TIREDNESS (r,s): Unusual fatigue/tiredness; sleepiness/drowsiness

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10; . = variable not used; ======= = variable not included in model;

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	++/	++/	++/	++/
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	/--	/--	/--	/
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	/+	/+	/++	/+
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/+	/+	/+	/++
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/++	/++	/	/+
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/+	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/+++	=======
C2	Too dry (1=yes)	=======	=======	/	=======
C4	Too much air/too cold (1=yes)	=======	=======	+++/++	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/+
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/-
	LRSS (M/F)	.51/.03	.57/.06	.76/.19	.80/.09
	n= (M/F)	183/175	187/182	183/178	99/112

DEPENDENT VARIABLE (M/F): H12 CHILLS/FEVER
H12: CHILLS; FEVER (t,u)

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10;
. = var not used; n = var not estimable; ======= = var not in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	.	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	+/++	+/++	+/++	n/
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	/-	/-	/-	n/-
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	/	.	.	.
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	--/	---/---	-/	n/-
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	++/	++/	+/	n/
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/	=======
C2	Too dry (1=yes)	=======	=======	/	=======
C4	Too much air/too cold (1=yes)	=======	=======	/+++	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	n/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	n/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	n/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	n/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	n/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	n/-
V7	log[HSB] (cfu/m^3)	=======	=======	=======	n/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	n/
	LRSS (M/F;b = >.99;NE = Not Est.)	b/b	b/b	b/b	NE/b
	n= (M/F)	178/171	184/179	180/175	97/108

DEPENDENT VARIABLES (M/F): H13 ERGONOMIC

H13: ERGONOMIC (v,dd,ee,ff,gg): Aching muscular joints; pain/stiffness in upper back; pain/stiffness in lower back; pain/numbness in hands/wrists

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10
. = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	/	/	/	/
W2B	Workstation-open (1=yes)	/--	/---	/--	/---
W3	Hours at Workstation (hrs)	.	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	++/--	+/--	++/--	/
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	-/	-/-	-/	/
P7	Workload (higher = more)	++/	/	+/	/
P8	Abilities are used (higher = more)	/	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/++	/	/+	/
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/-	/	/	/
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/++	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	+/	=======
C2	Too dry (1=yes)	=======	=======	++/	=======
C4	Too much air/too cold (1=yes)	=======	=======	/++	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/++
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/++
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F)	.78/.60	.78/.49	.92/.85	.45/.42
	n= (M/F)	182/170	186/181	183/177	98/112

DEPENDENT VARIABLE (M/F): H14 COGNATIVE

H14: COGNATIVE (x,z,aa,bb): difficulty remembering things; feeling depressed; tension/nervousness; difficulty concentrating

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10; . = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	.	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	/++	/++	/++	/++
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	++/	++/	+/	+/
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	/++	/++	/++	/
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	++/	+++/	+++/	+/
T6	Temp Diff (|pm - am|) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/+++	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/++	=======
C2	Too dry (1=yes)	=======	=======	/	=======
C4	Too much air/too cold (1=yes)	=======	=======	/++	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/++
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/-
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F)	.92/.03	.89/.03	.96/.26	.98/.11
	n= (M/F)	181/176	181/176	178/172	94/105

DEPENDENT VARIABLE (M/F): H15 DIZZINESS

H15: DIZZINESS/LIGHTHEADEDNESS (y)

Key: +++/--- = p(.01; ++/-- = .01(p(.05; +/- = .05(p(.10; / = p).10;
. = variable not used; ======= = variable not included in model;
n = variable not estimable

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	/+	/+	/++	n/n
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	/	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	/--	/--	/--	n/n
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	/++	/++	/	n/n
P8	Abilities are used (higher = more)	/--	/--	/	n/n
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	/	.	.	.
P11A	Moderate smoking ((10cigs/d)	.	.	.	.
P11B	Heavy smoking ()10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/+	/+	/+	n/n
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	++/	++/	++/	n/n
T6	Temp Diff (pm - am) (oF.)	/+	/+	/+	n/n
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/++	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/	=======
C2	Too dry (1=yes)	=======	=======	/-	=======
C4	Too much air/too cold (1=yes)	=======	=======	/+	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	n/n
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	n/n
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	n/n
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	n/n
V5	ln[RSP] (ug/m^3)	=======	=======	=======	n/n
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	n/n
V7	log[HSB] (cfu/m^3)	=======	=======	=======	n/n
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	n/n
	LRSS (M/F;b =).99;NE = Not Est.)	b/b	b/b	b/b	NE/NE
	n= (M/F)	180/167	181/167	178/164	94/101

DEPENDENT VARIABLE (M/F): H16 DRY/ITCHY SKIN

H16: DRY/ITCHY SKIN (cc)

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10;
. = variable not used; ======= = variable not included in model;
n = variable not estimable

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	.	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	++/	++/	/	n/
P6	Job Control (higher = more)	+++/	+++/	+++/	n/
P7	Workload (higher = more)	--/+++	--/+++	/+++	n/+
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	-/---	-/---	-/--	n/-
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	++/	+++/+	+++/	n/
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/++	/	/	n/
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/	=======
C2	Too dry (1=yes)	=======	=======	+++/+	=======
C4	Too much air/too cold (1=yes)	=======	=======	/	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	n/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	n/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	n/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	n/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	n/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	n/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	n/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	n/
	LRSS (M/F;b = >.99;NE = Not Est.)	b/b	b/b	b/b	NE/.96
	n= (M/F)	180/175	184/181	181/177	97/110

DEPENDENT VARIABLE (M/F): C1 HOT AIR

C1: HOT AIR: too little air movement; too hot; too stuffy

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10:
. = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	/	/	=======	=======
W2B	Workstation-open (1=yes)	/-	/	=======	=======
W3	Hours at Workstation (hrs)	.	.	=======	=======
W4	Go outside today (1=yes)	.	.	=======	=======
W5	Used chems at work today (1=yes)	.	.	=======	=======
W6	Hours at VDT (hrs)	.	.	=======	=======
W7	Any new carpet (1=yes)	.	.	=======	=======
W8	New Carpet w/glue (1=yes)	.	.	=======	=======
P1	Age (yrs)	--/-	--/-	=======	=======
P3A	Pay Grade (GS9-12)	--/	-/	=======	=======
P3B	Pay Grade (GS13-15)	--/	--/	=======	=======
P4	Job Satisfaction (higher = more)	.	.	=======	=======
P5	Role Conflict (higher = more)	.	.	=======	=======
P6	Job Control (higher = more)	.	.	=======	=======
P7	Workload (higher = more)	.	.	=======	=======
P8	Abilities are used (higher = more)	.	.	=======	=======
P9	Role Clarity (higher = more)	.	.	=======	=======
P10	External Stress (higher = more)	.	.	=======	=======
P11A	Moderate smoking (<10cigs/d)	/	.	=======	=======
P11B	Heavy smoking (>10 cigs/d)	/	.	=======	=======
P12A	Glasses or contact lens (1=yes)	.	.	=======	=======
P12B	Contact lens only (1=yes)	.	.	=======	=======
P13	MD diagnosed asthma (1=yes)	.	.	=======	=======
T1	Temperature (oF.)	++/	+++/	=======	=======
T2	% Relative Humidity (%)	/	.	=======	=======
T3	log[CO2] (ppm)	/+	/	=======	=======
T4	log[RSP] (ug/m^3)	/	.	=======	=======
T6	Temp Diff (|pm - am|) (oF.)	/	.	=======	=======
O2	At wkst: BO/Cosmetics/Other(1=yes)	+/	/	=======	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	=======	=======
C2	Too dry (1=yes)	=======	=======	=======	=======
C4	Too much air/too cold (1=yes)	=======	=======	=======	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	=======
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	=======
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	=======
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	=======
V5	ln[RSP] (ug/m^3)	=======	=======	=======	=======
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	=======
V7	log[HSB] (cfu/m^3)	=======	=======	=======	=======
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	=======
LRSS	(M/F) (a = <.01)	a/a	a/a	=======	=======
n=	(M/F)	180/168	184/179	=======	=======

DEPENDENT VARIABLE (M/F): C2 DRY AIR

C2: DRY AIR: Too dry

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10;
. = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	=======	=======
W2B	Workstation-open (1=yes)	.	.	=======	=======
W3	Hours at Workstation (hrs)	.	.	=======	=======
W4	Go outside today (1=yes)	.	.	=======	=======
W5	Used chems at work today (1=yes)	.	.	=======	=======
W6	Hours at VDT (hrs)	.	.	=======	=======
W7	Any new carpet (1=yes)	.	.	=======	=======
W8	New Carpet w/glue (1=yes)	.	.	=======	=======
P1	Age (yrs)	.	.	=======	=======
P3A	Pay Grade (GS9-12)	-/+	-/+	=======	=======
P3B	Pay Grade (GS13-15)	-/++	-/++	=======	=======
P4	Job Satisfaction (higher = more)	.	.	=======	=======
P5	Role Conflict (higher = more)	.	.	=======	=======
P6	Job Control (higher = more)	.	.	=======	=======
P7	Workload (higher = more)	.	.	=======	=======
P8	Abilities are used (higher = more)	.	.	=======	=======
P9	Role Clarity (higher = more)	.	.	=======	=======
P10	External Stress (higher = more)	.	.	=======	=======
P11A	Moderate smoking (<10cigs/d)	.	.	=======	=======
P11B	Heavy smoking (>10 cigs/d)	.	.	=======	=======
P12A	Glasses or contact lens (1=yes)	.	.	=======	=======
P12B	Contact lens only (1=yes)	.	.	=======	=======
P13	MD diagnosed asthma (1=yes)	--/	-/	=======	=======
T1	Temperature (oF.)	/	.	=======	=======
T2	% Relative Humidity (%)	/	.	=======	=======
T3	log[CO2] (ppm)	/	.	=======	=======
T4	log[RSP] (ug/m^3)	/	.	=======	=======
T6	Temp Diff (lpm - aml) (oF.)	/	.	=======	=======
O2	At wkst: BO/Cosmetics/Other(1=yes)	/+	/+	=======	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	=======	=======
C2	Too dry (1=yes)	=======	=======	=======	=======
C4	Too much air/too cold (1=yes)	=======	=======	=======	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	=======
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	=======
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	=======
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	=======
V5	ln[RSP] (ug/m^3)	=======	=======	=======	=======
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	=======
V7	log[HSB] (cfu/m^3)	=======	=======	=======	=======
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	=======
	LRSS (M/F) (a = <.01)	a/a	.19/.82	=======	=======
	n= (M/F)	176/173	180/180	=======	=======

DEPENDENT VARIABLE (M/F): C4 COLD AIR

C4: COLD AIR: Too much air movement; too cold

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10;
. = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	=======	=======
W2B	Workstation-open (1=yes)	.	.	=======	=======
W3	Hours at Workstation (hrs)	.	.	=======	=======
W4	Go outside today (1=yes)	.	.	=======	=======
W5	Used chems at work today (1=yes)	.	.	=======	=======
W6	Hours at VDT (hrs)	.	.	=======	=======
W7	Any new carpet (1=yes)	.	.	=======	=======
W8	New Carpet w/glue (1=yes)	.	.	=======	=======
P1	Age (yrs)	.	.	=======	=======
P3A	Pay Grade (GS9-12)	.	.	=======	=======
P3B	Pay Grade (GS13-15)	.	.	=======	=======
P4	Job Satisfaction (higher = more)	.	.	=======	=======
P5	Role Conflict (higher = more)	++/	+/	=======	=======
P6	Job Control (higher = more)	.	.	=======	=======
P7	Workload (higher = more)	.	.	=======	=======
P8	Abilities are used (higher = more)	-/	-/	=======	=======
P9	Role Clarity (higher = more)	+++/	+++/	=======	=======
P10	External Stress (higher = more)	.	.	=======	=======
P11A	Moderate smoking (<10cigs/d)	.	.	=======	=======
P11B	Heavy smoking (>10 cigs/d)	.	.	=======	=======
P12A	Glasses or contact lens (1=yes)	.	.	=======	=======
P12B	Contact lens only (1=yes)	.	.	=======	=======
P13	MD diagnosed asthma (1=yes)	.	.	=======	=======
T1	Temperature (oF.)	---/---	---/---	=======	=======
T2	% Relative Humidity (%)	.	.	=======	=======
T3	log[CO2] (ppm)	.	.	=======	=======
T4	log[RSP] (ug/m^3)	.	.	=======	=======
T6	Temp Diff (|pm - am|) (oF.)	++/	++/	=======	=======
O2	At wkst: BO/Cosmetics/Other(1=yes)	/	.	=======	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	=======	=======
C2	Too dry (1=yes)	=======	=======	=======	=======
C4	Too much air/too cold (1=yes)	=======	=======	=======	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	=======
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	=======
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	=======
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	=======
V5	ln[RSP] (ug/m^3)	=======	=======	=======	=======
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	=======
V7	log[HSB] (cfu/m^3)	=======	=======	=======	=======
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	=======
	LRSS (M/F)	.64/.07	.66/.08	=======	=======
	n= (M/F)	181/171	185/177	=======	=======

DEPENDENT VARIABLE (M/F): O2 ODOR

O2: ODOR: Body odor; cosmetics; other food smells

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10;
. = variable not used; ======= = variable not included in model
-I = -(infinity)

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	/+	/+	=======	--/
W2B	Workstation-open (1=yes)	/+++	/+++	=======	/+++
W3	Hours at Workstation (hrs)	/+	/+	=======	/++
W4	Go outside today (1=yes)	.	.	=======	.
W5	Used chems at work today (1=yes)	.	.	=======	.
W6	Hours at VDT (hrs)	/+++	/+++	=======	/
W7	Any new carpet (1=yes)	.	.	=======	.
W8	New Carpet w/glue (1=yes)	.	.	=======	.
P1	Age (yrs)	.	.	=======	.
P3A	Pay Grade (GS9-12)	.	.	=======	.
P3B	Pay Grade (GS13-15)	.	.	=======	.
P4	Job Satisfaction (higher = more)	.	.	=======	.
P5	Role Conflict (higher = more)	.	.	=======	.
P6	Job Control (higher = more)	/++	/++	=======	/++
P7	Workload (higher = more)	.	.	=======	.
P8	Abilities are used (higher = more)	.	.	=======	.
P9	Role Clarity (higher = more)	--/--	--/--	=======	--/--
P10	External Stress (higher = more)	+++/	+++/	=======	+/
P11A	Moderate smoking (<10cigs/d)	/	/	=======	/
P11B	Heavy smoking (>10 cigs/d)	+++/	+++/	=======	/
P12A	Glasses or contact lens (1=yes)	.	.	=======	.
P12B	Contact lens only (1=yes)	.	.	=======	.
P13	MD diagnosed asthma (1=yes)	++/	+/	=======	/-I
T1	Temperature (oF.)	/	.	=======	.
T2	% Relative Humidity (%)	++/	+/	=======	/
T3	log[CO2] (ppm)	+/	+++/	=======	++/
T4	log[RSP] (ug/m^3)	/+	/	=======	/
T6	Temp Diff (|pm - am|) (oF.)	/	.	=======	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	=======	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	=======	=======
C2	Too dry (1=yes)	=======	=======	=======	=======
C4	Too much air/too cold (1=yes)	=======	=======	=======	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	+++/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/++
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	-/
	LRSS (M/F)	.29/.02	.31/.02	=======	.91/.13
	n= (M/F)	179/170	179/170	=======	92/101

DEPENDENT VARIABLE (M/F): A1 FAIR OR POOR AIR QUALITY RATING

A1: FAIR OR POOR AIR QUALITY RATING: Overall air quality excellent/good vs fair/poor

Key: +++/--- = p(.01; ++/-- = .01(p(.05; +/- = .05(p(.10; / = p).10; . = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	++/-	++/--	+++/	/--
W2B	Workstation-open (1=yes)	/	/	/	/-
W3	Hours at Workstation (hrs)	-/	/	--/	/
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	.	.	.	.
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	.	.	.	.
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	.	.	.	.
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	.	.	.	.
P9	Role Clarity (higher = more)	/---	/---	/---	/--
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking ((10cigs/d)	.	.	.	.
P11B	Heavy smoking ()10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	.	.	.	.
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	-/	/	--/	/
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (|pm - am|) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	+++/+++	=======
C2	Too dry (1=yes)	=======	=======	++/+++	=======
C4	Too much air/too cold (1=yes)	=======	=======	/++	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/---
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/+
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F) (a = (.01)	a/.02	a/.02	.15/.66	a/.07
	n= (M/F)	172/171	176/177	172/173	90/108

DEPENDENT VARIABLE (M/F): A2 POOR AIR QUALITY RATING

A2: POOR AIR QUALITY RATING: Overall air quality excellent/good/fair vs poor

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10; . = variable not used; ======= = variable not included in model; -I = -(infinity)

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	.	.
W2B	Workstation-open (1=yes)	.	.	.	.
W3	Hours at Workstation (hrs)	.	.	.	.
W4	Go outside today (1=yes)	.	.	.	.
W5	Used chems at work today (1=yes)	++/	++/	+++/	++/
W6	Hours at VDT (hrs)	.	.	.	.
W7	Any new carpet (1=yes)	.	.	.	.
W8	New Carpet w/glue (1=yes)	++/	+++/	++/	-I/-I
P1	Age (yrs)	.	.	.	.
P3A	Pay Grade (GS9-12)	.	.	.	.
P3B	Pay Grade (GS13-15)	.	.	.	.
P4	Job Satisfaction (higher = more)	/---	/---	/---	/
P5	Role Conflict (higher = more)	.	.	.	.
P6	Job Control (higher = more)	.	.	.	.
P7	Workload (higher = more)	.	.	.	.
P8	Abilities are used (higher = more)	/++	/++	/+	/
P9	Role Clarity (higher = more)	.	.	.	.
P10	External Stress (higher = more)	.	.	.	.
P11A	Moderate smoking (<10cigs/d)	.	.	.	.
P11B	Heavy smoking (>10 cigs/d)	.	.	.	.
P12A	Glasses or contact lens (1=yes)	.	.	.	.
P12B	Contact lens only (1=yes)	+++/+	+++/	++/	+/
P13	MD diagnosed asthma (1=yes)	.	.	.	.
T1	Temperature (oF.)	/	.	.	.
T2	% Relative Humidity (%)	/	.	.	.
T3	log[CO2] (ppm)	/	.	.	.
T4	log[RSP] (ug/m^3)	/	.	.	.
T6	Temp Diff (lpm - aml) (oF.)	/	.	.	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	/	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	/++	=======
C2	Too dry (1=yes)	=======	=======	+++/	=======
C4	Too much air/too cold (1=yes)	=======	=======	/	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/--
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	LRSS (M/F) (b = >.99)	b/.92	b/.69	b/.92	b/b
	n= (M/F)	166/163	170/169	166/166	86/100

DEPENDENT VARIABLE (M/F): M1 FATIGUE

M1: FATIGUE

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10;
. = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	=======	.
W2B	Workstation-open (1=yes)	.	.	=======	.
W3	Hours at Workstation (hrs)	.	.	=======	.
W4	Go outside today (1=yes)	.	.	=======	.
W5	Used chems at work today (1=yes)	.	.	=======	.
W6	Hours at VDT (hrs)	.	.	=======	.
W7	Any new carpet (1=yes)	+/	++/	=======	/
W8	New Carpet w/glue (1=yes)	/	.	=======	.
P1	Age (yrs)	.	.	=======	.
P3A	Pay Grade (GS9-12)	.	.	=======	.
P3B	Pay Grade (GS13-15)	.	.	=======	.
P4	Job Satisfaction (higher = more)	.	.	=======	.
P5	Role Conflict (higher = more)	/	.	=======	.
P6	Job Control (higher = more)	.	.	=======	.
P7	Workload (higher = more)	/+++	/+++	=======	/+++
P8	Abilities are used (higher = more)	/--	/--	=======	/--
P9	Role Clarity (higher = more)	.	.	=======	.
P10	External Stress (higher = more)	.	.	=======	.
P11A	Moderate smoking (<10cigs/d)	.	.	=======	.
P11B	Heavy smoking (>10 cigs/d)	.	.	=======	.
P12A	Glasses or contact lens (1=yes)	.	.	=======	.
P12B	Contact lens only (1=yes)	+++/	+++/	=======	++/
P13	MD diagnosed asthma (1=yes)	/+	/	=======	/+
T1	Temperature (oF.)	/	.	=======	.
T2	% Relative Humidity (%)	/	.	=======	.
T3	log[CO2] (ppm)	/	.	=======	.
T4	log[RSP] (ug/m^3)	/	.	=======	.
T6	Temp Diff (|pm - am|) (oF.)	/	.	=======	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	=======	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	=======	=======
C2	Too dry (1=yes)	=======	=======	=======	=======
C4	Too much air/too cold (1=yes)	=======	=======	=======	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/
	Adjusted R-square (M/F)	.05/.08	.06/.09	=======	.05/.15
	n= (M/F)	173/166	178/172	=======	93/107

DEPENDENT VARIABLE (M/F): M2 VIGOR
M2: VIGOR

Key: +++/--- = p<.01; ++/-- = .01<p<.05; +/- = .05<p<.10; / = p>.10;
. = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	.	.	=======	.
W2B	Workstation-open (1=yes)	.	.	=======	.
W3	Hours at Workstation (hrs)	.	.	=======	.
W4	Go outside today (1=yes)	.	.	=======	.
W5	Used chems at work today (1=yes)	+++/	+++/	=======	+/
W6	Hours at VDT (hrs)	.	.	=======	.
W7	Any new carpet (1=yes)	.	.	=======	.
W8	New Carpet w/glue (1=yes)	.	.	=======	.
P1	Age (yrs)	/+++	/+++	=======	+/+++
P3A	Pay Grade (GS9-12)	.	.	=======	.
P3B	Pay Grade (GS13-15)	.	.	=======	.
P4	Job Satisfaction (higher = more)	.	.	=======	.
P5	Role Conflict (higher = more)	.	.	=======	.
P6	Job Control (higher = more)	.	.	=======	.
P7	Workload (higher = more)	.	.	=======	.
P8	Abilities are used (higher = more)	.	.	=======	.
P9	Role Clarity (higher = more)	++/+	++/+	=======	/+
P10	External Stress (higher = more)	.	.	=======	.
P11A	Moderate smoking (<10cigs/d)	.	.	=======	.
P11B	Heavy smoking (>10 cigs/d)	.	.	=======	.
P12A	Glasses or contact lens (1=yes)	.	.	=======	.
P12B	Contact lens only (1=yes)	--/	--/	=======	/
P13	MD diagnosed asthma (1=yes)	.	.	=======	.
T1	Temperature (oF.)	++/	+/	=======	/
T2	% Relative Humidity (%)	/	.	=======	.
T3	log[CO2] (ppm)	/	.	=======	.
T4	log[RSP] (ug/m^3)	/--	/--	=======	/
T6	Temp Diff (|pm - am|) (oF.)	/	.	=======	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	=======	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	=======	=======
C2	Too dry (1=yes)	=======	=======	=======	=======
C4	Too much air/too cold (1=yes)	=======	=======	=======	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	--/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	/+
	Adjusted R-square (M/F)	.10/.09	.10/.09	=======	.14/.18
	n= (M/F)	172/167	172/167	=======	88/102

DEPENDENT VARIABLE (M/F): M3 TENSION
M3: TENSION

Key: +++/--- = p(.01; ++/-- = .01(p(.05; +/- = .05(p(.10; / = p).10;
. = variable not used; ======= = variable not included in model

Code	Independent Variable Name	A	B	C	D'
W2A	Workstation-halfheight (1=yes)	/	.	=======	.
W2B	Workstation-open (1=yes)	/	.	=======	.
W3	Hours at Workstation (hrs)	.	.	=======	.
W4	Go outside today (1=yes)	.	.	=======	.
W5	Used chems at work today (1=yes)	--/	-/	=======	-/
W6	Hours at VDT (hrs)	.	.	=======	.
W7	Any new carpet (1=yes)	.	.	=======	.
W8	New Carpet w/glue (1=yes)	.	.	=======	.
P1	Age (yrs)	.	.	=======	.
P3A	Pay Grade (GS9-12)	.	.	=======	.
P3B	Pay Grade (GS13-15)	.	.	=======	.
P4	Job Satisfaction (higher = more)	.	.	=======	.
P5	Role Conflict (higher = more)	+++/	+++/	=======	+/
P6	Job Control (higher = more)	/--	/--	=======	/--
P7	Workload (higher = more)	/+++	/+++	=======	/+
P8	Abilities are used (higher = more)	.	.	=======	.
P9	Role Clarity (higher = more)	.	.	=======	.
P10	External Stress (higher = more)	.	.	=======	.
P11A	Moderate smoking ((10cigs/d)	.	.	=======	.
P11B	Heavy smoking ()10 cigs/d)	.	.	=======	.
P12A	Glasses or contact lens (1=yes)	.	.	=======	.
P12B	Contact lens only (1=yes)	.	.	=======	.
P13	MD diagnosed asthma (1=yes)	/++	/++	=======	|||||||
T1	Temperature (oF.)	/	.	=======	.
T2	% Relative Humidity (%)	--/	--/	=======	-/
T3	log[CO2] (ppm)	+/	++/	=======	/
T4	log[RSP] (ug/m^3)	/	.	=======	.
T6	Temp Diff (pm - am) (oF.)	/	.	=======	.
O2	At wkst: BO/Cosmetics/Other(1=yes)	=======	=======	=======	=======
C1	Too little air/hot,stuffy (1=yes)	=======	=======	=======	=======
C2	Too dry (1=yes)	=======	=======	=======	=======
C4	Too much air/too cold (1=yes)	=======	=======	=======	=======
V1	ln[1,1,1-tri+perc] (ug/m^3)	=======	=======	=======	+/
V2	ln[Aromatics+TCE+octane] (ug/m^3)	=======	=======	=======	/
V3	ln[MeCl2] (ug/m^3)	=======	=======	=======	+/
V4	ln[total VOCs] (ug/m^3)	=======	=======	=======	+/
V5	ln[RSP] (ug/m^3)	=======	=======	=======	/
V6	log[total fungi] (cfu/m^3)	=======	=======	=======	/
V7	log[HSB] (cfu/m^3)	=======	=======	=======	/
V8	log[thermophiles] (cfu/m^3)	=======	=======	=======	+/
	Adjust R-square (M/F)	.14/.09	.14/.10	=======	.21/.06
	n= (M/F)	175/168	179/175	=======	94/109

APPENDIX E

DETAILED MODELING RESULTS FOR MODEL A

Results on the following pages are presented first for males, then for females. The header for each case identifies the dependent variable (DEPVAR), the model type, the gender (P2), the significance probability for the likelihood ratio statistic (labeled LRS), and the sample size (labeled TOTN). For the logistic regressions (entitled "Maximum Likelihood Estimates"), the following are provided:

- the estimated coefficients (ESTIMATE)
- their estimated standard errors (STDERR)
- the chi-squared statistic (CHISQ) for testing whether the coefficient is zero
- the significance probability (PROB) associated with this test
- the estimated odds ratio = exp(ESTIMATE)
- the approximate lower 99% confidence limit for the true odds ratio:

  exp(ESTIMATE-2.576*STDERR)
- the approximate upper 99% confidence limit for the true odds ratio:

  exp(ESTIMATE+2.576*STDERR)

For the mood-state variables, ordinary regressions are performed, and the resultant information (entitled simply "MALES" or "FEMALES") includes the usual analysis of variance table and associated statistics such as R^2 and adjusted R^2. Also included are the parameter (coefficient) estimates, their standard errors, the value of the t statistic for testing that the coefficients are zero, and the associated significance probabilities.

