



A combination of work environment factors and individual difference variables in work interfering with family

Work interfering
with family

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Abstract

Purpose – The purpose of this paper is to test the relative contribution of work environment factors as well as individual difference variables on the degree of work interfering with family (WIF) and other mental health outcomes, namely, emotional exhaustion, life satisfaction, and family interfering with work (FIW).

Design/methodology/approach – Self-report measures of the constructs of interest will be completed by a random sample of 539 health care professionals (Study 1: $n = 314$; Study 2: $n = 128$). In Study 1, it is hypothesized that work environment factors namely, work stressors and a supportive work environment characterized by perceived support from the supervisor, the organization, and co-workers' supportive behaviors will be positively and negatively associated with WIF, respectively.

Findings – Findings document positive links between task-related stressors and WIF and negative links between perceived support from the organization and WIF. In addition, both task-related stressors and WIF are positive predictors of emotional exhaustion. In Study 2, the relative impact of two individual difference variables (i.e. time management and global self-determination) on WIF and other mental health outcomes are examined, above and beyond the impact of the work environment factors. Task-related stressors remain an important predictor of WIF and global self-determination accounts for additional variance in this outcome variable.

Research limitations/implications – Theoretical and practical implications that may guide future theory and research in this domain are discussed.

Originality/value – Findings from both studies provide insight as to potential sources, namely work environment factors and individual difference variables, which may accentuate or mitigate the degree of WIF.

Keywords Family friendly organizations, Individual psychology, Business environment, Canada

Paper type Research paper

The structure and dynamics of Canadian families have changed dramatically over the last few decades. Reports from the National Work-Life Conflict Study (Health Canada, 2001) headed by Duxbury and Higgins (2001) portray these changing realities. For example, dual-earner families have replaced the traditional male worker/female homemaker family. Lone parent families were estimated at 1.1 million in 1996 which represents a 19 per cent increase from 1991. In addition, Canadians are working longer hours and spending less time with their families. Consequently, the number of Canadian families experiencing conflict between their work and family lives has increased from 47 per cent to 59 per cent during the 1990s. Increasing incompatible demands from the workplace and the family result in feelings of conflict as both



partners try to accommodate these two often incompatible spheres of their lives (Higgins and Duxbury, 1992).

In turn, work-family conflict or work-family interference in turn, has been associated with a number of outcomes detrimental to one's job performance, family relations, and mental health (e.g. Allen *et al.*, 2000; Kossek and Ozeki, 1999). Hence, a great deal of research has been devoted to the identification of factors that may explain greater or lesser degrees of work-family interference. Indeed, results from recent meta-analyses have categorized the antecedents of work-family interference into work/family environment factors (e.g. characteristic of the workplace and family), individual difference variables (e.g. self-esteem, hardiness) and demographic characteristics such as gender, income, and being a parent (e.g. Byron, 2005; Ford *et al.*, 2007; Mesmer-Magnus and Viswesvaran, 2005). In addition, theoretical approaches and models such as the Model of Work-Family Interface (Frone *et al.*, 1992), the Theory of Work-Family Enrichment (Greenhaus and Powell, 2006), and the Model of Work-Family Balance (Frone, 2003), have been proposed require further empirical scrutiny, given their recency.

Notwithstanding the importance of work/family environment factors, there is also a need to better understand the contribution of personality and skills variables that may account for individual differences in the extent to which both of these life domains (i.e. work and family) are successfully integrated (Baltes and Dickson, 2001; Byron, 2005; Stoeva *et al.*, 2002). In order to address these gaps in the literature, we conducted two studies. Study 1 investigates the relative impact of work environment factors, namely work stressors and a supportive work environment on work interfering with family (WIF) and a common outcome associated with WIF: emotional exhaustion. Study 2 incorporates two individual difference variables in the regression model of Study 1: time management and global self-determination. Both of these individual difference variables are expected to be negatively related to WIF and to contribute additional variance in WIF. To lead into these studies, the construct of work interference with family will be defined and its associated antecedents and outcomes will be reviewed. Following these sections, an overview of the present studies will be introduced.

Work-family interference

Work-family interference is an inter-role conflict that results when participation in one role interferes by virtue of participation in the other role (Greenhaus and Beutell, 1985). This conceptualization explicitly portrays work-family interference as a two-dimensional construct, each with its unique direction and effect. WIF is distinguished from family interfering with work (FIW). Research provides support for this distinction as each dimension of work-family interference was shown to have unique relations to domain-specific antecedents and outcomes (e.g. Frone *et al.*, 1997; Kelloway *et al.*, 1999; Kossek and Ozeki, 1998). For instance, results from studies have shown that the antecedents of WIF reside in the work domain (e.g. job involvement: Byron, 2005; work stress: Greenhaus and Beutell, 1985) whereas the antecedents of FIW reside in the domain of the home (e.g. marital conflict: Byron, 2005; household duties: Baltes and Heydens-Gahir, 2003; family stressors: Frone *et al.*, 1992). Furthermore, each dimension of work-family interference has been linked to cross-domain specific outcomes (e.g. WIF = family satisfaction; FIW = work satisfaction; Frone *et al.*, 1992). In the present research we aim to better understand

the relative impact of different work environment factors as well as individual difference variables on WIF.

Antecedents of WIF: work environment factors and individual difference variables

Greenhaus and Beutell (1985) have categorized the antecedents of WIF into three types: time-based pressures, strains, and behavioral incompatibilities. In the present research, we will focus specifically on work stressors. Results from recent meta-analyses have convincingly shown that stressors in the workplace significantly impact the degree of WIF (Ford *et al.*, 2007). Key work stressors include: work role ambiguity, work role overload, and heavy responsibilities (Kahn and Byosiere, 1992; Mesmer-Magnus and Viswesvaran, 2005). The presence of these stressors in the workplace has been positively linked to increased feelings of WIF (Eagle *et al.*, 1997). This positive association is believed to reflect the limited physical and psychological resources of the worker (Mesmer-Magnus and Viswesvaran, 2005). In addition, it is important to note that stressors in the workplace have been linked to a number of mental health outcomes such as psychological distress, emotional exhaustion, and burnout (Bourbonnais *et al.*, 1999; Butterworth *et al.*, 1999; Donovan, 2003; Steinhardt *et al.*, 2003) as well as job dissatisfaction (Decker and Borgen, 1993).

Alternatively, a supportive work environment is a key component in employees' satisfaction and well-being at work (e.g. Baltes and Heydens-Gahir, 2003). The positive impact of a supportive work environment on work-family relations has been well documented (see Byron, 2005; Ford *et al.*, 2007 for a review). Specifically, workers who perceive greater support from their supervisor, management, and their co-workers report less WIF (e.g. Bernas and Major, 2000; Grzywacz and Marks, 2000). A supportive work environment includes the presence of adequate and appropriate work/family policies and programs, social support from supervisors and co-workers, as well as good interpersonal relations with co-workers (Mesmer-Magnus and Viswesvaran, 2005). The literature thus far has examined these support variables in a combined fashion (e.g. perceptions of support from any aspect of the workplace; Ford *et al.*, 2007) and results usually portray a negative, yet weak correlation with WIF (e.g. *rs* between -0.20 and -0.27 ; Ford *et al.*, 2007). Although these results may be methodological artifacts, we anticipate that each source of support will yield a differential impact on WIF and on indices of mental health (Mesmer-Magnus and Viswesvaran, 2005). By teasing apart each source of support, valuable insight as to their relative importance in diminishing WIF could thus be gained.

