

B. Collections of Information Employing Statistical Methods

1. Respondent Universe and Sampling Methods

As discussed in Section A2, the proposed survey will allow a comprehensive assessment of workplace stressors that may be linked with depression in women. To date, studies which have examined the relationship between workplace factors and depression in women have focused on only a few of the potential risk (e.g., hours of work, discrimination). Consequently, the amount of variance in depression in working women accounted for by these studies, although statistically significant, is often small. Most of these studies have also been cross-sectional in nature, not allowing researchers to better understand the antecedents and causal pathways between risk factors and depression. Nor have these studies examined the potential moderating effects of preventive factors in the workplace (i.e., workplace policies, practices and programs) on levels of depression. Studies of workplace policies, practices and programs have generally focused on outcomes such as productivity, commitment and turnover rather than on worker health. (An exception is Thomas and Ganster [1995] who found family supportive policies to be linked with reduced levels of stress and depression.) Consequently, although such policies, programs and practices show potential for reducing workplace hazards associated with depression in women, and thus positively influencing the health of women workers, there have been no comprehensive, longitudinal studies examining this relationship.

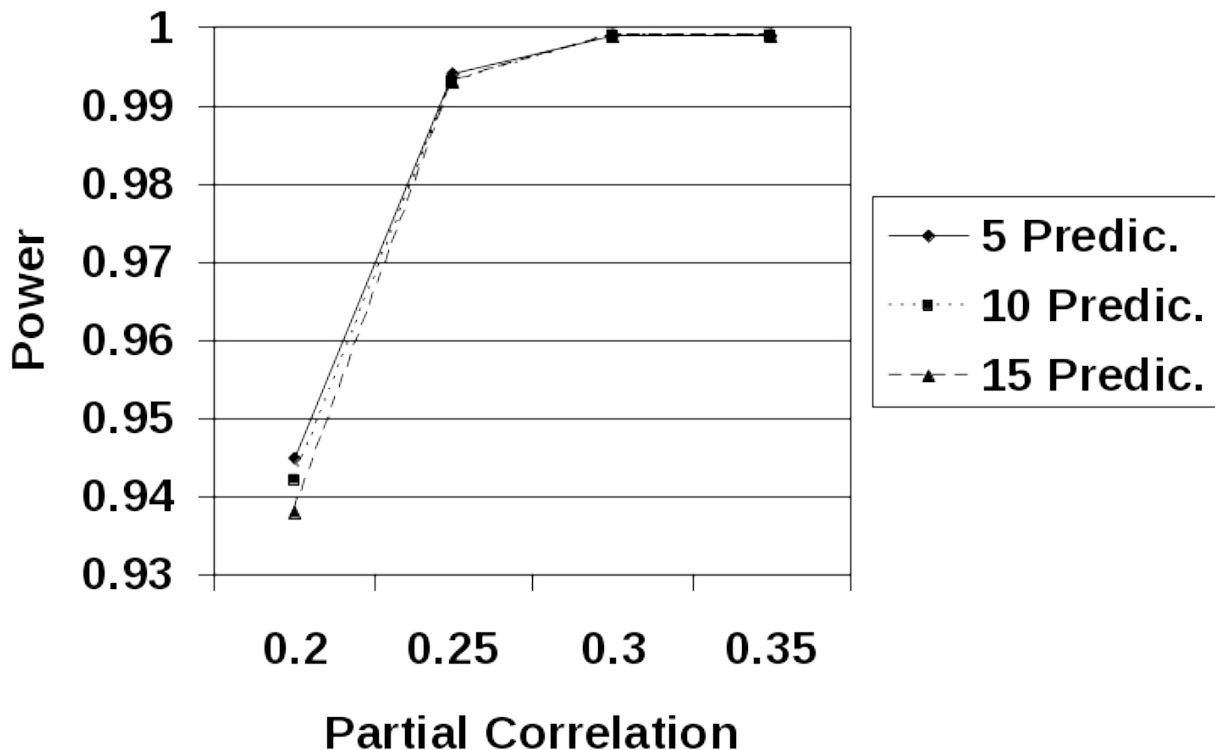
The data collected in this study will allow the determination of what job characteristics are associated with the development, worsening, or prevention/alleviation of depressive symptoms. Additionally, these data will allow a determination of whether workplace policies, procedures and practices modify the relationship between job characteristics and depressive symptoms, and which policies, procedures and practices are most protective. These data will be used to make recommendations to employers on how to identify and reduce or eliminate problematic job characteristics, and about workplace policies, procedures, and practices that are effective in reducing the risk for depression.