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H1 MODEL=A P2=MALE LRS=0.2875 TOTN=180 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	3.2784	7.0269	0.22	0.6408	26.5333	0.0000	1.928E9
T1	2	-0.0419	0.1161	0.13	0.7179	0.9590	0.7111	1.2933
T2	3	-0.0601	0.0461	1.70	0.1923	0.9417	0.8362	1.0604
T3	4	0.0894	1.4747	0.00	0.9517	1.0935	0.0245	48.8243
T4	5	0.2178	0.2882	0.57	0.4498	1.2433	0.5918	2.6122
T6	6	0.1081	0.1519	0.51	0.4766	1.1142	0.7534	1.6477
W3	7	0.1713	0.1086	2.49	0.1149	1.1868	0.8972	1.5700
P1	8	-0.0721	0.0208	12.00	0.0005	0.9304	0.8819	0.9817
P12A	9	1.3727	0.5663	5.87	0.0154	3.9460	0.9175	16.9707
P13	10	0.0153	0.5989	0.00	0.9796	1.0154	0.2171	4.7496

---------------------- DEPVAR=H1 MODEL=A P2=FEMALE LRS=0.0012 TOTN=174 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-8.0659	5.8415	1.91	0.1673	0.0003	0.0000	1076.86
T1	2	0.0656	0.1035	0.40	0.5262	1.0678	0.8179	1.3941
T2	3	0.0254	0.0416	0.37	0.5422	1.0257	0.9215	1.1417
T3	4	0.2988	1.2884	0.05	0.8166	1.3482	0.0488	37.2525
T4	5	0.0751	0.2454	0.09	0.7597	1.0780	0.5729	2.0284
T6	6	0.1892	0.1025	3.41	0.0649	1.2083	0.9279	1.5734
W3	7	0.1435	0.0952	2.27	0.1316	1.1543	0.9033	1.4751
P1	8	-0.0211	0.0160	1.74	0.1875	0.9791	0.9396	1.0203
P12A	9	0.0624	0.3621	0.03	0.8631	1.0644	0.4188	2.7052
P13	10	1.6500	0.6985	5.58	0.0182	5.2070	0.8613	31.4795

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H2 MODEL=A P2=MALE LRS=0.0009 TOTN=173 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	8.3277	6.6198	1.58	0.2084	4136.89	0.0002	1.05E11
T1	2	-0.1042	0.1042	1.00	0.3174	0.9010	0.6889	1.1785
T2	3	-0.0412	0.0393	1.10	0.2947	0.9596	0.8672	1.0619
T3	4	-0.0443	1.3099	0.00	0.9730	0.9567	0.0328	27.9384
T4	5	0.0138	0.2413	0.00	0.9544	1.0139	0.5446	1.8878
T6	6	0.0794	0.1374	0.33	0.5633	1.0826	0.7599	1.5424
W6	7	0.2575	0.1221	4.45	0.0349	1.2937	0.9446	1.7719
P3A	8	-0.9073	0.7088	1.64	0.2005	0.4036	0.0650	2.5057
P3B	9	-0.1371	0.6454	0.05	0.8317	0.8719	0.1654	4.5972
P4	10	-0.0389	0.3305	0.01	0.9062	0.9618	0.4105	2.2535
P5	11	0.0406	0.2492	0.03	0.8706	1.0414	0.5481	1.9789
P10	12	0.2971	0.1466	4.11	0.0427	1.3459	0.9226	1.9635

---------------------- DEPVAR=H2 MODEL=A P2=FEMALE LRS=0.0059 TOTN=167 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-5.5746	6.0713	0.84	0.3585	0.0038	0.0000	23507.4
T1	2	-0.0658	0.1098	0.36	0.5490	0.9363	0.7056	1.2424
T2	3	0.0561	0.0449	1.56	0.2117	1.0577	0.9422	1.1874
T3	4	1.5200	1.3613	1.25	0.2641	4.5722	0.1371	152.431
T4	5	0.2160	0.2489	0.75	0.3854	1.2411	0.6537	2.3565
T6	6	0.0395	0.1056	0.14	0.7084	1.0403	0.7925	1.3655
W6	7	0.1891	0.1036	3.33	0.0681	1.2082	0.9252	1.5777
P3A	8	0.2674	0.4337	0.38	0.5375	1.3066	0.4275	3.9933
P3B	9	1.0377	0.4577	5.14	0.0234	2.8227	0.8682	9.1773
P4	10	-0.7447	0.3529	4.45	0.0349	0.4749	0.1913	1.1787
P5	11	0.4977	0.2554	3.80	0.0513	1.6449	0.8520	3.1760
P10	12	-0.2108	0.1410	2.24	0.1349	0.8099	0.5633	1.1646

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H3 MODEL=A P2=MALE LRS=0.0022 TOTN=172 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	6.2416	7.0917	0.77	0.3788	513.680	0.0000	4.41E10
T1	2	-0.0277	0.1073	0.07	0.7964	0.9727	0.7378	1.2824
T2	3	-0.0279	0.0400	0.49	0.4846	0.9725	0.8773	1.0780
T3	4	-0.2994	1.4184	0.04	0.8328	0.7413	0.0192	28.6284
T4	‹	0.1049	0.2416	0.19	0.6643	1.1106	0.5960	2.0694
T6	6	0.0477	0.1496	0.10	0.7500	1.0489	0.7134	1.5420
W2A	7	-0.3895	0.4995	0.61	0.4354	0.6774	0.1871	2.4528
W6	8	0.3179	0.1353	5.52	0.0188	1.3742	0.9698	1.9473
P1	9	-0.0511	0.0197	6.70	0.0096	0.9502	0.9032	0.9996
P3A	10	-1.6216	0.8886	3.33	0.0680	0.1976	0.0200	1.9492
P3B	11	-0.5189	0.7619	0.46	0.4958	0.5952	0.0836	4.2366
P4	12	-0.0231	0.3371	0.00	0.9454	0.9772	0.4101	2.3286
P5	13	0.2757	0.2588	1.14	0.2867	1.3175	0.6764	2.5661
P10	14	0.2397	0.1527	2.46	0.1165	1.2709	0.8576	1.8834

---------------------- DEPVAR=H3 MODEL=A P2=FEMALE LRS=0.0850 TOTN=160 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-6.4731	7.4052	0.76	0.3820	0.0015	0.0000	297359
T1	2	0.0352	0.1301	0.07	0.7864	1.0358	0.7409	1.4482
T2	3	0.0322	0.0492	0.43	0.5122	1.0327	0.9098	1.1723
T3	4	0.9676	1.5323	0.40	0.5278	2.6316	0.0508	136.293
T4	5	0.1763	0.2831	0.39	0.5334	1.1928	0.5752	2.4733
T6	6	0.1523	0.1285	1.40	0.2361	1.1645	0.8363	1.6214
W2A	7	-0.3140	0.4782	0.43	0.5114	0.7305	0.2131	2.5039
W2B	8	-1.6689	0.7175	5.41	0.0200	0.1885	0.0297	1.1965
W6	9	0.0712	0.1206	0.35	0.5551	1.0738	0.7870	1.4650
P1	10	-0.0317	0.0213	2.22	0.1365	0.9688	0.9171	1.0234
P3A	11	-0.5817	0.6185	0.88	0.3470	0.5589	0.1136	2.7499
P3B	12	0.0966	0.6996	0.02	0.8902	1.1014	0.1817	6.6777
P4	13	-0.7056	0.4093	2.97	0.0848	0.4938	0.1721	1.4173
P5	14	0.7153	0.3284	4.74	0.0294	2.0448	0.8775	4.7648
P10	15	-0.2360	0.1636	2.08	0.1492	0.7898	0.5182	1.2037

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H4 MODEL=A P2=MALE LRS=0.9987 TOTN=176 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	2.2140	9.5678	0.05	0.8170	9.1523	0.0000	4.63E11
T1	2	-0.2628	0.1617	2.64	0.1042	0.7689	0.5070	1.1662
T2	3	-0.0421	0.0624	0.46	0.4995	0.9588	0.8164	1.1260
T3	4	3.0012	1.9727	2.31	0.1282	20.1097	0.1249	3238.53
T4	5	0.6479	0.4666	1.93	0.1650	1.9115	0.5746	6.3589
T6	6	0.1251	0.2056	0.37	0.5431	1.1333	0.6673	1.9246
W3	7	0.3399	0.1602	4.50	0.0339	1.4048	0.9298	2.1225
W6	8	-0.1958	0.1919	1.04	0.3075	0.8222	0.5015	1.3479
P1	9	-0.0547	0.0274	4.00	0.0456	0.9468	0.8822	1.0160
P3A	10	-2.1314	1.0207	4.36	0.0368	0.1187	0.0086	1.6453
P3B	11	-1.3455	0.8641	2.42	0.1194	0.2604	0.0281	2.4119
P8	12	-0.6266	0.2957	4.49	0.0341	0.5344	0.2495	1.1447
P9	13	-0.1255	0.3113	0.16	0.6867	0.8821	0.3956	1.9668
P13	14	2.1491	0.7059	9.27	0.0023	8.5771	1.3919	52.8522

----------------------- DEPVAR=H4 MODEL=A P2=FEMALE LRS=0.7525 TOTN=164 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-12.8374	8.1793	2.46	0.1165	0.0000	0.0000	3761.14
T1	2	-0.0383	0.1459	0.07	0.7932	0.9624	0.6609	1.4015
T2	3	-0.0380	0.0565	0.45	0.5016	0.9627	0.8323	1.1135
T3	4	1.9322	1.8478	1.09	0.2957	6.9047	0.0591	806.040
T4	5	1.1787	0.6547	3.24	0.0718	3.2501	0.6018	17.5527
T6	6	0.2724	0.1208	5.09	0.0241	1.3131	0.9620	1.7924
W3	7	0.1223	0.1352	0.82	0.3657	1.1301	0.7977	1.6009
W6	8	-0.0473	0.1283	0.14	0.7127	0.9538	0.6854	1.3274
P1	9	0.0246	0.0245	1.00	0.3169	1.0249	0.9622	1.0917
P3A	10	-1.0482	0.5898	3.16	0.0755	0.3506	0.0767	1.6018
P3B	11	0.0276	0.5375	0.00	0.9591	1.0280	0.2574	4.1050
P8	12	0.2086	0.2545	0.67	0.4125	1.2320	0.6395	2.3731
P9	13	-0.6304	0.2751	5.25	0.0219	0.5324	0.2621	1.0814
P13	14	-0.2154	0.8817	0.06	0.8070	0.8062	0.0832	7.8135

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H5 MODEL=A P2=MALE LRS=0.9222 TOTN=182 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	5.5419	8.4798	0.43	0.5134	255.162	0.0000	7.83E11
T1	2	-0.1919	0.1353	2.01	0.1562	0.8254	0.5825	1.1696
T2	3	-0.0083	0.0503	0.03	0.8693	0.9918	0.8712	1.1290
T3	4	1.1944	1.7638	0.46	0.4983	3.3016	0.0351	310.427
T4	5	-0.3943	0.3133	1.58	0.2082	0.6742	0.3008	1.5110
T6	6	0.1507	0.1695	0.79	0.3740	1.1626	0.7513	1.7992
W2A	7	-0.6614	0.6589	1.01	0.3155	0.5161	0.0945	2.8177
W7	8	1.0978	0.5067	4.69	0.0303	2.9976	0.8126	11.0570
P6	9	-0.5716	0.2868	3.97	0.0463	0.5646	0.2697	1.1820
P7	10	0.4680	0.2621	3.19	0.0742	1.5968	0.8129	3.1367

---------------------- DEPVAR=H5 MODEL=A P2=FEMALE LRS=0.6911 TOTN=174 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-3.3616	7.6342	0.19	0.6597	0.0347	0.0000	1.204E7
T1	2	0.3266	0.1375	5.64	0.0175	1.3862	0.9728	1.9755
T2	3	0.0608	0.0564	1.16	0.2811	1.0627	0.9190	1.2289
T3	4	-3.5734	1.7048	4.39	0.0361	0.0281	0.0003	2.2663
T4	5	0.1562	0.3586	0.19	0.6632	1.1691	0.4641	2.9445
T6	6	0.1962	0.1269	2.39	0.1221	1.2168	0.8775	1.6872
W2A	7	0.5719	0.4758	1.44	0.2294	1.7716	0.5201	6.0349
W2B	8	-1.9397	0.8081	5.76	0.0164	0.1437	0.0179	1.1525
W7	9	-0.8523	0.4669	3.33	0.0679	0.4264	0.1281	1.4197
P6	10	-0.2482	0.2218	1.25	0.2633	0.7802	0.4406	1.3815
P7	11	-0.2081	0.2198	0.90	0.3436	0.8121	0.4610	1.4306

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H6 MODEL=A P2=MALE LRS=0.9999 TOTN=178 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.7769	9.2873	0.09	0.7649	0.0622	0.0000	1.528E9
T1	2	0.1105	0.1640	0.45	0.5006	1.1168	0.7320	1.7040
T2	3	-0.0400	0.0627	0.41	0.5241	0.9608	0.8175	1.1292
T3	4	-1.6207	2.1254	0.58	0.4457	0.1978	0.0008	47.1970
T4	5	0.4211	0.4885	0.74	0.3886	1.5236	0.4329	5.3627
T6	6	0.3442	0.1943	3.14	0.0765	1.4109	0.8553	2.3273
W3	7	0.2070	0.1455	2.02	0.1549	1.2300	0.8455	1.7893
P1	8	-0.0678	0.0304	4.97	0.0257	0.9344	0.8641	1.0106
P7	9	0.7136	0.3296	4.69	0.0304	2.0413	0.8733	4.7714
P12A	10	1.4325	0.8443	2.88	0.0898	4.1892	0.4760	36.8707

---------------------- DEPVAR=H6 MODEL=A P2=FEMALE LRS=0.0429 TOTN=170 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.9596	6.3224	0.10	0.7566	0.1409	0.0000	1667611
T1	2	0.0097	0.1146	0.01	0.9327	1.0097	0.7516	1.3565
T2	3	0.0052	0.0490	0.01	0.9148	1.0053	0.8860	1.1405
T3	4	-0.2895	1.4318	0.04	0.8398	0.7486	0.0187	29.9287
T4	5	-0.0205	0.2620	0.01	0.9376	0.9797	0.4989	1.9240
T6	6	0.1047	0.1046	1.00	0.3167	1.1104	0.8481	1.4538
W3	7	0.2272	0.1076	4.46	0.0347	1.2551	0.9513	1.6560
P1	8	-0.0173	0.0192	0.81	0.3682	0.9828	0.9354	1.0327
P7	9	0.4011	0.2007	3.99	0.0457	1.4935	0.8906	2.5045
P12A	10	0.0137	0.3939	0.00	0.9722	1.0138	0.3675	2.7965

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H7 MODEL=A P2=MALE LRS=0.1679 TOTN=178 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-3.5591	8.1537	0.19	0.6625	0.0285	0.0000	3.769E7
T1	2	-0.3092	0.1206	6.57	0.0103	0.7340	0.5380	1.0015
T2	3	-0.0704	0.0475	2.20	0.1381	0.9320	0.8247	1.0533
T3	4	4.1893	1.5514	7.29	0.0069	65.9766	1.2128	3589.28
T4	5	-0.3442	0.2822	1.49	0.2225	0.7088	0.3426	1.4663
T6	6	0.1983	0.1419	1.95	0.1621	1.2193	0.8460	1.7574
W3	7	0.1243	0.1078	1.33	0.2490	1.1324	0.8578	1.4948
W6	8	0.4018	0.1399	8.25	0.0041	1.4945	1.0423	2.1429
W8	9	-0.6575	0.7014	0.88	0.3486	0.5181	0.0851	3.1560
P3A	10	-1.6994	0.8341	4.15	0.0416	0.1828	0.0213	1.5671
P3B	11	-0.8936	0.7285	1.50	0.2199	0.4092	0.0626	2.6725
P8	12	0.0628	0.1912	0.11	0.7426	1.0648	0.6507	1.7425
P10	13	0.4980	0.1690	8.68	0.0032	1.6454	1.0647	2.5430
P11A	14	1.2645	0.9310	1.84	0.1744	3.5413	0.3218	38.9686
P11B	15	-0.4360	0.7772	0.31	0.5748	0.6466	0.0873	4.7878

---------------------- DEPVAR=H7 MODEL=A P2=FEMALE LRS=0.0053 TOTN=167 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-10.2629	6.6882	2.35	0.1249	0.0000	0.0000	1059.87
T1	2	0.0120	0.1147	0.01	0.9166	1.0121	0.7532	1.3600
T2	3	0.0201	0.0453	0.20	0.6571	1.0203	0.9079	1.1466
T3	4	1.2862	1.4056	0.84	0.3602	3.6190	0.0968	135.237
T4	5	0.4236	0.2624	2.61	0.1064	1.5275	0.7770	3.0028
T6	6	0.1468	0.1203	1.49	0.2222	1.1581	0.8495	1.5788
W3	7	0.1861	0.1032	3.25	0.0713	1.2045	0.9234	1.5714
W6	8	0.1501	0.1036	2.10	0.1474	1.1620	0.8898	1.5174
W8	9	-0.8762	0.4919	3.17	0.0749	0.4164	0.1173	1.4784
P3A	10	-0.3672	0.4398	0.70	0.4039	0.6927	0.2231	2.1506
P3B	11	0.7163	0.4488	2.55	0.1105	2.0468	0.6442	6.5039
P8	12	-0.3519	0.1733	4.12	0.0423	0.7034	0.4501	1.0991
P10	13	-0.1632	0.1384	1.39	0.2382	0.8494	0.5947	1.2133
P11A	14	0.2719	0.5976	0.21	0.6491	1.3125	0.2815	6.1185
P11B	15	-1.8054	0.8915	4.10	0.0429	0.1644	0.0165	1.6341

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H8 MODEL=A P2=MALE LRS=1.0000 TOTN=176 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	4.9445	18.9583	0.07	0.7942	140.401	0.0000	2.27E23
T1	2	-0.3345	0.3073	1.18	0.2764	0.7157	0.3243	1.5795
T2	3	-0.0553	0.1044	0.28	0.5962	0.9462	0.7231	1.2382
T3	4	3.6423	3.4482	1.12	0.2908	38.1795	0.0053	275093
T4	5	0.3502	0.6927	0.26	0.6132	1.4194	0.2383	8.4536
T6	6	-0.3683	0.4315	0.73	0.3933	0.6919	0.2277	2.1027
W2A	7	-11.0621	.	.	.	.	.	.
W3	8	0.3302	0.2607	1.60	0.2054	1.3912	0.7108	2.7231
W7	9	1.4464	1.0219	2.00	0.1570	4.2478	0.3054	59.0754
P3A	10	-3.6639	2.1116	3.01	0.0827	0.0256	0.0001	5.9037
P3B	11	-3.0188	1.8570	2.64	0.1040	0.0489	0.0004	5.8406
P8	12	-0.8815	0.5300	2.77	0.0963	0.4142	0.1057	1.6222
P9	13	-0.8652	0.5571	2.41	0.1204	0.4210	0.1002	1.7681
P10	14	0.6105	0.4057	2.26	0.1324	1.8414	0.6475	5.2361
P13	15	2.7201	1.0565	6.63	0.0100	15.1818	0.9986	230.821

---------------------- DEPVAR=H8 MODEL=A P2=FEMALE LRS=1.0000 TOTN=169 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-6.7593	11.3278	0.36	0.5507	0.0012	0.0000	5.462E9
T1	2	0.1530	0.2105	0.53	0.4674	1.1653	0.6776	2.0042
T2	3	-0.0236	0.0916	0.07	0.7970	0.9767	0.7714	1.2366
T3	4	-1.5315	2.5460	0.36	0.5475	0.2162	0.0003	152.474
T4	5	0.4808	0.7145	0.45	0.5010	1.6174	0.2567	10.1894
T6	6	0.4005	0.1663	5.80	0.0160	1.4926	0.9725	2.2908
W2A	7	0.3100	0.6969	0.20	0.6564	1.3634	0.2265	8.2089
W2B	8	-0.2644	1.3466	0.04	0.8444	0.7677	0.0239	24.6417
W3	9	0.0971	0.1824	0.28	0.5944	1.1020	0.6888	1.7629
W7	10	0.6252	0.6545	0.91	0.3394	1.8686	0.3462	10.0864
P3A	11	0.5312	1.0745	0.24	0.6210	1.7010	0.1068	27.0886
P3B	12	1.6497	1.1007	2.25	0.1339	5.2054	0.3055	88.6861
P8	13	0.2803	0.3747	0.56	0.4545	1.3235	0.5041	3.4748
P9	14	-0.3998	0.3875	1.06	0.3021	0.6705	0.2471	1.8192
P10	15	0.0222	0.2700	0.01	0.9344	1.0224	0.5100	2.0498
P13	16	-0.2758	1.2482	0.05	0.8251	0.7590	0.0305	18.9076

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H9 MODEL=A P2=MALE LRS=0.0101 TOTN=175 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	14.3268	7.6938	3.47	0.0626	1667440	0.0041	6.75E14
T1	2	-0.0756	0.1087	0.48	0.4867	0.9272	0.7007	1.2268
T2	3	-0.0153	0.0423	0.13	0.7172	0.9848	0.8831	1.0982
T3	[illegible]	-1.4006	1.4560	0.93	0.3361	0.2464	0.0058	10.4862
T4	[illegible]	-0.1546	0.2523	0.38	0.5400	0.8568	0.4473	1.6410
T6	6	-0.0002	0.1439	0.00	0.9991	0.9998	0.6901	1.4485
W2A	7	-0.2835	0.5191	0.30	0.5850	0.7531	0.1978	2.8682
W3	8	0.1720	0.1008	2.91	0.0879	1.1877	0.9161	1.5398
W8	9	0.4980	0.6162	0.65	0.4190	1.6454	0.3364	8.0473
P1	10	-0.0183	0.0188	0.95	0.3296	0.9819	0.9354	1.0306
P4	11	-0.4406	0.3336	1.74	0.1866	0.6437	0.2725	1.5201
P10	12	0.4374	0.1577	7.70	0.0055	1.5487	1.0317	2.3248
P12A	13	0.7701	0.4960	2.41	0.1205	2.1600	0.6019	7.7508
P12B	14	0.2511	0.4838	0.27	0.6037	1.2854	0.3697	4.4699

---------------------- DEPVAR=H9 MODEL=A P2=FEMALE LRS=0.0168 TOTN=163 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-8.9925	6.9886	1.66	0.1982	0.0001	0.0000	8185.61
T1	2	-0.0151	0.1188	0.02	0.8988	0.9850	0.7253	1.3377
T2	3	0.0018	0.0464	0.00	0.9689	1.0018	0.8889	1.1290
T3	4	2.0415	1.4476	1.99	0.1585	7.7022	0.1850	320.704
T4	5	-0.1638	0.2784	0.35	0.5563	0.8489	0.4144	1.7391
T6	6	0.0161	0.1159	0.02	0.8897	1.0162	0.7539	1.3698
W2A	7	-0.3369	0.4288	0.62	0.4320	0.7140	0.2366	2.1548
W2B	8	-2.3011	0.6421	12.84	0.0003	0.1001	0.0192	0.5236
W3	9	0.2073	0.1096	3.58	0.0585	1.2304	0.9277	1.6317
W8	10	-1.1047	0.5213	4.49	0.0341	0.3313	0.0865	1.2689
P1	11	-0.0328	0.0200	2.69	0.1007	0.9677	0.9191	1.0189
P4	12	-0.7893	0.3676	4.61	0.0318	0.4542	0.1762	1.1707
P10	13	0.0797	0.1447	0.30	0.5819	1.0830	0.7460	1.5722
P12A	14	-0.3088	0.4501	0.47	0.4927	0.7343	0.2303	2.3412
P12B	15	0.9954	0.4626	4.63	0.0314	2.7058	0.8218	8.9090

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H10 MODEL=A P2=MALE LRS=0.5269 TOTN=182 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.7522	7.4341	0.01	0.9194	0.4713	0.0000	9.776E7
T1	2	-0.1551	0.1208	1.65	0.1989	0.8563	0.6273	1.1689
T2	3	-0.0536	0.0457	1.37	0.2411	0.9478	0.8425	1.0662
T3	4	1.7557	1.5426	1.30	0.2551	5.7875	0.1088	307.796
T4	5	-0.2191	0.2778	0.62	0.4302	0.8032	0.3927	1.6430
T6	6	0.2112	0.1369	2.38	0.1231	1.2352	0.8681	1.7574
P5	7	0.6581	0.2598	6.42	0.0113	1.9311	0.9889	3.7710

--------------------- DEPVAR=H10 MODEL=A P2=FEMALE LRS=0.0926 TOTN=177 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.9057	6.0693	0.10	0.7535	0.1487	0.0000	916958
T1	2	-0.0595	0.1065	0.31	0.5764	0.9422	0.7162	1.2397
T2	3	0.0209	0.0455	0.21	0.6456	1.0211	0.9082	1.1481
T3	4	0.5331	1.3659	0.15	0.6963	1.7042	0.0505	57.4927
T4	5	0.2140	0.2822	0.57	0.4483	1.2386	0.5987	2.5624
T6	6	0.0823	0.1021	0.65	0.4202	1.0858	0.8347	1.4124
P5	7	0.4147	0.2217	3.50	0.0615	1.5139	0.8552	2.6800

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H11 MODEL=A P2=MALE LRS=0.5143 TOTN=183 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	2.4780	7.0228	0.12	0.7242	11.9174	0.0000	8.568E8
T1	2	-0.1306	0.1197	1.19	0.2752	0.8776	0.6447	1.1945
T2	3	-0.0455	0.0475	0.92	0.3378	0.9555	0.8455	1.0799
T3	4	1.1006	1.4962	0.54	0.4620	3.0060	0.0637	141.856
T4	5	0.0773	0.3044	0.06	0.7995	1.0804	0.4932	2.3666
T6	6	-0.0046	0.1594	0.00	0.9769	0.9954	0.6602	1.5008
W3	7	0.2258	0.1102	4.20	0.0405	1.2533	0.9436	1.6648
P1	8	-0.0319	0.0198	2.59	0.1077	0.9686	0.9204	1.0193
P13	9	0.0825	0.6185	0.02	0.8939	1.0860	0.2207	5.3428

---------------------- DEPVAR=H11 MODEL=A P2=FEMALE LRS=0.0303 TOTN=175 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-8.5183	6.1964	1.89	0.1692	0.0002	0.0000	1708.94
T1	2	0.0646	0.1110	0.34	0.5605	1.0667	0.8014	1.4198
T2	3	0.0880	0.0450	3.82	0.0506	1.0920	0.9725	1.2262
T3	4	0.1026	1.4119	0.01	0.9421	1.1080	0.0292	42.0834
T4	5	0.1745	0.2627	0.44	0.5064	1.1907	0.6052	2.3425
T6	6	0.2104	0.1029	4.18	0.0410	1.2342	0.9468	1.6088
W3	7	0.1272	0.1001	1.61	0.2038	1.1356	0.8775	1.4697
P1	8	-0.0360	0.0178	4.10	0.0430	0.9646	0.9214	1.0099
P13	9	1.2157	0.6260	3.77	0.0521	3.3727	0.6724	16.9163

MAXIMUM LIKELIHOOD ESTIMATES

--------------------- DEPVAR=H12 MODEL=A P2=MALE LRS=1.0000 TOTN=178 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	21.8703	17.0156	1.65	0.1987	3.149E9	0.0000	3.42E28
T1	2	-0.6112	0.2533	5.82	0.0158	0.5427	0.2826	1.0422
T2	3	-0.0138	0.0898	0.02	0.8780	0.9863	0.7826	1.2430
T3	4	2.5206	3.1114	0.66	0.4179	12.4361	0.0041	37630.4
T4	5	0.2636	0.9357	0.08	0.7781	1.3016	0.1169	14.4973
T6	6	0.4578	0.2203	4.32	0.0377	1.5806	0.8961	2.7879
W5	7	2.0921	1.0917	3.67	0.0553	8.1019	0.4867	134.871
P4	8	0.9362	0.8195	1.31	0.2533	2.5503	0.3089	21.0570
P9	9	-0.0177	0.4540	0.00	0.9688	0.9825	0.3051	3.1639

--------------------- DEPVAR=H12 MODEL=A P2=FEMALE LRS=0.9999 TOTN=171 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	20.9881	10.1822	4.25	0.0393	1.303E9	0.0053	3.21E20
T1	2	-0.1764	0.1563	1.27	0.2590	0.8383	0.5604	1.2539
T2	3	0.0625	0.0678	0.85	0.3569	1.0645	0.8939	1.2676
T3	4	-1.8745	2.1865	0.73	0.3913	0.1534	0.0005	42.8594
T4	5	0.4086	0.4663	0.77	0.3809	1.5047	0.4527	5.0018
T6	6	0.0788	0.1671	0.22	0.6373	1.0820	0.7035	1.6640
W5	7	1.8864	0.7739	5.94	0.0148	6.5956	0.8984	48.4226
P4	8	-0.9805	0.5522	3.15	0.0758	0.3751	0.0904	1.5558
P9	9	0.3647	0.3086	1.40	0.2372	1.4401	0.6503	3.1888