Together, the studies reviewed herein indicate that work stressors and sources of support are important work environment factors in the prediction of WIF. The former has been shown to increase the degree of WIF, while the latter may lessen the degree of WIF. Notwithstanding the importance of these work environment factors research on the contribution of individual difference variables in the prediction of WIF remains scarce. More specifically, little is known on the role of traits and underlying processes that may explain why some individuals are more likely to experience greater WIF while others may experience less WIF. (Baltes and Heydens-Gahir, 2003; Byron, 2005; Grzywacz and Marks, 2000). Traits and skills, which may account for individual differences in WIF include: negative affectivity (Stoeva *et al.*, 2002), hardiness (Grandey and Cropanzano, 1999), extroversion (Bernas and Major, 2000), self-esteem (Grzywacz

and Marks, 2000), life management strategies (Baltes and Heydens-Gahir, 2003), and different coping styles and skills (Becker and Moen, 1999; Wiersma, 1994). With the exception of negative affectivity, these individual difference variables have been negatively linked to WIF. The present research will add to this body of literature by examining the contributing roles of two important other individual difference variables, namely time management and global self-determination.

The first individual difference variable that will be introduced is time management. The construct of time management comprises both attitudes and behaviors that characterize the effective use of one's time. They include perceived control over time, a preference for (dis)organization, setting goals and priorities, and the mechanics of time management (Macan *et al.*, 1990). Adams and Jex (1999) have recently integrated the construct of time management into a model of WIF (see also Baltes and Heydens-Gahir, 2003) and found that time management behaviors have both direct and indirect (through perceived control of time) relationships with WIF and FIW. Time management behaviors have also been linked to less job dissatisfaction and less health complaints such as feelings of depression, anxiety, and physical symptoms. Given that time-based pressures are an important predictor of WIF (Greenhaus and Beutell, 1985), we expect time management skills to result in less WIF. Workers who are able to make effective and efficient use of their time should successfully meet the demands of both work and family (Jex and Elacqua, 1999). By contrast, workers who experience more difficulty in effectively managing their time should experience greater WIF. In line with previous work (e.g. Adams and Jex, 1999), time management should also relate to better mental health.

The second individual difference variable that will be introduced is global self-determination. Briefly, self-determination refers to the degree of volition or perceived autonomy a person experiences toward a given behavior (Deci and Ryan, 1985). Results from studies conducted across numerous life domains (i.e. work, sport, education, health, relationships) support the beneficial role of self-determination as it is positively associated with greater creativity (Sheldon, 1995), enhanced learning, interest, and enjoyment (Black and Deci, 2000), greater vitality (Nix *et al.*, 1999) as well as other indicators of both physical and psychological well-being (see Deci and Ryan, 2002; Vallerand, 1997, for a review).

Vallerand (1997) has proposed a hierarchical model of self-determination whereby self-determination is hypothesized to exist at three different levels of generality within a person: global, contextual, and situational. Global self-determination refers to the degree of self-determination a person feels toward their life in general. Therefore it is thought to reflect individual differences in the manner with which one interacts with their environment. Therefore, the scope of the present research is limited to effects of global self-determination on WIF and other indicators of mental health. Individuals with greater levels of global self-determination are hypothesized to be motivated toward integration (Hodgins and Knee, 2002), thus striving for balance between the different spheres of their life. In this sense, they should experience less conflict. Sénécal *et al.* (2001) have investigated self-determination in the domain of WIF. However, they assessed contextual levels (not global or trait levels) of self-determination toward the domains of family and work. Their results showed spouse's and supervisor's support to be positively associated with feelings of self-determination toward the domains of family and work, respectively, which in turn were negatively linked to family

alienation. In their study, family alienation was linked to more conflict and more emotional exhaustion. In line with these findings, we expect global self-determination to be negatively associated with WIF and positively associated with indicators of better mental health.

Outcomes of WIF: life satisfaction, FIW and emotional exhaustion

Work is unequivocally an important sphere in most people's lives occupying a significant component of their sense of self. Beyond the financial benefits that work provides, one's job/career is known to bring life satisfaction and personal growth (Mannheim and Schiffrin, 1984). Yet, the work environment can be a considerable source of strain. An increasingly competitive market combined with a lack of resources and a shortage of manpower can create a stressful and even hazardous environment for workers. Although work provides many great opportunities for self-fulfillment, its accompanying demands and pressures can lead to increased WIF, resulting in a number of physical, mental, and interpersonal outcomes.

First, WIF has been shown to diminish feelings of work satisfaction, family satisfaction, and life satisfaction (Ford *et al.*, 2007). For instance, several studies using different samples across varying work environments have found a negative correlation between WIF and job satisfaction as well as life satisfaction (Allen *et al.*, 2000; Judge *et al.*, 2006; Kossek and Ozeki, 1998). Other studies have found work-family interference to negatively impact life satisfaction (Mesmer-Magnus and Viswesvaran, 2005). Given that Greenhaus and Beutell (1985) have proposed that the relationship between work and family is bidirectional (or reciprocal), past research has shown that work interfering with family is also related to family interfering with work (Frone *et al.*, 1992, 1997; Netemeyer *et al.*, 1996). In other words, it is expected that when an employee experiences conflict in one domain, chances are that this individual may also experience conflict in other life domains.

Second, WIF has been related to several indicators of physical and mental health (Judge *et al.*, 1994). For instance, measures of WIF have been associated with incidences of clinical depression and work distress (Frone *et al.*, 1992), emotional exhaustion (Leiter and Durup, 1996; Sénécal *et al.*, 2001), and experiences of burnout (Kossek and Ozeki, 1999). Thus, it appears that WIF is a worthwhile variable to investigate given that it is often the result of unfavorable work conditions and individual differences. Moreover, it is linked to important physical and mental health problems. Thus further empirical scrutiny into the work environment factors and individual difference variables as antecedents of WIF, along with its associated outcomes, is warranted.

Overview of the present research

The purpose of the present research is twofold. First, the relative contribution of work environment factors, namely work stressors and support variables on WIF and their resulting effects on mental health indicators are investigated in Study 1 and Study 2. More precisely, the impact of two types of work stressors (i.e. task-related stressors and stressors related to the significance of one's work) and three sources of support in the workplace (i.e. support from the supervisor, support from the organization, and co-workers' supportive behaviors) on WIF and mental health outcomes (i.e. emotional exhaustion, FIW, life satisfaction) are examined. Both types of work stressors are expected to positively predict WIF, emotional exhaustion, and FIW. By contrast, the

three sources of support are expected to negatively predict WIF, emotional exhaustion, and FIW. The reverse pattern of relationships is expected for life satisfaction.

Second, the incremental value of individual difference variables, notably time management and global self-determination in the prediction of WIF is investigated in Study 2. Both time management and global self-determination are expected to negatively predict WIF, emotional exhaustion, and FIW and to positively predict life satisfaction.

Study 1

The main objective of Study 1 is to examine the relative impact of work environment factors (i.e. work stressors and support variables) on WIF and emotional exhaustion. The incremental validity of WIF on emotional exhaustion is also tested. A secondary aim is to tease apart the effects of the three support variables (i.e. support from the supervisor, support from the organization, and co-workers' supportive behaviors) on WIF and emotional exhaustion. Work stressors are hypothesized to be positively related to WIF and emotional exhaustion while all three support variables are anticipated to be negatively related to WIF and emotional exhaustion. Finally, a positive relationship is expected between WIF and emotional exhaustion.

Method

Participants and procedure

Data were obtained from 314 nursing staff (288 women, 25 men and 1 “no gender specified”) who worked for a health and social services centre. The majority worked in a medium size general hospital setting (61.4 per cent) while the remaining worked in a residential and long-term care centre (24.8 per cent) and a local community health centre (13.8 per cent). All employees were unionized. Half of the sample reported working full-time (52.6 per cent) while the remaining reported working part-time or on occasion (47.4 per cent). In addition, 60.2 per cent of the participants indicated that they had been working in the nursing field for at least ten years. Participants' age ranged from 20 to 64 with a mean age of 43 years. The majority was married (64.6 per cent), had at least one child (76 per cent), and had completed a post-secondary education (72.1 per cent).