The respondent universe for this study is support occupations common across industries. We employed this strategy because comparability of occupations is needed across industry categories. Therefore, we recruited subjects who work in administrative services and support jobs within each participating company (e.g., clerical staff and administrative assistants, accounting, billing, word/data processing). As policies and procedures are likely to be implemented or enforced to different degrees in different departments or work units within a company, recruitment efforts focused on obtaining subjects from a number of different departments and work units within each participating company. Employees from both managerial and non-managerial positions within the targeted jobs were recruited to allow us to obtain input from workers at different career levels. As depression is most common in young women (and to reduce the likelihood of a healthy worker effect), the age range of recruits was limited to the ages of 18-45. These ages also encompass prime marriage and child-rearing years, so the likelihood of these women (and men) experiencing work-family conflict and wanting and using family-friendly

programs is increased. A representative from the HR department in each company who oversees, or has extensive knowledge of, the company policies, practices and programs, was recruited for the study as well.

Participation in this study is entirely voluntary. We have recruited 314 participants from 14 companies. The Center for Epidemiological Studies – Depression (or CES-D) scale was used to measure depressive symptoms in these participants. Information from published studies gave an a priori mean CES-D value of 10 and a standard deviation of 9.1 (drawn from Sayetta and Johnson, 1980), which is matched quite closely by our actual baseline CES-D values (mean = 10.2; standard deviation = 8.58). Based on the conventional statistical practice of not using data from a study to calculate power for that study, we used available data from a prior study with a similar sample size and study variables (Burnfield et al., 2006). The study did not include the CES-D, but it did include Profile of Mood States (POMS) variables (anxiety, tension, fatigue) that are very similar to depressive symptoms measured by the CES-D. It also included the same job stress measures used in the present study. These measures (POMS and job stress) were used to estimate model parameters for study power calculations. We assumed the use of multivariate regression at a significance level of 0.05 (two-tailed). Partial correlations among the study variables were conservatively estimated based on prior analyses on the relationship between job stressors and mood state. We calculated power for analyses containing 5, 10, or 15 predictor variables, as these are typical numbers of predictor variables we might use in regression models using these study data. Based on these estimates, we project that our study sample will have, at minimum, 93% power (see Figure 1).

Figure 1. Power estimates for multivariate analyses of the relationship between job stressors and depression for the present study.



Although the study sample is not representative of the working population as a whole, it is representative of white collar occupations whose members are likely to score above the mean on depressive symptoms, such as clerks and typists (Grosch and Murphy, 1998). In this study, we are attempting to maximize our ability to assess the impact of job demands on depression. Thus, we are sampling from a population with an intersection of risk factors. These include female gender, youth, jobs/occupations with higher levels of exposure to job stressors and occupational demographic factors that increase the risk of exposure to nontraditional stressors. The sample for this study is highly representative of this population.

2. Procedures for the Collection of Information

The methodology for sample selection has been described in the previous section (B.1).

