Assessing the Relationship Between Work–Family Conflict and Smoking

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Objectives. We examined the relationship between smoking and work–family conflict among a sample of New England long-term-care facility workers.

Methods. To collect data, we conducted in-person, structured interviews with workers in 4 extended-care facilities.

Results. There was a strong association between smoking likelihood and work–family conflict. Workers who experienced both stress at home from work issues (i.e., work-to-home conflict) and stress at work from personal issues (i.e., home-to-work conflict) had 3.1 times higher odds of smoking than those who did not experience these types of conflict. Workers who experienced home-to-work conflict had an odds of 2.3 compared with those who did not experience this type of conflict, and workers who experienced work-to-home conflict had an odds of 1.6 compared with workers who did not experience this type of conflict.

Conclusions. The results of this study indicate that there is a robust relationship between work–family conflict and smoking, but that this relationship is dependent upon the total amount of conflict experienced and the direction of the conflict. (*Am J Public Health.* 2012;102:1767–1772. doi:10.2105/AJPH.2011.300413)

Tobacco use is the foremost cause of preventable death and illness in the United States. Tobacco use, primarily in the form of cigarette smoking, is responsible for 1 in 5 deaths, or about 440 000 Americans every year,[1] and about 5 million people worldwide each year.[2] In addition to shortening human lives, tobacco also places a significant economic burden on society. Cigarette smoking is not distributed randomly among the population but is associated with social and economic disadvantage and stress.[3] Smoking is highest in groups with lower socioeconomic status and increasingly occurs in areas marked by low income, limited services, and chronic unemployment.[4–7] In addition, research on the relationship between working conditions and smoking has been the focus of public health research, which has demonstrated that smoking and occupation are linked and that job stress may be associated with increased levels of smoking.[8–11] Both the social environment and work-based factors have been demonstrated to be influential in determining tobacco use, but there has been little attention to date paid to smoking in relation to work–family conflict.

Work–family conflict refers to the expectations, demands, skills, or knowledge associated with one domain (e.g., work) affecting the other domain (e.g., family), with the term "conflict" implying that the 2 domains compete for the individual's time and energy in a negative interaction.[12] There are well-established links between work–family conflict and health outcomes, including depression and general well-being,[13–15] and the research has shown that the direction of the conflict (i.e., work interfering with family vs family interfering with work) is an important distinction to make when one is studying work–family conflict.[12] In addition to health outcomes, researchers are investigating links between work–family conflict and health behaviors, such as substance use and diet.[16,17] Work–family conflict has been found to be associated with alcohol consumption among diverse groups.[18–20] This association suggests the need to examine the relationship between work–family conflict and tobacco use, another substance believed to relieve stress.[21,22]

Finally, much of the work performed by workers in long-term-care facilities is both physically and emotionally demanding, provides relatively low wages, and is likely to be associated with adverse health consequences.[23–25] These characteristics make these workers important to consider when one is investigating the links between working conditions, work–family conflict, and health.

We examined the relationship between smoking and work–family conflict among workers in 4 New England long-term-care facilities. We assessed both the direction of work–family conflict (i.e., work-to-home vs home-to-work) and the effects of overall conflict (i.e., experiencing both forms of conflict) because we hypothesized that experiencing conflict in both directions may influence smoking likelihood more than experiencing conflict in 1 direction alone. We also examined the contributions of work and home factors as potential confounders because each may be separately associated with both smoking and work–family conflict.

METHODS

Our research team collected the data for this cross-sectional study in 4 extended-care facilities located in the Boston Metro area. This research was part of a larger study that examined how workplace policies, practices, and attitudes influence the cardiovascular health of employees. We chose this setting because many employees of extended-care facilities earn lower wages, are racially and ethnically diverse, and experience high levels of job strain.[26,27] Trained research assistants conducted in-person, structured interviews between September 2006 and July 2007. The interviews lasted about 40 minutes, were performed during the employee's work shift, and were conducted in English, Spanish, and Haitian Creole. As an incentive, all participants were given debit cards. The questionnaire contained items regarding employee characteristics, their experiences with workplace policies and practices, and health status. To recruit

participants, an introductory letter was distributed to all eligible employees (i.e., those who spoke English, Spanish, or Haitian Creole) inviting them to participate and giving them the opportunity to opt out if they did not wish to participate. After the opt-out period, study staff worked with department managers to schedule appointments for the interviewer-administered questionnaire. Four hundred fifty-two employees out of the 590 that were contacted completed the questionnaire, for a response rate of 76.6%. The study was approved by the institutional review board at the Dana Farber Cancer Institute, Boston, MA.