The general director of the health and social services centre granted the research team access to its three sites. Research assistants approached the nursing staff during their normal work hours and invited them to participate voluntarily in the study. Interested participants were given a short questionnaire to complete and were instructed to return it in postage-paid envelopes within two weeks to the University of Ottawa. No compensation was offered and participants were assured that their responses were anonymous and would be kept confidential. Overall, 700 questionnaires were distributed and 314 copies were returned, indicating a response rate of 44.9 per cent.

Measures

Work stressors. The Work Stress Scale (WSS (Schwartzberg and Dytell, 1996)) was used to assess the presence of stressors at work. The WSS is comprised of 23 items divided into 11 subscales designed to tap 11 specific work stressors: role ambiguity (three items), work overload (two items), conflicting demands (one item), work

disruptions (one item), repetitive demands (two items), lack of autonomy (three items), non-challenging work (two items), work dependency (one item), work insignificance (three items), lack of resources on the job (two items), and environment discomfort (two items). Participants rated the frequency with which they experienced each of these work related stressors using a seven-point Likert-type scale, ranging from 1 (never) to 7 (always).

In line with the work of Blanchard *et al.* (2007), the 11 work stressors were subject to a principal component analysis with an oblique rotation. The initial solution revealed the presence of three factors respectively accounting for 35.73 per cent, 12.62 per cent and 9.30 per cent of the variance. Similar to Blanchard *et al.* (2007), the first factor was comprised of “task-related stressors” (i.e. work overload, lack of resources, conflicting demands, environmental discomfort, and work disruptions) and the second factor was comprised of stressors related to the significance of one’s work or “work significance-related stressors” (i.e. work insignificance, non-challenging work, lack of autonomy, and role ambiguity). The third factor was comprised of the dimensions of “work dependency” and “repetitive demands”. However, the lack of meaningful interpretation of this factor combined with the little amount of explained variance provided justification for the removal of these two work dimensions. The remaining nine work dimensions were subject to a second principal component analysis which revealed the same two factors “task-related stressors” and “work significance-related stressors” accounting for 41.52 per cent and 15.12 per cent of the variance, respectively. All factor loadings were above 0.50 and there were no cross-loadings. Factor scores from each factor were retained for subsequent analyses. Results from reliability analyses supported the internal consistency of each factor. The item-total correlations for the “task-related stressors” factor ranged from 0.40 to 0.74 with an average of 0.59 and a Cronbach alpha coefficient of 0.71. The item-total correlations for the “work significance-related stressors” factor ranged from 0.47 to 0.54 with an average of 0.50 and a Cronbach alpha coefficient of 0.73. Higher scores on each factor indicate greater perceptions of stressors at work (Schwartzberg and Dytell, 1996).

Support from the supervisor. Perceptions of the support from the supervisor were assessed using the Interpersonal Behavior Scale (IBS) (Otis and Pelletier, 2004). Participants rated the frequency with which their immediate supervisor engaged in specific behaviors thought to satisfy their psychological needs for autonomy, competence, and relatedness (Deci and Ryan, 1985, 2002). Sample items include: “My immediate supervisor encourages me to be myself” (autonomy; five items), “My immediate supervisor sends me the message that I’m inadequate (competence, reverse coded; four items)”, and “I feel that my immediate supervisor sincerely cares about me” (relatedness; four items). Responses were rated from 1 (never) to 7 (all of the time). Results from reliability analyses support the inter-relatedness of the items with item-total correlations ranging from 0.47 to 0.78 with an average of 0.68 and a Cronbach alpha coefficient of 0.93. Responses were averaged across all 13 items to yield an overall score of “support from the supervisor”.

Support from the organization. Perceptions of support from the health and social services centre were assessed with five items that were created for the purpose of this study. These items were inspired in part from the IBS (Otis and Pelletier, 2004) and were formulated in collaboration with the management and direction of the health and social services centre. These items were:

- (1) "I feel that the management and direction of the health and social services centre cares about our quality of life at work."
- (2) "I feel that the management and direction of the health and social services centre is not doing enough in order to offer us more satisfying working conditions" (reverse-coded).
- (3) "A positive work climate is an important value of the health and social services centre".
- (4) "I am proud to be associated with the health and social services centre".
- (5) "The management and direction of the health and social services centre supports my ambitions when it comes to my professional development".

Responses were rated from 1 (never) to 7 (all of the time).

An exploratory factor analysis using a maximum likelihood extraction was conducted on the five items in order to ensure their homogeneity. Results from this initial solution supported the presence of one factor, which accounted for 53.58 per cent of the common variance. However, item 2 evidenced a low communality and factor loading ($\beta = 0.33$) suggesting the removal of this item. Results from a reliability analysis corroborated the removal of item 2 given its low item-total correlation ($r = 0.30$). The remaining four items were subject to a second exploratory factor analysis using a maximum likelihood extraction. Results from this second solution supported the homogeneity of the four items accounting for 64.34 per cent of the common variance. Results from a reliability analysis supported the inter-relatedness of the four items. Item-total correlations ranged from 0.70 to 0.76 with an average of 0.74 and a Cronbach alpha coefficient of 0.88. Responses were averaged across the four items to yield an overall "support from the organization" score.

Co-workers' supportive behaviors. The Organization and Citizenship Behaviors (OCB) Scale (Podsakoff *et al.*, 1997) was used as an indicator of co-workers' supportive behaviors and team playing approach towards accomplishing work tasks. Participants rated the frequency with which they feel their work team engages in specific behaviors thought to be supportive of its members. Sample items include: "We help each other out if someone falls behind in his/her work" (helping behaviors; seven items), "We provide constructive suggestions about how the team can improve its effectiveness" (civic virtue; three items) and "We spend a lot of time complaining about trivial matters" (sportspersonship, reverse-coded; three items). Each item was rated on a seven-point Likert-type scale ranging from 1 (never) to 7 (all of the time). Item-total correlations ranged from 0.27 to 0.94 with an average of 0.57 and a Cronbach alpha coefficient of 0.84. Responses were averaged across all items to yield an overall score of "co-workers' supportive behaviors".

Work interference with family. The Job Home Interference Scale (Schwartzberg and Dytell, 1996) was developed specifically with the intent to differentiate between two types of conflict: WIF and FIW. Thus, the WIF subscale was used to assess work interference with family. These items are:

- "I feel that my job tends to interfere with my home-life."
- "There is conflict between my responsibilities on the job and at home."
- "I worry about work-related problems when I am at home."

Participants rated their responses from 1 (never) to 7 (always). Item-total correlations ranged from 0.39 to 0.61 with an average of 0.50 and a Cronbach alpha coefficient of 0.67. Responses were averaged across the three items to derive an overall and unidirectional score of WIF.

Emotional exhaustion. The emotional exhaustion subscale from the Maslach Burnout Inventory (MBI) (Maslach and Jackson, 1981) was used to capture the symptoms that characterize the lack of energy commonly associated with burnout. Emotional exhaustion is one of three components of burnout and it believed to be the first stage of a burned-out worker (Maslach and Jackson, 1984). Research supports the use of this subscale without compromising the validity of the MBI (e.g. Thompson *et al.*, 2005). Sample items include: “I feel emotionally drained from my work” and “I feel used up at the end of the work day”. Participants rated the frequency with which they experienced each of these feelings/attitudes described in the items on a seven-point Likert-type scale ranging from 1 (never) to 7 (every day). Reliability analyses support the internal consistency of the items with item-total correlations ranging from 0.54 to 0.85 with an average of 0.69 and a Cronbach alpha coefficient of 0.91. Responses were averaged across all nine items in order to derive an overall score of “emotional exhaustion”.

Results

Prior to analyses, all variables were examined for accuracy of data entry, missing values, and fit between their distributions and assumptions of multivariate analyses (Tabachnick and Fidell, 2001). Missing data did not exceed 4 per cent across all variables. Therefore, missing data was imputed using the Expectation-Maximization algorithm available in SPSS. Descriptive statistics and inter-correlations among all variables are presented in Table I. For the most part, constructs were related in a manner consistent with our hypotheses. Task-related stressors were positively related to WIF while support from the organization was negatively related to WIF. In addition, WIF was positively related to emotional exhaustion. Contrary to expectations, support from the supervisor, co-workers’ supportive behaviors, and work significance-related stressors were not significantly related to WIF.