RTI, the contract research firm, recruited 14 companies using sources such as Dun and Bradstreet, combined with data from the Bureau of Labor Statistics on gender distributions by industry and occupation, to select companies who fit the profile required for the study. A Human Resources point of contact (POC) was identified within each company, and assisted RTI with recruitment of eligible participants. Each POC identified employees that fit the study criteria. Employees were recruited in two ways: 1) the POC supplied the contractor with the names and mailing addresses of eligible employees and RTI mailed the employees packets containing the study consent form, a form requesting contact information and preferred contact times, and business return envelopes addressed to NIOSH; or, 2) the POC requested the consent form packets from RTI and distributed them to the eligible employees. The employees sent the completed consent forms to NIOSH, who compiled a list of participants which was then sent to RTI. RTI is contacting these workers during their preferred contact times and conducting the telephone interview with them (see Appendix C for the study questionnaires and Appendix C1 for the interview transcript). Questions posed by telephone interviewers require only an oral “yes”, “no”, “agree”, “disagree”, etc. or numeric answer from respondents, and thus do not compromise respondent privacy and confidentiality if they choose to be interviewed while at the workplace. For sensitive questions, such as questions about depression symptoms, substance use, or medications, interviewers transfer respondents into a “Telephone Computer-Assisted Self Interviewing” system (T-ACASI) in which a respondent follows recorded instructions and answers questions by pressing keys on their telephone. Given that T-ACASI is a more expensive interviewing system, only the most sensitive questions are being administered by this system. After each completed wave of data collection, RTI is supplying NIOSH with a dataset which is ready to be analyzed.

At yearly intervals, during the next eighteen months, RTI will repeat the telephone surveys with the study participants. All participants are being given an incentive of \$25.00 for each survey (wave) that they complete. The incentive is in the form of a check, received in the mail within three to four weeks after completion of a survey.

It is expected that there will be some degree of subject attrition during the study. An attempt will be made to identify these individuals and conduct exit interviews with them to determine their reasons for leaving (e.g., better job opportunity elsewhere). After the study is completed and the results are analyzed, a summary of the evaluation will be provided by NIOSH to study participants.

3. Methods to Maximize Response Rates and Deal with Nonresponse

RTI and/or NIOSH investigators contacted the point of contact (POC) at each participating company to explain the purpose and goals of the study, and the potential benefit to the company of participating (i.e., that the company will learn what working conditions are risk factors for depression, and what working conditions, policies, and practices may be protective against depression). The POCs determined who the eligible employees were and distributed an invitation to participate in the study. Study packets, including consent forms and business reply envelopes (with the address of the NIOSH PI), were either distributed to potential participants by RTI or by the POC.

Participants have provided information about best place, number and time of day for RTI to phone them. RTI is making up to eight contacts to reach a participant. Callbacks have been scheduled as needed to accommodate the participant's schedule. Since this is a strictly voluntary study and participants have been informed that they may leave the study at any time for any reason, we have instructed RTI NOT to attempt to convert definite refusals. Using these methods, a response rate of 82% was obtained for the baseline data collection.

With regard to maximizing response rates for the follow-up surveys, RTI is sending letters to participants one to two weeks prior to the 18-month follow up surveys to inform them that they will be contacted for a re-interview. (See the 18month follow-up letters in Appendix F.) A "non-response letter" has been developed for those participants RTI is unable to reach for a follow-up interview which encourages the participant to contact RTI and arrange for the follow-up interview (see Appendix G for the non-response letter).

4. Tests of Procedures or Methods to be Undertaken

The study contractor, RTI, conducted two pilot tests of the survey and CATI/T-ACASI administration (9 subjects each) in February and March 2003. Based on these pilot tests, the survey was modified and shortened significantly. Additionally, NIOSH project staff were able to make recommendations regarding telephone interviewer training based on observation of the administration of the pilot tests.

5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or

Analyzing Data

1. The person who designed the data collection:

Naomi G. Swanson, Ph.D.
Chief, Work Organization and Stress Research Section
NIOSH, Taft Laboratories MSC24
4676 Columbia Parkway
Cincinnati, OH 45226

2. The contractor who will collect the data:

Research Triangle Institute International (RTI)
3040 Cornwallis Road
PO Box 12194
Research Triangle Park, NC 27709

The person responsible for receiving and approving contract deliverables:

Vallerie Redd
Contract Specialist, CDC/PGO
2920 Brandywine Road
Atlanta, GE 30341-5539

3. The person who will analyze the data:

Edward Krieg, Jr., Ph.D.
Health Statistician
NIOSH, Taft Laboratories, MSC22
4676 Columbia Parkway
Cincinnati, OH 45226

