Work–family interference as a mediator between job demands and job burnout among doctors

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Summary
There is an increasing realization that the connections between work and family life are of critical importance in contemporary society. The present study examined the relationship between job demands and burnout, and the mediational role of work–family interference (WFI) in a sample of Greek doctors (N = 162). The main findings are: (1) emotional job demands were found to be a strong independent predictor of both emotional exhaustion and depersonalization; (2) quantitative job demands were found to predict emotional exhaustion; (3) WFI was found to partially mediate the relationship between both quantitative/emotional job demands and emotional exhaustion; (4) additionally, WFI partially mediated the relationship between emotional job demands and depersonalization. The results and limitations are discussed with reference to the medical profession. Copyright © 2006 John Wiley & Sons, Ltd.

Key Words
work–home interference; job demands; burnout; doctors; Greece

Introduction
There is an increasing realization that the connections between work and family (or non-work) life are of critical importance in contemporary society. This development is rooted in the increasing inflow of women into the workforce and growing number of dual-earner families (cf. Geurts & Demerouti, 2003). In terms of Greece, the need to reconcile work and family demands is an increasing problem rooted in long work hours, informal care arrangements and low-levels of opportunities for part-time work (Bagavos, 2003). Indeed, a recent European Union (EU) survey concerning quality of life (European Foundation for the Improvement of Living and Working Conditions, 2005), indicated that Greece ranked first (14 per cent) in the EU concerning the difficulties experienced in fulfilling family responsibilities because of the amount of time spent at work, compared with either the EU15 average (9 per cent) or the EU25 average (10 per cent). The same survey also indicated that Greece reported the highest level (29 per cent) with regard to the issue of coming home from work too tired to do some of the household jobs, compared with either the EU15 average (22 per cent) or the EU25 average (23 per cent).
In general, the conditions of medical work in both primary care (general practice) and secondary care (hospital) suggest that doctors are particularly prone to spillover from work to family-life (e.g. Geurts, Rutte, & Peeters, 1999; Kirwan & Armstrong, 1995). For example, the combination of heavy workloads and emotional demanding interactions with patients can mean less time and energy available for family interaction and leisure. Combining this fact with aforementioned EU facts about work and family demands in Greece, suggests that Greek doctors represent a particularly significant risk group. Thus, the present study will examine the antecedents of work spillover into family life and their relationship with burnout among a sample of Greek Doctors.

Work–family interference (WFI) as a mediator

Woodworth's (1928) S-O-R model, which recognized that an active organism interferes between stimulus and response, is perhaps the most generic formulation of the mediation hypothesis. The central idea in this model is that various transformation processes internal to the organism mediate the effects of stimuli on behaviour. In general, a given variable is said to function as a mediator to the extent that it accounts for the relationship between the predictor and criterion variables. According to Baron and Kenny (1986), a variable functions as mediator when its inclusion in an analysis results in a significant reduction in the relationship between the independent and outcome variable. Work–family interference (WFI) is experienced when pressures from the work and family roles are mutually incompatible, such that participation in one role makes it difficult to participate in the other (Greenhaus & Beutell, 1985). Theoretically, the definition of WFI implies mediation, as WFI can mediate the way we experience demands over a prolonged period. Conceptually, work experience fits the characterization of a response variable as suggested by Holmbeck (1997). In essence, variables such as work experience cannot exist in isolation, as one cannot adapt to job demands without job demands in the first place.

In general, the role of WFI as a mediator between job-related demands and job strain outcomes has been suggested by many studies (Bakker & Geurts, 2004; Frone, Russell, & Cooper, 1992; Geurts, Rutte, & Peeters, 1999; Kinnunen & Mauno, 1999; Montgomery, Peeters, Schaufeli, & Den Ouden, 2003; Parasuraman, Purohit, & Godshalk, 1996; Stephens, Franks, & Atienza, 1997). In terms of health care professionals, Geurts et al. (1999), in a study of Dutch medical residents, found that WFI mediated the relationship between work characteristics (i.e. work time schedule, quantitative workload and dependency on supervisor, a partner who worked overtime frequently) and general psychological health. Additionally, Janssen, Peeters, Jonge, Houkes, and Tummer (2004), in a sample of Dutch nurses, found that negative work–home interference mediated the relationship between job demands and emotional exhaustion. Furthermore, Geurts, Kompier, Roxburgh, and Houtmann (2003), in a large heterogeneous sample of workers (which included 166 medical residents), found that WFI fully mediated the relationship between workload with depressive mood and health complaints, and partially mediated the relationship with negative affect. Taken together, the accumulated evidence provides both theoretical and empirical evidence to hypothesize WFI as a mediator between job demands and job strains.