MAXIMUM LIKELIHOOD ESTIMATES

-------------------- DEPVAR=H13 MODEL=A P2=MALE LRS=0.7830 TOTN=182 --------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	4.4607	7.9833	0.31	0.5763	86.5481	0.0000	7.39E10
T1	2	-0.1659	0.1305	1.62	0.2036	0.8471	0.6053	1.1856
T2	3	-0.0128	0.0494	0.07	0.7960	0.9873	0.8693	1.1213
T3	4	1.0921	1.7057	0.41	0.5220	2.9805	0.0368	241.286
T4	5	-0.3314	0.3078	1.16	0.2816	0.7179	0.3249	1.5864
T6	6	0.2514	0.1566	2.58	0.1085	1.2858	0.8590	1.9248
W2A	7	-0.2992	0.6050	0.24	0.6209	0.7414	0.1560	3.5229
W7	8	1.0378	0.4910	4.47	0.0346	2.8230	0.7969	10.0003
P6	9	-0.5100	0.2898	3.10	0.0784	0.6005	0.2846	1.2668
P7	10	0.5427	0.2606	4.34	0.0373	1.7206	0.8793	3.3669
P8	11	-0.2319	0.2300	1.02	0.3133	0.7930	0.4385	1.4342

-------------------- DEPVAR=H13 MODEL=A P2=FEMALE LRS=0.6038 TOTN=170 --------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-3.7146	7.6849	0.23	0.6288	0.0244	0.0000	9642610
T1	2	0.3001	0.1346	4.97	0.0258	1.3500	0.9544	1.9095
T2	3	0.0660	0.0565	1.36	0.2433	1.0682	0.9235	1.2356
T3	4	-3.2074	1.6716	3.68	0.0550	0.0405	0.0005	3.0001
T4	5	0.1994	0.3593	0.31	0.5789	1.2207	0.4838	3.0801
T6	6	0.2018	0.1258	2.58	0.1085	1.2236	0.8849	1.6919
W2A	7	0.4800	0.4772	1.01	0.3145	1.6161	0.4727	5.5249
W2B	8	-1.9142	0.8012	5.71	0.0169	0.1475	0.0187	1.1615
W7	9	-1.0096	0.4883	4.28	0.0387	0.3644	0.1036	1.2818
P6	10	-0.1446	0.2361	0.38	0.5403	0.8654	0.4710	1.5898
P7	11	-0.1703	0.2326	0.54	0.4642	0.8434	0.4633	1.5355
P8	12	-0.1586	0.2293	0.48	0.4891	0.8533	0.4727	1.5405

MAXIMUM LIKELIHOOD ESTIMATES

-------------------- DEPVAR=H14 MODEL=A P2=MALE LRS=0.9152 TOTN=181 --------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-7.7034	7.9709	0.93	0.3338	0.0005	0.0000	373114
T1	2	-0.1445	0.1373	1.11	0.2927	0.8655	0.6076	1.2327
T2	3	-0.0852	0.0519	2.69	0.1010	0.9183	0.8034	1.0497
T3	4	2.0965	1.7016	1.52	0.2179	8.1376	0.1016	651.855
T4	5	1.5976	0.6273	6.49	0.0109	4.9412	0.9818	24.8666
T6	6	-0.2291	0.1809	1.60	0.2053	0.7952	0.4990	1.2673
W5	7	0.2616	0.8970	0.09	0.7706	1.2990	0.1289	13.0955
P5	8	0.6750	0.2954	5.22	0.0223	1.9640	0.9176	4.2036
P7	9	0.2221	0.2645	0.71	0.4011	1.2487	0.6318	2.4681

-------------------- DEPVAR=H14 MODEL=A P2=FEMALE LRS=0.0274 TOTN=176 --------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	1.8709	5.9908	0.10	0.7548	6.4941	0.0000	3.271E7
T1	2	0.0143	0.1071	0.02	0.8940	1.0144	0.7698	1.3367
T2	3	-0.0125	0.0459	0.07	0.7858	0.9876	0.8774	1.1115
T3	4	-0.8420	1.3384	0.40	0.5293	0.4308	0.0137	13.5409
T4	5	-0.0297	0.2478	0.01	0.9045	0.9707	0.5127	1.8379
T6	6	0.0195	0.1011	0.04	0.8473	1.0197	0.7859	1.3230
W5	7	1.1082	0.5316	4.34	0.0371	3.0289	0.7701	11.9127
P5	8	0.0429	0.2347	0.03	0.8548	1.0438	0.5702	1.9107
P7	9	0.4807	0.2085	5.31	0.0212	1.6172	0.9452	2.7671

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H15 MODEL=A P2=MALE LRS=1.0000 TOTN=180 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-4.8115	17.1491	0.08	0.7790	0.0081	0.0000	1.25E17
T1	2	-0.2587	0.2311	1.25	0.2630	0.7721	0.4257	1.4002
T2	3	0.0585	0.0817	0.51	0.4743	1.0602	0.8590	1.3086
T3	4	2.0606	3.1261	0.43	0.5098	7.8507	0.0025	24672.2
T4	[illegible]	2.2166	1.0880	4.15	0.0416	9.1761	0.5565	151.304
T6	6	-0.0307	0.3461	0.01	0.9293	0.9698	0.3976	2.3652
W3	7	0.0729	0.2177	0.11	0.7376	1.0756	0.6139	1.8846
W6	8	-0.6501	0.4621	1.98	0.1595	0.5220	0.1587	1.7165
P1	9	-0.0031	0.0413	0.01	0.9410	0.9970	0.8963	1.1089
P7	10	0.0352	0.5047	0.00	0.9444	1.0358	0.2823	3.8012
P8	11	0.1369	0.4531	0.09	0.7625	1.1467	0.3569	3.6843
P10	12	0.2519	0.3043	0.69	0.4077	1.2865	0.5874	2.8173

---------------------- DEPVAR=H15 MODEL=A P2=FEMALE LRS=1.0000 TOTN=167 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-12.0640	12.6734	0.91	0.3411	0.0000	0.0000	8.688E8
T1	2	0.2374	0.2765	0.74	0.3906	1.2679	0.6220	2.5848
T2	3	0.1900	0.1084	3.07	0.0796	1.2092	0.9146	1.5988
T3	4	-2.0303	3.5805	0.32	0.5707	0.1313	0.0000	1330.18
T4	5	-0.0127	0.4195	0.00	0.9758	0.9874	0.3351	2.9094
T6	6	0.3084	0.1826	2.85	0.0914	1.3612	0.8505	2.1788
W3	7	0.3653	0.1912	3.65	0.0560	1.4409	0.8805	2.3580
W6	8	-0.1147	0.1843	0.39	0.5336	0.8916	0.5546	1.4334
P1	9	-0.1032	0.0499	4.27	0.0387	0.9019	0.7932	1.0257
P7	10	0.9435	0.4090	5.32	0.0210	2.5690	0.8958	7.3675
P8	11	-0.8042	0.3584	5.04	0.0248	0.4474	0.1777	1.1264
P10	12	0.0645	0.2523	0.07	0.7982	1.0666	0.5569	2.0430

MAXIMUM LIKELIHOOD ESTIMATES

--------------------- DEPVAR=H16 MODEL=A P2=MALE LRS=1.0000 TOTN=180 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-49.8985	16.2463	9.43	0.0021	0.0000	0.0000	0.0003
T1	2	0.1316	0.2098	0.39	0.5305	1.1407	0.6644	1.9582
T2	3	-0.1067	0.0823	1.68	0.1950	0.8988	0.7271	1.1110
T3	4	6.0691	2.6108	5.40	0.0201	432.291	0.5188	360238
T4	5	0.0657	0.3924	0.03	0.8671	1.0679	0.3886	2.9345
T6	6	0.1258	0.2605	0.23	0.6291	1.1341	0.5797	2.2185
P5	7	1.2212	0.4971	6.04	0.0140	3.3913	0.9424	12.2036
P6	8	1.4799	0.4925	9.03	0.0027	4.3925	1.2352	15.6204
P7	9	-0.9545	0.3844	6.17	0.0130	0.3850	0.1430	1.0364
P9	10	-0.7433	0.3953	3.54	0.0601	0.4755	0.1718	1.3165

--------------------- DEPVAR=H16 MODEL=A P2=FEMALE LRS=0.9974 TOTN=175 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-18.2387	8.9577	4.15	0.0417	0.0000	0.0000	126.007
T1	2	0.0451	0.1566	0.08	0.7734	1.0461	0.6989	1.5660
T2	3	0.0852	0.0671	1.61	0.2039	1.0889	0.9161	1.2944
T3	4	1.8295	1.9876	0.85	0.3573	6.2308	0.0372	1042.69
T4	5	-0.2935	0.3491	0.71	0.4006	0.7456	0.3034	1.8327
T6	6	0.2522	0.1281	3.88	0.0489	1.2869	0.9252	1.7899
P5	7	-0.6008	0.3724	2.60	0.1067	0.5484	0.2101	1.4312
P6	8	0.0038	0.2796	0.00	0.9892	1.0038	0.4885	2.0627
P7	9	0.9581	0.3301	8.42	0.0037	2.6067	1.1138	6.1009
P9	10	-0.9298	0.3178	8.56	0.0034	0.3946	0.1740	0.8948

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=C1 MODEL=A P2=MALE LRS=0.0055 TOTN=180 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-5.8352	7.2386	0.65	0.4202	0.0029	0.0000	366383
T1	2	0.2568	0.1080	5.65	0.0174	1.2928	0.9788	1.7075
T2	3	0.0128	0.0389	0.11	0.7417	1.0129	0.9163	1.1196
T3	4	-1.5301	1.4121	1.17	0.2786	0.2165	0.0057	8.2274
T4	5	-0.1608	0.2450	0.43	0.5117	0.8515	0.4530	1.6005
T6	6	0.0141	0.1437	0.01	0.9221	1.0142	0.7004	1.4685
O2	7	0.6292	0.3782	2.77	0.0961	1.8761	0.7082	4.9701
W2A	8	0.3845	0.4581	0.70	0.4013	1.4689	0.4513	4.7806
P1	9	-0.0500	0.0198	6.40	0.0114	0.9512	0.9039	1.0010
P3A	10	-1.7021	0.8543	3.97	0.0463	0.1823	0.0202	1.6464
P3B	11	-1.8986	0.7477	6.45	0.0111	0.1498	0.0218	1.0279
P11A	12	-1.2932	0.9638	1.80	0.1797	0.2744	0.0229	3.2856
P11B	13	-0.8750	0.6980	1.57	0.2100	0.4169	0.0690	2.5170

---------------------- DEPVAR=C1 MODEL=A P2=FEMALE LRS=0.0020 TOTN=168 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-11.2543	6.3004	3.19	0.0741	0.0000	0.0000	144.826
T1	2	-0.0102	0.1131	0.01	0.9282	0.9899	0.7397	1.3246
T2	3	-0.0406	0.0442	0.84	0.3589	0.9602	0.8569	1.0760
T3	4	2.3495	1.3972	2.83	0.0927	10.4803	0.2866	383.250
T4	5	-0.2949	0.2518	1.37	0.2414	0.7446	0.3892	1.4244
T6	6	0.0209	0.1128	0.03	0.8529	1.0211	0.7636	1.3654
O2	7	0.4217	0.3547	1.41	0.2345	1.5246	0.6114	3.8015
W2A	8	-0.3861	0.4154	0.86	0.3526	0.6797	0.2331	1.9817
W2B	9	-0.9535	0.5788	2.71	0.0995	0.3854	0.0868	1.7117
P1	10	-0.0324	0.0188	2.97	0.0848	0.9681	0.9224	1.0162
P3A	11	0.3047	0.4902	0.39	0.5342	1.3562	0.3836	4.7944
P3B	12	0.8036	0.5550	2.10	0.1477	2.2336	0.5347	9.3304
P11A	13	0.2446	0.5801	0.18	0.6732	1.2771	0.2866	5.6913
P11B	14	-0.0676	0.7266	0.01	0.9259	0.9346	0.1438	6.0746

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=C2 MODEL=A P2=MALE LRS=0.0015 TOTN=176 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	10.5165	6.6004	2.54	0.1111	36919.7	0.0015	8.94E11
T1	2	-0.0995	0.1003	0.98	0.3214	0.9053	0.6992	1.1722
T2	3	-0.0399	0.0383	1.09	0.2974	0.9609	0.8706	1.0605
T3	4	-0.1067	1.2919	0.01	0.9342	0.8988	0.0322	25.0590
T4	5	-0.3764	0.2359	2.55	0.1106	0.6863	0.3738	1.2602
T6	6	-0.0029	0.1264	0.00	0.9820	0.9972	0.7200	1.3809
O2	7	0.5005	0.3732	1.80	0.1799	1.6495	0.6307	4.3140
P3A	8	-1.2595	0.6914	3.32	0.0685	0.2838	0.0478	1.6846
P3B	9	-1.1078	0.6335	3.06	0.0804	0.3303	0.0646	1.6889
P13	10	-1.3636	0.6235	4.78	0.0287	0.2557	0.0513	1.2745

---------------------- DEPVAR=C2 MODEL=A P2=FEMALE LRS=0.0041 TOTN=173 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-6.2626	5.6666	1.22	0.2691	0.0019	0.0000	4165.38
T1	2	0.0228	0.1015	0.05	0.8219	1.0231	0.7877	1.3288
T2	3	-0.0300	0.0407	0.54	0.4606	0.9704	0.8739	1.0777
T3	4	0.7444	1.2613	0.35	0.5551	2.1052	0.0817	54.2449
T4	5	-0.1426	0.2441	0.34	0.5590	0.8671	0.4624	1.6261
T6	6	0.0586	0.1000	0.34	0.5578	1.0604	0.8195	1.3719
O2	7	0.5709	0.3314	2.97	0.0850	1.7699	0.7537	4.1561
P3A	8	0.7137	0.3980	3.22	0.0730	2.0415	0.7323	5.6914
P3B	9	0.8542	0.4116	4.31	0.0380	2.3495	0.8138	6.7834
P13	10	0.5410	0.6189	0.76	0.3821	1.7177	0.3488	8.4595

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=C4 MODEL=A P2=MALE LRS=0.6369 TOTN=181 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	29.8572	8.2546	13.08	0.0003	9.26E12	5395.66	1.59E22
T1	2	-0.5258	0.1281	16.84	0.0000	0.5911	0.4249	0.8222
T2	3	-0.0303	0.0466	0.42	0.5158	0.9702	0.8604	1.0939
T3	4	0.8955	1.5930	0.32	0.5740	2.4486	0.0404	148.275
T4	5	-0.2066	0.3150	0.43	0.5121	0.8133	0.3613	1.8310
T6	6	0.3559	0.1702	4.37	0.0365	1.4275	0.9208	2.2130
O2	7	0.2930	0.4680	0.39	0.5312	1.3404	0.4015	4.4753
P5	8	0.6450	0.3196	4.07	0.0436	1.9060	0.8367	4.3418
P8	9	-0.4740	0.2573	3.39	0.0654	0.6225	0.3208	1.2078
P9	10	0.8686	0.3133	7.69	0.0056	2.3836	1.0635	5.3423

---------------------- DEPVAR=C4 MODEL=A P2=FEMALE LRS=0.0720 TOTN=171 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	25.2627	6.9712	13.13	0.0003	9.36E10	1487.55	5.89E18
T1	2	-0.4721	0.1232	14.69	0.0001	0.6237	0.4541	0.8566
T2	3	-0.0228	0.0456	0.25	0.6168	0.9775	0.8691	1.0993
T3	4	1.5689	1.3922	1.27	0.2598	4.8014	0.1330	173.332
T4	5	0.0679	0.2992	0.05	0.8203	1.0703	0.4952	2.3132
T6	6	0.0842	0.1115	0.57	0.4503	1.0878	0.8163	1.4498
O2	7	0.3752	0.3726	1.01	0.3139	1.4553	0.5573	3.8001
P5	8	-0.1141	0.2543	0.20	0.6538	0.8922	0.4634	1.7177
P8	9	0.1527	0.2022	0.57	0.4501	1.1650	0.6920	1.9612
P9	10	-0.2858	0.2362	1.46	0.2263	0.7514	0.4089	1.3808

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=02 MODEL=A P2=MALE LRS=0.2868 TOTN=179 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-27.7241	8.8035	9.92	0.0016	0.0000	0.0000	0.0064
T1	2	0.0944	0.1196	0.62	0.4296	1.0990	0.8076	1.4955
T2	3	0.0941	0.0467	4.06	0.0438	1.0987	0.9741	1.2391
T3	4	2.7354	1.5432	3.14	0.0763	15.4159	0.2894	821.131
T4	5	0.1804	0.2864	0.40	0.5288	1.1977	0.5727	2.5047
T6	6	0.0404	0.1773	0.05	0.8196	1.0412	0.6595	1.6440
W2A	7	-0.2491	0.5582	0.20	0.6555	0.7795	0.1851	3.2832
W3	8	0.1388	0.1073	1.67	0.1958	1.1489	0.8714	1.5147
W6	9	0.0173	0.1422	0.01	0.9031	1.0175	0.7054	1.4676
P6	10	-0.1566	0.2776	0.32	0.5726	0.8550	0.4182	1.7480
P9	11	-0.4768	0.2426	3.86	0.0494	0.6208	0.3323	1.1597
P10	12	0.5274	0.1733	9.26	0.0023	1.6945	1.0843	2.6480
P11A	13	-0.2678	0.9860	0.07	0.7860	0.7651	0.0603	9.7001
P11B	14	1.9467	0.7429	6.87	0.0088	7.0055	1.0335	47.4848
P13	15	1.1548	0.5736	4.05	0.0441	3.1734	0.7241	13.9070

----------------------- DEPVAR=02 MODEL=A P2=FEMALE LRS=0.0186 TOTN=170 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-6.4727	6.7394	0.92	0.3368	0.0015	0.0000	53529.8
T1	2	0.1083	0.1140	0.90	0.3422	1.1144	0.8308	1.4948
T2	3	0.0105	0.0460	0.05	0.8190	1.0106	0.8976	1.1377
T3	4	-0.7852	1.4143	0.31	0.5788	0.4560	0.0119	17.4273
T4	5	0.5314	0.3212	2.74	0.0981	1.7013	0.7438	3.8916
T6	6	-0.0227	0.1158	0.04	0.8444	0.9776	0.7254	1.3173
W2A	7	0.7503	0.4254	3.11	0.0778	2.1176	0.7078	6.3353
W2B	8	1.6464	0.5103	10.41	0.0013	5.1883	1.3936	19.3160
W3	9	0.1970	0.1129	3.04	0.0811	1.2177	0.9104	1.6288
W6	10	0.2849	0.1104	6.65	0.0099	1.3296	1.0005	1.7670
P6	11	0.5211	0.2260	5.32	0.0211	1.6839	0.9408	3.0140
P9	12	-0.5418	0.2270	5.70	0.0170	0.5817	0.3241	1.0439
P10	13	0.0643	0.1436	0.20	0.6546	1.0664	0.7367	1.5437
P11A	14	-0.4009	0.6315	0.40	0.5255	0.6697	0.1316	3.4070
P11B	15	0.7186	0.7522	0.91	0.3394	2.0516	0.2955	14.2430
P13	16	0.0350	0.6856	0.00	0.9593	1.0356	0.1771	6.0563

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=A1 MODEL=A P2=MALE LRS=0.0009 TOTN=172 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	8.6286	6.6605	1.68	0.1952	5589.25	0.0002	1.58E11
T1	2	-0.1870	0.1015	3.39	0.0654	0.8294	0.6386	1.0773
T2	3	-0.0475	0.0382	1.55	0.2130	0.9536	0.8642	1.0522
T3	4	1.0900	1.2852	0.72	0.3964	2.9743	0.1085	81.5059
T4	5	0.0638	0.2372	0.07	0.7880	1.0659	0.5786	1.9637
T6	6	-0.1031	0.1254	0.68	0.4111	0.9020	0.6530	1.2460
W2A	7	1.0222	0.4580	4.98	0.0256	2.7793	0.8542	9.0432
W3	8	-0.1659	0.0939	3.12	0.0773	0.8471	0.6651	1.0789
P9	9	-0.0220	0.1763	0.02	0.9005	0.9782	0.6212	1.5406

---------------------- DEPVAR=A1 MODEL=A P2=FEMALE LRS=0.0167 TOTN=171 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	2.8785	6.3151	0.21	0.6485	17.7876	0.0000	2.066E8
T1	2	-0.0039	0.1046	0.00	0.9706	0.9962	0.7609	1.3042
T2	3	-0.0264	0.0456	0.34	0.5620	0.9739	0.8660	1.0953
T3	4	0.2838	1.3757	0.04	0.8366	1.3282	0.0384	45.9523
T4	5	0.0891	0.2487	0.13	0.7200	1.0932	0.5761	2.0746
T6	6	0.1382	0.1138	1.47	0.2246	1.1482	0.8565	1.5393
W2A	7	-0.8073	0.4139	3.80	0.0511	0.4461	0.1536	1.2955
W2B	8	-0.5481	0.4610	1.41	0.2344	0.5780	0.1763	1.8954
W3	9	-0.1240	0.1054	1.38	0.2395	0.8834	0.6733	1.1589
P9	10	-0.6773	0.2173	9.72	0.0018	0.5080	0.2902	0.8891

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=A2 MODEL=A P2=MALE LRS=1.0000 TOTN=166 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	4.9521	16.5700	0.09	0.7650	141.472	0.0000	4.88E20
T1	2	-0.2213	0.2881	0.59	0.4426	0.8015	0.3816	1.6835
T2	3	-0.1402	0.1366	1.05	0.3047	0.8692	0.6114	1.2358
T3	4	1.4689	3.2384	0.21	0.6501	4.3445	0.0010	18233.5
T4	5	-0.4313	0.5676	0.58	0.4473	0.6497	0.1506	2.8034
T6	6	-0.1848	0.3222	0.33	0.5662	0.8313	0.3625	1.9063
W5	7	2.7735	1.1595	5.72	0.0168	16.0146	0.8079	317.466
W8	8	2.0831	1.0027	4.32	0.0378	8.0293	0.6066	106.278
P4	9	0.7841	1.1376	0.48	0.4906	2.1904	0.1169	41.0404
P8	10	0.0232	0.5065	0.00	0.9635	1.0235	0.2776	3.7733
P12B	11	2.3590	0.9027	6.83	0.0090	10.5804	1.0342	108.240

---------------------- DEPVAR=A2 MODEL=A P2=FEMALE LRS=0.9184 TOTN=163 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-25.4776	8.8337	8.32	0.0039	0.0000	0.0000	0.0657
T1	2	0.0829	0.1357	0.37	0.5413	1.0864	0.7659	1.5410
T2	3	0.0284	0.0622	0.21	0.6486	1.0288	0.8765	1.2076
T3	4	2.9031	1.8329	2.51	0.1132	18.2306	0.1623	2048.06
T4	5	-0.1264	0.3182	0.16	0.6912	0.8813	0.3883	2.0003
T6	6	0.0865	0.1369	0.40	0.5276	1.0904	0.7663	1.5514
W5	7	-1.3847	1.1160	1.54	0.2147	0.2504	0.0141	4.4376
W8	8	-0.7737	0.7043	1.21	0.2720	0.4613	0.0752	2.8308
P4	9	-1.4793	0.4865	9.25	0.0024	0.2278	0.0651	0.7977
P8	10	0.6659	0.2859	5.43	0.0198	1.9462	0.9319	4.0649
P12B	11	0.8873	0.4887	3.30	0.0694	2.4286	0.6896	8.5522

MALES

Model: MODEL_A
Dependent Variable: M1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	12	601.55525	50.12960	1.812	0.0501
Error	160	4425.56613	27.65979		
C Total	172	5027.12139			

Root MSE	5.25926	R-square	0.1197
Dep Mean	11.71676	Adj R-sq	0.0536
C.V.	44.88661		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	8.875207	17.40262757	0.510	0.6108
T1	1	-0.150721	0.25447752	-0.592	0.5545
T2	1	-0.034069	0.10160697	-0.335	0.7378
T3	1	1.705283	3.27735236	0.520	0.6036
T4	1	0.526313	0.58937034	0.893	0.3732
T6	1	-0.098697	0.32994617	-0.299	0.7652
W7	1	2.199752	1.20158289	1.831	0.0690
W8	1	-1.213383	1.70163015	-0.713	0.4768
P5	1	0.779417	0.64881029	1.201	0.2314
P7	1	0.287778	0.55692295	0.517	0.6061
P8	1	-0.088367	0.45267595	-0.195	0.8455
P12B	1	3.047490	1.11349247	2.737	0.0069
P13	1	-0.559198	1.29603108	-0.431	0.6667

FEMALES

Model: MODEL_A
Dependent Variable: M1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	12	947.98787	78.99899	2.252	0.0119
Error	153	5367.51213	35.08178		
C Total	165	6315.50000			

Root MSE	5.92299	R-square	0.1501
Dep Mean	12.50000	Adj R-sq	0.0834
C.V.	47.38390		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-27.947019	17.62067897	-1.586	0.1148
T1	1	0.325707	0.29560938	1.102	0.2723
T2	1	0.095683	0.13087942	0.731	0.4658
T3	1	1.335964	3.74386843	0.357	0.7217
T4	1	0.791488	0.69817592	1.134	0.2587
T6	1	0.216152	0.30626034	0.706	0.4814
W7	1	-0.951298	1.37467425	-0.692	0.4900
W8	1	-2.494468	1.67732217	-1.487	0.1390
P5	1	-0.077111	0.70480613	-0.109	0.9130
P7	1	1.980703	0.60095932	3.296	0.0012
P8	1	-1.037155	0.50986737	-2.034	0.0437
P12B	1	0.481411	1.04614271	0.460	0.6460
P13	1	3.072302	1.76880472	1.737	0.0844

MALES

Model: MODEL_A
Dependent Variable: M2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	9	1042.13760	115.79307	3.190	0.0014
Error	162	5879.55426	36.29354		
C Total	171	6921.69186			

Root MSE	6.02441	R-square	0.1506
Dep Mean	20.58721	Adj R-sq	0.1034
C.V.	29.26289		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	3.999469	18.40610710	0.217	0.8283
T1	1	0.697905	0.28525880	2.447	0.0155
T2	1	0.015579	0.11147015	0.140	0.8890
T3	1	-6.019448	3.64741618	-1.650	0.1008
T4	1	-0.624396	0.66896232	-0.933	0.3520
T6	1	0.098093	0.38203161	0.257	0.7977
W5	1	5.419547	2.00022055	2.709	0.0075
P1	1	0.004125	0.04615919	0.089	0.9289
P9	1	1.141631	0.51724335	2.207	0.0287
P12B	1	-3.205318	1.28078477	-2.503	0.0133

FEMALES

Model: MODEL_A
Dependent Variable: M2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	9	989.64586	109.96065	2.780	0.0048
Error	157	6209.65953	39.55197		
C Total	166	7199.30539			

Root MSE	6.28904	R-square	0.1375
Dep Mean	19.16766	Adj R-sq	0.0880
C.V.	32.81065		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	11.702455	17.91686413	0.653	0.5146
T1	1	0.374465	0.32958604	1.136	0.2576
T2	1	-0.096955	0.12715978	-0.762	0.4469
T3	1	-3.892735	3.97677659	-0.979	0.3292
T4	1	-1.430794	0.72103218	-1.984	0.0490
T6	1	-0.247428	0.30453616	-0.812	0.4178
W5	1	-1.010421	1.61017378	-0.628	0.5312
P1	1	0.176101	0.05026258	3.504	0.0006
P9	1	1.050383	0.54546703	1.926	0.0560
P12B	1	-0.068799	1.15719264	-0.059	0.9527

APPENDIX F

DETAILED MODELING RESULTS FOR MODEL B

(INTERIM MODEL)

(Notation used in this appendix is identical to that in Appendix E.
The first page of Appendix E defines the notation.)