Measures

Smoking status was assessed with the question "Do you smoke cigarettes every day, some days, or not at all?" We dichotomized this 3-option response into yes or no by combining the "every day" and "some days" responses into "yes" and "not at all" into "no." We chose to dichotomize this variable because we were interested in smoking status and, for this study, less concerned about smoking intensity.

Work–family conflict was assessed with the following statements: "In the last month, I was preoccupied with my work while I was at home" (work-to-home conflict) and "In the last month, I was preoccupied with personal responsibilities while I was at work" (home-to-work conflict). Both items were adapted from standard measures.[28] The response categories were often, sometimes, rarely, and never. In the interest of easing interpretation of results, we recoded both variables into dichotomous variables by combining the "sometimes" and "often" responses into "yes," and the "rarely" and "never" responses into "no." We chose these cutpoints based on the distribution of responses.

To assess the effect of bidirectional work–family conflict (i.e., experiencing both home-to-work and work-to-home conflict), we created a third variable out of the 2-directional work–family conflict variables. This variable had 3 possible response categories. We coded participants who reported experiencing either type of conflict rarely or never as having "no conflict at all"; we coded participants who reported experiencing 1 type of conflict often or sometimes, but the other type of conflict rarely or never, as experiencing "unidirectional conflict"; and we coded participants who reported experiencing both types of conflict often or sometimes as experiencing "bidirectional conflict." We chose these cutpoints because we were interested in investigating the relationship of work–family conflict, either in both directions or regardless of direction, to tobacco use.

Confounders

Individual characteristics that we assessed included gender, age, race/ethnicity, nativity, level of education, annual household income, and alcohol consumption. We used standard measures to assess gender, age, and race/ethnicity. We transformed race/ethnicity into a dichotomous variable that represented White race/ethnicity versus all other race/ethnicity categories. We assessed nativity with the question: "In what country were you born?" We coded responses for any country other than the United States as "foreign-born" and coded those born inside the United States as "native-born." We assessed level of education with the question, "How much schooling have you had?" We combined the response categories into a dichotomous variable: 4-year college graduate and graduate degree versus those with less education. To assess income, respondents were asked about their yearly household income from all sources. We collapsed response categories into the following 4 categories: less than $30 000, $30 000 to $49 999, $50 000 to $69 999, and $70 000 or more. To assess alcohol consumption, participants were asked the average number of days they had consumed alcohol and, on those days, the average number of drinks they consumed. We combined responses to reflect average number of alcoholic drinks per day.

We assessed the following workplace factors: job control–demand attributes, shift worked, job flexibility, total hours worked per week, and occupation. We assessed Karasek control–demand job attributes with a 12-item questionnaire.[29] We combined these items into a categorical variable that represented all possible combinations of control (high vs low) and job demand (high vs low) to create the following categories: (1) low strain (high control, low demand), (2) high strain (low control, high demand), (3) passive (low control, low demand), and (4) active (high control, high demand). Total hours worked per week was assessed by asking participants how many hours they worked per week. To assess occupation, participants were asked their job title or occupation; we collapsed this response into a dichotomous variable that divided workers who provided direct patient care from those that did not. Job flexibility was assessed by asking participants about (1) the ease of taking time off, with both short notice and with more time, and (2) whether they were able to choose their start and quit times. We dichotomized responses into yes or no categories. Finally, participants were asked to identify the shift they usually work; response categories were (1) day (7 AM–3 PM), (2) evening (3 PM–11 PM), and (3) night (11 PM–7 AM).

We assessed the following home–family factors: whether the participant was married or living with a partner, the number of people that were supported by that individual's income, and how many children aged 18 years or younger were living at home. To assess marital status and number of children living at home, participants were asked, first, how many people lived with them, and, second, to give specific information about each household member. This information was summarized into (1) marital status or living with a partner, and (2) number of children living at home. To assess the number supported by the respondent's income, each participant was asked how many people are currently supported by their income. We grouped responses to this item into the following categories: 1 person, 2 people, and 3 or more people.