Burnout

Burnout is a state of physical, emotional and mental exhaustion caused by long-term involvement in situations that are emotionally demanding (Pines & Aronson, 1988) and is encountered frequently in health services personnel. In terms of correlates and possible consequences, burnout has been linked to increased levels of depression, psychosomatic complaints, substance abuse, absenteeism and sick-leave [see Schaufeli and Enzmann (1998) for a review]. Thus, the stress that doctors experience is an important topic for study. Physicians are primarily involved in people work, and the ‘helping’ relationship with patients or clients involves high interpersonal, or emotional demands, which can lead doctors to feelings of emotional exhaustion and depersonalization (Deary et al., 1996; Kirwan & Armstrong, 1995; Winefield & Anstey, 1991). In addition, Greek doctors work long hours, experience high patient demands and high patient turnover. Indeed, on average, Greek workers are reported to have the longest work hours in the EU (EIRO, 2005). The present study is especially...
important when one considers that while burnout is an exhaustively studied phenomenon, no published research could be identified by the authors that examined burnout among Greek doctors. Indeed, burnout as a concept has been rarely examined among health professionals in Greece [with the exception of Iacovides, Fountoulakis, Moysidou, and Ierodiakonou (1997), Tselebis, Moulou, and Ilias (2001) who both studied nurses] and among Greek employees per se [with exception of Kantas and Vassilaki (1997), Pomaki and Anagnostopoulou (2003), who both studied teachers].

A large body of research has identified job demands as an important antecedent of burnout. Workload and time pressure explains about 25–50 per cent of the variance of burnout, especially of emotional exhaustion (Lee & Ashforth, 1996). Freudenberger called burnout ‘the disease of the over-committed’ or ‘the super-achiever sickness’, suggesting that burned-out employees suffer from an imbalance with their work and home lives. Indeed, Cherniss (1995) followed 26 young professionals who suffered from early career burnout over 12 years and found that those who recovered were more successful at balancing work, family and leisure. Maslach (1982) pays special attention to making the transition from work to home by introducing the notion ‘decompression’. Maslach argues that people working in an emotional and demanding environment need to ‘decompress’ before moving into the normal pressure of their private life. In the present research, it follows logically that job demands is an important variable that directly influences the ability of individuals to ‘decompress’ from the work domain.

**Job demands**

According to Jones and Fletcher (1996), job demands refer to the degree to which working environments contain stimuli that require some effort. Such additional effort may result in additional cognitive, emotional and/or behavioural activity. Until recently, most studies concerning the relationship between job demands and job stress have focused on quantitative demands (e.g. workload). One of the most prominent models in this area, Karasek’s (1979) demand-control model has received critical attention with regard to the possible multi-faceted nature of job demands. Different types of job demands have been examined within the framework of the model (De Jonge, Mulder, & Nijhuis, 1999; Söderfeldt et al., 1996, 1997), but even more specification is needed.