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H1 MODEL=B P2=MALE LRS=0.0591 TOTN=184 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	0.2061	0.8988	0.05	0.8186	1.2289	0.1213	12.4461
T6	2	0.1812	0.1324	1.87	0.1712	1.1987	0.8523	1.6858
P1	3	-0.0704	0.0203	12.07	0.0005	0.9320	0.8845	0.9821
P12A	4	1.5022	0.5582	7.24	0.0071	4.4916	1.0664	18.9182
P13	5	0.0338	0.5754	0.00	0.9532	1.0344	0.2349	4.5541

----------------------- DEPVAR=H1 MODEL=B P2=FEMALE LRS=0.0022 TOTN=181 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	0.2078	0.6474	0.10	0.7483	1.2310	0.2323	6.5241
T6	2	0.1788	0.0948	3.56	0.0591	1.1958	0.9367	1.5265
P1	3	-0.0226	0.0156	2.08	0.1492	0.9777	0.9391	1.0177
P12A	4	0.0023	0.3428	0.00	0.9946	1.0023	0.4145	2.4238
P13	5	1.5774	0.6855	5.29	0.0214	4.8423	0.8282	28.3109

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H2 MODEL=B P2=MALE LRS=0.0015 TOTN=177 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.3205	1.2441	0.07	0.7967	0.7258	0.0294	17.8911
W6	2	0.2280	0.1163	3.84	0.0500	1.2561	0.9309	1.6948
P3A	3	-0.8770	0.6962	1.59	0.2078	0.4160	0.0692	2.5003
P3B	4	-0.1906	0.6316	0.09	0.7628	0.8265	0.1624	4.2055
P4	5	-0.1024	0.3161	0.10	0.7460	0.9027	0.3998	2.0378
P5	6	0.0394	0.2417	0.03	0.8706	1.0402	0.5581	1.9387
P10	7	0.3083	0.1395	4.89	0.0271	1.3611	0.9502	1.9497

---------------------- DEPVAR=H2 MODEL=B P2=FEMALE LRS=0.0066 TOTN=173 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	1.2750	1.0708	1.42	0.2338	3.5787	0.2269	56.4514
W6	2	0.1717	0.0988	3.02	0.0823	1.1873	0.9205	1.5314
P3A	3	0.1995	0.4101	0.24	0.6266	1.2208	0.4245	3.5111
P3B	4	0.8752	0.4274	4.19	0.0406	2.3994	0.7979	7.2151
P4	5	-0.7072	0.3344	4.47	0.0344	0.4930	0.2083	1.1667
P5	6	0.3684	0.2442	2.27	0.1315	1.4454	0.7705	2.7114
P10	7	-0.1564	0.1318	1.41	0.2353	0.8552	0.6090	1.2010

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H3 MODEL=B P2=MALE LRS=0.0018 TOTN=177 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	2.3643	1.5989	2.19	0.1392	10.6366	0.1730	653.973
W2A	2	-0.4600	0.4493	1.05	0.3059	0.6313	0.1984	2.0085
W6	3	0.2901	0.1301	4.97	0.0258	1.3366	0.9560	1.8687
P1	4	-0.0463	0.0184	6.31	0.0120	0.9548	0.9106	1.0011
P3A	5	-1.3526	0.8251	2.69	0.1012	0.2586	0.0309	2.1659
P3B	6	-0.3930	0.7099	0.31	0.5798	0.6750	0.1084	4.2026
P4	7	-0.1508	0.3218	0.22	0.6394	0.8600	0.3754	1.9702
P5	8	0.2546	0.2464	1.07	0.3016	1.2899	0.6838	2.4335

------------------------ DEPVAR=H3 MODEL=B P2=FEMALE LRS=0.0856 TOTN=167 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	3.5772	1.5298	5.47	0.0194	35.7732	0.6952	1840.82
W2A	2	-0.2332	0.4386	0.28	0.5950	0.7920	0.2559	2.4513
W2B	3	-1.7079	0.6836	6.24	0.0125	0.1812	0.0312	1.0545
W6	4	0.0837	0.1137	0.54	0.4619	1.0873	0.8112	1.4573
P1	5	-0.0288	0.0201	2.05	0.1520	0.9716	0.9226	1.0232
P3A	6	-0.7764	0.5900	1.73	0.1882	0.4601	0.1006	2.1032
P3B	7	-0.1995	0.6597	0.09	0.7623	0.8191	0.1497	4.4812
P4	8	-0.7103	0.3927	3.27	0.0705	0.4915	0.1787	1.3516
P5	9	0.5873	0.3082	3.63	0.0567	1.7991	0.8133	3.9798

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H4 MODEL=B P2=MALE LRS=0.9984 TOTN=176 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.0367	1.9278	0.00	0.9848	0.9640	0.0067	138.284
T4	2	0.8757	0.4623	3.59	0.0582	2.4006	0.7297	7.8978
T6	3	0.1566	0.1762	0.79	0.3741	1.1695	0.7428	1.8413
W3	4	0.3196	0.1496	4.56	0.0327	1.3766	0.9363	2.0238
P1	5	-0.0532	0.0265	4.02	0.0449	0.9482	0.8856	1.0152
P3A	6	-2.2693	1.0134	5.01	0.0251	0.1034	0.0076	1.4067
P3B	7	-1.6513	0.8347	3.91	0.0479	0.1918	0.0223	1.6469
P8	8	-0.5281	0.2804	3.55	0.0597	0.5897	0.2864	1.2144
P9	9	-0.1263	0.3055	0.17	0.6793	0.8814	0.4012	1.9361
P13	10	2.1122	0.6688	9.97	0.0016	8.2664	1.4761	46.2948

------------------------ DEPVAR=H4 MODEL=B P2=FEMALE LRS=0.7848 TOTN=164 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-4.8041	2.0485	5.50	0.0190	0.0082	0.0000	1.6045
T4	2	1.3298	0.5960	4.98	0.0257	3.7803	0.8142	17.5507
T6	3	0.2826	0.1182	5.71	0.0168	1.3266	0.9784	1.7987
W3	4	0.0970	0.1242	0.61	0.4350	1.1019	0.8002	1.5173
P1	5	0.0237	0.0237	1.00	0.3172	1.0240	0.9633	1.0884
P3A	6	-0.9770	0.5724	2.91	0.0878	0.3764	0.0862	1.6446
P3B	7	0.0024	0.5276	0.00	0.9963	1.0024	0.2575	3.9021
P8	8	0.1824	0.2484	0.54	0.4629	1.2001	0.6329	2.2757
P9	9	-0.5539	0.2653	4.36	0.0368	0.5747	0.2902	1.1383
P13	10	-0.4178	0.8571	0.24	0.6260	0.6585	0.0724	5.9900

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H5 MODEL=B P2=MALE LRS=0.9398 TOTN=186 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	5.7061	7.5425	0.57	0.4493	300.696	0.0000	8.25E10
T1	2	-0.1386	0.1176	1.39	0.2387	0.8706	0.6430	1.1786
T3	3	0.4140	1.5540	0.07	0.7899	1.5129	0.0276	82.8560
W2A	4	-0.6289	0.6456	0.95	0.3300	0.5332	0.1011	2.8128
W7	5	0.9253	0.4696	3.88	0.0488	2.5226	0.7525	8.4570
P6	6	-0.4870	0.2763	3.11	0.0780	0.6145	0.3016	1.2520
P7	7	0.4055	0.2524	2.58	0.1082	1.5001	0.7830	2.8739

---------------------- DEPVAR=H5 MODEL=B P2=FEMALE LRS=0.5579 TOTN=181 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.1969	6.9224	0.00	0.9773	0.8213	0.0000	4.559E7
T1	2	0.1898	0.1115	2.90	0.0887	1.2090	0.9072	1.6113
T3	3	-2.0837	1.3883	2.25	0.1334	0.1245	0.0035	4.4485
W2A	4	0.4194	0.4384	0.92	0.3387	1.5210	0.4917	4.7054
W2B	5	-1.7366	0.6879	6.37	0.0116	0.1761	0.0299	1.0361
W7	6	-0.8660	0.4431	3.82	0.0506	0.4206	0.1343	1.3171
P6	7	-0.3792	0.2111	3.23	0.0724	0.6844	0.3973	1.1789
P7	8	-0.1152	0.1967	0.34	0.5582	0.8912	0.5369	1.4792

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H6 MODEL=B P2=MALE LRS=1.0000 TOTN=182 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-5.1783	2.0380	6.46	0.0111	0.0056	0.0000	1.0742
T6	2	0.4134	0.1733	5.69	0.0170	1.5119	0.9675	2.3627
W3	3	0.2130	0.1476	2.08	0.1488	1.2374	0.8460	1.8098
P1	4	-0.0612	0.0291	4.41	0.0357	0.9406	0.8727	1.0139
P7	5	0.6890	0.3249	4.50	0.0340	1.9917	0.8625	4.5995
P12A	6	1.4195	0.8388	2.86	0.0906	4.1351	0.4765	35.8825

---------------------- DEPVAR=H6 MODEL=B P2=FEMALE LRS=0.0921 TOTN=177 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-3.1884	1.1500	7.69	0.0056	0.0412	0.0021	0.7977
T6	2	0.0986	0.1005	0.96	0.3263	1.1036	0.8519	1.4297
W3	3	0.2565	0.1049	5.98	0.0145	1.2924	0.9864	1.6934
P1	4	-0.0195	0.0192	1.03	0.3107	0.9807	0.9334	1.0304
P7	5	0.4325	0.1950	4.92	0.0266	1.5411	0.9326	2.5468
P12A	6	0.0415	0.3816	0.01	0.9133	1.0424	0.3900	2.7857

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H7 MODEL=B P2=MALE LRS=0.1352 TOTN=182 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.3826	7.1846	0.00	0.9575	0.6821	0.0000	7.44E7
T1	2	-0.2224	0.1044	4.53	0.0332	0.8006	0.6118	1.0476
T3	3	2.3442	1.3394	3.06	0.0801	10.4249	0.3308	328.486
W3	4	0.1324	0.1033	1.64	0.2000	1.1416	0.8749	1.4896
W6	5	0.3552	0.1306	7.39	0.0065	1.4265	1.0190	1.9970
W8	6	-0.4855	0.6612	0.54	0.4627	0.6154	0.1121	3.3796
P3A	7	-1.6467	0.8032	4.20	0.0404	0.1927	0.0243	1.5255
P3B	8	-0.9221	0.7036	1.72	0.1900	0.3977	0.0649	2.4360
P8	9	0.0427	0.1818	0.06	0.8145	1.0436	0.6534	1.6670
P10	10	0.4913	0.1598	9.45	0.0021	1.6344	1.0829	2.4669
P11A	11	1.1491	0.9154	1,58	0.2094	3.1554	0.2985	33.3538
P11B	12	-0.2820	0.7472	0.14	0.7059	0.7543	0.1101	5.1696

---------------------- DEPVAR=H7 MODEL=B P2=FEMALE LRS=0.0029 TOTN=172 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-5.9257	6.1996	0.91	0.3392	0.0027	0.0000	23028.1
T1	2	-0.0608	0.0923	0.43	0.5096	0.9410	0.7419	1.1936
T3	3	1.7090	1.2075	2.00	0.1570	5.5234	0.2462	123.906
W3	4	0.1711	0.0976	3.08	0.0795	1.1866	0.9228	1.5258
W6	5	0.1664	0.0996	2.79	0.0947	1.1810	0.9138	1.5265
W8	6	-0.8551	0.4628	3.41	0.0647	0.4252	0.1291	1.4008
P3A	7	-0.3154	0.4236	0.55	0.4565	0.7295	0.2450	2.1723
P3B	8	0.6354	0.4338	2.15	0.1430	1.8878	0.6175	5.7711
P8	9	-0.3588	0.1682	4.55	0.0329	0.6985	0.4529	1.0773
P10	10	-0.0717	0.1297	0.31	0.5802	0.9308	0.6664	1.3001
P11A	11	0.0802	0.5794	0.02	0.8900	1.0835	0.2436	4.8198
P11B	12	-1.5159	0.8746	3.00	0.0831	0.2196	0.0231	2.0898

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H8 MODEL=B P2=MALE LRS=1.0000 TOTN=182 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	3.4564	1.5095	5.24	0.0220	31.7026	0.6492	1548.24
T6	2	-0.2569	0.3036	0.72	0.3974	0.7734	0.3538	1.6908
W2A	3	-10.5591	.	.	.	.	.	.
P3A	4	-3.2826	1.3473	5.94	0.0148	0.0375	0.0012	1.2069
P3B	5	-2.8037	1.0668	6.91	0.0086	0.0606	0.0039	0.9459
P8	6	-1.1126	0.3529	9.94	0.0016	0.3287	0.1324	0.8158
P13	7	2.0687	0.7460	7.69	0.0056	7.9145	1.1584	54.0763

----------------------- DEPVAR=H8 MODEL=B P2=FEMALE LRS=1.0000 TOTN=175 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-4.5882	1.5705	8.53	0.0035	0.0102	0.0002	0.5812
T6	2	0.4417	0.1448	9.31	0.0023	1.5553	1.0711	2.2585
W2A	3	0.4112	0.6634	0.38	0.5354	1.5086	0.2732	8.3321
W2B	4	-0.5086	1.3043	0.15	0.6966	0.6013	0.0209	17.3099
P3A	5	0.7468	1.0319	0.52	0.4692	2.1102	0.1479	30.1135
P3B	6	1.6540	1.0689	2.39	0.1218	5.2278	0.3330	82.0629
P8	7	0.0267	0.2965	0.01	0.9282	1.0271	0.4785	2.2045
P13	8	0.0994	1.1331	0.01	0.9301	1.1045	0.0596	20.4558

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H9 MODEL=B P2=MALE LRS=0.0470 TOTN=180 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.6959	0.9636	0.52	0.4702	0.4986	0.0417	5.9675
W2A	2	-0.5856	0.4890	1.43	0.2311	0.5568	0.1580	1.9622
W3	3	0.1997	0.0976	4.18	0.0408	1.2210	0.9496	1.5701
W8	4	0.2764	0.5314	0.27	0.6030	1.3184	0.3354	5.1825
P4	5	-0.5457	0.3121	3.06	0.0804	0.5794	0.2593	1.2947
P10	6	0.3995	0.1438	7.71	0.0055	1.4911	1.0295	2.1596
P12B	7	0.2420	0.4210	0.33	0.5654	1.2738	0.4306	3.7678

---------------------- DEPVAR=H9 MODEL=B P2=FEMALE LRS=0.0319 TOTN=175 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	0.9475	1.0718	0.78	0.3767	2.5793	0.1631	40.7908
W2A	2	-0.2805	0.3790	0.55	0.4592	0.7554	0.2846	2.0053
W2B	3	-1.5950	0.5273	9.15	0.0025	0.2029	0.0522	0.7892
W3	4	0.1907	0.0977	3.81	0.0510	1.2101	0.9408	1.5564
W8	5	-0.8373	0.4458	3.53	0.0603	0.4329	0.1373	1.3649
P4	6	-0.7617	0.3288	5.37	0.0205	0.4669	0.2001	1.0890
P10	7	0.0948	0.1327	0.51	0.4748	1.0994	0.7811	1.5475
P12B	8	0.9626	0.3826	6.33	0.0119	2.6185	0.9773	7.0159

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H10 MODEL=B P2=MALE LRS=0.9031 TOTN=186 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.5221	0.5080	24.65	0.0000	0.0803	0.0217	0.2972
P5	2	0.6351	0.2472	6.60	0.0102	1.8872	0.9983	3.5676

--------------------- DEPVAR=H10 MODEL=B P2=FEMALE LRS=0.5457 TOTN=184 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.6896	0.4097	17.01	0.0000	0.1846	0.0642	0.5304
P5	2	0.3878	0.2091	3.44	0.0636	1.4737	0.8600	2.5255

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H11 MODEL=B P2=MALE LRS=0.5734 TOTN=187 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.6682	1.5261	0.19	0.6615	0.5126	0.0101	26.1287
T2	2	-0.0268	0.0438	0.38	0.5399	0.9736	0.8697	1.0898
T6	3	0.0415	0.1492	0.08	0.7810	1.0424	0.7098	1.5309
W3	4	0.2363	0.1090	4.69	0.0303	1.2666	0.9565	1.6771
P1	5	-0.0310	0.0195	2.52	0.1125	0.9695	0.9220	1.0194
P13	6	0.1133	0.6095	0.03	0.8525	1.1200	0.2330	5.3837

---------------------- DEPVAR=H11 MODEL=B P2=FEMALE LRS=0.0563 TOTN=182 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.4098	1.2327	3.82	0.0506	0.0898	0.0038	2.1504
T2	2	0.0770	0.0405	3.62	0.0571	1.0800	0.9730	1.1988
T6	3	0.2045	0.1013	4.08	0.0435	1.2269	0.9451	1.5927
W3	4	0.1511	0.0977	2.39	0.1218	1.1631	0.9043	1.4960
P1	5	-0.0381	0.0177	4.65	0.0310	0.9626	0.9197	1.0075
P13	6	1.1328	0.6108	3.44	0.0636	3.1043	0.6436	14.9726

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H12 MODEL=B P2=MALE LRS=1.0000 TOTN=184 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	31.3471	13.9674	5.04	0.0248	4.11E13	0.0097	1.74E29
T1	2	-0.5201	0.1954	7.08	0.0078	0.5945	0.3594	0.9834
T6	3	0.4161	0.1815	5.26	0.0219	1.5160	0.9499	2.4197
W5	4	1.8423	1.0208	3.26	0.0711	6.3110	0.4551	87.5212
P4	5	0.9442	0.7464	1.60	0.2059	2.5708	0.3759	17.5829

--------------------- DEPVAR=H12 MODEL=B P2=FEMALE LRS=0.9980 TOTN=179 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	20.0407	8.0002	6.28	0.0122	5.053E8	0.5668	4.51E17
T1	2	-0.2777	0.1061	6.85	0.0088	0.7575	0.5764	0.9956
T6	3	0.0730	0.1528	0.23	0.6328	1.0757	0.7257	1.5946
W5	4	1.4729	0.6950	4.49	0.0341	4.3619	0.7280	26.1336
P4	5	-0.8068	0.4633	3.03	0.0816	0.4463	0.1353	1.4721

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H13 MODEL=B P2=MALE LRS=0.7831 TOTN=186 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	7.4042	7.1467	1.07	0.3002	1642.87	0.0000	1.63E11
T1	2	-0.1116	0.1121	0.99	0.3195	0.8944	0.6701	1.1938
T3	3	-0.1281	1.4940	0.01	0.9316	0.8798	0.0187	41.2827
W2A	4	-0.2068	0.5830	0.13	0.7227	0.8132	0.1811	3.6510
W7	5	0.7622	0.4494	2.88	0.0899	2.1430	0.6734	6.8200
P6	6	-0.5014	0.2634	3.62	0.0569	0.6057	0.3073	1.1938
P7	7	0.3856	0.2374	2.64	0.1043	1.4705	0.7978	2.7105

---------------------- DEPVAR=H13 MODEL=B P2=FEMALE LRS=0.4909 TOTN=181 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.4617	6.8702	0.05	0.8315	0.2318	0.0000	1.125E7
T1	2	0.1678	0.1090	2.37	0.1234	1.1827	0.8932	1.5661
T3	3	-1.6231	1.3606	1.42	0.2329	0.1973	0.0059	6.5653
W2A	4	0.3460	0.4343	0.63	0.4256	1.4134	0.4617	4.3265
W2B	5	-1.7888	0.6851	6.82	0.0090	0.1672	0.0286	0.9763
W7	6	-0.9382	0.4412	4.52	0.0335	0.3913	0.1256	1.2194
P6	7	-0.3527	0.2089	2.85	0.0914	0.7028	0.4103	1.2037
P7	8	-0.1181	0.1949	0.37	0.5445	0.8886	0.5379	1.4681

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H14 MODEL=B P2=MALE LRS=0.8935 TOTN=181 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-8.1112	1.9159	17.92	0.0000	0.0003	0.0000	0.0418
T4	2	1.7198	0.5910	8.47	0.0036	5.5834	1.2182	25.5904
W5	3	0.1956	0.8661	0.05	0.8213	1.2160	0.1306	11.3212
P5	4	0.6105	0.2856	4.57	0.0326	1.8414	0.8823	3.8428
P7	5	0.3264	0.2556	1.63	0.2017	1.3860	0.7175	2.6773

---------------------- DEPVAR=H14 MODEL=B P2=FEMALE LRS=0.0260 TOTN=176 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.7069	0.9511	8.10	0.0044	0.0667	0.0058	0.7735
T4	2	-0.0303	0.2251	0.02	0.8928	0.9702	0.5433	1.7325
W5	3	1.0469	0.5134	4.16	0.0415	2.8488	0.7591	10.6912
P5	4	0.0608	0.2297	0.07	0.7913	1.0627	0.5881	1.9203
P7	5	0.4797	0.2032	5.57	0.0182	1.6156	0.9572	2.7268

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H15 MODEL=B P2=MALE LRS=1.0000 TOTN=181 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-12.8581	4.2954	8.96	0.0028	0.0000	0.0000	0.1664
T2	2	0.0775	0.0750	1.07	0.3018	1.0806	0.8907	1.3109
T4	3	2.5501	1.0237	6.21	0.0127	12.8084	0.9167	178.958
T6	4	0.0320	0.3284	0.01	0.9223	1.0325	0.4431	2.4060
W3	5	0.1030	0.2083	0.24	0.6210	1.1085	0.6482	1.8957
P1	6	-0.0048	0.0376	0.02	0.8981	0.9952	0.9033	1.0964
P7	7	0.0494	0.4690	0.01	0.9161	1.0506	0.3139	3.5168
P8	8	0.2725	0.4115	0.44	0.5079	1.3132	0.4550	3.7906

---------------------- DEPVAR=H15 MODEL=B P2=FEMALE LRS=1.0000 TOTN=167 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-6.0331	3.5243	2.93	0.0869	0.0024	0.0000	21.0205
T2	2	0.1497	0.0869	2.96	0.0851	1.1615	0.9285	1.4529
T4	3	-0.1545	0.3747	0.17	0.6801	0.8568	0.3264	2.2495
T6	4	0.2969	0.1725	2.96	0.0851	1.3457	0.8629	2.0986
W3	5	0.3547	0.1851	3.67	0.0554	1.4258	0.8850	2.2968
P1	6	-0.0972	0.0475	4.18	0.0408	0.9074	0.8029	1.0255
P7	7	0.9509	0.4001	5.65	0.0175	2.5880	0.9233	7.2540
P8	8	-0.8277	0.3502	5.59	0.0181	0.4371	0.1773	1.0773

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H16 MODEL=B P2=MALE LRS=1.0000 TOTN=184 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-50.0359	14.2274	12.37	0.0004	0.0000	0.0000	0.0000
T3	2	7.2247	2.1133	11.69	0.0006	1372.93	5.9348	317604
T6	3	0.2295	0.2387	0.92	0.3363	1.2580	0.6802	2.3266
P5	4	1.1220	0.4627	5.88	0.0153	3.0710	0.9325	10.1139
P6	5	1.2911	0.4528	8.13	0.0044	3.6368	1.1328	11.6757
P7	6	-0.7959	0.3540	5.06	0.0246	0.4512	0.1813	1.1230
P9	7	-0.7001	0.3751	3.48	0.0620	0.4965	0.1889	1.3049

---------------------- DEPVAR=H16 MODEL=B P2=FEMALE LRS=0.9926 TOTN=181 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-14.5982	7.4572	3.83	0.0503	0.0000	0.0000	100.640
T3	2	2.0210	1.1595	3.04	0.0813	7.5459	0.3807	149.586
T6	3	0.1450	0.1169	1.54	0.2150	1.1560	0.8554	1.5623
P5	4	-0.4674	0.3449	1.84	0.1754	0.6266	0.2577	1.5236
P6	5	-0.0383	0.2591	0.02	0.8826	0.9624	0.4937	1.8760
P7	6	0.8625	0.3096	7.76	0.0053	2.3691	1.0671	5.2595
P9	7	-0.7704	0.2900	7.06	0.0079	0.4628	0.2193	0.9769

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=C1 MODEL=B P2=MALE LRS=0.0071 TOTN=184 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-5.8273	6.3225	0.85	0.3567	0.0029	0.0000	34872.7
T1	2	0.2668	0.0946	7.95	0.0048	1.3058	1.0234	1.6661
T3	3	-1.6885	1.3001	1.69	0.1941	0.1848	0.0065	5.2622
O2	4	0.5012	0.3617	1.92	0.1658	1.6507	0.6502	4.1910
W2A	5	0.4386	0.4480	0.96	0.3275	1.5505	0.4890	4.9168
P1	6	-0.0501	0.0195	6.57	0.0104	0.9511	0.9045	1.0001
P3A	7	-1.6228	0.8674	3.50	0.0614	0.1973	0.0211	1.8434
P3B	8	-1.6827	0.7474	5.07	0.0244	0.1859	0.0271	1.2746

---------------------- DEPVAR=C1 MODEL=B P2=FEMALE LRS=0.0024 TOTN=179 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-14.7832	5.8744	6.33	0.0119	0.0000	0.0000	1.4180
T1	2	0.1214	0.0922	1.73	0.1879	1.1291	0.8904	1.4318
T3	3	1.1292	1.1908	0.90	0.3430	3.0932	0.1439	66.4667
O2	4	0.3309	0.3368	0.97	0.3258	1.3922	0.5847	3.3151
W2A	5	-0.5167	0.3935	1.72	0.1892	0.5965	0.2165	1.6437
W2B	6	-0.6199	0.5428	1.30	0.2534	0.5380	0.1329	2.1779
P1	7	-0.0344	0.0181	3.62	0.0569	0.9662	0.9222	1.0123
P3A	8	0.2917	0.4665	0.39	0.5318	1.3387	0.4025	4.4522
P3B	9	0.7735	0.5205	2.21	0.1373	2.1673	0.5670	8.2839

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=C2 MODEL=B P2=MALE LRS=0.1881 TOTN=180 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	0.5778	0.5924	0.95	0.3294	1.7821	0.3874	8.1974
O2	2	0.3146	0.3452	0.83	0.3621	1.3697	0.5629	3.3329
P3A	3	-1.1081	0.6719	2.72	0.0991	0.3302	0.0585	1.8640
P3B	4	-1.0658	0.6127	3.03	0.0820	0.3445	0.0711	1.6695
P13	5	-1.1096	0.6014	3.40	0.0650	0.3297	0.0700	1.5521

---------------------- DEPVAR=C2 MODEL=B P2=FEMALE LRS=0.8235 TOTN=180 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.7353	0.3355	4.80	0.0284	0.4794	0.2020	1.1376
O2	2	0.5492	0.3209	2.93	0.0870	1.7319	0.7577	3.9584
P3A	3	0.6773	0.3802	3.17	0.0748	1.9686	0.7393	5.2420
P3B	4	0.8409	0.3960	4.51	0.0337	2.3185	0.8359	6.4301
P13	5	0.3986	0.6032	0.44	0.5087	1.4897	0.3150	7.0459

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=C4 MODEL=B P2=MALE LRS=0.6616 TOTN=185 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	29.2332	6.6845	19.13	0.0000	4.96E12	165038	1.49E20
T1	2	-0.4527	0.0903	25.13	0.0000	0.6359	0.5039	0.8024
T6	3	0.3304	0.1558	4.50	0.0339	1.3915	0.9315	2.0787
P5	4	0.5482	0.3006	3.32	0.0683	1.7301	0.7976	3.7530
P8	5	-0.4198	0.2444	2.95	0.0859	0.6572	0.3502	1.2334
P9	6	0.8221	0.3011	7.45	0.0063	2.2753	1.0476	4.9418

------------------------ DEPVAR=C4 MODEL=B P2=FEMALE LRS=0.0778 TOTN=177 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	26.6549	5.8880	20.49	0.0000	3.77E11	97480.9	1.46E18
T1	2	-0.3585	0.0792	20.47	0.0000	0.6987	0.5698	0.8569
T6	3	0.1225	0.1061	1.33	0.2481	1.1303	0.8600	1.4856
P5	4	-0.1385	0.2451	0.32	0.5720	0.8707	0.4631	1.6370
P8	5	0.1239	0.1972	0.39	0.5298	1.1319	0.6811	1.8812
P9	6	-0.3175	0.2267	1.96	0.1615	0.7280	0.4060	1.3054

MAXIMUM LIKELIHOOD ESTIMATES

------------------------- DEPVAR=02 MODEL=B P2=MALE LRS=0.3128 TOTN=179 -------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-24.5641	7.3460	11.18	0.0008	0.0000	0.0000	0.0036
T2	2	0.0802	0.0425	3.55	0.0594	1.0835	0.9711	1.2089
T3	3	3.4363	1.1404	9.08	0.0026	31.0718	1.6465	586.381
T4	4	0.1067	0.2658	0.16	0.6882	1.1126	0.5610	2.2065
W2A	5	-0.2497	0.5530	0.20	0.6517	0.7790	0.1875	3.2376
W3	6	0.1370	0.1067	1.65	0.1994	1.1468	0.8712	1.5096
W6	7	0.0310	0.1396	0.05	0.8243	1.0315	0.7199	1.4779
P6	8	-0.1659	0.2758	0.36	0.5474	0.8471	0.4163	1.7239
P9	9	-0.4797	0.2418	3.94	0.0473	0.6190	0.3320	1.1539
P10	10	0.5332	0.1727	9.54	0.0020	1.7044	1.0923	2.6593
P11A	11	-0.2688	0.9760	0.08	0.7830	0.7643	0.0619	9.4440
P11B	12	1.9140	0.7320	6.84	0.0089	6.7802	1.0288	44.6847
P13	13	1.1117	0.5740	3.75	0.0528	3.0395	0.6929	13.3341