Multiple regression analyses

Two hierarchical multiple regression analyses were conducted in order to test our hypotheses. The first model tested the relative impact of work environment factors, namely two types of work stressors (task-related stressors and work

	M	SD	2	3	4	5	6	7
1. Task-related stressors	0.00	1.00	0.36*	-0.39*	-0.45*	-0.18*	0.25*	0.60*
2. Work significance-related stressors	0.00	1.00		-0.43*	-0.33*	-0.39*	0.10	0.31*
3. Support from the supervisor	4.65	1.28			0.40*	0.34*	-0.06	-0.28*
4. Support from the organization	3.07	1.45				0.18*	-0.21*	-0.34*
5. Co-workers’ SB	5.14	0.95					-0.09	-0.20*
6. WIF	2.71	1.26						0.41*
7. Emotional exhaustion	3.40	1.26						

Table I.
Descriptive statistics and inter-correlations among variables (Study 1)

Notes: * $p < 0.01$; co-workers’ SB: co-workers’ supportive behaviors; WIF: work interfering with family

significance-related stressors) and three support variables (i.e. support from the supervisor, support from the organization, and co-workers' supportive behaviors) on WIF. In this regression, we controlled for demographic characteristic variables such as workplace, work status (i.e. full-time/part-time) as well as the reported number of children by entering these variables in the first step. The work stressors and support variables were entered in the second step. The second regression tested the relative contribution of these same work environment factors on emotional exhaustion with the addition of WIF in the third step. Results from both regressions are presented in Table II.

In the prediction of WIF, the first step of the regression was not significant [$F(3, 299) = 0.62, p > 0.05$]. Workplace, work status, and number of children were not significantly related to WIF. The second step of the regression was significant [$\Delta F(5, 294) = 5.00, p(0.001)$] and accounted for 5.9 per cent additional variance in WIF. Task-related stressors [$\beta = 0.22, p(0.01)$] and support from the organization [$\beta = -0.14, p < 0.05$] emerged as significant predictors of WIF.

In the prediction of emotional exhaustion, the first step of the regression was not significant [$F(3, 299) = 1.53, p > 0.05$]. Workplace, work status, and number of children were not significantly related to emotional exhaustion. The second step of the regression was significant [$\Delta F(5, 294) = 37.28, p(0.001)$] and accounted for 37.6 per cent additional variance in emotional exhaustion. Task-related stressors [$\beta = 0.55, p(0.001)$] significantly predicted emotional exhaustion while work significance-related stressors only marginally predicted emotional exhaustion [$\beta = 0.10, p < 0.10$]. Finally, the third step of the regression model was significant [$\Delta F(1, 293) = 42.92, p(0.001)$] in that WIF [$\beta = 0.29, p(0.001)$] accounted for 7.6 per cent additional variance in emotional exhaustion.

Discussion

The primary aim of this first study was to examine the relative influence of work environment variables, namely work stressors and support variables in the prediction of WIF and emotional exhaustion. A secondary aim was to tease apart the effects of

	WIF	Emotional exhaustion
<i>Step 1: Demographics</i>		
Work setting	0.04	0.09
Work status (i.e. full-time, part-time)	-0.01	-0.03
Number of children	-0.06	-0.07
Adjusted R^2	0.00	0.01
<i>Step 2: Work environment factors</i>		
Task-related stressors	0.22***	0.55*****
Work significance-related stressors	0.01	0.10*
Support from the supervisor	0.12	-0.00
Support from the organization	-0.14**	-0.06
Co-workers' SB	-0.05	-0.06
Adjusted R^2	0.06*****	0.38*****
<i>Step 3:</i>		
WIF	-	0.29*****
Adjusted R^2	-	0.46*****

Notes: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$; ***** $p(0.001)$; co-workers' SB: co-workers' supportive behaviors; WIF: work interfering with family

Table II. Standardized parameter estimates and total adjusted R^2 values for hierarchical multiple regressions (Study 1)

three sources of support in the workplace: support from the supervisor, support from the organization, and co-workers' supportive behaviors. Both types of work stressors (i.e. task-related stressors and work significance-related stressors) were expected to positively predict WIF and emotional exhaustion while all three types of support were expected to negatively predict WIF and emotional exhaustion. Results provide partial support for our hypotheses. In the prediction of WIF, only task-related stressors and support from the organization emerged as significant predictors. In the prediction of emotional exhaustion, only task-related stressors and WIF emerged as significant predictors. Support from the supervisor and co-workers supportive behaviors did not reach significance. This finding suggests that perceived support from the organization may be more important in the prediction of WIF compared to support from the supervisor and co-workers. This finding corroborates the importance of appropriate work-family policies and programs. As well, findings yielded a significant link between task-related stressors and WIF and emotional exhaustion, while no relationship emerged between work significance-related stressors and WIF. This finding suggests that it may be the various tasks, both in terms of task quality and quantity, that one has to accomplish on a typical work day that contribute to WIF and not necessarily the nature of the work *per se*. As expected, WIF accounted for additional variance in emotional exhaustion above what is accounted for by the work environment variables.

Globally, this first study provides some preliminary results as to the respective roles of task-related work stressors and support from the organization on WIF. Although these results are interesting, their generality is limited to one type of worker: nurses. Little is known as to whether these findings would replicate in a more diversified group of workers. In addition, the relative contribution of individual differences in the prediction of WIF was not tested in this first study. The subsequent study was designed to address these questions.

Study 2

The first aim of Study 2 is to further examine the relative impact of work environment factors (i.e. work stressors and sources of support) on WIF in a more diversified group of workers. As in Study 1, the differential impact of the three support variables on WIF is also tested. The second aim of Study 2 is to test the incremental validity of individual difference variables, namely time management and global self-determination on WIF, above and beyond what is accounted for by the work environment factors. The third aim of Study 2 is to examine the relative contribution of the work environment factors, the individual difference variables, and WIF on emotional exhaustion, life satisfaction, and FIW.

As in Study 1, work stressors are hypothesized to be positively related to WIF and emotional exhaustion. There are also hypothesized to be negatively related to life satisfaction and positively related to FIW. By contrast, the support variables (i.e. support from the supervisor, support from the organization, and co-workers' supportive behaviors) are expected to be negatively related to WIF, emotional exhaustion, and FIW but positively related to life satisfaction. Moreover, time management and global self-determination are anticipated to be negatively related to WIF, emotional exhaustion, and FIW but positively related to life satisfaction. Finally,

WIF is expected to be positively related to emotional exhaustion and FIW, and negatively related to life satisfaction.

Method

Participants and procedure

Data were obtained from 128 employees (119 women, nine men) of a small health and social services centre. The majority were nurses (35 per cent) followed by community/social service workers (25 per cent). The remaining (40 per cent) worked in administration and/or medical laboratories. All employees were unionized. The majority worked in a local community health centre (43.7 per cent) while the remaining worked in a general hospital setting (27.8 per cent) and a residential and long-term care centre (15.9 per cent). More than half of the sample reported working full-time (60 per cent) while the remaining reported working part-time or on occasion (40 per cent). In addition, participants' work experience in the health care services ranged from eight months to 28 years with an average of nine years. Participants' age ranged from 22 to 65 with a mean age of 44 years. The majority was married (54.7 per cent), had at least one child (78.9 per cent), and had completed a post-secondary education (79.4 per cent).

The human resources department of the health and social services centre granted the research team permission to distribute the questionnaires to the staff via internal mail. Participants were instructed to return the completed questionnaire in a postage-paid envelope within two weeks to the University of Ottawa. No compensation was offered and participants were assured that their responses were anonymous and would be kept confidential. Overall, 350 questionnaires were distributed and 128 copies were returned, indicating a response rate of 36.6 per cent.