The need to evaluate a range of job demands is prompted by the fact that the nature of work is changing. Environmental, political and sociocultural forces have contributed to the restructuring of work over the last half a century (see Cooper, Dewe, & O’Driscoll, 2001, for a full discussion). For health care professionals especially, the nature of working life is changing by demanding more emotional effort, rather than physical effort alone (Barsade, Brief, & Spataro, 2003). Therefore, the present study will not just measure job demands by measuring overload but also assess a much richer set of demands by dividing them into quantitative and emotional demands. In the present research, quantitative job demands refer to work overload or work pressure or too much work to do in too little time, while emotional job demands refer to the affective component of work and the degree to which one’s work puts one in emotionally stressful situations. The general definition of job demands, employed in the present study, which refers to the degree to which the working environment contains stimuli that require some effort (Jones & Fletcher, 1996) encapsulates the idea that job demands lead to negative consequences if they require additional effort beyond the usual way of achieving the work goals (see Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

**Control variables**

Traditionally, the job-demands literature has measured more structural home demands such as hours worked and family situation. A recent literature review of structural variables (Montgomery, 2003) has indicated that there is mixed evidence to link them to strain outcomes such as burnout. That said, the present study does not suggest they are unimportant but hypothesizes them as important control variables. Therefore, the following demographic variables will be included in the analyses: gender, age, average work hours, having a working spouse and having children living at home.

In addition, a personal trait relevant to the study of job demands and burnout is negative affectivity (NA), defined by Watson and Clark (1984) as a stable tendency to express emotions
across time and situations. Therefore, not controlling for NA may overestimate the effect of job stress on well-being. Researchers have only recently acknowledged the role of psychological individual difference variables in work–family relationships (Greenhaus & Parasuraman, 1999). NA has been examined in three studies of WFI (Carlson, 1999; Frone, Russell, & Cooper, 1993; Stoeva, Chiu, & Greenhaus, 2002). Although the need to study NA has been questioned by researchers (Dollard & Winefield, 1998; Schonfield, 1996), the present research will adhere to the advice of Spector, Zapf, Chen, and Frese (2000) to include NA in studies of stressor–strain relationships.

The present study

The primary aim of the present research is to test a job demands model of burnout among Greek doctors.

Specifically, the research hypotheses are as follows:

Hypothesis 1a (H1a): Quantitative job demands are positively associated with burnout, beyond demographic variables and NA.

Hypothesis 1b (H1b): Emotional job demands are positively associated burnout, beyond demographic variables and NA.

Hypothesis 2a (H2a): WFI will mediate the relationship between job demands (quantitative and emotional demands) and emotional exhaustion, beyond demographic variables and NA.

Hypothesis 2b (H2b): WFI will mediate the relationship between job demands (quantitative and emotional demands) and depersonalization, beyond demographic variables and NA.

Methods

Participants and procedures

The study sample consisted of 162 Greek doctors attending professional development courses (e.g. research methods, IT training) in the university medical school. Participants were given the questionnaires before the course started. Participants ranged in age from 25 to 62 years of age (mean, M = 36.5; standard deviation, SD = 10.2). In terms of gender, 56 per cent of doctors were men.

A little over half of the respondents (53 per cent) lived with a partner, of which 72 per cent reported having a partner with a paid function. Forty-one per cent of respondents reported having children living at home. The total sample was split between medical residents (61 per cent) and medical specialists (39 per cent). Analysis of the study variables using these two samples indicated only two statistical differences; residents reported higher levels of quantitative job demands (M = 2.7 versus M = 2.4, t(147) = 3.2, p < 0.01), and higher levels of depersonalization (M = 10.7 versus M = 7.5, t(150) = 3.10, p < 0.01). As expected residents were significantly younger than specialists (M = 32.15 versus M = 43.49, p < 0.001). Men represented 57 per cent of the specialist doctor group and 56 per cent of the residents, but no gender differences were found within the resident, specialist doctors and total sample groups for any of the study variables. Overall, the weight of evidence recommended analysing the total sample of doctors.

Measures

Work-family interference (WFI). WFI was measured using the scale recommended by the Sloan Work–Family Researchers Electronic Network (MacDermid, 2000). The WFI (nine-items) scale contains WFI measures developed by virtual think tank comprising recognized experts in the field of work/life. The items in the scale represent a synopsis of the best published scales in the field, such as the scales of Netermeyer, Boles, and McMurrian (1996) and Gutek, Searle, and Klepa (1991), such as, ‘I was preoccupied with my work while I was at home’. All items are scored on a five-point frequency scale ranging from ‘1’ (never) to ‘5’ (always). Internal consistency was good (Cronbach’s alpha, α = 0.90). The present scale has already been translated and validated for use in a Greek sample (Montgomery, Panagopoulou, & Benos, 2005).