Analysis

To investigate the association between work–family conflict and smoking likelihood, we built 3 separate logistic regression models, 1 model for each of the 3 work–family conflict variables. The reference category for home-to-work conflict was "no home-to-work conflict," the reference category for work-to-home conflict was "no work-to-home conflict," and the reference category for overall conflict was "no conflict at all" (with unidirectional conflict and bidirectional conflict as 2 categories that we compared with the reference category). We chose to create 3 separate models (one for work-to-home conflict, one for home-to-work conflict, and another for overall conflict)

because, based upon the work–family conflict literature, the direction of the conflict is important and is almost always considered separately.[12,30] The models that consider home-to-work conflict and work-to-home conflict separately are based upon this previous work. In addition to these first 2 models, we decided to run a third model that examined the effect of overall conflict on smoking behavior, as we wanted to investigate the possibility that those who were most affected by work–family conflict were those who experienced it in both directions (i.e., work-to-home and home-to-work). This variable was created with 3 levels (no conflict at all, unidirectional conflict, and bidirectional conflict) to have 3 mutually exclusive categories.

We considered the following variables as potential confounders in the relationship between smoking and work–family conflict: age, education, gender, nativity, race/ethnicity, alcohol use, marital status, number of children, annual household income, number of people supported by income, Karasek job control/demand attributes, occupation, job flexibility, hours worked per week, and work shift. If inclusion of that variable modified the b coefficient by more than 5%, it was included as a covariate in the model. Thus, we included the following variables as covariates in all models: education, nativity, race/ethnicity, number of children, number supported by income, Karasek job control–demand attributes, and work shift. Furthermore, we adjusted all models for the fixed effect of the worksite by including 3 "dummy" variables to represent the 4 worksites in each model (worksite refers to the specific extended care facility at which the employee worked).

RESULTS

We included a total of 439 participants in the analysis. Participants were mostly female (82.5%) and older, as about half (49.7%) were aged between 40 and 64 years (Table 1). The sample was racially/ethnically diverse, as 35.5% identified as non-Hispanic Black, 42.4% identified as non-Hispanic White, 14.6% identified as another non-Hispanic race, and 7.5% identified as Hispanic or Latino. Furthermore, there was diversity in national origin, as more than half of the sample (55.1%) indicated that they were foreign-born. About a third (29.4%) of the sample indicated that they had obtained a high-school or general equivalency diploma education, 39.6% had attended some college, and 15.7% had earned a college degree or graduate degree.

The prevalence of smoking was 19.3% (86 of 439) in this sample of nursing home workers. Among those who smoked, 23.3% reported experiencing neither work-to-home nor home-to-work conflict; 43% reported that they experienced conflict in 1 direction (i.e., either work-to-home or home-to-work) but not in both directions; and 33.7% reported experiencing conflict sometimes or often in both directions. Among those who smoked, 65.1% worried about personal matters while at work (i.e., home-to-work conflict), and 45.3% worried about work while at home (i.e., work-to-home conflict).

We assessed the unadjusted relationship between work–family conflict and smoking likelihood first, then we created 3 separate multivariate logistic regression models to further investigate the relationship. Each model adjusted for the effects of education, nativity, race/ethnicity, number of children, number supported by income, job control and demand, work shift, and worksite.

The odds of smoking for those who reported experiencing only 1 type of conflict were 1.54 (95% confidence interval [CI] = 0.85, 2.78) compared with no conflict at all, and the odds of smoking for those who reported experiencing both types of conflict were 2.11 (95% CI = 1.12, 3.97) compared with no conflict at all. The odds of smoking for participants who reported experiencing home-to-work conflict, compared with those who reported no such conflict, were 1.90 (95% CI = 1.16, 3.10). The odds of smoking for those who reported work-to-home conflict, compared with those who reported no such conflict were 1.26 (95% CI = 0.79, 2.03).