Measures

Work stressors. The presence of stressors at work was assessed with the WSS (Schwartzberg and Dytell, 1996). Details on the WSS are described in the method section of Study 1. The two types of work stressors that emerged from the exploratory factor analysis in Study 1 (i.e. task-related stressors and work significance-related stressors) were derived by averaging across their respective work dimensions. Results from a reliability analysis supported the internal consistency of each factor. The item-total correlations for the "task-related stressors" factor ranged from 0.32 to 0.61 with an average of 0.47 and a Cronbach alpha coefficient of 0.71. The item-total correlations for the "work significance-related stressors" factor ranged from 0.39 to 0.62 with an average of 0.35 and a Cronbach alpha coefficient of 0.73.

Support from the supervisor. Perceptions of support from the supervisor were assessed using the IBS (Otis and Pelletier, 2004). This scale is described in detail in the Method section of Study 1. Results from a reliability analysis supported the inter-relatedness of the items with item-total correlations ranging from 0.58 to 0.88 with an average of 0.72 and a Cronbach alpha coefficient of 0.94. Responses were averaged across all 13 items to yield an overall score of "support from the supervisor".

Support from the organization. Perceptions of support from the health and social services centre were assessed with the same five items that were employed in Study 1. An exploratory factor analysis using a maximum likelihood extraction was conducted on the five items in order to ensure their homogeneity. Results from this initial solution supported the presence of one factor which accounted for 57.71 per cent of the common

variance. Results from a reliability analysis supported the inter-relatedness of the five items. Item-total correlations ranged from 0.51 to 0.78 with an average of 0.69 and a Cronbach alpha coefficient of 0.86. Responses were averaged across the five items to yield an overall “support from the organization” score.

Co-workers’ supportive behaviors. The OCB Scale (Podsakoff *et al.*, 1997) was used as an indicator of co-workers’ supportive behaviors. This scale is described in detail in the Method section of Study 1. Results from reliability analyses support the inter-relatedness of the entire scale with an average item-total correlation of 0.49 and a Cronbach alpha coefficient of 0.84. Responses were averaged across all items to yield an overall score of “co-workers’ supportive behaviors”.

Time management. The Time Management Behaviors (TMB Scale) (Macan *et al.*, 1990) was used to assess different behaviors and activities that individuals perform to manage their time more efficiently. The scale is comprised of 34 items divided into four subscales:

- (1) setting goals and priorities;
- (2) the mechanics of time management (i.e. making lists, planning);
- (3) perceived control over time; and
- (4) preference for (dis)organization.

Sample items included: “I review my goals to determine if they need revising” (setting goals and priorities), “I carry a notebook to jot down notes and ideas” (mechanics of time management), “I find myself procrastinating on tasks that I don’t like but that must be done” (reverse-coded; perceived control over time) and “I can find the things I need for my work more easily when my workspace is messy and disorganized than when it is neat and organized” (preference for disorganization). Participants rated the extent to which each item was true of them using a seven-point Likert-type scale ranging from 1 (seldom true of me) to 7 (very often true of me). For reasons of parsimony, responses were averaged across all 34 items in order to yield an overall “time management behaviors” score. Previous results supported the TMB scale’s validity evidenced by its positive associations with expected constructs such as job satisfaction, life satisfaction, higher grade point average, and self-rated performance (Macan *et al.*, 1990). Results from reliability analyses support the inter-relatedness of the entire scale with an average item-total correlation of 0.30 and a Cronbach alpha coefficient of 0.82.

Global self-determination. Participants’ global levels of self-determination were assessed using the General Self-Determination Scale (GSDS) (Pelletier *et al.*, 2005). The GSDS is comprised of six subscales of three items each that correspond to the six styles of behavior regulation proposed by Deci and Ryan (1985, 2002). Participants rated the extent to which each item corresponded to their reasons as to “why they do things in general”. Responses were rated on a seven-point Likert-type scale, ranging from 1 (does not correspond to me at all) to 7 (strongly corresponds to me). From the most self-determined to the least self-determined style of behavior regulation, examples of items include: “[...] in order to feel pleasant emotions” (intrinsic regulation), “[...] because they reflect the essence of who I am” (integrated regulation), “[...] because I chose them as means to attain my objectives” (identified regulation), “[...] because otherwise I would feel guilty for not doing them” (introjected regulation), “[...] because I want to be viewed more positively by certain

people” (external regulation), and “. . . although I do not see the benefit in what I am doing” (non-regulation). The reliability and validity of this scale has been supported in five independent studies (Sharp *et al.*, 2003).

In the present study, we were interested in measuring each participant’s global level of self-determination as opposed to their scores on each of the six separate styles of behavior regulations. Scores from each subscale were averaged across their respective three items, weighed according to their position on the self-determination continuum and summed to form a global self-determination index (GSDI) using the following formula: $[GSDI = +3*(intrinsic\ regulation) + 2*(integrated\ regulation) + 1*(identified\ regulation) - 1*(introjected\ regulation) - 2*(external\ regulation) - 3*(amotivation)]$ (see Green-Demers *et al.*, 1997; Grolnick and Ryan, 1987; Pelletier *et al.*, 2004; Ryan and Connell, 1989; Vallerand and Bissonnette, 1992; Vallerand, 1997, for more information on the GSDI). Results from reliability analyses supported the internal consistency of the entire scale. Item-total correlations ranged from 0.13 to 0.56 with an average of 0.44 and a Cronbach alpha coefficient of 0.84.

Work interference with family. As in Study 1, participants completed the WIF subscale of the Job-Home Interference Scale (Schwartzberg and Dytell, 1996) in order to assess work interference with family. These items are described in detail in the Method section of Study 1. Item-total correlations ranged from 0.46 to 0.67 with an average of 0.55 and a Cronbach alpha coefficient of 0.73.

Emotional exhaustion. As in Study 1, the emotional exhaustion subscale of the MBI (Maslach and Jackson, 1981) was used to assess participants’ attitudes and feelings characteristic of emotional exhaustion. Details on this instrument are described in the Method section of Study 1. Item-total correlations ranged from 0.54 to 0.82 with an average of 0.68 and a Cronbach alpha coefficient of 0.90.

Life satisfaction. Participants’ global life satisfaction was assessed with the five-item Satisfaction with Life Scale (Diener *et al.*, 1985). Sample items included: “In most ways my life is close to my ideal.” and “I am satisfied with my life”. Participants indicated their level of agreement with each item using a seven-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Item-total correlations ranged from 0.60 to 0.75 with an average of 0.69 and a Cronbach alpha coefficient of 0.86. Responses were averaged across all five items in order to derive an overall “life satisfaction” score.

Family interference with work. This construct was assessed with the “family interference with work” subscale of the Job-Home Interference Scale (Schwartzberg and Dytell, 1996). These items were:

- “I feel my home life interferes with my performance at work.”
- “I think about family problems during working hours.”

Participants rated their responses using a seven-point Likert-type scale ranging from 1 (never) to 7 (always). Responses were averaged across both items to derive an overall and unidirectional score of FIW. The correlation between both items was 0.33.

Results

Prior to analyses, all variables were examined for accuracy of data entry, missing values, and fit between their distributions and assumptions of multivariate analyses (Tabachnick and Fidell, 2001). There were no missing data. Three cases were deemed

to be outliers and thus were deleted from the dataset. Therefore, subsequent analyses were conducted on the remaining 125 cases. Descriptive statistics and inter-correlations among all variables are presented in Table III.

For the most part, constructs were related in a manner consistent with our hypotheses. With respect to the work environment factors, task-related stressors were positively related to WIF, emotional exhaustion, and FIW, and negatively related to life satisfaction. On the other hand, no relationships emerged between work significance-related stressors and WIF nor FIW. However, work significance-related stressors were positively linked to emotional exhaustion and negatively linked to life satisfaction. Also as expected, support from the supervisor and support from the organization were negatively related to WIF, emotional exhaustion, and FIW, and positively related to life satisfaction. However, the relationships between co-workers' supportive behaviors, WIF, emotional exhaustion, and FIW failed to reach significance.