---------------------- DEPVAR=02 MODEL=B P2=FEMALE LRS=0.0216 TOTN=170 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-4.3102	6.1649	0.49	0.4845	0.0134	0.0000	105935
T2	2	-0.0038	0.0409	0.01	0.9261	0.9962	0.8966	1.1069
T3	3	0.2482	0.9345	0.07	0.7906	1.2817	0.1154	14.2317
T4	4	0.4125	0.2923	1.99	0.1582	1.5106	0.7114	3.2074
W2A	5	0.7715	0.4209	3.36	0.0668	2.1630	0.7314	6.3964
W2B	6	1.6597	0.5058	10.77	0.0010	5.2577	1.4287	19.3490
W3	7	0.1918	0.1118	2.94	0.0862	1.2114	0.9083	1.6157
W6	8	0.2972	0.1094	7.38	0.0066	1.3461	1.0155	1.7843
P6	9	0.4858	0.2209	4.84	0.0278	1.6255	0.9201	2.8715
P9	10	-0.5464	0.2244	5.93	0.0149	0.5790	0.3248	1.0322
P10	11	0.0701	0.1407	0.25	0.6185	1.0726	0.7465	1.5412
P11A	12	-0.3366	0.6235	0.29	0.5892	0.7142	0.1433	3.5592
P11B	13	0.8197	0.7324	1.25	0.2631	2.2698	0.3441	14.9747
P13	14	0.1208	0.6799	0.03	0.8590	1.1284	0.1958	6.5027

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=A1 MODEL=B P2=MALE LRS=0.0012 TOTN=176 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	7.5825	4.9916	2.31	0.1288	1963.53	0.0051	7.54E8
T1	2	-0.0998	0.0663	2.27	0.1321	0.9050	0.7629	1.0736
W2A	3	1.0804	0.4310	6.28	0.0122	2.9459	0.9706	8.9411
W3	4	-0.1178	0.0892	1.75	0.1863	0.8889	0.7064	1.1185
P9	5	-0.0032	0.1731	0.00	0.9855	0.9969	0.6382	1.5570

----------------------- DEPVAR=A1 MODEL=B P2=FEMALE LRS=0.0186 TOTN=177 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	2.8868	4.9389	0.34	0.5589	17.9358	0.0001	6012832
T1	2	0.0132	0.0653	0.04	0.8399	1.0133	0.8564	1.1989
W2A	3	-0.8301	0.3844	4.66	0.0308	0.4360	0.1620	1.1736
W2B	4	-0.3542	0.4411	0.64	0.4220	0.7017	0.2253	2.1860
W3	5	-0.0915	0.0983	0.87	0.3519	0.9126	0.7084	1.1755
P9	6	-0.6367	0.2082	9.35	0.0022	0.5290	0.3094	0.9045

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=A2 MODEL=B P2=MALE LRS=1.0000 TOTN=170 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-5.7988	2.4822	5.46	0.0195	0.0030	0.0000	1.8137
W5	2	2.6277	1.0713	6.02	0.0142	13.8419	0.8764	218.627
W8	3	2.0667	0.8005	6.67	0.0098	7.8987	1.0046	62.1026
P4	4	0.2796	0.9796	0.08	0.7753	1.3226	0.1060	16.4949
P8	5	0.1475	0.4841	0.09	0.7606	1.1589	0.3330	4.0331
P12B	6	2.2631	0.8193	7.63	0.0057	9.6128	1.1648	79.3300

---------------------- DEPVAR=A2 MODEL=B P2=FEMALE LRS=0.6916 TOTN=169 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.2710	1.0980	0.06	0.8051	0.7626	0.0451	12.9028
W5	2	-1.1883	1.0867	1.20	0.2742	0.3047	0.0185	5.0080
W8	3	-0.1224	0.5719	0.05	0.8305	0.8848	0.2028	3.8606
P4	4	-1.2680	0.4356	8.47	0.0036	0.2814	0.0916	0.8642
P8	5	0.5166	0.2586	3.99	0.0458	1.6763	0.8611	3.2633
P12B	6	0.6973	0.4461	2.44	0.1180	2.0083	0.6364	6.3373

MALES

Model: MODEL_B
Dependent Variable: M1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	461.32201	92.26440	3.451	0.0054
Error	172	4598.77349	26.73706		
C Total	177	5060.09551			

Root MSE	5.17079	R-square	0.0912
Dep Mean	11.65730	Adj R-sq	0.0647
C.V.	44.35664		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	9.430923	1.85282911	5.090	0.0001
W7	1	2.030909	0.87693698	2.316	0.0217
P7	1	0.622951	0.46993307	1.326	0.1867
P8	1	-0.321712	0.41039563	-0.784	0.4342
P12B	1	3.006361	1.03379284	2.908	0.0041
P13	1	-0.478797	1.25192783	-0.382	0.7026

FEMALES

Model: MODEL_B
Dependent Variablc: M1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	725.56539	145.11308	4.183	0.0013
Error	166	5759.06252	34.69315		
C Total	171	6484.62791			

Root MSE	5.89009	R-square	0.1119
Dep Mean	12.45349	Adj R-sq	0.0851
C.V.	47.29670		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	9.154313	2.23536488	4.095	0.0001
W7	1	-1.448256	0.95327031	-1.519	0.1306
P7	1	1.985433	0.49732090	3.992	0.0001
P8	1	-1.113692	0.47582304	-2.341	0.0204
P12B	1	0.633955	1.01433492	0.625	0.5328
P13	1	2.715142	1.70730926	1.590	0.1137

MALES

Model: MODEL_B
Dependent Variable: M2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	920.59002	153.43167	4.219	0.0006
Error	165	6001.10184	36.37031		
C Total	171	6921.69186			

Root MSE	6.03078	R-square	0.1330
Dep Mean	20.58721	Adj R-sq	0.1015
C.V.	29.29382		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-7.266006	15.21342770	-0.478	0.6336
T1	1	0.349554	0.19767093	1.768	0.0788
T4	1	-0.872779	0.65027907	-1.342	0.1814
W5	1	5.618934	1.98938541	2.824	0.0053
P1	1	0.004705	0.04619709	0.102	0.9190
P9	1	1.133826	0.51770978	2.190	0.0299
P12B	1	-3.119279	1.27385550	-2.449	0.0154

FEMALES

Model: MODEL_B
Dependent Variable: M2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	879.34632	146.55772	3.710	0.0018
Error	160	6319.95907	39.49974		
C Total	166	7199.30539			

Root MSE	6.28488	R-square	0.1221
Dep Mean	19.16766	Adj R-sq	0.0892
C.V.	32.78898		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.100440	16.32324488	0.006	0.9951
T1	1	0.171500	0.21171089	0.810	0.4191
T4	1	-1.583314	0.66748473	-2.372	0.0189
W5	1	-0.920322	1.59799074	-0.576	0.5655
P1	1	0.166323	0.04956138	3.356	0.0010
P9	1	1.005985	0.53633951	1.876	0.0625
P12B	1	-0.105366	1.14255806	-0.092	0.9266

MALES

Model: MODEL_B
Dependent Variable: M3

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	997.39933	142.48562	5.209	0.0001
Error	171	4677.13699	27.35168		
C Total	178	5674.53631			

Root MSE	5.22988	R-square	0.1758
Dep Mean	9.11732	Adj R-sq	0.1420
C.V.	57.36208		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-20.494956	13.46827217	-1.522	0.1299
T2	1	-0.189134	0.08808575	-2.147	0.0332
T3	1	4.643948	2.14270466	2.167	0.0316
W5	1	-3.093422	1.59876902	-1.935	0.0547
P5	1	2.424422	0.61177252	3.963	0.0001
P6	1	-0.224039	0.50731152	-0.442	0.6593
P7	1	0.472796	0.49399589	0.957	0.3399
P13	1	-0.577664	1.25527022	-0.460	0.6460

FEMALES

Model: MODEL_B
Dependent Variable: M3

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	691.59692	98.79956	3.893	0.0006
Error	167	4238.43736	25.37986		
C Total	174	4930.03429			

Root MSE	5.03784	R-square	0.1403
Dep Mean	9.07429	Adj R-sq	0.1042
C.V.	55.51779		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	18.008372	13.12954879	1.372	0.1720
T2	1	-0.130891	0.09286740	-1.409	0.1606
T3	1	-1.319268	2.04704672	-0.644	0.5202
W5	1	1.070589	1.27980013	0.837	0.4041
P5	1	-0.067300	0.58132821	-0.116	0.9080
P6	1	-0.944714	0.40942133	-2.307	0.0223
P7	1	1.460581	0.44614300	3.274	0.0013
P13	1	2.940433	1.48165159	1.985	0.0488

APPENDIX G

DETAILED MODELING RESULTS FOR MODEL C

(TESTING FOR EFFECTS OF SELF-REPORTED
THERMAL COMFORT AND ODOR VARIABLES)

(Notation used in this appendix is identical to that in Appendix E. The first page of Appendix E defines the notation.)

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H1 MODEL=C P2=MALE LRS=0.3117 TOTN=180 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.9013	1.0206	0.78	0.3772	0.4060	0.0293	5.6281
T6	2	0.1314	0.1418	0.86	0.3541	1.1404	0.7915	1.6433
P1	3	-0.0655	0.0210	9.71	0.0018	0.9366	0.8873	0.9887
P12A	4	1.5269	0.5808	6.91	0.0086	4.6039	1.0312	20.5537
P13	5	0.1875	0.6230	0.09	0.7634	1.2062	0.2424	6.0035
C1	6	0.5966	0.4059	2.16	0.1416	1.8159	0.6383	5.1665
C2	7	0.6098	0.3889	2.46	0.1169	1.8401	0.6757	5.0109
C4	8	0.8990	0.4266	4.44	0.0351	2.4571	0.8188	7.3737
O2	9	0.2813	0.4131	0.46	0.4959	1.3249	0.4571	3.8399

----------------------- DEPVAR=H1 MODEL=C P2=FEMALE LRS=0.1789 TOTN=177 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.7684	0.8332	4.50	0.0338	0.1706	0.0199	1.4593
T6	2	0.1294	0.1065	1.48	0.2243	1.1381	0.8651	1.4974
P1	3	-0.0184	0.0181	1.04	0.3078	0.9818	0.9370	1.0286
P12A	4	-0.1944	0.3940	0.24	0.6217	0.8233	0.2984	2.2717
P13	5	1.7639	0.7479	5.56	0.0183	5.8352	0.8499	40.0645
C1	6	1.4056	0.3968	12.55	0.0004	4.0780	1.4673	11.3334
C2	7	0.7841	0.3733	4.41	0.0357	2.1904	0.8373	5.7300
C4	8	0.9760	0.3884	6.31	0.0120	2.6538	0.9758	7.2176
O2	9	1.0068	0.3680	7.49	0.0062	2.7368	1.0606	7.0623

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H2 MODEL=C P2=MALE LRS=0.0303 TOTN=173 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.5969	1.4547	3.19	0.0742	0.0745	0.0018	3.1595
W6	2	0.2501	0.1311	3.64	0.0564	1.2842	0.9161	1.8000
P3A	3	-0.4922	0.7714	0.41	0.5235	0.6113	0.0838	4.4590
P3B	4	0.4550	0.7139	0.41	0.5239	1.5762	0.2506	9.9146
P4	5	0.0950	0.3505	0.07	0.7865	1.0997	0.4458	2.7125
P5	6	0.0634	0.2782	0.05	0.8197	1.0655	0.5204	2.1816
P10	7	0.3580	0.1571	5.19	0.0227	1.4305	0.9544	2.1440
C1	8	0.5869	0.3747	2.45	0.1173	1.7984	0.6850	4.7215
C2	9	1.6167	0.3707	19.02	0.0000	5.0364	1.9382	13.0871
C4	10	0.6034	0.3884	2.41	0.1202	1.8283	0.6723	4.9725
O2	11	-0.3188	0.4123	0.60	0.4395	0.7270	0.2514	2.1028

---------------------- DEPVAR=H2 MODEL=C P2=FEMALE LRS=0.0392 TOTN=169 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	0.2908	1.1769	0.06	0.8048	1.3375	0.0645	27.7294
W6	2	0.1326	0.1047	1.60	0.2054	1.1418	0.8719	1.4953
P3A	3	0.3036	0.4644	0.43	0.5132	1.3547	0.4096	4.4812
P3B	4	1.1067	0.5012	4.87	0.0273	3.0244	0.8316	10.9989
P4	5	-0.8614	0.3678	5.48	0.0192	0.4226	0.1638	1.0899
P5	6	0.2789	0.2667	1.09	0.2958	1.3217	0.6649	2.6272
P10	7	-0.2181	0.1458	2.24	0.1349	0.8040	0.5523	1.1706
C1	8	1.1337	0.3773	9.03	0.0027	3.1071	1.1756	8.2122
C2	9	0.7555	0.3722	4.12	0.0424	2.1287	0.8160	5.5527
C4	10	0.5963	0.3928	2.30	0.1290	1.8154	0.6600	4.9936
O2	11	0.7880	0.3879	4.13	0.0422	2.1990	0.8096	5.9729

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H3 MODEL=C P2=MALE LRS=0.0306 TOTN=173 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.0928	1.8230	0.00	0.9594	0.9114	0.0083	99.8080
W2A	2	-0.7080	0.5145	1.89	0.1688	0.4926	0.1309	1.8540
W6	3	0.3432	0.1489	5.31	0.0212	1.4095	0.9604	2.0684
P1	4	-0.0379	0.0200	3.60	0.0577	0.9628	0.9145	1.0137
P3A	5	-0.9249	0.9102	1.03	0.3096	0.3966	0.0380	4.1362
P3B	6	0.1819	0.7959	0.05	0.8192	1.1995	0.1544	9.3198
P4	7	0.0158	0.3613	0.00	0.9651	1.0159	0.4006	2.5767
P5	8	0.2718	0.2812	0.93	0.3337	1.3123	0.6360	2.7079
C1	9	0.5833	0.3778	2.38	0.1226	1.7919	0.6771	4.7423
C2	10	1.4648	0.3784	14.98	0.0001	4.3267	1.6324	11.4680
C4	11	0.7347	0.3949	3.46	0.0628	2.0849	0.7538	5.7659
O2	12	0.1359	0.3969	0.12	0.7320	1.1456	0.4121	3.1846

---------------------- DEPVAR=H3 MODEL=C P2=FEMALE LRS=0.8123 TOTN=163 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	2.0534	1.7845	1.32	0.2499	7.7944	0.0786	772.995
W2A	2	-0.1026	0.5361	0.04	0.8483	0.9025	0.2268	3.5909
W2B	3	-1.7596	0.8518	4.27	0.0389	0.1721	0.0192	1.5444
W6	4	-0.0468	0.1289	0.13	0.7166	0.9543	0.6847	1.3301
P1	5	-0.0230	0.0226	1.03	0.3091	0.9773	0.9220	1.0358
P3A	6	-0.7830	0.7107	1.21	0.2706	0.4570	0.0733	2.8513
P3B	7	0.0176	0.7998	0.00	0.9825	1.0178	0.1297	7.9876
P4	8	-0.9673	0.4802	4.06	0.0440	0.3801	0.1103	1.3096
P5	9	0.4767	0.3320	2.06	0.1511	1.6108	0.6849	3.7884
C1	10	1.9699	0.4682	17.70	0.0000	7.1700	2.1465	23.9504
C2	11	0.9868	0.4540	4.72	0.0297	2.6826	0.8330	8.6391
C4	12	0.8400	0.5093	2.72	0.0991	2.3164	0.6238	8.6017
O2	13	1.4460	0.5063	8.16	0.0043	4.2461	1.1523	15.6462

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H4 MODEL=C P2=MALE LRS=1.0000 TOTN=172 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-3.0471	2.1666	1.98	0.1596	0.0475	0.0002	12.6046
T4	2	1.1173	0.5409	4.27	0.0389	3.0566	0.7588	12.3130
T6	3	0.2190	0.1858	1.39	0.2387	1.2448	0.7713	2.0090
W3	4	0.3111	0.1688	3.40	0.0653	1.3649	0.8836	2.1084
P1	5	-0.0515	0.0296	3.02	0.0824	0.9498	0.8801	1.0251
P3A	6	-1.6110	1.0661	2.28	0.1307	0.1997	0.0128	3.1120
P3B	7	-1.2440	0.9086	1.87	0.1709	0.2882	0.0277	2.9938
P8	8	-0.6055	0.3361	3.25	0.0716	0.5458	0.2296	1.2973
P9	9	0.0074	0.3644	0.00	0.9837	1.0075	0.3941	2.5758
P13	10	2.9633	0.8422	12.38	0.0004	19.3618	2.2118	169.492
C1	11	0.6177	0.6024	1.05	0.3051	1.8547	0.3929	8.7538
C2	12	1.5516	0.6135	6.40	0.0114	4.7190	0.9716	22.9192
C4	13	0.0055	0.6240	0.00	0.9929	1.0056	0.2015	5.0177
O2	14	0.7640	0.5886	1.68	0.1943	2.1468	0.4713	9.7790

---------------------- DEPVAR=H4 MODEL=C P2=FEMALE LRS=0.9686 TOTN=161 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-9.2781	2.7209	11.63	0.0006	0.0001	0.0000	0.1034
T4	2	2.5554	0.8275	9.54	0.0020	12.8764	1.5277	108.531
T6	3	0.2595	0.1357	3.66	0.0559	1.2963	0.9139	1.8387
W3	4	0.0559	0.1370	0.17	0.6834	1.0575	0.7430	1.5050
P1	5	0.0290	0.0279	1.07	0.2998	1.0294	0.9580	1.1061
P3A	6	-0.8841	0.6263	1.99	0.1580	0.4131	0.0823	2.0735
P3B	7	-0.1355	0.6160	0.05	0.8259	0.8733	0.1787	4.2687
P8	8	0.2249	0.2991	0.57	0.4520	1.2522	0.5795	2.7058
P9	9	-0.5613	0.2934	3.66	0.0557	0.5705	0.2679	1.2147
P13	10	-0.1047	0.8782	0.01	0.9051	0.9006	0.0938	8.6499
C1	11	1.0182	0.5776	3.11	0.0779	2.7682	0.6252	12.2570
C2	12	-0.0482	0.5516	0.01	0.9303	0.9529	0.2301	3.9461
C4	13	1.0313	0.4979	4.29	0.0383	2.8047	0.7778	10.1137
O2	14	0.1692	0.4958	0.12	0.7330	1.1844	0.3302	4.2477

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H5 MODEL=C P2=MALE LRS=0.9898 TOTN=183 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	2.0195	9.1699	0.05	0.8257	7.5346	0.0000	1.37E11
T1	2	-0.0620	0.1325	0.22	0.6402	0.9399	0.6681	1.3222
T3	3	-0.0899	1.7533	0.00	0.9591	0.9140	0.0100	83.6466
W2A	4	-1.2595	0.7590	2.75	0.0971	0.2838	0.0402	2.0051
W7	5	1.1532	0.5130	5.05	0.0246	3.1683	0.8451	11.8780
P6	6	-0.5262	0.2971	3.14	0.0766	0.5908	0.2749	1.2701
P7	7	0.4834	0.2665	3.29	0.0697	1.6216	0.8162	3.2217
C1	8	0.6488	0.4945	1.72	0.1895	1.9132	0.5352	6.8389
C2	9	1.2525	0.4729	7.02	0.0081	3.4991	1.0349	11.8306
C4	10	0.4296	0.5449	0.62	0.4305	1.5366	0.3775	6.2543
O2	11	-0.1132	0.5210	0.05	0.8280	0.8930	0.2333	3.4175

---------------------- DEPVAR=H5 MODEL=C P2=FEMALE LRS=0.8722 TOTN=177 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.6254	7.8392	0.11	0.7377	0.0724	0.0000	4.264E7
T1	2	0.2411	0.1256	3.69	0.0548	1.2726	0.9209	1.7588
T3	3	-2.4845	1.4977	2.75	0.0971	0.0834	0.0018	3.9494
W2A	4	0.2521	0.4952	0.26	0.6106	1.2867	0.3593	4.6077
W2B	5	-1.8479	0.7560	5.97	0.0145	0.1576	0.0225	1.1047
W7	6	-0.9466	0.4820	3.86	0.0495	0.3881	0.1121	1.3432
P6	7	-0.3198	0.2454	1.70	0.1924	0.7263	0.3860	1.3666
P7	8	-0.2606	0.2250	1.34	0.2469	0.7706	0.4316	1.3758
C1	9	0.6450	0.4829	1.78	0.1816	1.9060	0.5494	6.6124
C2	10	0.4645	0.4620	1.01	0.3146	1.5912	0.4840	5.2310
C4	11	1.0552	0.4634	5.19	0.0228	2.8725	0.8706	9.4775
O2	12	0.9713	0.4500	4.66	0.0309	2.6414	0.8287	8.4191

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H6 MODEL=C P2=MALE LRS=0.9999 TOTN=179 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-5.9569	2.1612	7.60	0.0058	0.0026	0.0000	0.6773
T6	2	0.4148	0.1861	4.96	0.0259	1.5141	0.9374	2.4454
W3	3	0.2035	0.1521	1.79	0.1810	1.2257	0.8284	1.8136
P1	4	-0.0540	0.0295	3.35	0.0673	0.9474	0.8781	1.0222
P7	5	0.6987	0.3301	4.48	0.0343	2.0111	0.8593	4.7069
P12A	6	1.3676	0.8597	2.53	0.1117	3.9259	0.4287	35.9521
C1	7	0.6007	0.5491	1.20	0.2740	1.8234	0.4432	7.5021
C2	8	0.2286	0.5171	0.20	0.6584	1.2568	0.3317	4.7619
C4	9	0.3264	0.5702	0.33	0.5670	1.3860	0.3190	6.0209
O2	10	0.1375	0.5483	0.06	0.8020	1.1474	0.2795	4.7111

------------------------ DEPVAR=H6 MODEL=C P2=FEMALE LRS=0.7504 TOTN=173 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-5.4583	1.4660	13.86	0.0002	0.0043	0.0001	0.1860
T6	2	0.0354	0.1139	0.10	0.7559	1.0360	0.7726	1.3893
W3	3	0.2606	0.1259	4.28	0.0385	1.2977	0.9383	1.7948
P1	4	-0.0261	0.0237	1.21	0.2707	0.9742	0.9165	1.0356
P7	5	0.4740	0.2387	3.94	0.0471	1.6064	0.8686	2.9710
P12A	6	-0.1214	0.4551	0.07	0.7897	0.8857	0.2742	2.8603
C1	7	1.6332	0.5046	10.48	0.0012	5.1202	1.3956	18.7848
C2	8	0.9273	0.4521	4.21	0.0403	2.5277	0.7887	8.1004
C4	9	0.6297	0.4390	2.06	0.1515	1.8770	0.6058	5.8157
O2	10	1.3419	0.4132	10.55	0.0012	3.8263	1.3198	11.0929

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H7 MODEL=C P2=MALE LRS=0.2071 TOTN=178 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.1586	8.3146	0.07	0.7952	0.1155	0.0000	2.314E8
T1	2	-0.2244	0.1159	3.75	0.0529	0.7990	0.5928	1.0770
T3	3	2.5095	1.4593	2.96	0.0855	12.2988	0.2866	527.768
W3	4	0.1200	0.1088	1.22	0.2702	1.1275	0.8519	1.4922
W6	5	0.3470	0.1412	6.04	0.0140	1.4148	0.9834	2.0355
W8	6	-0.6492	0.7150	0.82	0.3639	0.5225	0.0828	3.2958
P3A	7	-1.4609	0.8457	2.98	0.0841	0.2320	0.0263	2.0496
P3B	8	-0.5263	0.7336	0.51	0.4731	0.5908	0.0893	3.9097
P8	9	0.0470	0.1914	0.06	0.8060	1.0481	0.6402	1.7161
P10	10	0.5607	0.1750	10.26	0.0014	1.7519	1.1162	2.7497
P11A	11	1.5731	0.9773	2.59	0.1075	4.8216	0.3889	59.7772
P11B	12	-0.0453	0.7862	0.00	0.9540	0.9557	0.1261	7.2424
C1	13	0.5364	0.4200	1.63	0.2015	1.7098	0.5795	5.0446
C2	14	0.8356	0.3911	4.56	0.0327	2.3062	0.8421	6.3159
C4	15	-0.1964	0.4596	0.18	0.6691	0.8217	0.2515	2.6846
O2	16	-0.4275	0.4642	0.85	0.3571	0.6521	0.1973	2.1561

---------------------- DEPVAR=H7 MODEL=C P2=FEMALE LRS=0.0151 TOTN=169 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-9.0422	7.1098	1.62	0.2034	0.0001	0.0000	10642.9
T1	2	-0.0192	0.1078	0.03	0.8584	0.9810	0.7431	1.2950
T3	3	1.6006	1.2903	1.54	0.2148	4.9560	0.1785	137.609
W3	4	0.1351	0.1041	1.68	0.1943	1.1447	0.8754	1.4967
W6	5	0.1425	0.1065	1.79	0.1807	1.1532	0.8765	1.5172
W8	6	-1.0879	0.4956	4.82	0.0282	0.3369	0.0940	1.2078
P3A	7	-0.2694	0.4561	0.35	0.5548	0.7638	0.2359	2.4732
P3B	8	0.7707	0.4846	2.53	0.1117	2.1613	0.6203	7.5310
P8	9	-0.4300	0.1868	5.30	0.0213	0.6505	0.4020	1.0525
P10	10	-0.1246	0.1412	0.78	0.3778	0.8828	0.6136	1.2701
P11A	11	0.1539	0.6321	0.06	0.8076	1.1664	0.2289	5.9429
P11B	12	-1.6261	0.9349	3.03	0.0820	0.1967	0.0177	2.1863
C1	13	1.2859	0.4020	10.23	0.0014	3.6179	1.2845	10.1905
C2	14	-0.1872	0.3873	0.23	0.6289	0.8293	0.3058	2.2490
C4	15	1.0217	0.4227	5.84	0.0156	2.7779	0.9350	8.2530
O2	16	0.3812	0.3805	1.00	0.3164	1.4640	0.5494	3.9015

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H8 MODEL=C P2=MALE LRS=1.0000 TOTN=178 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	1.2266	2.0115	0.37	0.5420	3.4096	0.0192	606.815
T6	2	-0.2251	0.3091	0.53	0.4666	0.7984	0.3601	1.7703
W2A	3	-10.6463	.	.	.	.	.	.
P3A	4	-2.5949	1.4513	3.20	0.0738	0.0747	0.0018	3.1382
P3B	5	-2.0068	1.1775	2.90	0.0883	0.1344	0.0065	2.7911
P8	6	-0.9062	0.3816	5.64	0.0176	0.4041	0.1512	1.0798
P13	7	2.6456	0.9285	8.12	0.0044	14.0919	1.2889	154.071
C1	8	-0.0275	0.8339	0.00	0.9737	0.9729	0.1135	8.3364
C2	9	1.5013	0.9235	2.64	0.1040	4.4875	0.4158	48.4356
C4	10	-0.3450	0.9428	0.13	0.7144	0.7082	0.0624	8.0338
O2	11	0.3213	0.8039	0.16	0.6895	1.3789	0.1739	10.9369

---------------------- DEPVAR=H8 MODEL=C P2=FEMALE LRS=1.0000 TOTN=172 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-10.5839	3.0113	12.35	0.0004	0.0000	0.0000	0.0592
T6	2	0.4653	0.1750	7.07	0.0078	1.5925	1.0146	2.4995
W2A	3	0.6445	0.8006	0.65	0.4208	1.9050	0.2422	14.9819
W2B	4	1.2339	1.5386	0.64	0.4226	3.4346	0.0652	180.790
P3A	5	2.5330	1.4502	3.05	0.0807	12.5912	0.3004	527.799
P3B	6	3.6390	1.5662	5.40	0.0202	38.0538	0.6733	2150.66
P8	7	0.3092	0.3906	0.63	0.4286	1.3623	0.4981	3.7262
P13	8	0.1310	1.2969	0.01	0.9195	1.1400	0.0404	32.1951
C1	9	2.7910	1.2921	4.67	0.0308	16.2973	0.5842	454.614
C2	10	-0.7118	0.7963	0.80	0.3713	0.4908	0.0631	3.8170
C4	11	0.8193	0.7408	1.22	0.2687	2.2689	0.3366	15.2961
O2	12	1.3924	0.7169	3.77	0.0521	4.0245	0.6349	25.5116