The first logistic regression model that controlled for all relevant confounders assessed the relationship between the 3-level directional work–family conflict variable and smoking likelihood. For participants who reported both types of conflict, the odds of smoking were 3.11 compared with participants who experienced no conflict at all (95% CI = 1.48, 6.56). For participants who experienced either work-to-home conflict or home-to-work conflict, but not both, the odds of smoking were 1.46 (95% CI = 0.75, 2.85) compared with no conflict at all.

The second logistic regression model assessed the relationship between home-to-work conflict (i.e., feeling preoccupied with personal responsibilities while at work) and smoking likelihood, with control for all relevant confounders. The results of this model indicated that, on average, for participants who experienced home-to-work conflict, the odds of smoking were 2.3 compared with participants who reported no such conflict (95% CI = 1.31, 4.10).

The final model assessed the relationship between work-to-home conflict (i.e., feeling preoccupied with work while at home) and smoking likelihood. This model indicated that, on average, for participants who experienced work-to-home conflict, the odds of smoking were 1.55 compared with those who reported no such conflict (95% CI = 0.89, 2.69).

DISCUSSION

The purpose of this study was to investigate the relationship between work–family conflict and smoking among a sample of nursing home workers. We found that work–family conflict does significantly contribute to smoking likelihood and that, when this conflict is experienced in both directions (i.e., being preoccupied with personal matters while at work and preoccupied with work while at home), the influence on smoking is the greatest. This finding indicates a possible gradient, such that, when work–family conflict is experienced in both directions (i.e., from home-to-work and from work-to-home), it increases the likelihood of smoking more than experiencing 1 type of conflict alone.

When we examined each direction of conflict separately, we found that conflict had differential effects on smoking likelihood depending on the direction of the conflict. We discovered a robust relationship between home-to-work conflict and smoking likelihood, as participants who were preoccupied with personal matters while at work were significantly more likely to smoke. But the relationship between smoking and work-to-home conflict (i.e., being preoccupied with work while at home) was much weaker. This finding highlights the importance of directionality in

TABLE 1—Participant Characteristics by Exposure Category: Interviewed Workers at 4 Extended Care Facilities in the Boston Metropolitan Area, September 2006 to July 2007

	Overall (n = 439), No.	No Conflict (n = 142), No. (%)	Unidirectional Conflict (n = 184), No. (%)	Bidirectional Conflict (n = 113), No. (%)
Smokers	86	20 (23.3)	37 (43.0)	29 (33.7)
Gender				
Male	77	29 (37.7)	25 (32.5)	23 (29.9)
Female	362	113 (31.2)	159 (43.9)	90 (24.9)
Age, y				
18–25	65	24 (36.9)	32 (49.2)	9 (13.9)
26–39	137	38 (27.7)	66 (48.2)	33 (24.1)
40–64	218	72 (33.0)	79 (36.2)	67 (30.7)
≥ 65	18	8 (44.4)	6 (33.3)	4 (22.2)
Race/ethnicity				
Non-Hispanic Black	156	49 (31.4)	55 (35.3)	52 (33.3)
Non-Hispanic White	186	57 (30.6)	87 (46.8)	42 (22.6)
Non-Hispanic Other	64	26 (40.6)	26 (40.6)	12 (18.8)
Hispanic	33	10 (30.3)	16 (48.5)	7 (21.2)
Nativity				
Foreign-born	242	82 (33.9)	93 (38.4)	67 (27.7)
US-born	197	60 (30.5)	91 (46.2)	46 (23.4)
Education				
< high school	67	24 (35.8)	22 (32.8)	21 (31.3)
High school or GED	129	44 (34.1)	57 (44.2)	28 (21.7)
Some college	174	48 (27.6)	77 (44.3)	49 (28.2)
College graduate or graduate degree	69	26 (37.7)	28 (40.6)	15 (21.7)
Annual household income, $				
< 30 000	92	27 (29.4)	36 (39.1)	29 (31.5)
30 000–49 000	107	36 (33.6)	47 (43.9)	24 (22.4)
50 000–69 000	73	28 (38.4)	32 (43.8)	13 (17.8)
≥ 70 000	122	37 (30.3)	53 (43.4)	32 (26.2)
Married	247	81 (32.8)	99 (40.1)	67 (27.1)
Persons supported by income, no.				
1	44	18 (40.9)	16 (36.4)	10 (22.7)
2	91	32 (35.2)	41 (45.1)	18 (19.8)
≥ 3	304	92 (30.3)	127 (41.8)	85 (28.0)
Children aged ≤ 18 y				
0	211	78 (37.0)	86 (40.8)	47 (22.3)
1	111	25 (22.5)	56 (50.5)	30 (27.0)
2	88	33 (37.5)	31 (35.2)	24 (27.3)
≥ 3	29	6 (20.7)	11 (37.9)	12 (41.4)
Job control–demand category[a]				
Low strain	136	50 (36.8)	57 (41.9)	29 (21.3)
High strain	111	28 (25.2)	52 (46.9)	31 (27.9)
Passive	85	29 (34.1)	32 (37.7)	24 (28.2)
Active	107	35 (32.7)	43 (40.2)	29 (27.1)