With respect to the individual difference variables, only global self-determination was related in the hypothesized manner to WIF, emotional exhaustion and life satisfaction. Contrary to expectations, time management was not related to any of these outcome variables. Finally, WIF was positively related to emotional exhaustion and FIW, and negatively related to life satisfaction.

Multiple regression analyses

Four hierarchical multiple regression analyses were conducted in order to test our hypotheses. In the first regression, we tested the relative contribution of the work environment factors which included two types of work stressors (task-related stressors and work significance-related stressors) and three support variables (support from the supervisor, support from the organization, and co-workers' supportive behaviors) on WIF. As in Study 1, we controlled for demographic characteristic variables such as workplace, work status (i.e. full-time / part-time) as well as number of children. We also examined the contributing roles of two individual difference variables namely, time management behaviors and global self-determination in the prediction of WIF. Hence, demographic characteristic variables were entered in first step, work environment factors were entered in the second step, and individual difference variables were entered in the third step. The second, third, and fourth regressions tested the predictive validity of these same antecedents respectively on emotional exhaustion, life satisfaction and FIW with the addition of WIF in the fourth step. Results from these regressions are presented in Table IV.

In the prediction of WIF, the first step of the regression was significant [$F(3, 101) = 2.91, p < 0.05$] and accounted for 5.2 per cent of the variance in WIF. Work status (i.e. full-time, part-time) was negatively related to WIF [$\beta = -0.22, p < 0.05$] indicating that employees who worked full time experienced more WIF. The second step of the first regression was significant [$\Delta F(5, 96) = 6.23, p(0.001)$] and accounted for 24.2 per cent additional variance in WIF. As in Study 1, only task-related stressors [$\beta = 0.42, p < 0.001$] emerged as a significant predictor of WIF. The third step of the regression was marginally significant [$\Delta F(2, 94) = 2.93, p(0.06)$] accounting for 2.9 per cent additional variance in WIF. Global self-determination emerged as a predictor of WIF [$\beta = -0.25, p < 0.05$].

Table III.
Descriptive statistics and
inter-correlations among
variables (Study 2)

	M	SD	2	3	4	5	6	7	8	9	10	11
1. Task-related stressors	3.38	0.94	0.32**	-0.29**	-0.43**	-0.27**	-0.35**	-0.44**	0.42**	0.55**	-0.34**	-0.20*
2. Work significance-related stressors	2.79	0.73		-0.35**	-0.37**	-0.32**	-0.18	-0.26**	0.04	0.32	-0.40**	0.05
3. Support from the supervisor	5.03	1.19			0.65**	0.25**	0.22*	0.13	-0.19*	-0.28**	0.35**	-0.17
4. Support from the organization	4.71	1.29				0.28**	0.18	0.16	-0.29**	-0.36**	0.43**	-0.20*
5. Co-workers' SB	4.94	0.91					0.25**	0.16	-0.13	-0.16	0.28**	-0.13
6. Time management	3.66	0.42						0.32**	-0.20	-0.38**	0.18	-0.30**
7. GSDI	14.48	7.75							-0.40**	-0.42**	0.34**	-0.23**
8. WIF	2.69	1.11								0.51**	-0.32**	0.48**
9. Emotional exhaustion	2.06	1.20									-0.45**	0.33**
10. Life satisfaction	5.29	0.95										-0.35**
11. FIW	2.54	0.96										

Notes: * $p < 0.05$; ** $p < 0.01$; co-workers' SB: co-workers' supportive behaviors; GSDI: global self-determination; WIF: work interfering with family; FIW: family interfering with work

	WIF	EE	LS	FIW
<i>Step 1: Demographics</i>				
Work setting	0.18	0.09	-0.02	0.06
Work status (i.e. full-time, part-time)	-0.22**	-0.14	0.02	-0.06
Number of children	-0.05	-0.11	0.18*	-0.06
<i>Adjusted R²</i>	<i>0.05**</i>	<i>0.01</i>	0.00	0.00
<i>Step 2: Work environment factors</i>				
Task-related stressors	0.42***	0.55***	0.05	0.15
Work significance-related stressors	-0.03	0.11	-0.23**	-0.03
Support from the supervisor	-0.13	-0.11	0.08	-0.10
Support from the organization	-0.02	-0.02	0.26**	-0.03
Co-workers' SB	-0.02	0.04	0.12	-0.08
<i>Adjusted R²</i>	<i>0.25***</i>	<i>0.41***</i>	<i>0.24***</i>	0.00
<i>Step 3: Individual difference variables</i>				
Time management GSDI	0.02	-0.15*	0.00	-0.23**
<i>Adjusted R²</i>	<i>-0.25**</i>	0.10	0.26**	-0.12
Step 4:				
WIF	-	0.38***	-0.26**	0.51***
<i>Adjusted R²</i>		<i>0.53***</i>	<i>0.31**</i>	<i>0.22***</i>

Table IV.
Standardized parameter estimates and total R^2 values for hierarchical multiple regressions (Study 2)

Notes: * $p > 0.10$; ** $p > 0.05$; *** $p > 0.001$; co-workers' SB: co-workers' supportive behaviors; GSDI: global self-determination index; WIF: work interfering with family; EE: emotional exhaustion; LS: life satisfaction; FIW: family interfering with work

In the prediction of emotional exhaustion, the first step of the regression was not significant [$F(3, 101) = 1.49, p > 0.05$]. Workplace, work status, and number of children were not significantly related to emotional exhaustion. The second step of the regression was significant [$\Delta F(5, 96) = 14.64, p(0.001)$] and accounted for 39.7 per cent additional variance in emotional exhaustion. Only task-related stressors [$\beta = 0.55, p(0.001)$] emerged as a significant predictor of emotional exhaustion. The third step of the regression was only marginally significant [$\Delta F(2, 94) = 42.92, p(0.10)$] accounting for 1.9 per cent additional variance in emotional exhaustion. Time management behaviors were negatively related to emotional exhaustion [$\beta = -0.15, p(0.10)$]. Finally, the fourth step of the regression was significant [$\Delta F(1, 93) = 21.62, p(0.001)$]. WIF accounted for 10.3 per cent additional variance in emotional exhaustion [$\beta = 0.38, p(0.001)$].

In the prediction of life satisfaction, the first step of the regression which included the demographic characteristic variables was not significant [$F(3, 101) = 1.08, p > 0.05$]. The second step of the regression model was significant [$\Delta F(5, 96) = 7.20, p(0.001)$] and accounted for 23.7 per cent additional variance in life satisfaction. Work significance-related stressors [$\beta = -0.23, p(0.05)$] and support from the organization [$\beta = 0.26, p(0.05)$] emerged as a significant predictors of life satisfaction. The third step of the regression was significant [$\Delta F(2, 94) = 3.13, p(0.05)$] accounting for 3.2 per cent additional variance in life satisfaction. Global self-determination was positively related to life satisfaction [$\beta = 0.26, p(0.05)$]. Finally, the fourth step of the regression was significant [$\Delta F(1, 93) = 6.94, p(0.001)$]. WIF accounted for 4.4 per cent additional variance in life satisfaction [$\beta = -0.26, p(0.05)$].

In the prediction of FIW, both the first [$F(3, 101) = 0.37, p > 0.05$] and second steps [$\Delta F(5, 96) = 1.25, p(0.001)$] of the regression failed to reach significance. Neither of the demographic characteristic variables nor the work environment variables were significantly related to FIW. The third step of the regression was significant [$\Delta F(2, 94) = 3.28, p(0.05)$] accounting for 3.2 per cent additional variance in FIW. Time management behaviors were negatively related to FIW [$\beta = -0.23, p(0.10)$]. Finally, the fourth step of the regression was significant [$\Delta F(1, 93) = 22.62, p(0.001)$]. WIF accounted for 18 per cent additional variance in FIW [$\beta = 0.51, p(0.001)$].

