

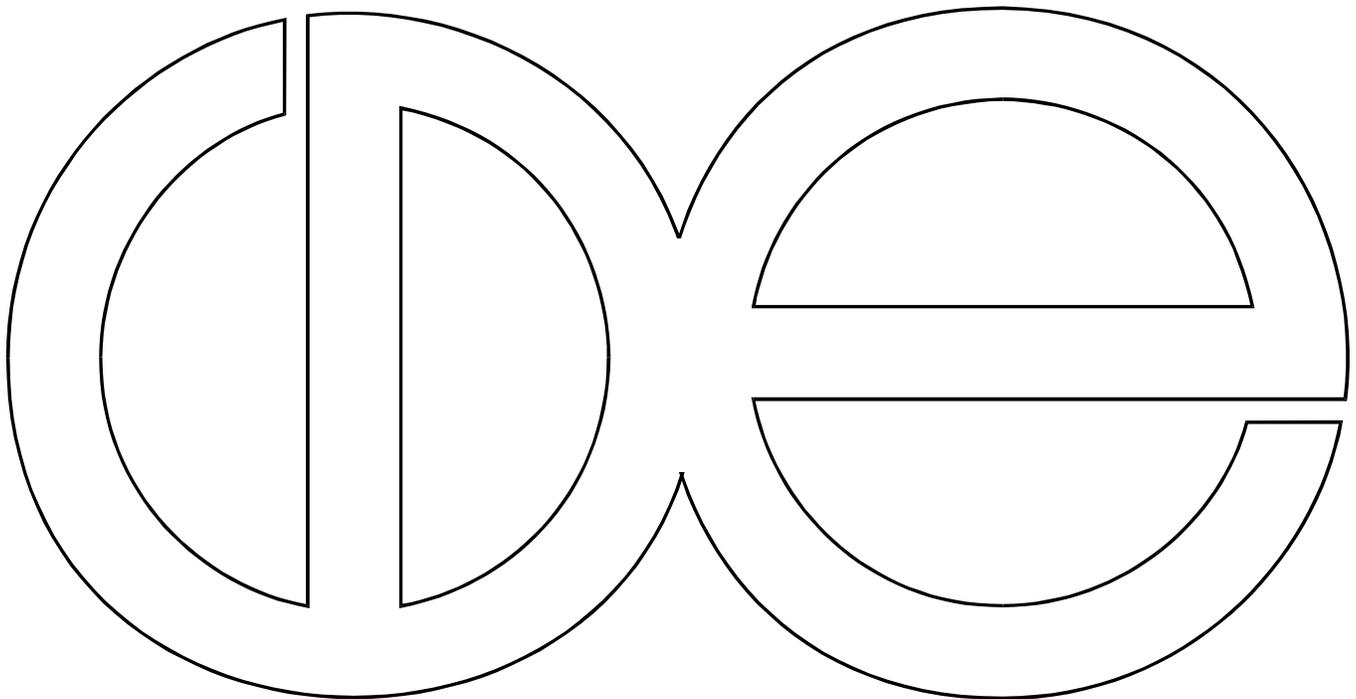
**Center for Demography and Ecology  
University of Wisconsin-Madison**

**Contributions of Job Strain and  
Workaholism to Work-Family Conflict**

**Brian C. Martinson**

**Joan M. Griffin**

**CDE Working Paper No. 2003-24**



Running head: Contributions Of Job Strain And Workaholism To Work-Family Conflict

Revised 2003-12-24

Contributions Of Job Strain And Workaholism To Work-Family Conflict

Brian C. Martinson, Ph.D.

HealthPartners Research Foundation

Minneapolis, Minnesota

Joan M. Griffin, Ph.D.

Center for Chronic Disease

Outcomes Research (CCDOR)

Minneapolis VA Medical Center

Minneapolis, Minnesota

### Abstract

Work and family influence the health and health behaviors of employed adults, especially when these domains have conflicting or competing demands. The extent to which work-family conflict is a function of extrinsic factors, such as the organization of work vs. an individual's work habits, remains unclear. We conducted a mail survey of randomly selected working men (n=655) and women (n=825), ages 30-65, enrolled in a large managed care organization (MCO) to investigate the relationships among workplace characteristics, work habits and work-family conflict. Standard scale items assessed job demands, job control (skill discretion, decision authority) and social support. Using cluster analysis to assess multiple dimensions of work behavior, we classified workers into one of three categories of work habits: workaholic (n=186), unengaged (n=558), and average workers (n=642). We measured work to family conflict by asking respondents how frequently work responsibilities intruded into their family life and the level of distress caused by these intrusions. In multivariate regression models adjusted for age, sex, marital status, major occupational group, and educational attainment, we observed significant and independent associations between measures of workplace characteristics, work habits, and work-family conflict. More specifically we observed significant associations between work-family conflict and social support ( $b=-0.30$ ,  $p<.01$ ), decision authority ( $b=-0.51$ ,  $p<.01$ ), and a significant interaction effect between job demands and skill discretion ( $b=0.27$ ,  $p<.01$ ). Workaholics reported significantly higher work-family conflict ( $b=1.45$ ,  $p<.01$ ), while unengaged workers reported significantly lower work-family conflict ( $b=-0.80$ ,  $p<.01$ ). We found no interaction between work environment and work habits. The issue of workaholism needs to be included in discussions of policies to reduce work-family conflict.

## Introduction

Over the last two decades dramatic changes in the labor market, especially the increasing number of women and dual-career couples in the workforce, have hastened the need for equally dramatic changes in policies that take into consideration the competing demands of work and family. Despite a growing interest from employers, labor advocates, and the popular press and government-sponsored initiatives for research to examine the interface between work and family, questions still remain about the causes and consequences of work-family conflict. Much of the recent research has concentrated not on the antecedents that lead to conflict, but on the deleterious consequences that can arise from the competing demands from both domains, leaving a gap in the evidence base that is needed to inform future policy and interventions to prevent or reduce work to family conflict. Questions remain as to whether there are specific job conditions, work characteristics, or working behaviors that lead to greater conflict between domains. In this study we attempt to address this gap by examining whether work-related behavior and psychosocial working conditions are independent predictors of work to family conflict in a sample of salaried workers. In addition to theory from occupational health psychology on job stress, we address in detail the emerging theories and conceptualizations from psychology and organizational sociology of workaholism and, using an integration of these perspectives, test our hypothesis. Specifically we hypothesize that work-related behavior, such as excessive or workaholic behavior patterns, predict work-family conflict independently of job conditions, conceptualized as job demands, decision latitude, and social support.