Continued

TABLE 1—*Continued*

Shift worked				
Day	270	90 (33.3)	112 (41.5)	68 (25.2)
Evening	101	27 (26.7)	49 (48.5)	25 (24.8)
Night	68	25 (36.8)	23 (33.8)	20 (29.4)

Note. GED = general equivalency diploma.
[a]Low strain = high control, low demand; high strain = low control, high demand; passive = low control, low demand; and active = high control, high demand.

the relationship between smoking and work–family conflict.

Most research that deals with the work–family interface addresses the bidirectional nature of conflict by regarding work-to-home conflict as separate and distinct from home-to-work conflict, and generally considers work-to-home conflict and home-to-work conflict as 2 theoretically separate and distinct concepts.[12] Our findings highlight the importance of this previous work, as the strength and significance of the relationship between work–family conflict and smoking depends on the direction of the conflict. Our finding that home-to-work conflict influences smoking, but work-to-home conflict does not, may perhaps be explained by the psychological precedence of personal and family life over work life, as the greater emotional engagement of home and family may make it a more powerful contributor to coping behaviors such as smoking.[12] Furthermore, although there has been little research that has investigated the relationship between work–family conflict and smoking, the single study that examined this relationship reported results that were similar to the findings of the present study, finding that home-to-work, but not work-to-home, conflict was associated with smoking.[17]

As there is a literature that reports an association between smoking and workplace factors, including policies such as smoking bans,[5–7,31] another important aim of this study was to, as exhaustively as possible, control for home and workplace factors that independently predict smoking behavior. This strategy was employed to lessen the possibility that work or home factors alone accounted for the association between work–family conflict and smoking. Furthermore, although we did not collect data on worksite-level tobacco policies, because we were able to adjust for the effect of belonging to a particular worksite, the effect that workplace smoking bans and other worksitewide policies would have on our results is negligible. We found that after we controlled for a wide array of workplace factors and home factors, the relationship between work–family conflict and smoking did not lessen.

A key strength of this study was the ability to look at the relationship between work–family conflict and tobacco use, as this important topic has received little attention in either the public health or the sociology literatures. Other strengths of our study include a high response rate, the inclusion of a very diverse group of predominantly low-wage workers, and a clear gradient in the results.

A limitation of this research was its cross-sectional design, and, because there is no time component in the design, it is impossible to attribute a causal relationship to the associations between work–family conflict and smoking. It is possible that smoking is causing the work–family conflict. The economic burden and health consequences of smoking can contribute to increased stress at home, as tobacco use can significantly affect family budgets, because of the cost of cigarettes and the increased cost of health care that result from tobacco use.[2]

Second, it is possible that those who recently quit smoking would report more work–family conflict because of the recent elimination of an important coping mechanism.[32] Third, the smoking measure that was available in the data set and used in this study, though brief, was not the most well-validated measure for self-reported smoking available.[33] Finally, we may not have measured, and therefore controlled for, all relevant confounders. Although much of the varied dimensions of work life were measured and accounted for, the complexities of home life may not have been sufficiently represented. Other aspects of home life that have been demonstrated to be important in predicting tobacco use that were not present in this study include attitudes toward smoking, communication within the household, partner support, household smoking bans, presence of other smokers in the household, and emotional attachments among family members.[34–36] It is possible that there are innate psychological or personality factors or childhood experiences that contribute to susceptibility to both work–family conflict and smoking.