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H9 MODEL=C P2=MALE LRS=0.2380 TOTN=176 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.7023	1.1314	5.70	0.0169	0.0671	0.0036	1.2364
W2A	2	-0.9376	0.5663	2.74	0.0978	0.3916	0.0910	1.6840
W3	3	0.1969	0.1071	3.38	0.0659	1.2176	0.9240	1.6045
W8	4	0.1963	0.6424	0.09	0.7599	1.2169	0.2326	6.3670
P4	5	-0.3735	0.3489	1.15	0.2844	0.6883	0.2802	1.6909
P10	6	0.4349	0.1626	7.15	0.0075	1.5448	1.0162	2.3485
P12B	7	-0.0559	0.4666	0.01	0.9046	0.9456	0.2843	3.1458
C1	8	1.2513	0.4111	9.27	0.0023	3.4949	1.2120	10.0774
C2	9	1.1137	0.3689	9.11	0.0025	3.0456	1.1775	7.8773
C4	10	0.8629	0.4065	4.51	0.0338	2.3700	0.8317	6.7534
O2	11	0.6874	0.4024	2.92	0.0875	1.9885	0.7053	5.6068

------------------------ DEPVAR=H9 MODEL=C P2=FEMALE LRS=0.3503 TOTN=171 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.4270	1.3013	1.20	0.2728	0.2400	0.0084	6.8562
W2A	2	-0.3212	0.4475	0.52	0.4729	0.7253	0.2290	2.2969
W2B	3	-1.7314	0.6112	8.03	0.0046	0.1770	0.0367	0.8547
W3	4	0.2906	0.1209	5.78	0.0162	1.3372	0.9794	1.8258
W8	5	-1.1333	0.5155	4.83	0.0279	0.3220	0.0853	1.2149
P4	6	-0.7393	0.3740	3.91	0.0481	0.4774	0.1822	1.2512
P10	7	0.0957	0.1495	0.41	0.5223	1.1004	0.7487	1.6174
P12B	8	1.3810	0.4552	9.20	0.0024	3.9789	1.2317	12.8532
C1	9	1.6634	0.4411	14.22	0.0002	5.2772	1.6941	16.4393
C2	10	1.0760	0.4220	6.50	0.0108	2.9329	0.9890	8.6978
C4	11	-0.3668	0.4232	0.75	0.3861	0.6929	0.2329	2.0614
O2	12	0.6623	0.4076	2.64	0.1042	1.9392	0.6786	5.5416

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H10 MODEL=C P2=MALE LRS=0.7016 TOTN=182 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-3.8221	0.6913	30.56	0.0000	0.0219	0.0037	0.1299
P5	2	0.7780	0.3013	6.67	0.0098	2.1771	1.0019	4.7311
C1	3	0.4727	0.4428	1.14	0.2857	1.6043	0.5128	5.0196
C2	4	1.9682	0.4514	19.01	0.0000	7.1578	2.2376	22.8970
C4	5	0.2308	0.4600	0.25	0.6159	1.2596	0.3851	4.1196
O2	6	-1.2568	0.5374	5.47	0.0194	0.2846	0.0713	1.1360

--------------------- DEPVAR=H10 MODEL=C P2=FEMALE LRS=0.3140 TOTN=180 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.7550	0.5699	23.37	0.0000	0.0636	0.0147	0.2761
P5	2	0.3701	0.2217	2.79	0.0950	1.4479	0.8179	2.5631
C1	3	0.6592	0.4096	2.59	0.1076	1.9332	0.6731	5.5530
C2	4	0.6927	0.3901	3.15	0.0758	1.9991	0.7318	5.4608
C4	5	0.4202	0.3696	1.29	0.2556	1.5223	0.5875	3.9444
O2	6	0.2775	0.3571	0.60	0.4370	1.3198	0.5260	3.3115

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H11 MODEL=C P2=MALE LRS=0.7639 TOTN=183 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.4468	1.6350	0.78	0.3762	0.2353	0.0035	15.8784
T2	2	-0.0373	0.0464	0.65	0.4211	0.9634	0.8549	1.0857
T6	3	-0.0625	0.1551	0.16	0.6869	0.9394	0.6300	1.4008
W3	4	0.2320	0.1151	4.07	0.0437	1.2611	0.9375	1.6964
P1	5	-0.0289	0.0203	2.02	0.1557	0.9715	0.9220	1.0237
P13	6	0.1439	0.6547	0.05	0.8261	1.1548	0.2138	6.2364
C1	7	0.5687	0.4298	1.75	0.1857	1.7660	0.5836	5.3434
C2	8	0.5622	0.4136	1.85	0.1741	1.7545	0.6046	5.0918
C4	9	1.3677	0.4369	9.80	0.0017	3.9263	1.2741	12.0994
O2	10	0.3400	0.4331	0.62	0.4324	1.4049	0.4604	4.2873

---------------------- DEPVAR=H11 MODEL=C P2=FEMALE LRS=0.1918 TOTN=178 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-3.6470	1.4247	6.55	0.0105	0.0261	0.0007	1.0233
T2	2	0.0853	0.0433	3.88	0.0488	1.0890	0.9741	1.2176
T6	3	0.1493	0.1066	1.96	0.1611	1.1610	0.8822	1.5279
W3	4	0.1127	0.1063	1.12	0.2892	1.1193	0.8512	1.4719
P1	5	-0.0415	0.0196	4.51	0.0337	0.9593	0.9121	1.0090
P13	6	1.2963	0.6487	3.99	0.0457	3.6557	0.6875	19.4404
C1	7	1.0967	0.4209	6.79	0.0092	2.9943	1.0125	8.8546
C2	8	0.0171	0.4005	0.00	0.9660	1.0172	0.3626	2.8542
C4	9	0.9396	0.3825	6.04	0.0140	2.5590	0.9553	6.8546
O2	10	0.7184	0.3690	3.79	0.0515	2.0511	0.7928	5.3066

MAXIMUM LIKELIHOOD ESTIMATES

--------------------- DEPVAR=H12 MODEL=C P2=MALE LRS=1.0000 TOTN=180 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	18.6693	15.9247	1.37	0.2411	1.282E8	0.0000	8.39E25
T1	2	-0.3798	0.2194	3.00	0.0834	0.6840	0.3887	1.2037
T6	3	0.4058	0.2185	3.45	0.0634	1.5005	0.8547	2.6344
W5	4	2.2000	1.1268	3.81	0.0509	9.0250	0.4953	164.455
P4	5	1.1739	0.8142	2.08	0.1494	3.2346	0.3971	26.3450
C1	6	-0.0640	0.8829	0.01	0.9422	0.9380	0.0965	9.1189
C2	7	1.3625	0.8383	2.64	0.1041	3.9059	0.4507	33.8507
C4	8	1.4590	0.9611	2.30	0.1290	4.3017	0.3618	51.1516
O2	9	0.9040	0.8915	1.03	0.3106	2.4695	0.2485	24.5449

--------------------- DEPVAR=H12 MODEL=C P2=FEMALE LRS=1.0000 TOTN=175 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	8.1095	9.6221	0.71	0.3993	3325.91	0.0000	1.93E14
T1	2	-0.1400	0.1245	1.27	0.2607	0.8694	0.6308	1.1981
T6	3	0.0745	0.1814	0.17	0.6814	1.0773	0.6752	1.7191
W5	4	1.7475	0.8516	4.21	0.0402	5.7402	0.6400	51.4815
P4	5	-0.9445	0.5453	3.00	0.0832	0.3889	0.0954	1.5844
C1	6	0.4749	0.6952	0.47	0.4946	1.6079	0.2682	9.6382
C2	7	-0.2025	0.6983	0.08	0.7718	0.8167	0.1352	4.9348
C4	8	2.7591	0.8550	10.41	0.0013	15.7856	1.7448	142.819
O2	9	0.0832	0.6047	0.02	0.8906	1.0868	0.2289	5.1598

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H13 MODEL=C P2=MALE LRS=0.9217 TOTN=183 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	5.3954	8.5450	0.40	0.5278	220.390	0.0000	8E11
T1	2	-0.0366	0.1254	0.09	0.7702	0.9641	0.6979	1.3317
T3	3	-0.9026	1.6634	0.29	0.5874	0.4055	0.0056	29.4389
W2A	4	-0.7154	0.6652	1.16	0.2822	0.4890	0.0881	2.7133
W7	5	0.9627	0.4853	3.93	0.0473	2.6188	0.7502	9.1416
P6	6	-0.5064	0.2793	3.29	0.0698	0.6027	0.2935	1.2375
P7	7	0.4560	0.2519	3.28	0.0703	1.5778	0.8246	3.0189
C1	8	0.8255	0.4648	3.15	0.0757	2.2830	0.6895	7.5596
C2	9	0.9270	0.4341	4.56	0.0327	2.5269	0.8259	7.7310
C4	10	0.5758	0.5085	1.28	0.2575	1.7786	0.4799	6.5909
O2	11	0.2616	0.4690	0.31	0.5770	1.2990	0.3881	4.3481

---------------------- DEPVAR=H13 MODEL=C P2=FEMALE LRS=0.8476 TOTN=177 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-4.4652	7.7919	0.33	0.5666	0.0115	0.0000	5996787
T1	2	0.2275	0.1234	3.40	0.0652	1.2555	0.9136	1.7253
T3	3	-2.0486	1.4703	1.94	0.1635	0.1289	0.0029	5.6910
W2A	4	0.2068	0.4921	0.18	0.6743	1.2297	0.3462	4.3686
W2B	5	-1.8876	0.7557	6.24	0.0125	0.1514	0.0216	1.0609
W7	6	-1.0327	0.4813	4.60	0.0319	0.3560	0.1031	1.2301
P6	7	-0.2788	0.2436	1.31	0.2525	0.7567	0.4040	1.4172
P7	8	-0.2640	0.2238	1.39	0.2381	0.7680	0.4315	1.3668
C1	9	0.6803	0.4797	2.01	0.1561	1.9745	0.5738	6.7938
C2	10	0.5180	0.4592	1.27	0.2593	1.6787	0.5143	5.4789
C4	11	1.1409	0.4603	6.14	0.0132	3.1296	0.9562	10.2434
O2	12	0.8921	0.4465	3.99	0.0457	2.4402	0.7725	7.7082

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H14 MODEL=C P2=MALE LRS=0.9574 TOTN=178 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-8.6261	1.9729	19.12	0.0000	0.0002	0.0000	0.0289
T4	2	1.6605	0.5990	7.68	0.0056	5.2619	1.1247	24.6191
W5	3	0.0949	0.8824	0.01	0.9144	1.0995	0.1132	10.6756
P5	4	0.5603	0.2976	3.54	0.0597	1.7512	0.8136	3.7694
P7	5	0.3442	0.2652	1.68	0.1944	1.4109	0.7125	2.7937
C1	6	0.2620	0.4780	0.30	0.5836	1.2995	0.3793	4.4519
C2	7	0.5053	0.4585	1.21	0.2705	1.6575	0.5088	5.4000
C4	8	0.5274	0.4693	1.26	0.2611	1.6945	0.5058	5.6764
O2	9	0.4160	0.4577	0.83	0.3634	1.5159	0.4662	4.9285

---------------------- DEPVAR=H14 MODEL=C P2=FEMALE LRS=0.2592 TOTN=172 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-4.6309	1.2335	14.09	0.0002	0.0097	0.0004	0.2338
T4	2	-0.0253	0.2775	0.01	0.9274	0.9750	0.4770	1.9928
W5	3	1.3068	0.6011	4.73	0.0297	3.6943	0.7853	17.3785
P5	4	-0.0123	0.2578	0.00	0.9621	0.9878	0.5084	1.9190
P7	5	0.5639	0.2354	5.74	0.0166	1.7575	0.9584	3.2229
C1	6	1.1003	0.4449	6.12	0.0134	3.0051	0.9553	9.4533
C2	7	-0.1689	0.4137	0.17	0.6830	0.8446	0.2910	2.4517
C4	8	0.9937	0.4034	6.07	0.0138	2.7012	0.9556	7.6359
O2	9	1.4769	0.3812	15.01	0.0001	4.3793	1.6404	11.6916

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H15 MODEL=C P2=MALE LRS=1.0000 TOTN=178 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-14.7924	5.0201	8.68	0.0032	0.0000	0.0000	0.1556
T2	2	0.0670	0.0768	0.76	0.3832	1.0693	0.8774	1.3032
T4	3	2.5741	1.0523	5.98	0.0144	13.1195	0.8723	197.320
T6	4	0.1367	0.3591	0.14	0.7035	1.1465	0.4546	2.8914
W3	5	0.1098	0.2270	0.23	0.6285	1.1161	0.6219	2.0028
P1	6	0.0108	0.0410	0.07	0.7917	1.0109	0.9095	1.1235
P7	7	0.0127	0.4496	0.00	0.9774	1.0128	0.3181	3.2248
P8	8	0.4938	0.4473	1.22	0.2695	1.6385	0.5177	5.1864
C1	9	0.7725	0.8961	0.74	0.3886	2.1652	0.2153	21.7770
C2	10	-0.2158	0.8093	0.07	0.7897	0.8059	0.1002	6.4815
C4	11	-0.2472	0.9470	0.07	0.7941	0.7810	0.0681	8.9555
O2	12	0.9754	0.7845	1.55	0.2137	2.6522	0.3515	20.0108

---------------------- DEPVAR=H15 MODEL=C P2=FEMALE LRS=1.0000 TOTN=164 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-8.9097	5.0646	3.09	0.0785	0.0001	0.0000	62.5965
T2	2	0.2256	0.1267	3.17	0.0750	1.2531	0.9041	1.7367
T4	3	0.0154	0.6311	0.00	0.9805	1.0155	0.1998	5.1609
T6	4	0.4705	0.2530	3.46	0.0630	1.6008	0.8342	3.0717
W3	5	0.4696	0.2277	4.25	0.0392	1.5994	0.8896	2.8753
P1	6	-0.1628	0.0693	5.52	0.0188	0.8498	0.7108	1.0158
P7	7	0.8351	0.5285	2.50	0.1141	2.3050	0.5908	8.9936
P8	8	-0.8152	0.5004	2.65	0.1033	0.4426	0.1219	1.6061
C1	9	0.2323	0.9090	0.07	0.7983	1.2615	0.1213	13.1167
C2	10	-1.8572	1.0286	3.26	0.0710	0.1561	0.0110	2.2089
C4	11	1.8583	1.0769	2.98	0.0844	6.4128	0.4002	102.760
O2	12	2.4120	1.0326	5.46	0.0195	11.1563	0.7804	159.489

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H16 MODEL=C P2=MALE LRS=1.0000 TOTN=181 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-56.3194	17.0800	10.87	0.0010	0.0000	0.0000	0.0000
T3	2	7.8970	2.5573	9.54	0.0020	2689.20	3.7039	1952468
T6	3	0.2348	0.2659	0.78	0.3771	1.2647	0.6375	2.5087
P5	4	0.7829	0.6030	1.69	0.1942	2.1878	0.4628	10.3422
P6	5	1.4184	0.5247	7.31	0.0069	4.1305	1.0691	15.9591
P7	6	-0.6627	0.4202	2.49	0.1148	0.5155	0.1746	1.5216
P9	7	-0.8434	0.4637	3.31	0.0690	0.4302	0.1303	1.4206
C1	8	0.4597	0.7715	0.36	0.5512	1.5836	0.2170	11.5546
C2	9	2.9568	0.9081	10.60	0.0011	19.2363	1.8544	199.550
C4	10	-0.1613	0.9946	0.03	0.8712	0.8510	0.0657	11.0319
O2	11	0.4701	0.7080	0.44	0.5067	1.6002	0.2583	9.9136

---------------------- DEPVAR=H16 MODEL=C P2=FEMALE LRS=0.9980 TOTN=177 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-13.6088	8.1191	2.81	0.0937	0.0000	0.0000	1489.21
T3	2	1.7142	1.2609	1.85	0.1740	5.5522	0.2157	142.919
T6	3	0.1166	0.1313	0.79	0.3744	1.1237	0.8012	1.5759
P5	4	-0.5324	0.3739	2.03	0.1545	0.5872	0.2241	1.5384
P6	5	-0.0424	0.2904	0.02	0.8840	0.9585	0.4536	2.0252
P7	6	0.8712	0.3372	6.68	0.0098	2.3898	1.0026	5.6964
P9	7	-0.7394	0.3122	5.61	0.0179	0.4774	0.2136	1.0670
C1	8	0.6519	0.6088	1.15	0.2842	1.9192	0.4000	9.2089
C2	9	0.9581	0.5644	2.88	0.0896	2.6067	0.6091	11.1562
C4	10	0.0860	0.5117	0.03	0.8665	1.0898	0.2917	4.0720
O2	11	-0.2849	0.5051	0.32	0.5726	0.7521	0.2047	2.7628

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=A1 MODEL=C P2=MALE LRS=0.1465 TOTN=172 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	17.3192	7.2505	5.71	0.0169	3.324E7	0.2572	4.3E15
T1	2	-0.2496	0.0970	6.62	0.0101	0.7791	0.6069	1.0003
W2A	3	1.4432	0.5534	6.80	0.0091	4.2342	1.0178	17.6151
W3	4	-0.2349	0.1087	4.67	0.0307	0.7906	0.5976	1.0461
P9	5	0.0890	0.2114	0.18	0.6736	1.0931	0.6341	1.8843
C1	6	2.2841	0.4305	28.15	0.0000	9.8168	3.2386	29.7571
C2	7	0.9476	0.3795	6.24	0.0125	2.5795	0.9705	6.8565
C4	8	0.3268	0.4616	0.50	0.4789	1.3865	0.4222	4.5534
O2	9	0.1098	0.4083	0.07	0.7881	1.1161	0.3899	3.1950

---------------------- DEPVAR=A1 MODEL=C P2=FEMALE LRS=0.6618 TOTN=173 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	5.0787	6.7922	0.56	0.4546	160.565	0.0000	6.373E9
T1	2	-0.0465	0.0906	0.26	0.6078	0.9546	0.7559	1.2055
W2A	3	-0.7268	0.4695	2.40	0.1216	0.4835	0.1442	1.6203
W2B	4	0.3509	0.5467	0.41	0.5210	1.4203	0.3474	5.8078
W3	5	-0.0856	0.1229	0.49	0.4860	0.9180	0.6689	1.2598
P9	6	-0.6700	0.2428	7.61	0.0058	0.5117	0.2738	0.9564
C1	7	1.9385	0.4508	18.49	0.0000	6.9483	2.1755	22.1926
C2	8	1.4989	0.4346	11.89	0.0006	4.4768	1.4614	13.7142
C4	9	0.9901	0.5019	3.89	0.0485	2.6915	0.7388	9.8060
O2	10	0.4858	0.4335	1.26	0.2624	1.6255	0.5321	4.9654

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=A2 MODEL=C P2=MALE LRS=1.0000 TOTN=166 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-13.6244	4.4873	9.22	0.0024	0.0000	0.0000	0.1268
W5	2	4.1840	1.6061	6.79	0.0092	65.6278	1.0478	4110.56
W8	3	2.5298	1.2007	4.44	0.0351	12.5510	0.5694	276.664
P4	4	2.0894	1.2807	2.66	0.1028	8.0801	0.2983	218.871
P8	5	-0.2261	0.5176	0.19	0.6622	0.7976	0.2103	3.0260
P12B	6	2.4237	1.0772	5.06	0.0244	11.2875	0.7039	181.013
C1	7	1.6420	1.3287	1.53	0.2165	5.1655	0.1685	158.338
C2	8	3.7198	1.4075	6.98	0.0082	41.2561	1.0986	1549.24
C4	9	-0.6151	1.4146	0.19	0.6637	0.5406	0.0141	20.6747
O2	10	0.5155	1.0545	0.24	0.6249	1.6745	0.1107	25.3275

---------------------- DEPVAR=A2 MODEL=C P2=FEMALE LRS=0.9188 TOTN=166 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.4320	1.2974	1.22	0.2697	0.2388	0.0084	6.7538
W5	2	-1.4182	1.1235	1.59	0.2068	0.2421	0.0134	4.3751
W8	3	-0.1835	0.6075	0.09	0.7626	0.8324	0.1740	3.9805
P4	4	-1.3494	0.4653	8.41	0.0037	0.2594	0.0782	0.8600
P8	5	0.4993	0.2836	3.10	0.0783	1.6476	0.7935	3.4207
P12B	6	0.7076	0.4835	2.14	0.1433	2.0291	0.5840	7.0505
C1	7	1.2809	0.5617	5.20	0.0226	3.5999	0.8470	15.2998
C2	8	0.7361	0.4944	2.22	0.1365	2.0878	0.5842	7.4609
C4	9	0.4168	0.4665	0.80	0.3716	1.5171	0.4562	5.0455
O2	10	-0.1527	0.4689	0.11	0.7447	0.8584	0.2565	2.8725

APPENDIX H

DETAILED MODELING RESULTS FOR MODEL D'

(TESTING FOR EFFECTS OF VOCs, INTEGRATED RSP, AND MICROBIOLOGICALS)

(Notation used in this appendix is identical to that in Appendix E. The first page of Appendix E defines the notation.)

MAXIMUM LIKELIHOOD ESTIMATES

DEPVAR=H1 MODEL=D P2=MALE LRS=0.6395 TOTN=97

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	0.8198	4.0609	0.04	0.8400	2.2700	0.0001	79275.0
T6	2	0.8106	0.3597	5.08	0.0242	2.2493	0.8905	5.6813
P1	3	-0.1216	0.0388	9.82	0.0017	0.8855	0.8013	0.9786
P12A	4	2.5075	0.9654	6.75	0.0094	12.2742	1.0208	147.580
P13	5	-0.9998	0.9404	1.13	0.2877	0.3680	0.0326	4.1482
V1	6	1.4924	0.6306	5.60	0.0180	4.4478	0.8763	22.5746
V2	7	-0.3513	0.8809	0.16	0.6900	0.7038	0.0728	6.8066
V3	8	0.7015	0.4762	2.17	0.1407	2.0168	0.5914	6.8771
V4	9	0.4814	0.6443	0.56	0.4549	1.6183	0.3078	8.5089
V5	10	0.9561	0.4882	3.84	0.0502	2.6015	0.7397	9.1495
V6	11	-0.6208	0.5062	1.50	0.2201	0.5375	0.1459	1.9801
V7	12	-2.7645	1.1342	5.94	0.0148	0.0630	0.0034	1.1702
V8	13	-0.4073	0.3272	1.55	0.2131	0.6654	0.2865	1.5458

DEPVAR=H1 MODEL=D P2=FEMALE LRS=0.0150 TOTN=111

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.9652	2.6917	0.13	0.7199	0.3809	0.0004	390.965
T6	2	0.2722	0.1909	2.03	0.1538	1.3128	0.8029	2.1468
P1	3	-0.0133	0.0245	0.29	0.5882	0.9868	0.9264	1.0511
P12A	4	0.0927	0.5118	0.03	0.8563	1.0971	0.2936	4.1005
P13	5	1.3066	0.9671	1.83	0.1767	3.6936	0.3059	44.6052
V1	6	0.1567	0.3500	0.20	0.6544	1.1696	0.4748	2.8815
V2	7	0.3341	0.5606	0.36	0.5512	1.3967	0.3296	5.9192
V3	8	0.4565	0.4709	0.94	0.3324	1.5785	0.4693	5.3097
V4	9	0.2931	0.3166	0.86	0.3546	1.3406	0.5931	3.0303
V5	10	-0.3066	0.3716	0.68	0.4093	0.7359	0.2826	1.9168
V6	11	-0.4574	0.4166	1.21	0.2723	0.6329	0.2164	1.8511
V7	12	0.1776	0.9150	0.04	0.8461	1.1943	0.1131	12.6119
V8	13	-0.3869	0.2385	2.63	0.1048	0.6792	0.3674	1.2554

MAXIMUM LIKELIHOOD ESTIMATES

---------------------- DEPVAR=H2 MODEL=D P2=MALE LRS=0.0024 TOTN=95 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	2.5341	3.5739	0.50	0.4783	12.6051	0.0013	125551
W6	2	0.0943	0.2081	0.21	0.6502	1.0989	0.6429	1.8783
P3A	3	-0.4521	1.1987	0.14	0.7060	0.6363	0.0290	13.9538
P3B	4	0.2609	1.0604	0.06	0.8056	1.2981	0.0845	19.9353
P4	5	-0.2928	0.4284	0.47	0.4942	0.7462	0.2475	2.2496
P5	6	-0.0536	0.4402	0.01	0.9031	0.9478	0.3050	2.9457
P10	7	0.1967	0.2140	0.85	0.3579	1.2174	0.7015	2.1127
V1	8	-0.1100	0.4395	0.06	0.8024	0.8958	0.2888	2.7792
V2	9	-0.5671	0.7047	0.65	0.4210	0.5672	0.0923	3.4841
V3	10	0.5070	0.3114	2.65	0.1035	1.6603	0.7444	3.7031
V4	11	0.0255	0.4856	0.00	0.9581	1.0258	0.2936	3.5837
V5	12	0.0519	0.3242	0.03	0.8727	1.0533	0.4569	2.4279
V6	13	-0.4212	0.4921	0.73	0.3920	0.6563	0.1847	2.3314
V7	14	-0.3147	0.8978	0.12	0.7259	0.7300	0.0723	7.3745
V8	15	0.4084	0.2701	2.29	0.1305	1.5044	0.7502	3.0167

---------------------- DEPVAR=H2 MODEL=D P2=FEMALE LRS=0.0474 TOTN=105 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	1.3728	3.0684	0.20	0.6546	3.9464	0.0015	10689.3
W6	2	0.2062	0.1363	2.29	0.1304	1.2290	0.8651	1.7460
P3A	3	-0.3962	0.5783	0.47	0.4933	0.6729	0.1517	2.9847
P3B	4	1.0778	0.6342	2.89	0.0892	2.9382	0.5736	15.0518
P4	5	-1.0717	0.5083	4.45	0.0350	0.3424	0.0925	1.2683
P5	6	0.1441	0.3668	0.15	0.6944	1.1550	0.4490	2.9712
P10	7	-0.0255	0.1855	0.02	0.8908	0.9748	0.6045	1.5720
V1	8	0.3188	0.3619	0.78	0.3784	1.3755	0.5415	3.4940
V2	9	0.7263	0.6126	1.41	0.2358	2.0674	0.4267	10.0177
V3	10	-0.0164	0.4020	0.00	0.9675	0.9837	0.3493	2.7708
V4	11	0.3738	0.3772	0.98	0.3217	1.4532	0.5500	3.8400
V5	12	-0.2171	0.3811	0.32	0.5689	0.8048	0.3016	2.1482
V6	13	-0.4753	0.3605	1.74	0.1873	0.6217	0.2456	1.5736
V7	14	-0.1618	1.0001	0.03	0.8715	0.8506	0.0647	11.1837
V8	15	-0.7868	0.2973	7.00	0.0081	0.4553	0.2117	0.9793

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H3 MODEL=D P2=MALE LRS=0.0071 TOTN=95 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	4.0254	4.0463	0.99	0.3198	56.0027	0.0017	1883550
W2A	2	-1.4327	0.8772	2.67	0.1024	0.2387	0.0249	2.2864
W6	3	0.0494	0.2243	0.05	0.8256	1.0506	0.5895	1.8724
P1	4	-0.0487	0.0330	2.18	0.1401	0.9525	0.8748	1.0370
P3A	5	-1.0210	1.4622	0.49	0.4850	0.3602	0.0083	15.5744
P3B	6	-0.4984	1.2536	0.16	0.6909	0.6075	0.0240	15.3463
P4	7	-0.1496	0.4842	0.10	0.7573	0.8611	0.2474	2.9973
P5	8	0.8509	0.5107	2.78	0.0957	2.3418	0.6283	8.7274
V1	9	-0.2267	0.4672	0.24	0.6275	0.7972	0.2393	2.6560
V2	10	-0.1311	0.7918	0.03	0.8684	0.8771	0.1141	6.7435
V3	11	0.2646	0.3234	0.67	0.4133	1.3029	0.5664	2.9972
V4	12	0.3472	0.5693	0.37	0.5419	1.4151	0.3265	6.1332
V5	13	0.0238	0.3430	0.00	0.9447	1.0241	0.4233	2.4778
V6	14	-0.1875	0.5052	0.14	0.7106	0.8290	0.2256	3.0462
V7	15	-0.8332	1.0242	0.66	0.4159	0.4347	0.0311	6.0808
V8	16	0.3762	0.2849	1.74	0.1867	1.4567	0.6993	3.0347