Discussion

The purpose of this second study was to further examine the relative impact of work environment factors (i.e. work stressors and sources of support) as well as individual difference variables in the prediction of WIF and well-being indices (i.e. emotional exhaustion, life satisfaction, and FIW). It was hypothesized that both types of work stressors (i.e. task-related stressors and work significance-related stressors) would positively predict WIF, emotional exhaustion, and FIW, and negatively predict life satisfaction. However, based on the findings of Study 1, task-related stressors were expected to have a greater impact on WIF and on all other criteria. We also anticipated negative relationships between all three support variables (i.e. support from the supervisor, support from the organization, and co-workers' supportive behaviors) and WIF as well as emotional exhaustion and FIW, but positive relationships between the three support variables and life satisfaction. Although, based on the findings of Study 1, support from the organization was expected to play a more important role in the prediction of WIF and other mental health outcomes.

Results provided partial support for our hypotheses. Consistent with the findings of Study 1, task-related stressors emerged as a significant antecedent of WIF while work significance-related stressors did not reach significance. This particular finding further suggests a greater influence of task-related stressors on WIF. Contrary to what was expected, the different sources of support did not emerge as significant predictors of WIF in the regressions. While significant correlations were documented between some support variables and WIF, their relationships failed to reach significance when controlling for work stressors in the same regression model. With respect to the individual difference variables, global self-determination emerged as a marginally significant antecedent of WIF above and beyond the impact of work environment factors while time management did not. In the prediction of emotional exhaustion, task-related stressors, time management (although marginal), and WIF emerged as significant antecedents of emotional exhaustion. In the prediction of life satisfaction, support from the organization, work significance-related stressors, global self-determination, and WIF emerged as significant predictors. Finally, only time management and WIF were significantly related to FIW.

Globally, the findings of this second study provide support for the results obtained in the first study with respect to the role of task-related stressors (as a work environment factor) on the degree of WIF experienced by employees. The findings obtained from this second study also evidence the importance of global self-determination (as an individual difference variable) as a predictor of WIF and other mental health indices. Unlike the findings of Study 1, support from the

organization did not emerge as a significant predictor of WIF although it was positively related to life satisfaction.

General discussion

The main purpose of this research was to test the relative impact of work environment factors (i.e. work stressors and a supportive work environment) and individual difference variables (i.e. time management and global self-determination) on the degree of WIF and its associated outcomes. Concerning the impact of work stressors on WIF, results are quite convincing given that in both studies, task-related stressors were strongly associated with WIF. These results suggest that the more employees perceive their tasks as being ambiguous or involving hazardous working conditions, the more their work interferes with their family domain. Concerning the impact of work significance-related stressors on WIF, no relationships emerged. Rather, they appear to influence general well-being instead. More precisely, they were related to emotional exhaustion (Study 1 and Study 2), life satisfaction, and FIW (Study 2). With respect to the roles of the support variables, findings obtained in this research revealed mitigating results. Within both studies no clear results emerged.

In this research, we also tested the impact of two individual differences variables, namely time management and global self-determination on WIF and its associated outcomes. Although time management was hypothesized to influence WIF, it did not significantly contribute to the prediction of WIF beyond the impact of task-related stressors. On the other hand, global self-determination was linked to WIF as expected as well as to less FIW. This suggests that employees who feel self-determined toward their life in general, experience less interference from their work domain in their family domain and vice-versa. These results are in line with Self-Determination Theory (Deci and Ryan, 2002), which postulates that people are naturally orientated toward greater growth and integration of their different life domains and activities. Thus, global self-determination is also a reflection of integration and congruence within an individual (Sheldon and Kasser, 1995).

This investigation also attempted to draw links between WIF and a number of mental health indices. For instance, in Study 1, we examined the effect of WIF on feelings of emotional exhaustion. Approximately 45 per cent of the variance in this outcome variable was explained by WIF as well as by the work environment variables. In Study 2, we included life satisfaction and FIW in addition to emotional exhaustion. Task-related stressors were strongly and positively linked to emotional exhaustion, as was WIF while time management was negatively (but marginally) linked to emotional exhaustion. On the positive side, greater perceived support from the organization and global self-determination were positively associated with life satisfaction. By contrast, stressors related to the significance of one's work as well as feelings of WIF were negatively linked to life satisfaction. Finally, WIF was linked to FIW, thus indicating that people who feel that their work interferes with their family life are likely in turn, to feel that their family interferes with their work. Interestingly, time management also emerged as a significant predictor of FIW. Together, findings from both studies provide preliminary insights as to potential factors that may accentuate or mitigate the degree of WIF and may in turn, directly or indirectly impact their psychological well-being. The theoretical implications that may guide future research in this domain are discussed below.

Theoretical implications and future research

The results from the present investigation offer interesting avenues for future theorizing in the work-family realm with respect to the effects of work environment factors, and individual difference variables on WIF and general well-being. First, it is important to note that the three sources of support, namely support from the supervisor, support from the organization and co-workers, supportive behaviors were assessed in both studies. This methodological approach enabled us to tease apart the relative importance of each of the sources of support in the work environment in the prediction of WIF. Results from the correlation matrices partly supported the role of all three sources of support. However, support from the supervisor and co-workers' supportive behaviors did not reach significance; therefore, they do not seem to have an impact on WIF.

Such findings are in line with those of Mesmer-Magnus and Viswesvaran's (2005) whom documented a negative but moderate correlation between a supportive work environment and WIF ($r = -0.16$). Moreover, Ford *et al.* (2007) noted that the strength of the relationships between support variables and WIF reported in their meta-analysis were quite modest, ranging from $r = -0.20$ (support from the organization) to $r = -0.27$ (supervisor/managerial support). As well, while supportive supervisors and co-workers may enhance the quality of life at work, such hypotheses may better be assessed through its impact on work-family enrichment (Greenhaus and Powell, 2006) and less through assessments of interference (or conflict). In that sense, co-workers supportive behaviors are correlated with time management and to greater life satisfaction which are both positive constructs. Similarly, supervisor support was correlated with life satisfaction.

Moreover, as suggested by Ford *et al.* (2007), the relationship between support variables and WIF may be moderated by sex differences. Future research avenues would certainly benefit from this distinction and would thus provide further support for the findings of Roxburgh (1999) which demonstrated co-workers' supportive behaviors to be more important for men while spousal support to be more important for women. These findings are consistent with two theoretical perspectives on the topic: social role differences between men and women (see Pleck, 1977) and gender differences in role identity (e.g. Cinamon and Rich, 2002). In their meta-analysis of the impact of work-family interference on job and life satisfaction, Kossek and Ozeki (1998) also documented a much stronger relation between WIF and job satisfaction for females than for males. Given that 92 per cent of our sample used in the present study was female, it was not possible to test such for moderation effects of sex differences.

Further theorizing on the role of support variables in the prediction of work-family interference suggest that future research would benefit from the inclusion of a measure of work-family culture. This construct is defined as "the shared assumptions, beliefs and values regarding the extent to which an organization supports and values the integration of employees' work and family life" (Thompson *et al.*, 1999, p. 394). Past research documented a strong negative link between work-family culture and work-family interference (Behson, 2002). Hence, a measure of work-family culture may shed further light as to the role of the organization in the prediction of work-family interference and/or work-family enrichment. For example, a supportive work culture may be one that includes employee assistance programs conducive to minimizing interference between work and family. Such a concept could also be easily represented

by a measure of support from the supervisor and co-workers. In this manner, a supportive work environment would include a work-team that supports its members in their efforts to balance work and family. Future research on this concept of work-family culture could provide insight as to the contradictory findings that have emerged between support variables and WIF. Considering the findings obtained in this research with respect to support from the organization, this would certainly be a worthwhile avenue to pursue.