## Background

### Work family interface

The work-family interface is a term that most often describes the intersections of the social roles that are associated with these two domains of life. Within this literature researchers have concentrated much of their effort on work-family conflict, or the conflict that arises when one's effort to perform tasks in one domain interferes or is incompatible with the demands imposed by the other (Greenhaus & Beutell, 1985). In recent studies, researchers have recognized that different stressors may affect the direction of conflict, and as a result, they have encouraged others to specify and measure whether the conflict originates from work interfering with family-related responsibilities (work to family conflict or WFC) or from family-related responsibilities interfering with work (family to work conflict or FWC). This distinction is considered essential for developing a more precise understanding of the antecedents and consequences of work-family conflict that can be used to inform future policy. Our data did not extend into possible family stressors and involvement, but instead converged on working behaviors and the work environment. We concentrate our efforts, therefore, solely on WFC.

While more recent reviews of the literature have summarized the deleterious consequences of work to family conflict on life and job satisfaction (Kossek & Ozeki, 1998), turnover, absenteeism, and mental and physical health (Allen, Herst, Bruck, & Sutton, 2000), fewer studies have examined its antecedents. In a 1985 review of 18 studies, Greenhaus and Beutell (Greenhaus & Beutell, 1985) identified important links between time constraints, role conflict and ambiguity, lack of autonomy, lack of support, and psychological demands to work-family conflict. They also recognized some evidence linking work-family conflict to behavior, and suggest that excessive work involvement or commitment to work that are often linked to career success may also lead to WFC. (p.85) Frone (Frone, Russell, & Cooper, 1992) built on this work and work from others to develop a larger conceptual model of the work-family interface, of which the antecedents of WFC

were both job stressors and job involvement. While Frone's larger model presents a more comprehensive representation of the possible direct and indirect relationships among these antecedents, WFC, FWC and potential consequences, we concentrate our hypotheses on one part of this model: the relationship between job stressors, patterns of excessive job involvement and WFC. We suggest that job stress and workaholism independently lead to work-family conflict, even after adjusting for differences in age, gender, family composition, and occupational status.

### Job stressors

In occupational health psychology, the dominant model used to conceptualize how job stressors lead to poor health outcomes has been Karasek's job strain or demand/control model (Karasek & Theorell, 1990; Karasek, 1979). This model has played a pivotal part in the process of conceptualizing job stress, and is the most recognized and widely-used model to describe the psychosocial work environment's effect on health. The model posits that psychosocial job conditions, namely the psychological demands and level of worker control, are differentially distributed across occupational groups and that workers with jobs that are demanding, yet lack a sufficient degree of control over the work process are at the greatest risk for psychological strain that, in turn, can lead to psychological distress and poor physical health outcomes. Job demands are most frequently conceptualized as the pace, effort, and volume of work, while control is typically examined in terms of "decision latitude." Decision latitude, more specifically, is considered to be comprised of decision authority, or the authority to make decisions concerning the work, and skill discretion, or the ability to use one's skills at work. By testing the possible effects of social support on the demand-control relationship, Johnson, Hall and Theorell further modified the model to show that jobs that pose the greatest risk to health and mortality are those

with high demands, low decision latitude and low social support (Johnson, Hall, & Theorell, 1989).

The job strain model has been used extensively to predict all-cause mortality (Amick et al., 2002; Falk, Hanson, Isacsson, & Ostergren, 1992) cardiovascular disease (Alfredsson, Hammar, & Hogstedt, 1993; Schnall, Landisbergis, & Baker, 1994) and mortality (Alterman, Shekelle, Vernon, & Bureau, 1994; Johnson et al., 1989; Kivimaki et al., 2002), precursors to cardiovascular disease (Schnall, Schwartz, Landsbergis, Warren, & Pickering, 1992), and other outcomes associated with psychological and physical strain, such as musculoskeletal disorders (Nahit, Pritchard, Cherry, Silman, & Macfarlane, 2001; Skov, Borg, & Orhede, 1996; Waldenstrom et al., 2002), psychological disorders (Cropley, Steptoe, & Joeke, 1999; Mausner-Dorsch & Eaton, 2000; Stansfeld, Fuhrer, Shipley, & Marmot, 1999) and workplace injuries (Murata, Kawakami, & Amari, 2000; Myers et al., 1999). It has been used only infrequently in studies of work-family conflict (Duxbury, Higgins, & Lee, 1994), even though identified antecedents to WFC are often characterized in similar terms to components measured within the model: high psychological demands (including time demands), lack of control or autonomy, and lack of social support (Voydanoff, 1988a, 1988b).

### Workaholism

Separate from, but possibly related to issues of job strain (Greenberger, Porter, Miceli, & Strasser, 1991) is the concept of workaholism. This term, although commonly used and frequently seen and heard in the popular press, has not been as thoroughly studied as job strain and its definition, meaning, and potential sequelae remain understudied. In this section we describe and summarize how various disciplines have conceptualized workaholism.

Within the psychological literature, three inter-related explanations have been proposed for why people engage in excessive work behavior. One line of thinking about workaholism has taken to heart the term's implied reference to chemical addictions such as alcoholism (Killinger, 1991; Robinson, 1998; Schaefer & Fassel, 1990), and has focused on the potentially addictive nature of the rewards (both intrinsic and extrinsic) frequently associated with work (Oates, 1971; Porter, 1996). A second line of thinking is that excessive work effort may reflect an underlying obsessive-compulsive personality disorder (Naughton, 1987). A third, less dramatic psychological explanation of excessive work is based on the notion that some people simply derive such fulfillment, pleasure, and enjoyment from their work that they have a tendency to lose themselves in it (Machlowitz, 1980; Scott, Moore, & Miceli, 1997). What these three perspectives share in common is a view of the phenomenon of excessive work focused inwardly on the foibles, frailties, or pathologies of individual workers. While such aspects of individual workers almost certainly come into play for some individuals, these perspectives are limited by their inattention to potential systemic or environmental factors that may explain the tendency toward excessive work for many.

Over the past several years, a variety of writers in the popular press have argued that work in the Western world during the late 20<sup>th</sup> and early 21<sup>st</sup> centuries has become, for many, a hyper-individualistic, and often all-consuming quest for meaning, self-actualization, and social status (Ciulla, 2000; Hochschild, 1998; Nash, 1994; Schor, 1993). While the explanations described above focus on largely non-rational responses to work, others have sought to understand workaholism in terms of a generally rational response on the part of individuals to both positive and negative environmental conditions and incentives. Clearly, the possible explanations for why people work excessively are many and varied. We find the concept of individuals' responses to incentives a potentially important unifying principle. Individuals may work

excessively in response to positive incentives such as the intrinsic rewards they derive from their work, or from the more utilitarian aspects of monetary gain and material consumption that such work may provide. By contrast, individuals may also work excessively in response to negative incentives such as attempting to avoid or escape consumer debt. More darkly, in a competitive work culture, some may work excessively out of fear that if they are not perceived by their bosses, supervisors, and peers as striving to excel, they may be passed over for promotions or raises, and may be at greater risk of layoff than their more workaholic peers. Excessive work may also derive from the normative standard of judging work productivity in terms of total per-worker output, rather than worker output per hour worked. Finally, for some, working excessively may provide a positively sanctioned refuge from difficult family relationships, responsibilities, or obligations.