----------------------- DEPVAR=H3 MODEL=D P2=FEMALE LRS=0.7384 TOTN=103 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	1.7070	3.9475	0.19	0.6654	5.5124	0.0002	143740
W2A	2	0.3294	0.8141	0.16	0.6857	1.3901	0.1707	11.3194
W2B	3	-2.8979	1.1232	6.66	0.0099	0.0551	0.0031	0.9955
W6	4	-0.0302	0.1791	0.03	0.8660	0.9703	0.6117	1.5390
P1	5	-0.0435	0.0381	1.30	0.2536	0.9574	0.8679	1.0562
P3A	6	-2.1492	1.0841	3.93	0.0474	0.1166	0.0071	1.9030
P3B	7	-0.4783	1.1098	0.19	0.6665	0.6198	0.0355	10.8108
P4	8	-1.1398	0.6534	3.04	0.0811	0.3199	0.0594	1.7218
P5	9	0.8384	0.5323	2.48	0.1153	2.3127	0.5870	9.1121
V1	10	0.4495	0.4944	0.83	0.3633	1.5675	0.4386	5.6017
V2	11	2.2115	0.9252	5.71	0.0168	9.1294	0.8421	98.9698
V3	12	-0.9086	0.5951	2.33	0.1268	0.4031	0.0870	1.8671
V4	13	0.6918	0.4493	2.37	0.1236	1.9973	0.6278	6.3547
V5	14	-0.1299	0.4658	0.08	0.7803	0.8782	0.2645	2.9154
V6	15	-0.6933	0.4889	2.01	0.1562	0.4999	0.1419	1.7614
V7	16	-0.6164	1.3393	0.21	0.6453	0.5399	0.0171	17.0072
V8	17	-1.0585	0.3643	8.44	0.0037	0.3470	0.1358	0.8869

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H4 MODEL=D P2=MALE LRS=0.9884 TOTN=92 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.5408	7.5541	0.04	0.8384	0.2142	0.0000	6.052E7
T4	2	0.6260	0.7896	0.63	0.4279	1.8701	0.2446	14.2964
T6	3	0.5656	0.4213	1.80	0.1794	1.7605	0.5947	5.2115
W3	4	0.1254	0.2722	0.21	0.6449	1.1336	0.5623	2.2855
P1	5	-0.0578	0.0647	0.80	0.3710	0.9438	0.7989	1.1150
P3A	6	-1.8408	2.1504	0.73	0.3920	0.1587	0.0006	40.3919
P3B	7	-2.0016	1.6158	1.53	0.2154	0.1351	0.0021	8.6772
P8	8	-1.0570	0.5294	3.99	0.0459	0.3475	0.0889	1.3590
P9	9	-0.7129	0.4953	2.07	0.1500	0.4902	0.1369	1.7559
P13	10	1.9195	1.1244	2.91	0.0878	6.8175	0.3765	123.465
V1	11	0.9267	0.8483	1.19	0.2746	2.5262	0.2841	22.4642
V2	12	1.2211	1.3174	0.86	0.3540	3.3909	0.1139	100.960
V3	13	0.4370	0.5934	0.54	0.4615	1.5481	0.3357	7.1392
V4	14	-1.3889	1.2415	1.25	0.2632	0.2493	0.0102	6.1056
V5	15	0.2404	0.6510	0.14	0.7119	1.2718	0.2377	6.8031
V6	16	-1.7515	1.1105	2.49	0.1147	0.1735	0.0099	3.0318
V7	17	0.2759	1.8801	0.02	0.8833	1.3177	0.0104	167.174
V8	18	0.3781	0.4883	0.60	0.4387	1.4595	0.4149	5.1344

----------------------- DEPVAR=H4 MODEL=D P2=FEMALE LRS=0.6020 TOTN=99 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-8.6147	4.7386	3.31	0.0691	0.0002	0.0000	36.3042
T4	2	0.5111	0.7625	0.45	0.5026	1.6671	0.2338	11.8853
T6	3	0.1048	0.2778	0.14	0.7059	1.1105	0.5429	2.2714
W3	4	0.1839	0.1896	0.94	0.3320	1.2019	0.7375	1.9588
P1	5	0.0433	0.0402	1.16	0.2825	1.0443	0.9415	1.1582
P3A	6	-1.5316	0.7924	3.74	0.0533	0.2162	0.0281	1.6647
P3B	7	0.8864	0.8124	1.19	0.2752	2.4264	0.2993	19.6709
P8	8	0.2811	0.3879	0.53	0.4686	1.3246	0.4877	3.5978
P9	9	-0.3673	0.3848	0.91	0.3398	0.6926	0.2570	1.8663
P13	10	-12.0596	.	.	.	.	.	.
V1	11	0.0098	0.5695	0.00	0.9862	1.0098	0.2329	4.3791
V2	12	0.7124	0.9428	0.57	0.4499	2.0389	0.1797	23.1282
V3	13	-0.1415	0.8794	0.03	0.8721	0.8681	0.0901	8.3631
V4	14	0.8989	0.5290	2.89	0.0893	2.4569	0.6289	9.5985
V5	15	-0.5199	0.5639	0.85	0.3565	0.5946	0.1391	2.5414
V6	16	-0.7206	0.6596	1.19	0.2746	0.4865	0.0889	2.6605
V7	17	2.4175	1.9010	1.62	0.2035	11.2178	0.0838	1501.88
V8	18	-0.6434	0.4494	2.05	0.1523	0.5255	0.1651	1.6724

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H5 MODEL=D P2=MALE LRS=0.4804 TOTN=98 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-4.0831	16.2190	0.06	0.8012	0.0169	0.0000	2.35E16
T1	2	-0.0987	0.2220	0.20	0.6565	0.9060	0.5114	1.6051
T3	3	1.4338	2.8997	0.24	0.6210	4.1946	0.0024	7357.14
W2A	4	-1.7995	1.2216	2.17	0.1407	0.1654	0.0071	3.8472
W7	5	0.2005	0.8390	0.06	0.8112	1.2220	0.1408	10.6097
P6	6	-0.4887	0.3929	1.55	0.2135	0.6134	0.2229	1.6878
P7	7	0.3766	0.3709	1.03	0.3098	1.4573	0.5605	3.7888
V1	8	-0.3687	0.6041	0.37	0.5416	0.6916	0.1459	3.2787
V2	9	0.6166	0.9172	0.45	0.5014	1.8526	0.1745	19.6742
V3	10	0.0100	0.3915	0.00	0.9796	1.0101	0.3684	2.7690
V4	11	0.2342	0.6033	0.15	0.6979	1.2639	0.2672	5.9793
V5	12	-0.0350	0.4621	0.01	0.9397	0.9656	0.2936	3.1752
V6	13	0.2684	0.6407	0.18	0.6752	1.3079	0.2511	6.8131
V7	14	-0.2949	1.2044	0.06	0.8066	0.7446	0.0335	16.5707
V8	15	0.2841	0.3655	0.60	0.4370	1.3286	0.5182	3.4063

----------------------- DEPVAR=H5 MODEL=D P2=FEMALE LRS=0.4156 TOTN=112 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	10.8577	16.6332	0.43	0.5139	51932.5	0.0000	2.11E23
T1	2	0.2600	0.1783	2.13	0.1448	1.2969	0.8193	2.0530
T3	3	-5.5171	3.5117	2.47	0.1162	0.0040	0.0000	34.0912
W2A	4	0.7678	0.7077	1.18	0.2780	2.1550	0.3481	13.3409
W2B	5	-3.0925	1.0879	8.08	0.0045	0.0454	0.0028	0.7482
W7	6	-1.0483	0.7239	2.10	0.1476	0.3505	0.0543	2.2625
P6	7	-0.4793	0.3196	2.25	0.1336	0.6192	0.2718	1.4106
P7	8	-0.4944	0.3033	2.66	0.1031	0.6099	0.2792	1.3323
V1	9	1.3292	0.6120	4.72	0.0299	3.7780	0.7809	18.2783
V2	10	0.9365	1.0282	0.83	0.3624	2.5510	0.1805	36.0585
V3	11	-0.5564	0.5765	0.93	0.3345	0.5733	0.1298	2.5311
V4	12	0.9586	0.4847	3.91	0.0480	2.6080	0.7483	9.0901
V5	13	0.1014	0.4942	0.04	0.8375	1.1067	0.3099	3.9529
V6	14	0.0857	0.4221	0.04	0.8391	1.0895	0.3673	3.2318
V7	15	0.9363	1.1474	0.67	0.4145	2.5505	0.1327	49.0089
V8	16	-0.3349	0.3082	1.18	0.2773	0.7154	0.3234	1.5825

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H6 MODEL=D P2=MALE LRS=0.9990 TOTN=96 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-11.5797	5.8347	3.94	0.0472	0.0000	0.0000	31.5157
T6	2	0.8820	0.4413	3.99	0.0457	2.4157	0.7751	7.5292
W3	3	0.0020	0.2557	0.00	0.9937	1.0020	0.5186	1.9362
P1	4	-0.0750	0.0471	2.53	0.1118	0.9277	0.8217	1.0474
P7	5	0.7683	0.5083	2.28	0.1307	2.1561	0.5821	7.9859
P12A	6	9.8689	.	.	.	.	.	.
V1	7	0.9159	0.7889	1.35	0.2456	2.4990	0.3275	19.0698
V2	8	-0.7276	1.1899	0.37	0.5409	0.4831	0.0225	10.3562
V3	9	0.6669	0.6489	1.06	0.3041	1.9482	0.3662	10.3653
V4	10	1.1562	0.7067	2.68	0.1018	3.1778	0.5147	19.6222
V5	11	0.7329	0.6986	1.10	0.2941	2.0811	0.3441	12.5848
V6	12	-0.0493	0.6958	0.01	0.9435	0.9519	0.1586	5.7149
V7	13	-1.9471	1.4811	1.73	0.1886	0.1427	0.0031	6.4767
V8	14	-0.0535	0.4972	0.01	0.9143	0.9479	0.2633	3.4120

----------------------- DEPVAR=H6 MODEL=D P2=FEMALE LRS=0.1775 TOTN=110 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	0.2109	3.4844	0.00	0.9517	1.2348	0.0002	9766.51
T6	2	0.1552	0.2192	0.50	0.4791	1.1679	0.6640	2.0541
W3	3	0.3782	0.1648	5.26	0.0218	1.4597	0.9547	2.2316
P1	4	-0.0325	0.0297	1.20	0.2742	0.9680	0.8967	1.0450
P7	5	0.1766	0.2917	0.37	0.5449	1.1932	0.5628	2.5295
P12A	6	-0.1110	0.5730	0.04	0.8464	0.8949	0.2045	3.9159
V1	7	0.3990	0.4130	0.93	0.3341	1.4903	0.5143	4.3184
V2	8	-0.7757	0.6710	1.34	0.2477	0.4604	0.0817	2.5929
V3	9	0.3351	0.5809	0.33	0.5640	1.3981	0.3131	6.2432
V4	10	0.3944	0.3698	1.14	0.2861	1.4835	0.5722	3.8459
V5	11	-0.6913	0.4647	2.21	0.1368	0.5009	0.1513	1.6583
V6	12	-0.1305	0.4753	0.08	0.7836	0.8777	0.2580	2.9858
V7	13	0.3468	1.0523	0.11	0.7417	1.4145	0.0941	21.2748
V8	14	-0.4221	0.2568	2.70	0.1002	0.6557	0.3384	1.2705

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H7 MODEL=D P2=MALE LRS=0.0448 TOTN=98 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-31.3869	16.1544	3.77	0.0520	0.0000	0.0000	27634.9
T1	2	-0.1032	0.2018	0.26	0.6091	0.9019	0.5363	1.5169
T3	3	5.7526	2.8319	4.13	0.0422	315.009	0.2139	463970
W3	4	0.1803	0.1479	1.49	0.2228	1.1976	0.8182	1.7529
W6	5	-0.0173	0.2268	0.01	0.9392	0.9828	0.5480	1.7629
W8	6	-7.8992	.	.	.	.	.	.
P3A	7	-1.5527	1.5012	1.07	0.3010	0.2117	0.0044	10.1188
P3B	8	-0.9960	1.2558	0.63	0.4277	0.3694	0.0145	9.3834
P8	9	-0.1855	0.2680	0.48	0.4887	0.8307	0.4165	1.6568
P10	10	0.5992	0.2728	4.83	0.0280	1.8207	0.9016	3.6764
P11A	11	0.2667	1.2456	0.05	0.8305	1.3056	0.0528	32.3096
P11B	12	0.6318	1.0699	0.35	0.5548	1.8810	0.1195	29.6026
V1	13	-0.1469	0.5143	0.08	0.7751	0.8634	0.2295	3.2477
V2	14	0.4341	0.9416	0.21	0.6447	1.5436	0.1365	17.4556
V3	15	0.1582	0.3580	0.20	0.6586	1.1714	0.4658	2.9459
V4	16	-1.9555	0.8666	5.09	0.0240	0.1415	0.0152	1.3190
V5	17	-0.2264	0.4226	0.29	0.5922	0.7974	0.2685	2.3684
V6	18	-0.2565	0.5724	0.20	0.6541	0.7738	0.1771	3.3804
V7	19	0.4117	1.2051	0.12	0.7326	1.5094	0.0677	33.6508
V8	20	0.3897	0.3649	1.14	0.2855	1.4765	0.5768	3.7798

----------------------- DEPVAR=H7 MODEL=D P2=FEMALE LRS=0.0609 TOTN=104 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-10.3542	16.1793	0.41	0.5222	0.0000	0.0000	4.02E13
T1	2	-0.1199	0.1519	0.62	0.4299	0.8870	0.5998	1.3118
T3	3	3.0796	3.1830	0.94	0.3333	21.7497	0.0060	79142.7
W3	4	0.3615	0.1653	4.78	0.0288	1.4355	0.9377	2.1975
W6	5	0.2269	0.1566	2.10	0.1473	1.2547	0.8382	1.8782
W8	6	0.9136	1.5710	0.34	0.5609	2.4933	0.0436	142.665
P3A	7	-0.5704	0.6627	0.74	0.3894	0.5653	0.1025	3.1165
P3B	8	0.6520	0.6544	0.99	0.3190	1.9194	0.3557	10.3577
P8	9	-0.6581	0.2900	5.15	0.0232	0.5178	0.2453	1.0930
P10	10	0.1062	0.2034	0.27	0.6016	1.1120	0.6585	1.8779
P11A	11	0.5063	0.8923	0.32	0.5704	1.6591	0.1666	16.5248
P11B	12	-1.1267	1.1692	0.93	0.3352	0.3241	0.0159	6.5874
V1	13	0.0853	0.5355	0.03	0.8735	1.0890	0.2741	4.3265
V2	14	0.2893	0.9087	0.10	0.7502	1.3355	0.1285	13.8753
V3	15	0.3134	0.4316	0.53	0.4677	1.3681	0.4500	4.1587
V4	16	-0.1499	0.5513	0.07	0.7857	0.8608	0.2080	3.5617
V5	17	-0.5891	0.4601	1.64	0.2004	0.5548	0.1696	1.8151
V6	18	-0.9101	0.4179	4.74	0.0294	0.4025	0.1372	1.1811
V7	19	0.6931	1.0340	0.45	0.5027	1.9999	0.1394	28.6939
V8	20	-0.3767	0.2734	1.90	0.1683	0.6861	0.3393	1.3876

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H8 MODEL=D P2=MALE LRS=1.0000 TOTN=97 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.8493	16.9553	0.00	0.9601	0.4277	0.0000	3.98E18
T6	2	-0.2763	0.9519	0.08	0.7716	0.7586	0.0653	8.8092
W2A	3	-7.4962	.	.	.	.	.	.
P3A	4	-4.6768	3.2032	2.13	0.1443	0.0093	0.0000	35.6819
P3B	5	-4.2233	2.8137	2.25	0.1334	0.0147	0.0000	20.5897
P8	6	-1.7419	0.8601	4.10	0.0428	0.1752	0.0191	1.6060
P13	7	4.3842	1.9160	5.24	0.0221	80.1741	0.5761	11156.9
V1	8	-0.5228	1.2757	0.17	0.6819	0.5929	0.0222	15.8537
V2	9	2.3767	2.7216	0.76	0.3825	10.7693	0.0097	11938.7
V3	10	2.8677	1.5763	3.31	0.0689	17.5965	0.3034	1020.70
V4	11	0.0300	1.9489	0.00	0.9877	1.0305	0.0068	156.080
V5	12	0.8168	0.9148	0.80	0.3719	2.2632	0.2144	23.8868
V6	13	0.5712	1.5695	0.13	0.7159	1.7704	0.0311	100.910
V7	14	-3.3684	3.5501	0.90	0.3427	0.0344	0.0000	322.679
V8	15	-0.3699	0.6339	0.34	0.5595	0.6908	0.1350	3.5361

---------------------- DEPVAR=H8 MODEL=D P2=FEMALE LRS=1.0000 TOTN=108 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.6100	6.0228	0.19	0.6648	0.0735	0.0000	402211
T6	2	1.1906	0.6080	3.83	0.0502	3.2891	0.6869	15.7495
W2A	3	0.6242	1.1834	0.28	0.5978	1.8668	0.0885	39.3556
W2B	4	-7.7119	.	.	.	.	.	.
P3A	5	1.4682	1.3868	1.12	0.2897	4.3414	0.1219	154.562
P3B	6	3.8324	1.8080	4.49	0.0340	46.1732	0.4382	4864.93
P8	7	-0.0003	0.4271	0.00	0.9995	0.9997	0.3327	3.0040
P13	8	-5.7583	.	.	.	.	.	.
V1	9	0.4425	1.0283	0.19	0.6669	1.5566	0.1101	22.0079
V2	10	-1.4213	1.5553	0.84	0.3608	0.2414	0.0044	13.2653
V3	11	2.2491	1.7329	1.68	0.1943	9.4792	0.1092	823.078
V4	12	1.6497	0.8749	3.56	0.0593	5.2054	0.5466	49.5728
V5	13	-0.9129	0.9732	0.88	0.3482	0.4014	0.0327	4.9237
V6	14	-0.3733	1.0575	0.12	0.7241	0.6885	0.0452	10.4942
V7	15	-0.9375	2.5205	0.14	0.7099	0.3916	0.0006	258.607
V8	16	0.2268	1.1071	0.04	0.8377	1.2546	0.0724	21.7299

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H9 MODEL=D P2=MALE LRS=0.1128 TOTN=95 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.9635	3.9387	0.57	0.4518	0.0516	0.0000	1316.31
W2A	2	-2.2612	1.1848	3.64	0.0563	0.1042	0.0049	2.2053
W3	3	0.3420	0.1633	4.39	0.0362	1.4078	0.9244	2.1440
W8	4	-9.4419	.	.	.	.	.	.
P4	5	-0.8847	0.4999	3.13	0.0767	0.4128	0.1139	1.4964
P10	6	0.2791	0.2469	1.28	0.2584	1.3219	0.6998	2.4971
P12B	7	0.0678	0.7479	0.01	0.9278	1.0702	0.1559	7.3477
V1	8	0.0920	0.4846	0.04	0.8494	1.0964	0.3146	3.8203
V2	9	1.1457	0.9037	1.61	0.2049	3.1446	0.3066	32.2536
V3	10	0.5674	0.3790	2.24	0.1343	1.7637	0.6644	4.6819
V4	11	-0.3341	0.6423	0.27	0.6029	0.7160	0.1369	3.7452
V5	12	0.2822	0.3594	0.62	0.4323	1.3260	0.5254	3.3468
V6	13	-0.2003	0.5153	0.15	0.6975	0.8185	0.2170	3.0867
V7	14	-1.3331	0.9644	1.91	0.1669	0.2637	0.0220	3.1620
V8	15	0.3796	0.3135	1.47	0.2259	1.4617	0.6518	3.2778

----------------------- DEPVAR=H9 MODEL=D P2=FEMALE LRS=0.1756 TOTN=106 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-3.1265	3.2450	0.93	0.3353	0.0439	0.0000	187.283
W2A	2	0.0858	0.6454	0.02	0.8942	1.0896	0.2066	5.7451
W2B	3	-2.4333	0.8168	8.88	0.0029	0.0877	0.0107	0.7195
W3	4	0.4694	0.1729	7.37	0.0066	1.5990	1.0243	2.4963
W8	5	-2.1327	1.2665	2.84	0.0922	0.1185	0.0045	3.0950
P4	6	-0.9720	0.5095	3.64	0.0564	0.3783	0.1018	1.4056
P10	7	0.3484	0.1996	3.05	0.0810	1.4168	0.8472	2.3692
P12B	8	0.9259	0.5877	2.48	0.1151	2.5241	0.5554	11.4709
V1	9	0.6506	0.4228	2.37	0.1239	1.9167	0.6450	5.6958
V2	10	0.8476	0.6884	1.52	0.2182	2.3340	0.3962	13.7483
V3	11	0.0234	0.4503	0.00	0.9586	1.0237	0.3209	3.2654
V4	12	0.6994	0.4947	2.00	0.1574	2.0125	0.5627	7.1976
V5	13	0.0751	0.4327	0.03	0.8622	1.0780	0.3536	3.2862
V6	14	-0.2008	0.3927	0.26	0.6090	0.8181	0.2975	2.2497
V7	15	-0.4469	1.0632	0.18	0.6742	0.6396	0.0413	9.8937
V8	16	-0.5755	0.2781	4.28	0.0385	0.5624	0.2748	1.1513

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H10 MODEL=D P2=MALE LRS=0.5612 TOTN=99 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	4.4631	3.5709	1.56	0.2113	86.7560	0.0088	857467
P5	2	0.1636	0.4985	0.11	0.7429	1.1777	0.3261	4.2535
V1	3	0.5767	0.5585	1.07	0.3018	1.7802	0.4223	7.5037
V2	4	-1.3227	0.8339	2.52	0.1127	0.2664	0.0311	2.2829
V3	5	0.3427	0.3732	0.84	0.3584	1.4087	0.5387	3.6842
V4	6	1.0169	0.5479	3.44	0.0635	2.7646	0.6740	11.3395
V5	7	-0.4213	0.4109	1.05	0.3053	0.6562	0.2277	1.8911
V6	8	-1.2356	0.6206	3.96	0.0465	0.2907	0.0588	1.4377
V7	9	-0.8742	1.2143	0.52	0.4716	0.4172	0.0183	9.5242
V8	10	0.1749	0.2957	0.35	0.5542	1.1911	0.5561	2.5514

--------------------- DEPVAR=H10 MODEL=D P2=FEMALE LRS=0.1975 TOTN=112 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	0.0978	2.7360	0.00	0.9715	1.1027	0.0010	1268.68
P5	2	0.4924	0.3159	2.43	0.1190	1.6362	0.7252	3.6920
V1	3	0.2296	0.3552	0.42	0.5180	1.2581	0.5039	3.1412
V2	4	-0.5253	0.5913	0.79	0.3744	0.5914	0.1289	2.7125
V3	5	0.0477	0.4007	0.01	0.9053	1.0489	0.3736	2.9444
V4	6	0.0652	0.3243	0.04	0.8406	1.0674	0.4629	2.4611
V5	7	0.0198	0.3993	0.00	0.9605	1.0200	0.3647	2.8531
V6	8	-0.7963	0.3373	5.57	0.0183	0.4510	0.1892	1.0753
V7	9	-0.0933	0.9034	0.01	0.9177	0.9109	0.0889	9.3358
V8	10	-0.1434	0.2525	0.32	0.5701	0.8664	0.4521	1.6604

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H11 MODEL=D P2=MALE LRS=0.8008 TOTN=99 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-6.8254	5.0444	1.83	0.1760	0.0011	0.0000	477.696
T2	2	-0.0333	0.0822	0.16	0.6858	0.9672	0.7827	1.1954
T6	3	0.1937	0.4203	0.21	0.6448	1.2137	0.4111	3.5837
W3	4	0.4060	0.1930	4.42	0.0354	1.5008	0.9129	2.4674
P1	5	-0.0378	0.0381	0.98	0.3212	0.9629	0.8729	1.0622
P13	6	-0.1991	1.0363	0.04	0.8476	0.8195	0.0568	11.8273
V1	7	0.8349	0.6507	1.65	0.1995	2.3046	0.4311	12.3185
V2	8	1.3360	0.9786	1.86	0.1722	3.8038	0.3058	47.3172
V3	9	0.2997	0.5225	0.33	0.5663	1.3495	0.3512	5.1844
V4	10	-0.7706	0.7708	1.00	0.3175	0.4627	0.0635	3.3702
V5	11	0.5434	0.4765	1.30	0.2541	1.7219	0.5046	5.8759
V6	12	0.1155	0.5993	0.04	0.8471	1.1224	0.2397	5.2556
V7	13	-1.4753	1.2034	1.50	0.2202	0.2287	0.0103	5.0767
V8	14	-0.2598	0.3354	0.60	0.4386	0.7712	0.3250	1.8298

---------------------- DEPVAR=H11 MODEL=D P2=FEMALE LRS=0.0865 TOTN=112 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-3.9356	3.2073	1.51	0.2198	0.0195	0.0000	75.6717
T2	2	0.1414	0.0710	3.96	0.0465	1.1519	0.9594	1.3831
T6	3	0.3785	0.2189	2.99	0.0838	1.4601	0.8308	2.5661
W3	4	0.1887	0.1428	1.75	0.1863	1.2077	0.8360	1.7446
P1	5	-0.0010	0.0272	0.00	0.9706	0.9990	0.9314	1.0715
P13	6	1.8769	1.0543	3.17	0.0750	6.5332	0.4322	98.7683
V1	7	0.2464	0.4413	0.31	0.5766	1.2794	0.4105	3.9876
V2	8	-0.3130	0.6830	0.21	0.6468	0.7312	0.1259	4.2478
V3	9	1.0358	0.5921	3.06	0.0802	2.8174	0.6130	12.9494
V4	10	0.2690	0.3428	0.62	0.4327	1.3087	0.5412	3.1647
V5	11	-0.3114	0.4162	0.56	0.4543	0.7324	0.2507	2.1398
V6	12	-0.4098	0.4362	0.88	0.3475	0.6638	0.2158	2.0418
V7	13	-0.4482	1.1396	0.15	0.6941	0.6388	0.0339	12.0301
V8	14	-0.5064	0.2585	3.84	0.0501	0.6027	0.3097	1.1729

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H12 MODEL=D P2=MALE LRS=1.0000 TOTN=97 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-131.600	100.0000	1.73	0.1884	0.0000	0.0000	5.26E54
T1	2	1.8222	.	.	.	.	.	.
T6	3	2.9589	.	.	.	.	.	.
W5	4	18.5819	.	.	.	.	.	.
P4	5	4.4450	3.0176	2.17	0.1407	85.1999	0.0359	202468
V1	6	-19.9640	.	.	.	.	.	.
V2	7	1.4145	29.2469	0.00	0.9614	4.1144	0.0000	2.16E33
V3	8	-8.3031	.	.	.	.	.	.
V4	9	-13.4916	.	.	.	.	.	.
V5	10	-22.3241	.	.	.	.	.	.
V6	11	-20.1781	.	.	.	.	.	.
V7	12	34.6892	8.0416	18.61	0.0000	1.16E15	1171785	1.15E24
V8	13	7.0664	.	.	.	.	.	.