References

- Adelman, P. (1987). Occupational complexity, control and personal income: Their relationship to psychological well-being in men and women. Journal of Applied Psychology, 72, 529-537.
- Allen, T.D., Herst, D.E.L., Bruck, C.S. and Sutton, M. (2000). Consequences associated with work-to-family conflict: A review and agenda for future research. Journal of Occupational Health Psychology, 5(2), 278-308.
- Asher HB (1983). Causal Modeling. (2nd ed.) Beverly Hills, CA: Sage University Papers.
- Beck, D.A. and Koenig, H.G. (1996). Minor depression: A review of the literature. International Journal of Psychiatry in Medicine, 26(2), 177-209.
- Berndt, E.R., Finkelstein, S.N., Greenberg, P.E., Howland, R.H., Keith, A., Rush, A.J., Russel, J. and Keller, M.B. (1998). Workplace performance effects from chronic depression and its treatment. Journal of Health Economics, 17, 511-535.
- Bond, J.T., Galinsky, E. and Swanberg, J.E. (1998). The 1997 National Study of the Changing Workforce. New York: Families and Work Institute.
- Broadhead, W.E., Blazer, D.G., George, L.K. and Tse, C.K. (1990). Depression, disability days, and days lost from work in a prospective epidemiologic survey. Journal of the American Medical Association, 264, 2524-2528.
- Burnfield, J., Jex, S., and Swanson, N. (2006). Role stressors and the etiology of work related musculoskeletal symptoms. Paper presented at Work, Stress, and Health 2006, Miami, Florida, March 2-4.
- Carr, D. (1997). The fulfillment of career dreams at midlife: Does it matter for women's mental health? Journal of Health and Social Behavior, 38, 331-344.
- Cobb-Clark, D.A. and Dunlop, Y. (1999). The role of gender in job promotions. Monthly Labor Review, Dec., 32-38.
- Cohen, P.N. and Bianchi, S.M. (1999). Marriage, children and women's employment: What do we know? Monthly Labor Review, Dec., 22-31.
- Conti, D.J. and Burton, W.N. (1994). The economic impact of depression in a workplace. Journal of Occupational Medicine, 36(9), 983-988.
- Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16, 297-354.

De Jonge, J., Reuvers, M.M.E.N., Houtman, I.L.D., Bongers, P.M. and Kompier, M.A.J. (2000). Linear and nonlinear relations between psychosocial job characteristics, subjective outcomes, and sickness absence: Baseline results from SMASH. Journal of Occupational Health Psychology, 5(2), 256-268.

Dekker, I. and Barling, J. (1998). Personal and organizational predictors of workplace sexual harassment of women by men. Journal of Occupational Health Psychology, 3(1), 7-18.

Dewa, C.S., Goering, P., Lin, E. and Paterson, M. (2002). Depression-related short-term disability in an employed population. Journal of Occupational and Environmental Medicine, 44(7), 628-633.

Edwards, P., Roberts, I., Clarke, M., DiGuseppi, C., Pratap, S., Wentz, R. and Kwan, I. (2002). Increasing responses to postal questionnaires: systematic review. British Medical Journal, 324, 1183-1191.

Fitzgerald, L. (1993). Sexual harassment: Violence against women in the workplace. American Psychologist, 48, 1070-1076.

Fitzgerald, L. Gelfand, MJ and Drasgow, F. (1995). Measuring sexual harassment: Theoretical and psychometric advances. Basic and Applied Social Psychology. 17(4), 425-445.

Galinsky, E., Bond, J.T. and Friedman, D.E. (1993). The Changing Workforce: Highlights of the National Study. New York: Families and Work Institute.

Gelfand, M.J., Fitzgerald, L.F. and Drasgow, F. (1995). The structure of sexual harassment: A confirmatory analysis across cultures and settings. Journal of Vocational Behavior, 47, 164-177.

Glomb, T.M., Richman, W., Hulin, C.L., Drasgow, F., Schneider, K.T. and Fitzgerald, L.F. (1997). Ambient sexual harassment: An integrated model of antecedents and consequences. Organizational Behavior and Human Decision Processes, 71, 309-328.