The second type of work environment factor noteworthy of discussion is work stressors. Unlike support variables, stressors in the workplace have consistently emerged as significant predictors of WIF (Ford *et al.*, 2007). Across various measures and studies (including ours) consistent strong relations have emerged between the presence of work stressors and WIF and its associated outcomes (e.g. Baltes and Heydens-Gahir, 2003; Bernas and Major, 2000). The present study categorized work stressors into two main types: task-related stressors and stressors related to the significance of one's work. In line with previous research, task-related stressors such as work overload, lack of resources, and conflicting demands, and others, were positively linked to WIF and emotional exhaustion, and this in both studies (see Byron, 2005 for a review). On the other hand, stressors related to the significance of one's work such as role ambiguity, poor job recognition, and lack of autonomy were negatively linked to life satisfaction as per the regression analyses of Study 2 and to global self-determination and time management (see correlation matrix, Study 2). Overall, work stressors appear to clearly impact the work climate and employee's psychological adjustment in the workplace. Such negative outcomes create work preoccupations and eventually spill-over in other life domains (i.e. the family) thus influencing non-work related outcomes through WIF (Ford *et al.*, 2007).

Based on the herein findings, both work stressors and support variables are important antecedents of WIF. However, in order to clarify some of the mixed findings that emerged in this research as well as in others, it may be worthwhile in future research to investigate how each of these antecedents map respectively onto constructs such as work-family facilitation and family enrichment, in addition to the well-studied work-family interference construct. To be more precise, WIF may be better explained by antecedents such as work stressors, whereas work-family facilitation may be better explained by support variables. For instance, Frone (2003) articulated a fourfold model of work-family balance incorporating work-to-family facilitation (i.e. the extent to which participation at work is made easier by virtue of the experience, skills, and opportunities gained or developed at home). Greenhaus and Powell (2006) have also proposed a model of work-family enrichment suggesting that support and resources from one domain can enhance performance in other domains through affective and/or instrumental paths.

A number of theoretical implications also arise from the inclusion of individual difference variables in the model of work-family interference. The present research examined the roles of time management skills and global self-determination as possible intrapersonal antecedents that may explain in part, why some people are likely to experience conflict between their work and family domains, whereas others may not or at least to a lesser degree.

First, time management skills were hypothesized to minimize the degree of WIF (e.g. Adams and Jex, 1999; Baltes and Heydens-Gahir, 2003). However, our results did

not yield a significant relation between time management and WIF while the correlation matrix did (although marginal). Mixed findings have also been reported in the past. For instance, Adams and Jex (1999) found positive links between setting goals and priorities and WIF. Such unpredicted results may be explained by the fact that prioritizing is most often done at work, which may as well result in greater interference between work and family. However, Adams and Jex (1999) also found negative links between a preference for disorganization and WIF as well as no significant relationship between these time management strategies and FIW. Future research should examine each of the different attitudes and behaviors that comprise the time management construct in order to determine how they might map differently onto WIF.

Moreover, in our investigation, the WIF construct tapped the cognitive dimension of work-family interference (e.g. "I worry about work-related problems when I am at home"). Many approaches can be used to assess work-family interference. Most researchers assess the general aspects of WIF, such as perceived time constraints with respect to each role (Ford *et al.*, 2007). Given that our measure captured more of a psychological preoccupation with work, it could explain the absence of some relationships. However, it is also possible that other measures tapping the time-based constraints of work-family interference may show stronger links to a measure of time management skills given that the latter deals with actual behaviors. That being said, our results did yield a negative link between time management and emotional exhaustion as well as between time management and FIW. Again, future research should further investigate the relationship between the components of time management skills and both FIW and WIF. Further clarifying these points could certainly have valuable applied implications for employees, organizations, and the workplace in general.

The second individual difference variable hypothesized to minimize the degree of WIF was employees' global levels of self-determination. This construct is viewed as a dispositional level variable, accounting for individual differences in how people approach and integrate their life domains and associated activities. In this research, global self-determination was negatively related to WIF, thus indicating that the more employees feel self-determined toward their different life domains, the less they experience interference from the work domain into the family domain. This finding contributes to the literature on both the work-family interference as well as to the Theory of Self-Determination (Deci and Ryan, 1985, 2002). First, our findings provide support for a potential personality characteristic that may decrease the degree of interference experienced by workers, thus providing further insight into the nature of individuals within organizations. Second, our findings provide additional support for a well-validated macro-theory of human motivation which postulates that greater feelings of self-determination result in better adjustment (Knee and Zuckerman, 1996; Bober and Grolnick, 1995).

Inspired by studies grounded in the framework of Self-Determination Theory (e.g. Amiot *et al.*, 2004; Sénécal *et al.*, 2001), future studies could examine the mediating role of coping strategies on the relationship between feelings of self-determination toward the domains of work and family and the degree of work-family interference. It would be expected that feelings of self-determination in both life spheres would ensue more adaptive coping strategies resulting in less work-to-family interference (and more work-family facilitation). Findings from this research are also quite useful on an applied basis. For example, when individuals report high levels of global

self-determination, evidenced by greater signs of integration, lesser degree of interference between different life domains can be expected. In terms of intervention, some training could be provided aimed at making employees more aware of their motivational resources (i.e. self-determination) and their impact on their everyday functioning and well-being.

Finally, as hypothesized, a positive link emerged between WIF and FIW. This finding suggests that the nature of the conflict between work and family is bi-directional (or reciprocal e.g. Greenhaus and Beutell, 1985). Our results documented a moderately high correlation between WIF and FIW ($r = 0.48$) which is in line with past findings ranging from $r = 0.30$ to $r = 0.55$ (Frone *et al.*, 1992, 1997; Netemeyer *et al.*, 1996). Further investigation of the reciprocal nature of the work-family interface is certainly warranted. As suggested by Byron (2005), it would be worthwhile to investigate the dynamics underlying the work-family interference construct. Specifically, increased work demands and pressures resulting in feelings of WIF may potentially and eventually ensue greater pressures from the family, resulting in greater feelings of FIW. In a similar vein, the negative and positive aspects of work and family should also be considered (Grzywacz and Marks, 2000). By doing so, researchers may be better equipped to identify and explain the antecedents, consequences, and correlates of WIF. Finally, given the bi-directional influences implied in the construct of work-family interference, longitudinal research is needed to map out how each type of interference develops overtime.

Limitations

Three important methodological limitations should be acknowledged. First, although our hypotheses were conceptualized in terms of putative causes and effects, the use of correlational and cross-sectional data does not allow us to draw definite conclusions concerning causality. The use of longitudinal designs would be pertinent to confirm the causal hypotheses postulated in this research. Second, the data was obtained from self-reports measures, thus potentially introducing a methodological bias. Its resulting effect may reside in the magnitude of the relationships observed, which may be inflated. Although we cannot directly rule out such a possibility, it is noteworthy to mention that such a methodological artifact should be relatively constant across all relationships. If the relationships observed in this research were largely a function of method bias, significant relationships would have emerged between constructs where none were predicted. However, it seems unlikely that the patterns observed in our findings are solely attributable to method variance. A third limitation concerns the cross-sectional design of our study as it fails to capture the temporal nature of work and family issues (Ford *et al.*, 2007). A potential source of measurement errors is the extent to which the time of measurement influences responses. Because daily schedules for most individuals may vary from week to week, interference between work and family domains is also likely to vary across time. Even though our aim was not necessarily to assess a stable construct of work interfering with family, our measure of the construct may have been affected by these temporal factors.

Conclusion

This research lends support to the claim that both work environment factors and individual difference variables should be studied within the same paradigm in order to

better grasp the strengths among these different sources of antecedents of work interfering with family. Most importantly, task-related stressors were found to have a detrimental (negative) effect on WIF while global self-determination was found to have a beneficial (positive) effect on WIF. Future research grounded in a motivational framework would provide researchers and practitioners, as well as organizations and workers with valuable tools on how to enhance feelings of (global) self-determination, which would eventually lead to better management of multiple life domains and untimely to integration of them all within one's self.

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