The U.S. has been characterized as having a “culture of over-work.” (Andresky Fraser, 2001)(p. 200). Most recently, Joe Robinson has argued that excessive work can be described as a sort of bravado, arising naturally from the fact that we live our lives embedded in a culture that values productive endeavor above all else (Robinson, 2003). With such cultural imperatives operating, the potential linkages between excessive work and WFC become obvious, with or without suppositions of illness or pathology of individual workers.

And yet, while the term “workaholism” is commonly used in the popular press and everyday conversation, the concept is currently not well defined. Over the past two decades, research in the business management, organizational behavior, and human resources literatures has begun to explore the role of person-level factors and coping strategies, (excessive work-effort and other control-enhancing strategies, in particular), as determinants of outcomes directly affecting organizations, including job satisfaction, productivity, and turnover (Porter, 1996; Rabinowitz & Hall, 1977; Scott et al., 1997; Spence & Robbins, 1992). Unfortunately, little of this

work has formally examined the impact of workaholism on families or on outcomes of work to family conflict. In our review of the academic literatures, we have found only one study attempting to develop empirical measures of workaholism (Spence & Robbins, 1992), one study that has applied these measures to examine the relationship between workaholism and work-life conflict (Bonebright, Clay, & Ankenman, 2000), and one study that has endeavored to offer a theoretically based definition of the term (Scott et al., 1997). Our paper extends this line of research by integrating the empirical work of Spence and Robbins with the theoretical expectations of Scott et al. to develop a new empirical measure of workaholism. As with work itself, the idea of excessive work effort is complex and multi-dimensional. We have chosen here to measure the concept in terms of experiential and behavioral components, since motivational and attitudinal aspects are not as readily captured with a cross-sectional survey study design.

This study combines theory from the job strain literature with more recent organizational literature on person-level factors. Common themes in these literatures are the importance of “control” in the work setting, and excessive or compulsive work effort. Examined together, these literatures suggest the possibility that excessive work behavior may be an expected response to perceptions of a lack of control, or a reduction in control among workers who formerly felt a high level of control. For this reason we hypothesized that a combination of person level, namely excessive or compulsive work behaviors, and psychosocial work characteristics would predict work to family conflict.

## Methods

### Sample

Data from this study come from a postal survey of working men and women who were insured and received health care from a large Midwestern managed care organization. Participants

were identified using a two-stage sampling procedure. First a subset of both large and small employer groups that purchase health insurance from the organization and represent a range of companies and institutions with predominately salaried, professional employees were selected. The employer groups chosen included colleges and universities, law firms, publishers, insurance, financial, and investment firms, defense contractors, medical groups, hospitals, real estate firms, marketing companies, and consultant firms. For the second stage of the procedure, a random sample of 3,000 male and female employees, between the ages of 30 and 65, from all of the selected employer groups were chosen and asked to complete the study's mailed survey. We targeted salaried workers for two reasons. First, the nature of salaried work may be more conducive to excessive work patterns than hourly work. In general the expectations for salaried workers are that they complete their work duties and meet their deadlines whatever the time requirements may be. Second, salaried work may be differentially selective of individuals with personality traits that impel them towards excessive work.

### Measures

#### Dependent variable

Work-family conflict. To assess WFC, participants were asked to report how frequently they missed family activities or obligations because of work or work-related responsibilities and the level of distress caused by the conflict (Fox & Dwyer, 1999). Frequency and distress scores ranging from 1 to 4 were then multiplied to create a WFC score from 1 to 16.

#### Independent variables

Work environment scales. For this study we assessed job demands, decision latitude and social support using a series of statements based on items in Karasek's Job Content Questionnaire (JCQ) (Karasek, Gordon, Pietrokovsky, Frese, & Pieper, 1985). Fifteen statements were used to

assess decision latitude (9 for decision authority and 6 for skill discretion), 4 for job demands, and 6 for social support. Participants responded to statements using one of 5 response categories (rarely/never, sometimes, often, usually, always/most of the time). Items for each scale were summed and used in analyses as a continuous measure.

Work behavior. Work behavior was assessed using a set of seven summative scales. Six of these scales assessed work attitudes and habits and were reproduced or adapted from work by Spence and Robbins (Spence & Robbins, 1992). Reproduced scales included those that measured ambition (driven), job involvement, perfectionism, and non-delegation. Adapted scales included items from other Spence and Robbins scales but were reconfigured to address two theoretical constructs proposed in the literature on excessive work patterns: thinking about work outside of work and discretionary time spent on work (Scott et al., 1997). The seventh scale, a validated subscale from the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) assessed the extent to which an individual adopts a future-oriented view of the world. For all items in each of these scales, participants were asked to respond to each item using a 5-point scale ranging from very untrue (1) to very true (5).

The *Driven* scale contained seven items assessing intrinsic work drive or ambition. Example items from this scale include: “I seem to have an inner compulsion to work hard, a feeling that it's something I have to do whether I want to or not,” and “I feel obligated to work hard, even when it's not enjoyable.” *Job Involvement* was measured with a seven item scale assessing identification with and involvement in one's job. Example items from this scale include: “My job is a very important part of who I am,” and “I am deeply committed to my job.” The *Perfectionism* scale contained eight items assessing perfectionistic behavior. Example items from this scale include: “I can't let go of projects until I'm sure they're exactly right,” and “My

standards sometimes make it difficult to get everything done.” *Non-delegation* was assessed using an seven item scale, with example items including: “I’d rather work overtime to finish a project myself than delegate portions of it to someone else,” and “I double check other’s work so thoroughly that delegating tasks saves me no time at all.” *Thinking about work outside of work* was assessed using an four item scale, with items such as: “I leave my worries at the office,” (reverse coded) and “I often find myself thinking about work even when I want to get away from it for a while.” A seven item scale was used to assess *spending discretionary time on work activities*. Sample items from this scale include: “I usually take some job-related work along on vacations,” and “I work most nights and weekends.” *Future time orientation* was assessed using a thirteen item scale, sample items from which include: “Meeting tomorrow’s deadlines and doing other necessary work comes before tonight’s play,” and “I take each day as it is rather than plan it out,” (reverse coded).