Tobacco-control policies have heavily influenced smoking rates in the United States. The findings of this study show a relationship between smoking and work–family conflict and identify a possibly fruitful area for tobacco intervention and control as well as workplace policies related to reducing work–family conflict. However, because there is very little research on this topic, and the research that has been conducted uses small samples and cross-sectional designs, the next step in the link between smoking and work–family conflict is replication in studies with larger samples and study designs that contain a time component. Should the findings presented in this study be replicated, there is potential for workplace policies and programs to alleviate work–family conflict and by doing so decrease smoking rates among their workers. ■

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Contributors

All of the authors made substantial and direct intellectual contributions to the article. C. C. Nelson conceptualized the study, performed the analysis, and wrote the article. Y. Li contributed to the analysis plan, provided feedback during previous iterations of the analysis, and aided in the interpretation of results. G. Sorensen and L. F. Berkman contributed to the conceptualization of the study and the interpretation of results, and provided comments on previous drafts of the article. All authors approved the final version of the article.

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Human Participant Protection

This study was approved by the institutional review board at the Dana Farber Cancer Institute, Boston, MA.

References

1. NIH State-of-the-Science Panel. National Institutes of Health State-of-the-Science Conference Statement: Tobacco use: prevention, cessation, and control. *Ann Intern Med.* 2006;145(11):839–844.

2. *WHO Report on the Global Tobacco Epidemic: Implementing Smoke-Free Environments.* Geneva, Switzerland: World Health Organization; 2009.

3. Graham H, Inskip HM, Francis B, Harman J. Pathways of disadvantage and smoking careers: evidence and policy implications. *J Epidemiol Community Health.* 2006;60(Suppl 2):7–12.

4. Graham H. Why social disparities matter for tobacco-control policy. *Am J Prev Med.* 2009;37(2 Suppl):S183–S184.

5. Sanderson DM, Ekholm O, Hundrup YA, Rasmussen NK. Influence of lifestyle, health, and work environment on smoking cessation among Danish nurses followed over 6 years. *Prev Med.* 2005;41(3-4):757–760.

6. Eriksen W. Work factors and smoking cessation in nurses' aides: a prospective cohort study. *BMC Public Health.* 2005;5:142.

7. Li W, Land T, Zhang Z, Keithly L, Kelsey JL. Small-area estimation and prioritizing communities for tobacco control efforts in Massachusetts. *Am J Public Health.* 2009;99(3):470–479.

8. Albertsen K, Borg V, Oldenburg B. A systematic review of the impact of work environment on smoking cessation, relapse and amount smoked. *Prev Med.* 2006;43(4):291–305.

9. Sorensen G, Barbeau E, Hunt MK, Emmons K. Reducing social disparities in tobacco use: a social–contextual model for reducing tobacco use among blue-collar workers. *Am J Public Health.* 2004;94(2):230–239.

10. Sorensen G, Quintiliani L, Pereira L, Yang M, Stoddard A. Work experiences and tobacco use: findings from the Gear up for Health study. *J Occup Environ Med.* 2009;51(1):87–94.

11. Barbeau EM, McLellan D, Levenstein C, DeLaurier GF, Kelder G, Sorensen G. Reducing occupation-based disparities related to tobacco: roles for occupational health and organized labor. *Am J Ind Med.* 2004;46(2):170–179.

12. Greenhaus JH, Beutell NJ. Sources of conflict between work and family roles. *Acad Manage Rev.* 1985;10(1):76–88.

13. Kinnunen U, Feldt T, Geurts S, Pulkkinen L. Types of work–family interface: well-being correlates of negative and positive spillover between work and family. *Scand J Psychol.* 2006;47(2):149–162.

14. Hammer TH, Saksvik PO, Nytro K, Torvatn H, Bayazit M. Expanding the psychosocial work environment: workplace norms and work–family conflict as correlates of stress and health. *J Occup Health Psychol.* 2004;9(1):83–97.

15. Allen TD, Herst DEL, Bruck CS, Sutton M. Consequences associated with work-to-family conflict: a review and agenda for future research. *J Occup Health Psychol.* 2000;5(2):278–308.