--------------------- DEPVAR=H12 MODEL=D P2=FEMALE LRS=0.9971 TOTN=108 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	30.2303	13.3531	5.13	0.0236	1.35E13	0.0155	1.17E28
T1	2	-0.3180	0.1910	2.77	0.0959	0.7276	0.4449	1.1901
T6	3	0.0426	0.3001	0.02	0.8871	1.0435	0.4817	2.2607
W5	4	1.3581	1.0567	1.65	0.1987	3.8888	0.2556	59.1549
P4	5	-1.2084	0.6749	3.21	0.0733	0.2987	0.0525	1.6992
V1	6	0.2198	0.8339	0.07	0.7921	1.2458	0.1454	10.6752
V2	7	-0.1889	0.9964	0.04	0.8497	0.8279	0.0636	10.7814
V3	8	0.2562	0.7958	0.10	0.7475	1.2920	0.1663	10.0360
V4	9	0.4902	0.4820	1.03	0.3092	1.6326	0.4717	5.6510
V5	10	-0.3367	0.7763	0.19	0.6645	0.7141	0.0967	5.2754
V6	11	-1.0791	0.6361	2.88	0.0898	0.3399	0.0660	1.7498
V7	12	-2.8563	1.7966	2.53	0.1119	0.0575	0.0006	5.8811
V8	13	-0.0990	0.4188	0.06	0.8132	0.9057	0.3079	2.6640

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H13 MODEL=D P2=MALE LRS=0.4515 TOTN=98 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.5534	16.0590	0.00	0.9725	0.5750	0.0000	5.32E17
T1	2	-0.0560	0.2220	0.06	0.8010	0.9455	0.5337	1.6751
T3	3	0.3576	2.9377	0.01	0.9031	1.4299	0.0007	2765.88
W2A	4	-1.9143	1.2131	2.49	0.1146	0.1474	0.0065	3.3557
W7	5	0.1827	0.8427	0.05	0.8284	1.2005	0.1370	10.5223
P6	6	-0.6081	0.3985	2.33	0.1270	0.5444	0.1950	1.5196
P7	7	0.3208	0.3609	0.79	0.3741	1.3782	0.5440	3.4920
V1	8	-0.3563	0.6120	0.34	0.5604	0.7003	0.1447	3.3879
V2	9	1.1120	0.9175	1.47	0.2255	3.0404	0.2861	32.3133
V3	10	-0.1752	0.3903	0.20	0.6535	0.8393	0.3071	2.2938
V4	11	0.0955	0.5995	0.03	0.8735	1.1002	0.2348	5.1542
V5	12	0.0111	0.4521	0.00	0.9804	1.0112	0.3155	3.2404
V6	13	0.2004	0.6435	0.10	0.7555	1.2219	0.2329	6.4113
V7	14	-0.7644	1.2172	0.39	0.5300	0.4656	0.0202	10.7092
V8	15	0.2657	0.3632	0.54	0.4644	1.3043	0.5118	3.3244

---------------------- DEPVAR=H13 MODEL=D P2=FEMALE LRS=0.4156 TOTN=112 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	10.8577	16.6332	0.43	0.5139	51932.5	0.0000	2.11E23
T1	2	0.2600	0.1783	2.13	0.1448	1.2969	0.8193	2.0530
T3	3	-5.5171	3.5117	2.47	0.1162	0.0040	0.0000	34.0912
W2A	4	0.7678	0.7077	1.18	0.2780	2.1550	0.3481	13.3409
W2B	5	-3.0925	1.0879	8.08	0.0045	0.0454	0.0028	0.7482
W7	6	-1.0483	0.7239	2.10	0.1476	0.3505	0.0543	2.2625
P6	7	-0.4793	0.3196	2.25	0.1336	0.6192	0.2718	1.4106
P7	8	-0.4944	0.3033	2.66	0.1031	0.6099	0.2792	1.3323
V1	9	1.3292	0.6120	4.72	0.0299	3.7780	0.7809	18.2783
V2	10	0.9365	1.0282	0.83	0.3624	2.5510	0.1805	36.0585
V3	11	-0.5564	0.5765	0.93	0.3345	0.5733	0.1298	2.5311
V4	12	0.9586	0.4847	3.91	0.0480	2.6080	0.7483	9.0901
V5	13	0.1014	0.4942	0.04	0.8375	1.1067	0.3099	3.9529
V6	14	0.0857	0.4221	0.04	0.8391	1.0895	0.3673	3.2318
V7	15	0.9363	1.1474	0.67	0.4145	2.5505	0.1327	49.0089
V8	16	-0.3349	0.3082	1.18	0.2773	0.7154	0.3234	1.5825

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H14 MODEL=D P2=MALE LRS=0.9813 TOTN=94 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-10.9692	5.6243	3.80	0.0511	0.0000	0.0000	33.7506
T4	2	2.5455	1.3799	3.40	0.0651	12.7496	0.3645	445.912
W5	3	0.7348	1.1247	0.43	0.5135	2.0851	0.1150	37.7893
P5	4	1.2775	0.7053	3.28	0.0701	3.5877	0.5831	22.0729
P7	5	-0.1155	0.4756	0.06	0.8081	0.8909	0.2617	3.0333
V1	6	0.9385	0.6569	2.04	0.1531	2.5561	0.4706	13.8831
V2	7	0.0758	1.1145	0.00	0.9458	1.0787	0.0611	19.0440
V3	8	0.1822	0.5630	0.10	0.7462	1.1999	0.2814	5.1166
V4	9	-0.0267	0.8629	0.00	0.9753	0.9737	0.1054	8.9902
V5	10	0.5864	0.5535	1.12	0.2894	1.7975	0.4320	7.4799
V6	11	-0.1484	0.6829	0.05	0.8280	0.8621	0.1484	5.0066
V7	12	-2.2683	1.7229	1.73	0.1880	0.1035	0.0012	8.7573
V8	13	1.0241	0.9136	1.26	0.2623	2.7846	0.2647	29.2984

--------------------- DEPVAR=H14 MODEL=D P2=FEMALE LRS=0.1132 TOTN=105 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-0.1088	3.0633	0.00	0.9717	0.8969	0.0003	2397.69
T4	2	-0.2774	0.3244	0.73	0.3925	0.7578	0.3286	1.7476
W5	3	1.6491	0.7575	4.74	0.0295	5.2023	0.7392	36.6136
P5	4	0.3173	0.3641	0.76	0.3835	1.3734	0.5376	3.5086
P7	5	0.3264	0.3176	1.06	0.3041	1.3860	0.6116	3.1410
V1	6	0.1065	0.4012	0.07	0.7907	1.1124	0.3957	3.1267
V2	7	-0.7980	0.5855	1.86	0.1729	0.4502	0.0996	2.0345
V3	8	0.8430	0.4281	3.88	0.0490	2.3233	0.7712	6.9991
V4	9	0.4912	0.3605	1.86	0.1730	1.6343	0.6457	4.1365
V5	10	-0.7158	0.4182	2.93	0.0869	0.4888	0.1664	1.4355
V6	11	-0.3096	0.4076	0.58	0.4475	0.7337	0.2568	2.0967
V7	12	1.0576	1.0728	0.97	0.3242	2.8795	0.1816	45.6559
V8	13	-0.2389	0.2445	0.95	0.3286	0.7875	0.4195	1.4784

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=H15 MODEL=D P2=MALE LRS=1.0000 TOTN=94 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.9467	15.5878	0.04	0.8501	0.0525	0.0000	1.44E16
T2	2	0.2174	0.2778	0.61	0.4339	1.2428	0.6076	2.5422
T4	3	3.4715	3.3037	1.10	0.2933	32.1850	0.0065	159824
T6	4	-0.7228	1.4812	0.24	0.6256	0.4854	0.0107	22.0381
W3	5	-0.0434	0.4950	0.01	0.9301	0.9575	0.2675	3.4271
P1	6	-0.1960	0.1639	1.43	0.2317	0.8220	0.5389	1.2538
P7	7	-0.4198	0.9147	0.21	0.6463	0.6572	0.0623	6.9342
P8	8	0.5946	0.8359	0.51	0.4769	1.8123	0.2104	15.6095
V1	9	1.5452	2.7490	0.32	0.5741	4.6889	0.0039	5578.21
V2	10	-0.2696	2.6512	0.01	0.9190	0.7637	0.0008	706.195
V3	11	0.6193	2.3290	0.07	0.7903	1.8576	0.0046	749.049
V4	12	-0.6677	1.6323	0.17	0.6825	0.5129	0.0077	34.3673
V5	13	1.2623	1.3761	0.84	0.3590	3.5335	0.1020	122.380
V6	14	-4.5177	3.1717	2.03	0.1543	0.0109	0.0000	38.5748
V7	15	-5.2026	5.8598	0.79	0.3746	0.0055	0.0000	19776.4
V8	16	-0.7265	0.7988	0.83	0.3630	0.4836	0.0618	3.7856

--------------------- DEPVAR=H15 MODEL=D P2=FEMALE LRS=1.0000 TOTN=101 ---------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-71.6158	153.3000	0.22	0.6404	0.0000	0.0000	252E138
T2	2	1.1975	2.1313	0.32	0.5742	3.3118	0.0137	802.498
T4	3	0.4062	3.6427	0.01	0.9112	1.5011	0.0001	17850.6
T6	4	1.0726	.	.	.	.	.	.
W3	5	0.0333	0.3626	0.01	0.9267	1.0339	0.4063	2.6310
P1	6	-0.1180	0.0919	1.65	0.1990	0.8887	0.7014	1.1261
P7	7	1.4229	0.9392	2.30	0.1298	4.1491	0.3692	46.6316
P8	8	-1.3960	0.8256	2.86	0.0909	0.2476	0.0295	2.0766
V1	9	-3.8939	10.5330	0.14	0.7116	0.0204	0.0000	1.24E10
V2	10	15.9512	34.1274	0.22	0.6402	8462879	0.0000	1.28E45
V3	11	-12.0261	29.5946	0.17	0.6845	0.0000	0.0000	7.69E27
V4	12	8.0976	18.1487	0.20	0.6555	3286.57	0.0000	6.61E23
V5	13	5.3057	8.8983	0.36	0.5510	201.482	0.0000	1.82E12
V6	14	-4.3422	9.9350	0.19	0.6621	0.0130	0.0000	1.694E9
V7	15	-7.5497	.	.	.	.	.	.
V8	16	-0.6683	10.0499	0.00	0.9470	0.5126	0.0000	8.97E10

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=H16 MODEL=D P2=MALE LRS=1.0000 TOTN=97 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-484.300	983.2000	0.24	0.6223	0.0000	0.0000	.
T3	2	7.7447	.	.	.	.	.	.
T6	3	22.3725	48.6706	0.21	0.6458	5.203E9	0.0000	1.47E64
P5	4	60.0125	109.3000	0.30	0.5829	1.16E26	0.0000	22E147
P6	5	56.4753	.	.	.	.	.	.
P7	6	-48.0385	73.8410	0.42	0.5153	0.0000	0.0000	5.57E61
P9	7	-63.1875	73.7868	0.73	0.3918	0.0000	0.0000	1.28E55
V1	8	-4.0977	.	.	.	.	.	.
V2	9	99.7000	228.5000	0.19	0.6625	1.99E43	0.0000	855E296
V3	10	-52.7175	.	.	.	.	.	.
V4	11	-40.8373	.	.	.	.	.	.
V5	12	46.0907	82.0523	0.32	0.5743	1.04E20	0.0000	649E109
V6	13	-69.5702	.	.	.	.	.	.
V7	14	35.0655	.	.	.	.	.	.
V8	15	21.3663	.	.	.	.	.	.

---------------------- DEPVAR=H16 MODEL=D P2=FEMALE LRS=0.9572 TOTN=110 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-23.9633	20.0552	1.43	0.2321	0.0000	0.0000	1.07E12
T3	2	3.6845	3.4612	1.13	0.2871	39.8252	0.0053	296722
T6	3	-0.0649	0.2846	0.05	0.8196	0.9372	0.4502	1.9508
P5	4	-0.4607	0.5556	0.69	0.4069	0.6308	0.1508	2.6393
P6	5	-0.3032	0.4201	0.52	0.4705	0.7385	0.2502	2.1792
P7	6	0.8894	0.5216	2.91	0.0882	2.4337	0.6349	9.3282
P9	7	-0.9274	0.4811	3.72	0.0539	0.3956	0.1146	1.3660
V1	8	0.4373	0.6499	0.45	0.5010	1.5485	0.2903	8.2601
V2	9	-0.6005	1.1860	0.26	0.6126	0.5485	0.0258	11.6422
V3	10	-0.1359	0.8476	0.03	0.8726	0.8729	0.0983	7.7486
V4	11	0.4648	0.5042	0.85	0.3566	1.5917	0.4343	5.8335
V5	12	-0.1451	0.6656	0.05	0.8275	0.8649	0.1557	4.8042
V6	13	-0.3767	0.6743	0.31	0.5764	0.6861	0.1208	3.8973
V7	14	1.4642	1.3966	1.10	0.2944	4.3241	0.1184	157.881
V8	15	-0.5137	0.3536	2.11	0.1463	0.5983	0.2406	1.4876

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=02 MODEL=D P2=MALE LRS=0.9130 TOTN=92 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-76.9378	27.3994	7.88	0.0050	0.0000	0.0000	0.0017
T2	2	0.0394	0.1097	0.13	0.7196	1.0402	0.7841	1.3799
T3	3	10.4252	4.4891	5.39	0.0202	33698.2	0.3202	3.546E9
T4	4	0.4482	0.6279	0.51	0.4754	1.5655	0.3106	7.8906
W2A	5	-5.7061	2.0254	7.94	0.0048	0.0033	0.0000	0.6134
W3	6	0.2651	0.2018	1.73	0.1889	1.3036	0.7751	2.1923
W6	7	0.4238	0.3711	1.30	0.2535	1.5278	0.5873	3.9739
P6	8	-0.9645	0.6884	1.96	0.1612	0.3812	0.0647	2.2453
P9	9	-1.2681	0.6289	4.07	0.0438	0.2814	0.0557	1.4218
P10	10	0.7481	0.4487	2.78	0.0955	2.1130	0.6651	6.7124
P11A	11	0.7436	1.5366	0.23	0.6284	2.1035	0.0402	110.154
P11B	12	1.7007	1.9556	0.76	0.3845	5.4778	0.0355	844.146
P13	13	1.3886	1.0506	1.75	0.1863	4.0092	0.2677	60.0361
V1	14	-1.2117	0.9661	1.57	0.2098	0.2977	0.0247	3.5858
V2	15	5.5257	2.0170	7.51	0.0062	251.062	1.3908	45319.5
V3	16	-0.7150	0.5194	1.89	0.1687	0.4892	0.1284	1.8645
V4	17	-1.4363	1.0022	2.05	0.1518	0.2378	0.0180	3.1436
V5	18	-1.0572	0.7109	2.21	0.1370	0.3474	0.0557	2.1686
V6	19	1.1972	0.8942	1.79	0.1806	3.3108	0.3308	33.1373
V7	20	0.1144	1.5795	0.01	0.9422	1.1212	0.0192	65.5748
V8	21	-0.6934	0.4091	2.87	0.0901	0.4999	0.1743	1.4340

----------------------- DEPVAR=02 MODEL=D P2=FEMALE LRS=0.1320 TOTN=101 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-8.4113	15.2934	0.30	0.5823	0.0002	0.0000	2.86E13
T2	2	0.1289	0.1023	1.59	0.2076	1.1376	0.8740	1.4806
T3	3	0.8180	2.7272	0.09	0.7642	2.2660	0.0020	2548.52
T4	4	0.6541	0.4516	2.10	0.1475	1.9234	0.6010	6.1560
W2A	5	0.9076	0.8596	1.11	0.2911	2.4784	0.2707	22.6901
W2B	6	3.3423	1.0334	10.46	0.0012	28.2841	1.9744	405.183
W3	7	0.3638	0.1774	4.21	0.0403	1.4388	0.9110	2.2723
W6	8	0.2306	0.1549	2.22	0.1364	1.2594	0.8450	1.8769
P6	9	1.0584	0.4283	6.11	0.0135	2.8818	0.9561	8.6859
P9	10	-1.1207	0.4430	6.40	0.0114	0.3261	0.1042	1.0207
P10	11	0.0612	0.2241	0.07	0.7848	1.0631	0.5969	1.8936
P11A	12	-0.7184	0.9857	0.53	0.4661	0.4875	0.0385	6.1766
P11B	13	0.5843	1.1651	0.25	0.6160	1.7937	0.0892	36.0749
P13	14	-10.2070	.	.	.	.	.	.
V1	15	0.2263	0.6018	0.14	0.7069	1.2540	0.2661	5.9094
V2	16	-0.6340	1.0339	0.38	0.5398	0.5305	0.0370	7.6090
V3	17	0.7399	0.4998	2.19	0.1388	2.0957	0.5783	7.5942
V4	18	0.9623	0.4541	4.49	0.0341	2.6177	0.8126	8.4322
V5	19	-0.7471	0.4598	2.64	0.1042	0.4737	0.1449	1.5486
V6	20	-0.4564	0.4391	1.08	0.2986	0.6336	0.2044	1.9635
V7	21	-0.2452	1.1887	0.04	0.8366	0.7825	0.0366	16.7248
V8	22	-0.1729	0.3161	0.30	0.5845	0.8412	0.3726	1.8991

MAXIMUM LIKELIHOOD ESTIMATES

------------------------ DEPVAR=A1 MODEL=D P2=MALE LRS=0.0018 TOTN=90 ------------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-2.6637	10.8998	0.06	0.8069	0.0697	0.0000	1.09E11
T1	2	0.0154	0.1497	0.01	0.9183	1.0155	0.6906	1.4934
W2A	3	-0.8386	0.8067	1.08	0.2985	0.4323	0.0541	3.4537
W3	4	-0.1525	0.1292	1.39	0.2380	0.8586	0.6155	1.1976
P9	5	-0.3715	0.2690	1.91	0.1673	0.6897	0.3449	1.3791
V1	6	-0.4679	0.4578	1.04	0.3067	0.6263	0.1926	2.0368
V2	7	0.8388	0.7571	1.23	0.2679	2.3136	0.3291	16.2662
V3	8	-0.0631	0.3122	0.04	0.8400	0.9388	0.4201	2.0983
V4	9	0.1241	0.4964	0.06	0.8026	1.1321	0.3152	4.0667
V5	10	-0.0384	0.3421	0.01	0.9106	0.9623	0.3987	2.3230
V6	11	0.1604	0.4672	0.12	0.7313	1.1740	0.3524	3.9114
V7	12	1.2306	1.0036	1.50	0.2201	3.4233	0.2580	45.4164
V8	13	-0.0558	0.2384	0.05	0.8148	0.9457	0.5118	1.7477

---------------------- DEPVAR=A1 MODEL=D P2=FEMALE LRS=0.0715 TOTN=108 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	-1.4371	8.8506	0.03	0.8710	0.2376	0.0000	1.894E9
T1	2	0.1044	0.1257	0.69	0.4062	1.1100	0.8030	1.5345
W2A	3	-1.2485	0.6304	3.92	0.0476	0.2869	0.0566	1.4556
W2B	4	-1.0264	0.6034	2.89	0.0890	0.3583	0.0757	1.6955
W3	5	-0.0386	0.1428	0.07	0.7872	0.9621	0.6660	1.3899
P9	6	-0.7176	0.3196	5.04	0.0248	0.4879	0.2142	1.1115
V1	7	-0.2834	0.4220	0.45	0.5018	0.7532	0.2540	2.2337
V2	8	-0.6577	0.7056	0.87	0.3513	0.5180	0.0841	3.1897
V3	9	0.5197	0.4097	1.61	0.2047	1.6815	0.5853	4.8312
V4	10	0.5442	0.4584	1.41	0.2351	1.7232	0.5291	5.6127
V5	11	-1.1153	0.4295	6.74	0.0094	0.3278	0.1084	0.9911
V6	12	-0.2227	0.3552	0.39	0.5308	0.8004	0.3206	1.9983
V7	13	1.9998	1.0308	3.76	0.0524	7.3876	0.5192	105.124
V8	14	-0.0208	0.3048	0.00	0.9456	0.9794	0.4467	2.1476

MAXIMUM LIKELIHOOD ESTIMATES

----------------------- DEPVAR=A2 MODEL=D P2=MALE LRS=1.0000 TOTN=86 -----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	4.6100	18.0903	0.06	0.7989	100.484	0.0000	1.74E22
W5	2	4.3720	2.1454	4.15	0.0416	79.2019	0.3152	19901.5
W8	3	-15.6605	.	.	.	.	.	.
P4	4	2.2531	2.0951	1.16	0.2822	9.5172	0.0431	2100.81
P8	5	-1.3152	0.9820	1.79	0.1805	0.2684	0.0214	3.3684
P12B	6	4.1738	2.3889	3.05	0.0806	64.9618	0.1381	30564.9
V1	7	-2.6337	3.5707	0.54	0.4608	0.0718	0.0000	709.403
V2	8	-1.5839	4.9135	0.10	0.7472	0.2052	0.0000	64426.2
V3	9	0.9868	1.4443	0.47	0.4944	2.6826	0.0650	110.755
V4	10	2.6909	3.3337	0.65	0.4196	14.7449	0.0027	79103.4
V5	11	0.9774	1.1222	0.76	0.3838	2.6575	0.1476	47.8556
V6	12	-2.0299	2.4933	0.66	0.4156	0.1313	0.0002	80.8698
V7	13	-1.7215	5.4205	0.10	0.7508	0.1788	0.0000	207256
V8	14	-0.0632	0.8291	0.01	0.9393	0.9388	0.1109	7.9451

---------------------- DEPVAR=A2 MODEL=D P2=FEMALE LRS=0.9909 TOTN=100 ----------------------

EFFVAR	PARAM	ESTIMATE	STDERR	CHISQ	PROB	ODDS RATIO	LOWER 99% LIMIT	UPPER 99% LIMIT
INTERCEPT	1	4.5533	5.1940	0.77	0.3807	94.9452	0.0001	6.141E7
W5	2	-1.5782	1.6609	0.90	0.3420	0.2063	0.0029	14.8839
W8	3	-9.7796	.	.	.	.	.	.
P4	4	-1.2164	0.7778	2.45	0.1178	0.2963	0.0400	2.1973
P8	5	0.8611	0.5403	2.54	0.1110	2.3658	0.5882	9.5154
P12B	6	1.1863	0.7609	2.43	0.1190	3.2749	0.4613	23.2517
V1	7	0.2004	0.6272	0.10	0.7493	1.2219	0.2429	6.1476
V2	8	-0.3181	1.1033	0.08	0.7731	0.7275	0.0424	12.4784
V3	9	0.8413	0.6452	1.70	0.1923	2.3194	0.4401	12.2232
V4	10	1.3422	0.9287	2.09	0.1484	3.8275	0.3499	41.8684
V5	11	-1.1268	0.7852	2.06	0.1513	0.3241	0.0429	2.4495
V6	12	-1.4016	0.5822	5.80	0.0161	0.2462	0.0549	1.1031
V7	13	-1.7192	1.4794	1.35	0.2452	0.1792	0.0040	8.0989
V8	14	-0.3710	0.3651	1.03	0.3096	0.6900	0.2694	1.7674

MALES

Model: MODEL_D1
Dependent Variable: M1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	13	521.03110	40.07932	1.339	0.2087
Error	79	2363.89363	29.92270		
C Total	92	2884.92473			

Root MSE	5.47016	R-square	0.1806
Dep Mean	11.44086	Adj R-sq	0.0458
C.V.	47.81253		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	10.313542	7.72265190	1.335	0.1856
W7	1	2.246219	1.86580927	1.204	0.2322
P7	1	-0.747321	0.71643255	-1.043	0.3001
P8	1	-0.211099	0.62094438	-0.340	0.7348
P12B	1	4.326826	1.73986160	2.487	0.0150
P13	1	-0.103268	1.73837831	-0.059	0.9528
V1	1	0.801810	1.05394734	0.761	0.4491
V2	1	-0.033745	1.70007087	-0.020	0.9842
V3	1	0.053318	0.76748920	0.069	0.9448
V4	1	0.739749	1.25852430	0.588	0.5583
V5	1	0.953317	0.85629877	1.113	0.2690
V6	1	-0.474724	1.31116356	-0.362	0.7183
V7	1	0.578121	2.29275960	0.252	0.8016
V8	1	-0.734133	0.66930873	-1.097	0.2760

FEMALES

Model: MODEL_D1
Dependent Variable: M1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	13	1245.11395	95.77800	2.481	0.0060
Error	93	3589.80193	38.60002		
C Total	106	4834.91589			

Root MSE	6.21289	R-square	0.2575
Dep Mean	12.97196	Adj R-sq	0.1537
C.V.	47.89477		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	7.290475	8.32434480	0.876	0.3834
W7	1	-0.158693	1.65798219	-0.096	0.9240
P7	1	2.261391	0.71555145	3.160	0.0021
P8	1	-1.567023	0.69711399	-2.248	0.0269
P12B	1	0.064140	1.48384973	0.043	0.9656
P13	1	4.971034	2.75382882	1.805	0.0743
V1	1	1.505314	0.94401205	1.595	0.1142
V2	1	1.429719	1.58597457	0.901	0.3697
V3	1	0.410835	1.08066346	0.380	0.7047
V4	1	0.754019	1.03006835	0.732	0.4660
V5	1	-0.596457	1.02373986	-0.583	0.5616
V6	1	-0.465497	0.97588138	-0.477	0.6345
V7	1	-1.796028	2.50981862	-0.716	0.4760
V8	1	-1.056179	0.68711302	-1.537	0.1277

MALES

Model: MODEL_01
Dependent Variable: M2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	14	1069.67218	76.40516	2.009	0.0286
Error	73	2776.31646	38.03173		
C Total	87	3845.98864			

Root MSE	6.16699	R-square	0.2781
Dep Mean	21.23864	Adj R-sq	0.1397
C.V.	29.03664		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-20.289128	31.45227438	-0.645	0.5209
T1	1	0.608883	0.43716552	1.393	0.1679
T4	1	-1.726251	1.09080158	-1.583	0.1178
W5	1	4.028964	2.36653240	1.702	0.0929
P1	1	0.137834	0.07960607	1.731	0.0876
P9	1	0.929187	0.78933618	1.177	0.2429
P12B	1	-2.884950	2.11821609	-1.362	0.1774
V1	1	-3.294250	1.38700413	-2.375	0.0202
V2	1	0.002242	2.01113450	0.001	0.9991
V3	1	0.024471	0.89422832	0.027	0.9782
V4	1	-0.618600	1.57349053	-0.393	0.6954
V5	1	-1.138699	0.99657106	-1.143	0.2569
V6	1	-1.809992	1.61495519	-1.121	0.2661
V7	1	2.122726	2.79950079	0.758	0.4507
V8	1	-0.496599	0.79633489	-0.624	0.5348

FEMALES

Model: MODEL_D1
Dependent Variable: M2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	14	1337.61427	95.54388	2.547	0.0042
Error	87	3263.87592	37.51582		
C Total	101	4601.49020			

Root MSE	6.12502	R-square	0.2907
Dep Mean	19.50980	Adj R-sq	0.1765
C.V.	31.39455		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	15.543931	25.93350572	0.599	0.5505
T1	1	-0.032071	0.36386808	-0.088	0.9300
T4	1	-1.343817	0.85155843	-1.578	0.1182
W5	1	-0.820179	2.01443764	-0.407	0.6849
P1	1	0.244765	0.06621643	3.696	0.0004
P9	1	1.242762	0.72502113	1.714	0.0901
P12B	1	1.860575	1.54338429	1.206	0.2313
V1	1	1.263904	1.11011012	1.139	0.2580
V2	1	-2.425527	1.85576750	-1.307	0.1946
V3	1	0.351513	1.16160590	0.303	0.7629
V4	1	-0.567223	0.95488534	-0.594	0.5540
V5	1	0.739171	1.02847732	0.719	0.4742
V6	1	0.880146	0.98893318	0.890	0.3759
V7	1	-2.394214	2.69108813	-0.890	0.3761
V8	1	1.299691	0.69109043	1.881	0.0634

MALES

Model: MODEL_D1
Dependent Variable: M3

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	15	946.69857	63.11324	2.628	0.0030
Error	78	1873.01419	24.01300		
C Total	93	2819.71277			

Root MSE	4.90031	R-square	0.3357
Dep Mean	8.88298	Adj R-sq	0.2080
C.V.	55.16513		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	16.287025	26.56121494	0.613	0.5415
T2	1	-0.234105	0.12316023	-1.901	0.0610
T3	1	-2.197584	4.81502143	-0.456	0.6494
W5	1	-3.270905	1.74777538	-1.871	0.0650
P5	1	1.821833	1.06730202	1.707	0.0918
P6	1	-0.913257	0.69092699	-1.322	0.1901
P7	1	-0.195602	0.67164744	-0.291	0.7717
P13	1	-1.096215	1.55888181	-0.703	0.4840
V1	1	2.130235	1.09657767	1.943	0.0557
V2	1	2.422823	1.76119267	1.376	0.1729
V3	1	1.334015	0.70610566	1.889	0.0626
V4	1	1.953129	1.16438544	1.677	0.0975
V5	1	0.485459	0.73443112	0.661	0.5106
V6	1	-0.531957	1.21693225	-0.437	0.6632
V7	1	-0.584275	2.07819047	-0.281	0.7793
V8	1	1.158243	0.63251675	1.831	0.0709

FEMALES

Model: MODEL_D1
Dependent Variable: M3

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	15	617.50117	41.16674	1.455	0.1389
Error	93	2630.64562	28.28651		
C Total	108	3248.14679			

Root MSE	5.31851	R-square	0.1901
Dep Mean	8.78899	Adj R-sq	0.0595
C.V.	60.51328		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	25.138122	30.73146475	0.818	0.4155
T2	1	0.051972	0.15696598	0.331	0.7413
T3	1	-2.300396	5.53207714	-0.416	0.6785
W5	1	0.510478	1.78211507	0.286	0.7752
P5	1	-0.052145	0.89697741	-0.058	0.9538
P6	1	-1.212113	0.60745829	-1.995	0.0489
P7	1	1.265693	0.67075577	1.887	0.0623
P13	1	2.173542	2.35872173	0.921	0.3592
V1	1	1.908019	1.15866852	1.647	0.1030
V2	1	-1.921348	1.88479446	-1.019	0.3107
V3	1	1.256366	0.95251600	1.319	0.1904
V4	1	0.802433	0.84644240	0.948	0.3456
V5	1	-1.414973	0.91826406	-1.541	0.1267
V6	1	-0.547471	0.80518645	-0.680	0.4982
V7	1	0.220751	2.13812929	0.103	0.9180
V8	1	0.033675	0.59452547	0.057	0.9550