Scores for each scale were then summed and, in order to standardize the variance for the scales, transformed into z-scores. Using a method proposed by Spence and Robbins, we conducted an exploratory cluster analysis of z-scores to classify workers into a set of work pattern profiles using Ward’s minimum variance method. In preliminary analyses we examined solutions that produced between three and eight clusters. The three cluster solution was conceptually distinct and interpretable and we labeled the clusters “average,” “workaholic,” and “unengaged” work behavior. All cluster solutions identified the same “pure” workaholic group, as well as more variable definitions of groups that could be classified as “average” and “unengaged.” Solutions with more than three clusters tended to pull people from the average group into less conceptually distinct clusters, some of which appeared to represent other types of workaholicism as proposed by Scott et al. (e.g., achievement-oriented workaholics, compulsive workaholics). These results

support the proposition set forth by Scott, Moore & Miceli (Scott et al., 1997) that “workaholism” may not be a single behavioral pattern, but may represent various sub-types of excessive patterns, such as compulsive-dependent, perfectionistic, and achievement-oriented habits. Results of an eight cluster solution have been presented elsewhere (Martinson, 2002). However, since the three-cluster solution subjectively produced clusters that were conceptually more distinct and interpretable we use it in all subsequent analyses presented here.

### Covariates

Because work family conflict has been shown to differ by age, gender, and marital status, we controlled for their effect in multivariate models. Educational attainment and occupation class are also included as control variables in multivariate models. Job title and usual activities were used to classify individuals into 8 occupational classes based on the first two digits of the Standard Occupational Code (SOC).

### Analysis strategy

The first part of these analyses was to describe both the study sample and scale characteristics. For the second part we created a series of multiple linear regression models in order to address whether work characteristics and work behavior was associated with WFC, while adjusting for age, gender, marital status, occupational code, and educational attainment. In the first model of this series we fit the control variables. We then added the work characteristics, including an interaction term between demands and decision latitude to the model. In the final model we added work behavior. Beta and standard deviations are presented in respective tables.

## Results

Of the 3,000 employees who were identified to participate, it was later determined that 366 were not health plan members at the time of the survey and 36 were ineligible due to the inability to complete the study's survey or for having an undeliverable address. Surveys were sent to the remaining 2,598 from November 2000 through January of 2001. Nearly 60% (n=1,529) completed and returned surveys.

Descriptive statistics for the study sample (means and standard deviations for continuous measures, percentages for categorical measures) are provided in Table 1. While there were N=1,529 total survey completions, we omit from these analyses N=65 respondents who were retired, unemployed, out of the labor force, students, or homemakers, as well as N=64 respondents who were in occupational categories of farming, fishing, forestry; construction & extraction; installation, maintenance, & repair; production; and transportation & material moving. This resulted in the analytic sample of N=1,400 described in Table 1.

Women are somewhat over-represented in the sample (58%), and the sample is heavily concentrated in the age range 40-59 (37% in the 40-49 age group, and 33% in the 50-59 age group) with lower proportions in the younger (23% age 30-39) and older (7% in the 60-65 age group) categories. Roughly three quarters of the sample is married or cohabiting, with an additional 15% being separated/divorced or widowed, and 10% being never married.

The sample was designed to represent primarily salaried workers, and in Table 1 we see that over 40% of the sample represents managerial (22%) and business/finance occupations (19%), with the remaining 58% of the sample being nearly evenly distributed across occupations of education/legal, arts/social science, healthcare, protective & social services, and office & administrative support.

Given the occupational composition of the sample, it is not surprising that the sample is also relatively highly educated, with 34% having a college degree and an additional 28% having a professional degree.

The dependent variable, WFC, ranges between 1 and 16, with a mean score of 6.0 and a S.D. roughly 2/3 as large. The Job Demands scale ranges from 5-20 with a mean of 12.5 (S.D. of 2.4). The Decision Authority scale ranges from 9-25 with a mean of 31 (S.D. of 6.3), while the Skill Discretion scale ranges from 15-39 with a mean of 28.4 (S.D. of 4.2). The social support scale ranges from 6-30 with a mean of roughly 22 (SD of 4.3).

The primary independent variable of interest is the Work Behavior Cluster variable. Based on the cluster analysis described in the methods section above, roughly 46% of the total sample can be classified in a group we name “average worker.” Another 40% of the sample is classified in the “unengaged worker” group. The remainder of the sample (13.4%) are classified in the “workaholic” group.

In Table 2, we present the psychometric characteristics of the seven scales used to perform the cluster analysis that generated the work behavior pattern clusters. The Cronbach’s Alpha coefficients describing the internal consistency of these scales range from a low of .69 (for scale measuring working during discretionary time) to a high of .86 (perfectionism scale).

Table 3 presents the sample n’s, proportion of the sample falling into each work behavior cluster, and standardized means for the seven scales used to derive the clusters. Since all seven scales were standardized using z-scores, the overall sample mean for all scales is zero (0) with S.D. equal 1.0. As can be seen in the first column of Table 3, the “Average” worker cluster was slightly above the sample average in terms of job involvement (0.12), thinking about work while not at work (0.13), and spending discretionary time at work (0.01), and only moderately above

average in terms of driven-ness (0.23), perfectionism (0.37), non-delegation (0.20), future orientation (0.31).

By contrast, the “Unengaged” worker cluster was substantially below the sample average mean on all seven scales, ranging from  $-0.48$  to  $-0.79$ . The final column in Table 3 shows that the “Workaholic” cluster was more than one standard deviation above the sample mean on four of the seven scales (driven-ness, job involvement, thinking about work outside of work, and spending discretionary time working), and substantially above the sample average on the remaining three scales (perfectionism, non-delegation, and future orientation).

In Table 4a, we present cross-tabulations of each of the Whitehall II working-conditions scales (job demands, decision authority, skill discretion, and social support) by our work-behavior cluster variable. We have broken each working-condition scale into tertiles for this table.

In the top panel of Table 4a, we see that the work-behavior cluster variable is strongly associated with job demands (Chi-sq 139.9,  $p < .0001$ ) with unengaged workers being over-represented in the lowest job demand tertile (50% vs. sample average of 36%), and workaholics being over-represented in the highest tertile of job demands (63% vs. 34% sample average).

In the second panel of Table 4a shows the strong association between the work-behavior cluster variable and the skill-discretion scale (Chi-sq 73.0,  $p < .0001$ ). Again, unengaged workers are somewhat over-represented in the lowest tertile of skill discretion (45% vs. sample average of 39%) while workaholics are substantially over-represented in the top tertile of skill-discretion (56% vs. sample average of 33%).

In the third panel of Table 4a, we see that work-behavior cluster is also significantly, but less strongly associated with decision authority (Chi-sq 15.7,  $p < .01$ ) with workaholics being

somewhat over-represented in the highest tertile of decision authority (45% vs. sample average of 37%).

Finally, in the bottom panel of Table 4a, we see a significant, but more modest association between our work-behavior cluster variable and the social support scale (Chi-sq 12.6,  $p < .05$ ). In this panel we see that workaholics are over-represented in the lowest tertile of social support (45% vs. 37% sample average).