16. Devine CM, Jastran M, Jabs J, Wethington E, Farell TJ, Bisogni CA. "A lot of sacrifices": work–family spillover and the food choice strategies of low-wage employed parents. *Soc Sci Med.* 2006;63(10):2591–2603.

17. Frone MR, Barnes GM, Farrell MP. Relationship of work–family conflict to substance use among employed mothers: the role of negative affect. *J Marriage Fam.* 1994;56(4):1019–1030.

18. Wang M, Liu S, Zhan Y, Shi J. Work–family conflict and alcohol use: testing the cross-level moderation effects of peer drinking norms and social support. *J Appl Psychol.* 2010;95(2):377–386.

19. Grzywacz JG, Marks NF. Family, work, work–family spillover and problem drinking during midlife. *J Marriage Fam.* 2000;62(2):336–348.

20. Wang J, Afifi TO, Cox B, Sareen J. Work–family conflict and mental disorders in the United States: cross-sectional findings from the National Comorbidity Survey. *Am J Ind Med.* 2007;50(2):143–149.

21. Hull JG. A self-awareness model of the causes and effects of alcohol consumption. *J Abnorm Psychol.* 1981;90(6):586–600.

22. Steele CM, Josephs RA. Drinking your troubles away II: an attention–allocation model of alcohol's effect on psychological stress. *J Abnorm Psychol.* 1988;97(2):196–205.

23. Devine CM, Connors MM, Sobal J, Bisogni CA. Sandwiching it all in: spillover of work into food choices and family roles in low- and moderate-income urban households. *Soc Sci Med.* 2003;56(3):617–630.

24. Coltrane S. Research on household labor: modeling and measuring the social embeddedness of routine family work. *J Marriage Fam.* 2000;62(4):1208–1233.

25. Bettio F, Simonazzi A, Villa P. Change in care regimes and female migration: the 'care drain' in the Mediterranean. *J Eur Soc Policy.* 2006;16(3):271–285.

26. Berkman LF, Buxton O, Ertel KA, Okechukwu C. Managers' practices related to work–family balance predict employee cardiovascular risk and sleep duration in extended care settings. *J Occup Health Psychol.* 2010;15(3):316–329.

27. Ertel KA, Koenen KC, Berkman LF. Incorporating home demands into models of job strain: findings from the work, family, and health network. *J Occup Environ Med.* 2008;50(11):1244–1252.

28. MacDermid MM. *The Measurement of Work–Life Tension: Recommendations of the Virtual Think Tank.* Sloan Work and Family Literature Database; 2000. Available at: http://workfamily.sas.upenn.edu. Accessed June 7, 2012.

29. Karasek RA. Job demands, job decision latitude, and mental strain: implications for job redesign. *Adm Sci Q.* 1979;24(2):285–307.

30. Frone MR, Russell M, Cooper ML. Antecedents and outcomes of work–family conflict: testing a model of the work–family interface. *J Appl Psychol.* 1992;77(1):65–78.

31. Fichtenberg CM, Glantz SA. Effect of smoke-free workplaces on smoking behavior: systematic review. *BMJ.* 2002;325(7357):188.

32. Spector PE. A consideration of the validity and meaning of self-report measures of job conditions. In C.L. Cooper and I.T. Robertson (eds.) *International Review of Industrial and Organizational Psychology*, 7. New York: Wiley;1992:123–151.

33. Hughes JR, Keely JP, Niaura RS, Ossip-Klein DJ, Richmond RL, Swan GE. Measures of abstinence in clinical trials: issues and recommendations. *Nicotine Tob Res.* 2003;5(1):13–25.

34. DiNapoli PP. Early initiation of tobacco use in adolescent girls: key sociostructural influences. *Appl Nurs Res.* 2009;22(2):126–132.

35. Scragg R, Reeder AI, Wong G, Glover M, Nosa V. Attachment to parents, parental tobacco smoking and smoking among year 10 students in the 2005 New Zealand national survey. *Aust N Z J Public Health.* 2008;32(4):348–353.

36. Key JD, Marsh LD, Carter CL, Malcolm RJ, Sinha D. Family-focused smoking cessation: enhanced efficacy by the addition of partner support and group therapy. *Subst Abus.* 2004;25(1):37–41.