Burnout. The Greek version of the Maslach Burnout Inventory-General Survey (MBI-GS) was used to assess burnout (Kantas & Vassilaki, 1997). Two subscales of the MBI-GS were assessed: emotional exhaustion (nine items; e.g. ‘I feel used up at the end of the workday’, α = 0.86), and depersonalization (four items; e.g. ‘I have become less enthusiastic about my work’,
α = 0.76). All items are scored on a seven-point frequency rating scale ranging from ‘0’ (never) to ‘6’ (daily). High scores on the emotional exhaustion and depersonalization subscales are indicative of burnout.

**Job demands.** Job demands were measured using two scales taken from the Dutch Questionnaire on the Experience and Evaluation of Work [De Vragenlijst beleving en beoordeling van de arbeid (VBBA); Van Veldon & Meijman, 1994]; quantitative job demands (five items; e.g. ‘Do you have to work very fast?’) and emotional job demands (four items; ‘Is your work emotionally demanding?’). All items are scored on a four-point scale from ‘1’ (never) to ‘4’ (always). The scales were translated and back translated into Greek. Internal consistency for the quantitative job demands scale and emotional job demands scale were good, α = 0.74, α = 0.73, respectively.

**Negative affectivity (NA).** To assess NA, the PANAS scale was used developed by Watson, Clark, and Tellegen (1988). The PANAS is designed to measure negative affectivity (NA) as well as positive affectivity (PA). However, the latter is not further considered in this study. NA is assessed by descriptors such as ‘afraid, hostile, irritable, jittery and upset’. Participants indicated the extent to which they experienced the particular mood state in general on a five-point scale ranging from ‘very slightly or not at all’ to ‘extremely’. Extensive research has demonstrated the reliability and validity of this instrument across a wide range of subjects (Watson et al., 1988). Internal consistency for the NA scales was good, α = 0.89. The PANAS has been previously translated for use in a Greek sample (Panagopoulou, 2001).

**Analysis**

SPSS regression analyses were used to assess the impact of a predictor variable on the criterion/outcome variable. The mediation analysis was carried out in line with the methodology suggested by Baron and Kenny (1986). Accordingly, a prerequisite for mediation is that the predictor, mediator and dependent variables must be significantly related. Mediation is demonstrated by a reduction in the impact of the predictor on the dependent measure after controlling for the mediator, with gender, age, work hours, working spouse, having children and NA entered as control variables. Using the methodology recommended by Eckenrode, Rowe, Laird, and Brathwaite (1995) reduction of the coefficient to zero equals full mediation and reduction of the coefficient is equivalent to partial mediation. This is consistent with the view of Baron and Kenny (1986) who suggest that as most areas of psychology have multiple causes, a more realistic goal is to seek mediators that significantly reduce the relationship between the predictor and dependent measure. In the event of partial mediation, both MacKinnion and Dwyer (1993) and Schrout and Bolger (2002) recommend estimating the extent of mediation by calculating the percentage of the total effect that is mediated. In addition, the statistical significance of the mediation was calculated using the Sobel test (Preacher & Leonardelli, 2001).

**Results**

**Descriptive statistics**

Table I provides the M values, SDs and correlation coefficients of the study variables. According
to Cohen and Holliday’s (1982) rule of thumb, correlations between 0.40 and 0.69 are considered to be moderate, whereas correlations exceeding 0.69 are considered high. As expected, emotional exhaustion was moderately correlated with depersonalization (r = 0.51, p < 0.01) and WFI (r = 0.62, p < 0.01). Depersonalization was moderately correlated with WFI (r = 0.38, p < 0.01). This indicates that the burnout and WFI scales were associated entities but independent constructs.

Quantitative job demands was weakly correlated with emotional job demands (r = 0.36, p < 0.01). The two types of demands were correlated with WFI (r values equal 0.42 and 0.43, p < 0.01; for quantitative and emotional job demands, respectively). NA was related to all study variables (range of r value was from 0.18 to 0.39). Once again, this indicates that the variable scales were related but independent constructs.