In Table 4b, we present results of a cross-tabulation of occupational category by our work-behavior cluster variable. Most occupational groups are evenly distributed across work-behavior pattern groups. The most notable exception is for those in the educational/legal occupational group, who are substantially over-represented in the workaholic work-pattern cluster (22% vs. 11.5% sample average). Other occupational groups with differential representation in the workaholic cluster include those in management occupations, who are slightly over-represented among workaholics (25% vs. 22% sample average) and those in office & administrative service occupations, who are under-represented among workaholics (12% vs. 17% sample average).

In Table 5, we present results from a series of three multivariate, ordinary least-squares regression models to predict WFC. In Model 1 we estimate WFC as a function of demographic characteristics and occupational group. In this model females report significantly lower WFC scores, nearly a half-point lower than men ( $-0.45$ ,  $p < .05$ ). We also find a significant, non-linear association between age category and WFC, with those in their 30s and 40s reporting significantly higher levels of WFC relative to those in their early 60s (1.35,  $p < .01$  and 1.68,  $p < .01$ , respectively). Those in their 50s, however, do not report significantly higher WFC compared to those in their early 60s (0.69,  $p$  NS). Occupational group is also significantly associated with scores on the WFC scale. Relative to the managerial group, those in several occupational

categories report significantly lower WFC. These jobs include those in the arts/social sciences (-0.89,  $p < .05$ ), those in business, finance, computer & math occupations (-1.09,  $p < .01$ ), and those in office & administrative support occupations (-1.07,  $p < .01$ ). By contrast, those in healthcare occupations and protective services occupations score significantly higher on the WFC scale (1.18,  $p < .01$ , and 0.72,  $p < .10$ , respectively). In terms of educational attainment, those with some college education score similarly on WFC to the reference group, those who have completed a college degree. Workers with a professional degree(s) report significantly higher WFC (0.65,  $p < .05$ ) while those with a tech degree or less than high school degree report significantly less WFC (-0.87,  $p < .01$ ). Marital status is not associated with WFC.

For Model 2, as shown in Table 5, we examine WFC as a function of the job strain scales while controlling for the demographic characteristics and occupational group. These scales are each standardized as z-scores for model estimation. In Model 2 we find that, overall, the associations we see in Model 1 remain virtually unchanged when job strain component scales. The one exception to this is that the age category effects are reduced by approximately 40% when the job strain scales are added to the model. We also find that both the skill discretion and social support scales are negatively associated with WFC, with a one unit increase in either of these scores being associated with a roughly 1/3 of a point reduction in WFC score ( $p < .01$ ). By contrast, both job demands and skill discretion are significantly and positively associated with WFC, and there is a significant interaction between the two (0.32,  $p < .01$ ). No other significant two- or three-way interactions among job strain components were found.

In Model 3 we augment Model 2 by adding the work behavior categories. As in Model 2, fitting work behavior into the model does not change the associations between WFC and the demographic variables. The first finding to note here is that, even after adjusting for job strain,

those in the workaholic behavior category score significantly higher on WFC, compared to those in the “average worker” category (1.45,  $p < .01$ ). By contrast, those in the unengaged group score significantly lower on WFC, on average (-0.80,  $p < .01$ ). The other point to notice is that addition of the work-behavior categories doesn’t substantially alter the effects of the job strain component scales. The one exception is that the main effect of the job demands scale is reduced by roughly 20%. Thus, these sets of measures appear to independently predict WFC.

We have also estimated a model (not presented here) in which we have included all covariates included in Model 3 with the addition of an interaction term between occupational group and work behavior categories. The interaction term is not significant overall in this model, but we do observe an interesting pattern for the educational/legal occupational group. Specifically, those in the education/legal occupational group who also fall into the average worker work-behavior cluster reported significantly lower WFC, compared to the reference category (-1.31,  $p < .05$ ). By contrast, those in the education/legal occupational group who fall into either the unengaged work-behavior cluster or into the workaholic work-behavior cluster report substantially higher WFC (1.48,  $p < .06$  and 1.76,  $p < .06$ , respectively). This pattern may explain the lack of an association in Table 5 between the education/legal occupational group and WFC, since the effects move in opposite directions for this group, depending on work-behavior pattern cluster and thus, largely cancel each other out in the aggregate.

## Discussion

In interpreting the findings of this paper and their implications, several limitations of the data and methods should be considered. First, the cross-sectional design precludes assessment of causality in the associational relationships modeled. This design is also not well suited to identifying relationships that are not instantaneous between variables (i.e., lagged effects). Second, since both predictor and outcome measures are based on self-report from a single respondent, the findings may be biased by common method variance. Finally, our measure of WFC may not capture the complexity of the construct or the multi-dimensional aspects of conflicts that can occur between work and family.

These limitations notwithstanding, this paper makes several contributions to our understanding of excessive work behavior, working conditions, and WFC. First, we have extended the empirical work of Spence and Robbins (Spence & Robbins, 1992), and the theoretical work of Scott, Moore, and Miceli (Scott et al., 1997), in developing an empirical measure of workaholism. Our definition of workaholism is consistent with the three conceptual elements of workaholism proposed by Scott, Moore, and Miceli – a) discretionary time spent in work activities, b) thinking about work when not at work, and c) working beyond organizational or economic requirements – as evidenced by non-delegatory and perfectionistic behavior patterns. However, more compelling to us is the fact that workers who we identify as workaholic are deemed so by virtue of scoring substantially above the sample average on *all seven scales* used to evaluate their work related behaviors. Moreover, we find this measure significantly predictive of work to family conflict, further suggesting its usefulness. While others have posited multiple types of workaholism, our empirical measure appears to identify a “pure” type of excessive work behavior. This does not preclude the existence of other sub-types of workaholics, but may suggest

that other sub-types are less extreme in their behaviors. We do find it remarkable that our measure allows us to identify substantial numbers of workers who fit such a distinct behavioral profile.

Second, we have replicated in this largely salaried sample the previously noted observation that working conditions such as job demands, decision authority, skill discretion, and social support are associated with work to family conflict.

Third, we have demonstrated that workaholic behavior is positively associated with work to family conflict, even after adjusting for standard measures of working conditions related to job strain. There is a spate of research in the business management, organizational behavior, and human resources literatures that has begun to explore the role of person-level factors and coping strategies, (excessive work-effort and other control-enhancing strategies, in particular), as determinants of outcomes directly affecting organizations, including job satisfaction, productivity, and turnover (Porter, 1996; Rabinowitz & Hall, 1977; Scott et al., 1997; Spence & Robbins, 1992). Unfortunately, very little of this work has examined the impact of such coping strategies on WFC. To our knowledge, ours is the first study to simultaneously examine person-level factors and working conditions as they relate to work family conflict. Importantly, our findings support the idea that workaholism may be more than simply a coping response to overly demanding and/or unsupportive work-settings. If workaholism were nothing more than this, we would expect the variance in WFC to be picked up primarily by our measures of working conditions, with little variance left to be explained by the work-behavior categories, which is clearly not what we find.