Goetzel, R., Anderson, D.R., Whitmer, R.W., Ozminkowski, R.J., Dunn, R.L., and Wasserman, J. (1998). The relationship between modifiable health risks and health care expenditures: An analysis of the multi-employer HERO health risk and cost database. Journal of Occupational and Environmental Medicine, 40(10), 843-854.

Goldenhar, L.M., Gershon, R., Mueller, C., Karkasian, C. and Swanson, N. (2001). Psychosocial work stress in female funeral service practitioners. Equal Opportunities International, 20(1/2), 17-38.

- Goldenhar, L.M., Swanson, N.G., Hurrell, J.J.Jr., Ruder, A. and Deddens, J. (1998). Stressors and adverse outcomes for female construction workers. Journal of Occupational Health Psychology, 3(1), 19-32.
- Grosch, J.W. and Murphy, L.R. (1998). Occupational differences in depression and global health: Results from a national sample of US workers. Journal of Occupational and Environmental Medicine, 40(2), 153-164.
- Grover, S.L. and Crooker, K.J. (1995). Who appreciates family-responsive human resource policies: The impact of family-friendly policies on the organizational attachment of parents and non-parents. Personnel Psychology, 48, 271-288.
- Gutek, B. and Koss, M. (1993). Changed women and changed organizations: Consequences of and coping with sexual harassment. Journal of Vocational Behavior, 42, 28-48.
- Heinisch, D.A. and Jex, S.M. (1997). Negative affectivity and gender as moderators of the relationship between work-related stressors and depressed mood at work. Work & Stress, 11(1), 46-57.
- Hewitt Associates LLC (2002). Work and life benefits provided by major U.S. employers in 1999. Lincolnshire, IL: Hewitt Associates LLC.
- Kamb, M.L., Rhodes, F., Hoxworth, T., Rogers, J., Lentz, A., Kent, C., MacGowen, R., and Peterman, T.A. (1998). What about money? Effect of small monetary incentives on enrolment, retention, and motivation to change behaviour in an HIV/STD prevention counselling intervention. Sexually Transmitted Infections, 74(4), 253-255.
- Kissinger, P., Kopicko, J.J., Meyers, L., Wustrack, S., Elkins, W., Farley, T.A., and Martin, D. (2000). The effect of modest monetary incentives on follow-up rates in sexually transmitted disease studies. International Journal of STD & AIDS, 11(1), 27-30.
- Klonoff, E.A., Landrine, H. and Campbell, R. (2000). Sexist discrimination may account for well-known gender differences in psychiatric symptoms. Psychology of Women Quarterly, 24, 93-99.
- Kountoulakis, F., Iocavides, A., Kleantous, S., Samolis, S., Kaprinis, S., Sitzoglou, K., Kaprinis, G. and Bech, P. (2001). Reliability, validity, and psychometric properties of the Greek translation of the Center for Epidemiological Studies – Depression (CES-D) scale. BMC Psychiatry, 1, 3-13.
- Landrine, H., Klonoff, E.A., Gibbs, J., Manning, V. and Lund, M. (1995). Physical and psychiatric correlates of gender discrimination: An application of the Schedule of Sexist Events. Psychology of Women Quarterly, 19, 473-492.

Lyness, K.S. and Thompson, D.E. (2000). Climbing the corporate ladder: Do female and male executives follow the same route? Journal of Applied Psychology, 85(1), 86-101.

Magley, V.J., Hulin, C.L., Fitzgerald, L.F. and DeNardo, M. (1999). Outcomes of self-labeling sexual harassment. Journal of Applied Psychology, 84(3), 390-402.

Maier, W., Gansicke, M., Gater, R., Rezaki, M., Tiemens, B. and Florenzano Urzua, R. (1999). Gender differences in the prevalence of depression: A survey in primary care. Journal of Affective Disorders, 53, 241-252.

Martin, J.K., Blum, T.C., Beach, S.R.H. and Roman, P.M. (1996). Subclinical depression and performance at work. Sociology, Psychiatry and Psychiatric Epidemiology, 31, 3-9.

Morrow, P.C., McElroy, J.C. and Phillips, C.M. (1994). Sexual harassment behaviors and work-related perceptions and attitudes. Journal of Vocational Behavior, 45, 295-309.