No significant differences were found between any of the variables with regard to gender, except for NA with women reporting higher mean levels, M = 22.3 versus M = 19.2, [t(156) = 2.89, p < 0.01]. Comparison between mean levels of burnout of the respondents in this study and 479 US doctors (Schaufeli & Enzmann, 1998) indicates that the respondents in the present study had similar levels of emotional exhaustion (M = 23.7 in present study and M = 24.0) and depersonalization (M = 9.4 in present study and M = 10.6).

Multiple regression analyses

Table II reports the results of the multiple regression analysis. The hypotheses were tested after controlling for gender, age, average work hours, having a working spouse, having children living at home and NA. Limited support was found for H1a, with quantitative job demands a significant predictor of emotional exhaustion (β = 0.24, p < 0.01), but not depersonalization. Full support for H1b was found with emotional demands a significant predictor of both emotional exhaustion (β = 0.33, p < 0.01) and depersonalization (β = 0.20, p < 0.01).

Table II shows the results of the mediation analyses, carried out in line with the methodology suggested by Baron and Kenny (1986). With regard to H2a, Table II indicates that WFI partially mediated the relationship between quantitative job demands and emotional exhaustion (from β = 0.24 to β = 0.04; Sobel test, z = 4.73, p < 0.001), and emotional job demands and emotional exhaustion (from β = 0.33 to β = 0.18; Sobel test, z = 4.79, p < 0.001). In terms of the total effect mediated, 83 per cent of the relationship between quantitative job demands and exhaustion was mediated by WFI, and 45 per cent of the relationship between emotional job demands and emotional exhaustion. In terms of H2b, WFI did not mediate between quantitative job demands and depersonalization, but WFI partially mediated the relationship between

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<th>Emotional exhaustion</th>
<th>Depersonalization</th>
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<td></td>
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<td>NA</td>
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<tr>
<td>QJD</td>
<td>0.24*</td>
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<td>EJD</td>
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<td>WFI</td>
<td>0.61**</td>
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<td>R² (R² adjusted)</td>
<td>0.28 (0.22)</td>
<td>0.51 (0.47)</td>
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Note: βi, initial beta weight when first entered; βt, final beta weight after WFI entered. QJD = quantitative job demands, EJD = emotional job demands, WFI = work–family interference.

* p < 0.05; ** p < 0.01.
emotional job demands and depersonalization (from $\beta = 0.20$ to $\beta = 0.11$; Sobel test, $z = 3.25$, $p < 0.001$). In terms of total effect mediated, 45 per cent of the relationship between emotional job demands and depersonalization was mediated by WFI. Finally, the strength of WFI as a predictor of both emotional exhaustion and depersonalization is indicated by the fact that addition of WFI significantly increased the explained variance ($\Delta R^2 = 0.23$ for emotional exhaustion and $\Delta R^2 = 0.08$ for depersonalization).

Additional analyses. In the interest of being exhaustive, two extra analyses were carried out. (1) The regression equations were re-analysed with two subsamples (residents and doctors). Results indicated that the same pattern of relationships compared to the total sample. (2) In the total sample, group (resident versus doctor) was entered as dummy variable, but indicated non-significance. Taken together, these additional analyses recommended that analysis of the total group of doctors was reliable and valid.

Discussion

Main findings

The primary aims of this research were to test a job demands and burnout model and examine the mediational role of WFI. In terms of the first hypothesis, evidence was found that emotional job demands is a strong predictor of both emotional exhaustion and depersonalization, even after controlling for demographic variables and NA. This means that the emotional people work that Greek doctors constantly engage in is an important predictor of burnout. Additionally, quantitative job demands were found to predict emotional exhaustion, meaning that heavy workloads or overwork is reducing the energy available to these health care professionals.