Why workaholic behavior patterns are associated with WFC may seem, on the surface, to be an obvious question. Clearly, strategies for coping with difficult working situations that entail excessive work would be expected to impinge on family roles, resulting in tensions and conflict for both workers and their families. However, we might speculate about a deeper level of conflict

here as well. Workaholics receive any number of extrinsic rewards for their behavior, ranging from the concrete, such as career advancement, prestige, and monetary rewards, to the less tangible, such as approval or admiration from peers, competitors, clients, and others. Beyond this, the intrinsic value of workaholic behavior may be substantial. Such intrinsic gains may include the belief that one is “doing it all for my family,” or that one’s work is of great value to humanity, or even just to the organization or company. With this plethora of potential gains deriving from excessive work, it is possible to see that for some workers, at least some of the time, the work-role may well be a very attractive refuge from other, less rewarding aspects of one’s life. In the face of marital discord, conflicts with children, or other personal troubles, becoming absorbed in work may seem quite an attractive option. To the extent that this reflects an avoidance of family difficulties, it can be viewed as a *failure to cope* that may ultimately generate further conflict.

Other findings here are consistent with this perspective, particularly the finding of an interaction between job demand and job control (skill discretion). In the classic construction of work-strain, high demands paired with high job control is the hallmark of the most desirable positions. By contrast, the significant negative associations between WFC and both social support and decision authority speak to potential mechanisms for managing WFC. Workers with adequate social support in the work setting may be able to “work-around” potential conflicts more effectively than those in settings that lack such support. Similarly, workers with high decision authority may simply be in a better position than others to avoid potential WFC by using their discretion to change their schedules or delegate tasks to others.

We have focused primarily here on workaholism, but the finding of significantly lower WFC among unengaged workers warrants some brief discussion. If workaholism represents an extreme of over-commitment to work, the unengaged behavior pattern seems to signal a

detachment from the work-role. While this pattern is associated with lower WFC, it may reflect an undesirable imbalance in the opposite direction. This is particularly likely to be the case from the employers perspective.

A life-course effect is suggested by the finding of elevated WFC among those in their 30s and 40s, ages at which both family obligations and work or career aspirations are likely to be on the upswing. The observation of significantly lower WFC being reported by women may reflect a tendency for women to “put family first,” over job or career. Alternatively, it may be that women are simply more effective at juggling the dual spheres of work and family, thereby avoiding conflict.

We find it of particular interest that workaholics are over-represented in educational/legal occupations, but that among this occupational group, both workaholics and the unengaged appear to have elevated levels of WFC. While the elevation of WFC among workaholics in educational/legal occupations is consistent with the main effects observed for work-behavior clusters, the finding of elevated WFC among unengaged educational/legal workers is anomalous. To the extent that this occupational group is composed of college or university professors, and lawyers, this might be a function of disenchantment with one’s work in the face of having made substantial investments and specialization that are not quickly or easily shuffled off. Such entrapment in an unsatisfying work situation may also be expressed as WFC.

A new research initiative being launched by the National Institute of Child Health and Human Development and the Alfred P. Sloan Foundation aims to improve our understanding of WFC. One goal of this initiative is to identify workplace policies that might ameliorate and reduce such conflict (Anonymous, 2003). Our findings here suggest that when exploring policies to

address WFC, a conceptual framework that encompasses both job strain as well as worker coping strategies should be employed.

Table 1: Sample Descriptives (N=1,400)

<b>Variable</b>	<b>Mean/ %</b>	<b>S.D.</b>
Female	57.8%	--
Age Categories:		
30-39	22.8%	--
40-49	37.3	--
50-59	32.9%	--
60-65	7.0%	--
Marital status:		
Never married	10.4%	--
Married or Cohabiting	74.4%	--
Separated/Divorced or Widowed	15.2%	--
Major Occupational Group:		
Management	22.2%	--
Business/Finance/Computer & Math	19.1%	--
Education/Legal	11.4%	--
Arts/Social Science	10.9%	--
Healthcare	9.8%	--
Office & Admin support	8.9%	--
Protective Services	8.9%	--
Educational Attainment:		
Less than High School/Tech Degree	21.9%	--
Some college	16.9%	--
College degree	33.6%	--
Professional degree	27.6%	--
Work-Family conflict scale (range 1-16)	6.0	3.9
Job Demands scale (range 5–20; Std: -3.1 to 3.1)	12.5	2.4
Decision Authority scale (range 9-45; Std: -3.5 to 2.2)	30.9	6.3
Skill Discretion scale (range 15-39; Std: -3.2 to 2.5)	28.4	4.2
Social support scale (range 6-30; Std: -3.6 to 1.9)	21.7	4.3
Work Behavior Cluster:		
Average worker	46.3%	--
Unengaged worker	40.3%	--
Workaholic	13.4%	--

Table 2: Alpha coefficients, means, standard deviations and possible ranges of scales used to construct work-pattern profiles

<b>Scale name</b>	<b>Possible range</b>	<b>Alpha coefficient</b>	<b>Mean</b>	<b>S.D.</b>
Driven	0-28	.77	16.1	4.9
Job involvement	0-32	.85	16.8	5.7
Perfectionism	0-32	.86	16.1	5.4
Non-delegation	0-28	.79	10.4	4.2
Future orientation	13-65	.70	45.5	5.1
Think about work	0-16	.82	7.6	3.5
Working during discretionary time	0-28	.69	10.3	4.4

Table 3: Work-pattern profile means (in z scores), sample n's and proportion of sample in each profile

<b>Scale name</b>	<b>Cluster 1 (N=642) “Average”</b>	<b>Cluster 2 (N=558) “Unengaged”</b>	<b>Cluster 3 (N=186) “Workaholic”</b>
	46%	40%	13%
Driven	0.23	-0.71	1.27
Job involvement	0.12	-0.50	1.13
Perfectionism	0.37	-0.79	0.98
Non-delegation	0.20	-0.55	0.81
Future orientation	0.31	-0.55	0.67
Think about work	0.13	-0.48	1.04
Discretionary time @ work	0.01	-0.49	1.45