Moyle, P. (1998). Longitudinal influences of managerial support on employee well-being. Work & Stress, 12(1), 29-49.

Neidhammer, I., Goldberg, M., Leclerc, A., Bugel, I. and David, S. (1998). Psychosocial factors at work and subsequent depressive symptoms in the Gazel cohort. Scandinavian Journal of Work, Environment and Health, 24(3), 197-205.

Nolan-Hoeksema, S., Larson, J. and Grayson, C. (1999). Explaining the gender difference in depressive symptoms. Journal of Personality and Social Psychology, 77(5), 1061-1072.

Nunnally, J. (1978) Psychometric Theory (2nd Edition). McGraw-Hill, New York.

Parry, B.L. (1995). Mood disorders linked to the reproductive cycle in women. In Bloom, E., Kupfer, D.J. (Eds.), Psychopharmacology: The Fourth Generation of Progress. New York: Raven, pp. 1029-1042.

Piotrkowski, C.S. (1998). Gender harassment, job satisfaction, and distress among employed white and minority women. Journal of Occupational Health Psychology, 3(1), 33-43.

Pugliese, K. (1995). Work and well-being: Gender differences in the psychological consequences of employment. Journal of Health and Social Behavior, 36, 57-71.

Riger, S. (1991). Gender dilemmas in sexual harassment policies and procedures. American Psychologist, 46(5), 497-505.

Roxburgh, S. (1996). Gender differences in work and well-being: Effects of exposure and vulnerability. Journal of Health and Social Behavior, 37, 265-277.

Sayetta, R.B. and Johnson, D.P. (1980). Basic data on depressive symptomatology. United States, 1974-75. Vital health statistics II: Data from the National Health Survey. 216 (i-v): 1-37.

Scandura, T. and Lankau, M. (1997). Relationships of gender, family responsibility and flexible work hours to organizational commitment and job satisfaction. Journal of Organizational Behavior, 18, 377-391.

Schwartzberg, N.S. and Dytell, R.S. (1996). Dual-earner families: The importance of work stress and family stress for psychological well-being. Journal of Occupational Health Psychology, 1(2), 211-223.

Sparks, K., Cooper, C., Fried, Y. and Shirom, A. (1997). The effects of hours of work on health: A meta-analytic review. Journal of Occupational and Organizational Psychology, 70, 391-408.

Stokes, J., Riger, S. and Sullivan, M. (1995). Measuring perceptions of the working environment for women in corporate settings. Psychology of Women Quarterly, 19, 533-549.

Stroh, L.K., Brett, J.M. and Reilly, A.H. (1996). Family structure, glass ceiling, and traditional explanations for the differential rate of turnover of female and male managers. Journal of Vocational Behavior, 49, 99-118.

Swanson, N.G., Grubb, P., Dunkin, R., Beam, C. and Brightwell, S. (2001). Work organization changes in customer call centers of a U.S. Government agency. Invited presentation at, A Working Conditions in Call Centers, @ a meeting of OSH Institutes, Sankt Augustin, Germany, September 6-7.

Tharenou, P. (1999). Is there a link between family structures and women's and men's managerial career advancement? Journal of Organizational Behavior, 20, 837-863.

Thomas, L., and Ganster, D. (1995). Impact of family-supportive work variables on work-family conflict and strain: A control perspective. Journal of Applied Psychology, 80, 6-15.

Turnage, J.J. and Spielberger, C.D. (1991). Job stress in managers, professionals, and clerical workers. Work & Stress, 5(3), 165-176.

Vermeulen, M. and Mustard, C. (2000). Gender differences in job strain, social support at work and psychological distress. Journal of Occupational Health Psychology, 2000, 5(4), 428-440.

Women's Bureau. (2000). 20 Facts on Women Workers. Washington, D.C.: U.S. Department of Labor, Women's Bureau.

Women's Bureau. (1998). Work and Elder Care: Facts for Caregivers and Their Employers. Washington, D.C.: U.S. Department of Labor, Women's Bureau, No. 98-1.