With regard to the second hypothesis, WFI was found to partially mediate the relationship between both quantitative/emotional job demands and emotional exhaustion. Additionally, WFI partially mediated the relationship between emotional job demands and depersonalization. Baron and Kenny (1986) suggest that partial mediation may be a realistic goal for the social sciences, given the multiple causes of psychological phenomena. However, the large reduction in the direct effect between quantitative job demands and emotional exhaustion (after including WFI) provides strong evidence that such spillover is having a detrimental effect on work functioning (via feelings of burnout). Such a result is consistent with asserted centrality of family in Greek society (e.g. Bagavos, 2003) and a recent EU survey (European Foundation for the Improvement of Living and Working Conditions, 2005) positioning Greece as a country that typically shows high levels of WFI, compared all other European countries. Therefore, it can be speculated that the heavy workload of Greek doctors is interfering with family and social obligations, and thus it is likely that these health professionals bring the emotional demands of the day home with them. A more dynamic methodology (e.g. diary methodology) could confirm such a process, but the results from the present study are highly suggestive of such an idea. Indeed, it is significant that in the present study emotional demands were more strongly and consistently related to burnout.

An important element of the present research in comparison with previous research was that an additional type of demand was examined beyond traditional work pressure. In the present study, a differential effect was observed with emotional demands linked to both emotional exhaustion and depersonalization, but quantitative demands linked only to emotional exhaustion. This probably suggests that specific demands are domain specific (such as emotional demands) relative to others. For example, certain demands such as being on call and high patient turnover are experienced within the work environment, while doctors having to make treatment decisions and convincing patients to comply with medication may linger beyond the work setting. The differential results regarding demands provide further evidence that occupational researchers should always try to measure a diverse set of demands. This is a consistent with researchers who call for a broadening the perspective of demands (De Jonge & Dormann, 2002; De Jonge et al., 1999; Le Blanc, Bakker, Peeters, Van Heesch, & Schaufeli, 2001). Using demands that are specific will provide more opportunities to detect meaningful associations between variables.

Limitations

The present study is cross-sectional and thus the postulated relationships cannot be interpreted
causally. Longitudinal studies and/or quasi-experimental research designs are needed to further validate the hypothesized causality of the relationships. In terms of variables studied, it would have been interesting to have been able to control for time in parenting and home roles. Indeed, the present study concentrated mainly on the work side of the equation, and it would have been useful to also examine family-to-work interference and family related outcomes.

Practical implications

The fact that WFI was found to be a significant issue for Greek doctors should be treated with due seriousness. Recent research (Frone, 2000) examining a nationally representative sample of employed adults estimated that employees reporting WFI were 2 to 30 times more likely than employees who reported no WFI to experience a clinically significant mental health problem. In addition, Frone, Russell, and Barnes (1996), studying random community samples of employed parents, found that WFI was positively related to depression, poor physical health and heavy alcohol use. Potential interventions for WFI should try to address the intrapersonal (e.g. coping styles), interpersonal (e.g. social support) and environmental (e.g. availability of flexible work hours or child care) factors. From a practical point of view, the results of this study indicate that it is advisable to train health care providers in coping with demanding situations. The results with regard to quantitative job demands strongly suggest that an organizational intervention is called for, with regard to work re-design, time-management, self-management and workload management.

The results concerning the emotional demands suggest that medical doctors should receive training in dealing with the emotional demands of their work. Such training could take the form of undergraduate or postgraduate training in communication skills and emotional management. Indeed medical students in Greece are rarely taught how to routinely assess psychosocial factors, and often use distancing techniques to avoid dealing with awkward situations (Panagopoulou et al., 2006). Alternatively the incorporation of reflection groups within medical settings where doctors could deal with the difficult emotional situations they have encountered at work, before they go home could be very effective.

Additionally, the reported burnout levels of the present sample were consistent with US physicians (Schaufeli & Enzmann, 1998), suggesting that Greek physicians are not benefiting from a ‘South-European dividend’ and their stress–strain reactions are similar to US and North European norms.

References

Work–family interference and burnout


Van Veldon, M., & Meijman, T.F. (1994). Het meten van psychosociale arbeidsbelasting met een vragenlijst: de vragenlijst beleving en beoordeling van de arbeid (VBBA) [The measurement of psychosocial strain at work: The questionnaire experience and evaluation of work]. Amsterdam: NIA.