**Table 4a: Crosstabs of Work behavior groups by DCS components**

<b>Job Demands</b>		<b>Average</b>	<b>Unengaged</b>	<b>Workaholic</b>		
(Tertiles)	Low	30.5%	49.7%	11.4%	35.7%	<b>Chi-Sq</b>
	Middle	33.3	28.9	26.1	30.6	139.93
	High	36.2	21.4	62.5	33.8	(p < .0001)
		46.4	40.2	13.4	1371	
<b>Skill Discretion</b>		<b>Average</b>	<b>Unengaged</b>	<b>Workaholic</b>		
(Tertiles)	Low	40.8	44.8	14.1	38.8	<b>Chi-Sq</b>
	<b>Middle</b>	30.7	26	30.3	28.8	73.04
	High	28.5	29.2	55.68	32.5	(p < .0001)
		46.4	40.1	13.5	1374	
<b>Decision Authority</b>		<b>Average</b>	<b>Unengaged</b>	<b>Workaholic</b>		
(Tertiles)	Low	35.8%	30.0%	26.9%	32.3%	<b>Chi-Sq</b>
	Middle	32.3	29.7	28	30.7	15.69
	High	31.9	40.3	45.2	37.1	(p < .01)
		46.3	40.2	13.5	1382	
<b>Social Support</b>		<b>Average</b>	<b>Unengaged</b>	<b>Workaholic</b>		
(Tertiles)	Low	39	32.3	45.4	37.1	<b>Chi-Sq</b>
	Middle	33.7	39.5	31.7	35.8	12.64
	High	27.4	28.2	23	27.1	(p < .05)
		46.3	40.3	13.3	1373	

**Table 4b: Crosstabs of Work behavior groups by Occupational Group**

<b>Occupational Group</b>	<b>Average</b>	<b>Unengaged</b>	<b>Workaholic</b>		
Management	21.5%	22.2%	25.4%	22.3%	<b>Chi-Sq</b>
Arts/Social Science	11.0	10.9	10.8	10.9	36.61
Biz/Fin/Computer & Math	20.1	19.5	14.1	19.0	(p < .001)
Educational/Legal	9.0	11.1	<b>21.6</b>	11.5	
Healthcare	10.1	10.2	8.1	9.9	
Office & Admin Support	17.1	<b>19.6</b>	11.9	11.9	
Protective Service	11.2	6.6	8.1	8.9	
	46.4	40.2	13.4	1371	

**Table 5: Multivariate models 1, 2, and 3**

	B	S.E.		B	S.E.		B	S.E.	
Intercept	5.71	0.54	***	5.83	0.51	***	5.93	0.51	***
Female	-0.45	0.23	**	-0.56	0.21	***	-0.51	0.21	**
Age Category									
60-65 (reference)	--	--		--	--		--	--	
50-59	0.69	0.43		0.27	0.40		0.31	0.39	
40-49	1.68	0.42	***	0.94	0.40	**	0.98	0.39	**
30-39	1.35	0.45	***	0.80	0.42	*	0.84	0.41	**
Occupational group									
Management (reference)	--	--		--	--		--	--	
Arts/Social Science	-0.89	0.38	**	-0.71	0.36	*	-0.79	0.36	**
Biz/Fin/Computer & Math	-1.09	0.32	***	-0.57	0.31	*	-0.64	0.30	**
Education/Legal	-0.41	0.39		-0.13	0.37		-0.31	0.36	
Healthcare	1.18	0.40	***	0.90	0.40	**	0.86	0.39	**
Office & Admin support	-1.07	0.35	***	-0.67	0.34	*	-0.73	0.34	**
Protective service	0.72	0.43	*	1.13	0.42	***	0.87	0.41	**
Educational Attainment									
College Degree (reference)	--	--		--	--		--	--	
Professional degree	0.65	0.29	**	0.48	0.27	*	0.50	0.27	*
Less than HS/Tech degree	-0.87	0.30	***	-0.87	0.28	***	-0.91	0.28	***
Some College	0.02	0.31		0.05	0.29		0.12	0.29	
Marital status									
Separated/Div/Wid (ref)	--	--		--	--		--	--	
Married or Cohabiting	-0.25	0.30		-0.08	0.28		0.01	0.28	
Never Married	-0.38	0.43		-0.33	0.39		-0.36	0.39	
Job strain component scales									
Demands				1.04	0.13	***	0.84	0.13	***
Decision authority				-0.48	0.14	***	-0.51	0.13	***
Skill Discretion				0.34	0.14	**	0.26	0.14	*
Social Support				-0.35	0.11	***	-0.30	0.11	***
Demands x Skill Discretion				0.32	0.09	***	0.27	0.09	***
Work behavior categories									
Average (referent)							--	--	
Workaholic							1.45	0.30	***
Unengaged							-0.80	0.21	***

\* p &lt; .10. \*\* p &lt; .05. \*\*\* p &lt; .01

## Acknowledgement

This research was supported by a grant from the HealthPartners Research Foundation.

## References

Alfredsson, L., Hammar, N., & Hogstedt, C. (1993). Incidence of myocardial infarction and mortality from specific causes among bus drivers in Sweden. International Journal of Epidemiology, *22*(1), 57-61.

Allen, T. D., Herst, D. E., Bruck, C. S., & Sutton, M. (2000). Consequences associated with work-to-family conflict: a review and agenda for future research. [Review] [276 refs]. Journal of Occupational Health Psychology, *5*(2), 278-308.

Alterman, T., Shekelle, R. B., Vernon, S. W., & Burau, K. D. (1994). Decision latitude, psychologic demand, job strain, and coronary heart disease in the Western Electric Study. American Journal of Epidemiology, *139*(6), 620-627.

Amick, B. C., Mc Donough, P., Chang, H., Rogers, W. H., Pieper, C. F., & Duncan, G. (2002). Relationship between all-cause mortality and cumulative working life course psychosocial and physical exposures in the United States labor market from 1968 to 1992. Psychosomatic Medicine, *64*(3), 370-381.

Andresky Fraser, J. (2001). White-Collar Sweatshop: The deterioration of work and its rewards in corporate America. New York: W. W. Norton & Company.

Anonymous. (2003, June 17). Initiative Eyed to Heal Work/Family Mismatch. Health Grants & Contracts Weekly, pp. pp 1,7.

Bonebright, C. A., Clay, D. L., & Ankenman, R. D. (2000). The Relationship of Workaholism with Work-life Conflict, Life Satisfaction, and Purpose In Life. Journal of Counseling Psychology, *47*(4), 469-477.

Ciulla, J. (2000). The Working Life: The promise and betrayal of modern work: New York: Times Books.

Cropley, M., Steptoe, A., & Joekes, K. (1999). Job strain and psychiatric morbidity. Psychological Medicine, *29*(6), 1411-1416.

Duxbury, L., Higgins, C., & Lee, C. (1994). Work-family conflict: A comparison by gender, family type, and perceived control. Journal of Family Issues, *15*(3), 449-466.

Falk, A., Hanson, B. S., Isacson, S. O., & Ostergren, P. O. (1992). Job strain and mortality in elderly men: social network, support, and influence as buffers. American Journal of Public Health, *82*(8), 1136-1139.

Fox, M. L., & Dwyer, D. J. (1999). An investigation of the effects of time and involvement in the relationship between stressors and work-family conflict. J Occup Health Psychol, *4*(2), 164-174.

Frone, M. R., Russell, M., & Cooper, M. L. (1992). Antecedents and outcomes of work-family conflict: testing a model of the work-family interface. Journal of Applied Psychology, *77*(1), 65-78.

Greenberger, D., Porter, G., Miceli, M., & Strasser, S. (1991). Responses to inadequate personal control in organizations. Journal of Social Issues, *47*(4), 111-128.

- Greenhaus, J. H., & Beutell, N. J. (1985). Sources and conflict between work and family roles. Academy of Management Review, 10(1), 76-88.
- Hochschild, A. (1998). The Time Bind : When Work Becomes Home and Home Becomes Work: Owl Books.
- Johnson, J. V., Hall, E. M., & Theorell, T. (1989). Combined effects of job strain and social isolation on cardiovascular disease morbidity and mortality in a random sample of the Swedish male working population. Scandinavian Journal of Work, Environment & Health, 15(4), 271-279.
- Karasek, R. A. (1979). Job Decision Latitude, Job Demands and Mental Strain: Implications for Job Redesign. Administrative Science Quarterly, 24(June), 285-308.
- Karasek, R., & Theorell, T. (1990). Healthy Work: Stress, Productivity, and the Reconstruction of Working Life. New York: Basic Books.
- Karasek, R. A., Gordon, G., Pietrokovsky, C., Frese, & Pieper. (1985). Job Content Instrument: Questionnaire and User's Guide. Los Angeles/Lowell, MA: University of Southern California/University of Massachusetts.
- Killinger, B. (1991). Workaholics: The respectable addicts. Buffalo, NY: Firefly Books.
- Kivimaki, M., Leino-Arjas, P., Luukkonen, R., Riihimaki, H., Vahtera, J., & Kirjonen, J. (2002). Work stress and risk of cardiovascular mortality: prospective cohort study of industrial employees.[erratum appears in BMJ 2002 Dec 14;325(7377):1386]. BMJ, 325(7369), 857.
- Kossek, E. E., & Ozeki, C. (1998). Work-family conflict, policies, and the job-life satisfaction relationship: A review and directions for organizational behavior-human resources research. Journal of Applied Psychology, 83(2), 139-149.
- Machlowitz, M. (1980). Workaholics: Living with them, working with them. Reading, MA: Addison-Wesley.
- Martinson, B. C. (2002). Health Related Outcomes Associated with Patterns of Excessive Work Effort (Paper presentation, Society for Behavioral Medicine annual conference). Washington, D.C.: Society of Behavioral Medicine.
- Mausner-Dorsch, H., & Eaton, W. W. (2000). Psychosocial work environment and depression: epidemiologic assessment of the demand-control model.[erratum appears in Am J Public Health 2001 May;91(5):828]. American Journal of Public Health, 90(11), 1765-1770.
- Murata, K., Kawakami, N., & Amari, N. (2000). Does job stress affect injury due to labor accident in Japanese male and female blue-collar workers? Industrial Health, 38(2), 246-251.
- Myers, A. H., Baker, S. P., Li, G., Smith, G. S., Wiker, S., Liang, K. Y., & Johnson, J. V. (1999). Back injury in municipal workers: a case-control study. American Journal of Public Health, 89(7), 1036-1041.
- Nahit, E. S., Pritchard, C. M., Cherry, N. M., Silman, A. J., & Macfarlane, G. J. (2001). The influence of work related psychosocial factors and psychological distress on regional musculoskeletal pain: a study of newly employed workers.[comment]. Journal of Rheumatology, 28(6), 1378-1384.
- Nash, L. (1994). The virtual job. Wilson Quarterly, 18(4), 72-81.
- Naughton, T. (1987). A conceptual view of workaholism and implications for career counseling and research. Career Development Quarterly, March, 180-187.
- Oates, W. (1971). Confessions of a workaholic: The facts about work addiction. New York: World Publishing.
- Porter, G. (1996). Organizational impact of workaholism: suggestions for researching the negative outcomes of excessive work. Journal of Occupational Health Psychology, 1(1), 70-84.

- Rabinowitz, S., & Hall, D. (1977). Organizational research on job involvement. Psychological Bulletin, 84(2), 265-288.
- Robinson, B. (1998). Chained to the Desk: A guidebook for workaholics, their partners and children, and the clinicians who treat them. New York: New York University Press.
- Robinson, J. (2003). Work to Live: The Guide to Getting a Life: New York: Perigee Trade.
- Schaeff, A., & Fassel, D. (1990). The addictive organization. San Francisco: Harper Row.
- Schnall, P. L., Landsbergis, P. A., & Baker, D. (1994). Job Strain and Cardiovascular Disease. Annual Review of Public Health, 15, 381-411.
- Schnall, P. L., Schwartz, J. E., Landsbergis, P. A., Warren, K., & Pickering, T. G. (1992). Relation between job strain, alcohol, and ambulatory blood pressure. Hypertension, 19(5), 488-494.
- Schor, J. (1993). Overworked American: The unexpected decline of leisure: Basic books.
- Scott, K., Moore, K., & Miceli, M. (1997). An exploration of the meaning and consequences of workaholism. Human Relations, 50(3), 287-314.
- Skov, T., Borg, V., & Orhede, E. (1996). Psychosocial and physical risk factors for musculoskeletal disorders of the neck, shoulders, and lower back in salespeople. Occupational & Environmental Medicine, 53(5), 351-356.
- Spence, J., & Robbins, A. (1992). Workaholism: definition, measurement, and preliminary results. Journal of Personality Assessment, 58(1), 160-178.
- Stansfeld, S. A., Fuhrer, R., Shipley, M. J., & Marmot, M. G. (1999). Work characteristics predict psychiatric disorder: prospective results from the Whitehall II Study. Occupational & Environmental Medicine, 56(5), 302-307.
- Voydanoff, P. (1988a). Work and family: A review and expanded conceptualization. Special Issue: Work and family: Theory, research, and applications. Journal of Social Behavior & Personality, 3(4), 1-22.
- Voydanoff, P. (1988b). Work role characteristics, family structure demands, and work/family conflict. Journal of Marriage & the Family, 50, 749-761.
- Waldenstrom, M., Theorell, T., Ahlberg, G., Josephson, M., Nise, P., Waldenstrom, K., Vingard, E., & group, M.-s. (2002). Assessment of psychological and social current working conditions in epidemiological studies: experiences from the MUSIC-Norrtalje study. Scandinavian Journal of Public Health, 30(2), 94-102.
- Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. Journal of Personality and Social Psychology, 77(6), 1271-1288.

Center for Demography and Ecology  
University of Wisconsin  
1180 Observatory Drive Rm. 4412  
Madison, WI 53706-1393  
U.S.A.  
608/262-2182  
FAX 608/262-8400  
comments to: [brian.c.martinson@healthpartners.com](mailto:brian.c.martinson@healthpartners.com)  
requests to: [cdepubs@ssc.wisc.edu](mailto:cdepubs@ssc.wisc.edu)