**Work time demands, work time control and supervisor support in the Australian construction industry: An analysis of work-family interaction**

## Introduction

*The work-family interface*

There is an established link between the experience of conflict between work and family domains and negative outcomes for workers, families and organizations. Recently, researchers have begun to explore the possibility of positive work-family interaction and studies have shown that participation in one domain (e.g. work or family) can positively enhance experiences in the second domain (e.g. family or work) (Carlson, Kacmar, Wayne & Grzywacz 2006). Work-family conflict and enrichment are not bi-polar opposites of the same concept and have different antecedents and outcomes (Grzywacz & Marks, 2000; Powell & Greenhaus, 2006). For example, Voydanoff (2004a) suggests that demands are related to work-family conflict, while resources are related to work-family enrichment. Both work-family conflict and work-family enrichment are also understood to be bi-directional and multi-faceted (Greenhaus & Beutell, 1985; van Steenbergen, Ellemers, & Mooijaart, 2007). Managing the work-family interface is important because the quality of work-family interaction has been linked with objective measures of workers' health and performance (van Steenbergen & Ellemers, 2009).

*Aims*

The research examined the relationship between job characteristics and positive and negative work-family interaction in the Australian construction industry. Research objectives were:

(1) To explore the relationship between work time demands, work time control and supervisor support and experiences of work-family interaction in the Australian construction context;
(2) To position Australian construction workers into theoretical job characteristic 'types', based upon work time demands (hours) and resources (work time control and supervisor support); and
(3) To investigate the extent to which respondents in different job 'types' differ in their experience of positive and negative work-family interaction.

*Theoretical framework*

The stressfulness of a job is commonly understood in terms of the demands it places upon an individual and the level of control over the way in which work is performed. Job demands are typically conceptualised as quantitative measures of job requirements, including time pressure and workload. Control has been operationalised as the extent to which a person can control their work activity in terms of either method or timing of work. The Job Demand-Control (JDC) model of job strain proposes that high job demands, coupled with low job control will evoke the strongest stress reactions (Karasek, 1979) and produce the highest levels of strain and health complaints (De Lange, Taris, Kompier, Houtman & Bongers, 2004). van der Hulst, van Veldhoven & Beckers (2006) classified Dutch workers according to their levels of job demands and control and report that high job demands are associated with more frequent overtime and, where this is coupled with low job control, workers also experience a heightened need for recovery. Research generally supports the ability of the JDC model to predict general psychological wellbeing, job-related wellbeing and burnout (Hausser, Mojzisch, Niesel & Schulz-Hardt, 2010).

However, job control is not the only resource available for coping with job demands. Social support is defined as 'instrumental aid, emotional concern, informational, and appraisal functions of others in the work (family) domain that are intended to enhance the wellbeing of the recipient' (Michel, Mitchelson, Pichler & Cullen, 2010: p. 92). The Job Demands-Control-Support (JDC-S) model extends Karasek's original JDC model to suggest that the

most adverse health effects will occur in jobs that are high in demands, low in control and low in workplace social support (Johnson, Hall & Theorell, 1989; Schaufeli & Bakker, 2004). Though JDC-S model is not as strongly supported in the empirical research as the JDC model, Hausser *et al.* (2010) report that both social support and control contributed significantly to health and wellbeing outcomes in 60% of a total of 83 studies published between 1998 and 2007. Pal & Saksvik (2008) argue that the JDC-S model is a relevant model in the analysis of work-family conflict, while Allan, Loudoun & Peetz (2007) report work-family conflict to be negatively correlated with supportive management and worker control. Similarly, Wong & Lin (2007) report time demands to negatively and work schedule flexibility and supervisor support to positively predict work-to-leisure conflict in a sample of service workers.

*Domain specificity*

Work-family interaction is understood to be bi-directional, i.e. work can either positively or negatively impact upon family life or vice versa. Frone (2003) argues that the sources of work interference with family (WIF) lie in the work domain while sources of family interference with work (FIW) are to be found in the family domain. This domain specificity hypothesis has been supported in meta analyses of the work-family interface (see, for example, Byron, 2005). Similarly, Voydanoff (2004b) demonstrated that demands in the work domain are salient predictors of WIF while resources in the work domain predict family-to-work facilitation (positive interaction).

*Work time demands and work-family interaction*

The research focused on work time demands (i.e., work hours), which are widely reported to have a negative impact upon workers' health and well being (see, for example Hughes & Parkes, 2007). Long hours, particularly hours worked over a standard work week (e.g. overtime), are reported to negatively impact work-life balance (Jansen, Kant, Nijhuis, Swaen & Kristensen, 2004; Albertsen, Rafnsdottir, Grimsmo, Tomasson & Kauppinen, 2008; Taris, Beckers, Verhoeven, Guerts, Kompier & van Der Linden, 2006). Van Hooff, Guerts, Kompier & Taris (2006) assert that time engaged in effortful work reduces the time available for family and consumes energy that could otherwise be spent in tasks required at home. Non-standard work hours have been linked to increased work-to-family conflict (Hosking & Western, 2008), lower levels of family functioning, more depressive symptoms and less effective parenting than those working standard hours (Strazdins, Clements, Korda, Broom & D'Souza, 2006). Not only do long hours positively predict work-to-family conflict but organizational time demands are also inversely related to workers' experience of work-to-family enrichment (Wayne, Randel & Stevens, 2006).

*The Australian context*

The working hours of Australians have increased in recent decades (Campbell, 2002). Unlike European Union countries, Australia has no statutory limits on the hours that can be worked (van Wanrooy & Wilson, 2006) and most Australian workers have limited control over their work hours (Peetz, Townsend, Russell, Houghton, Fox & Allan, 2003). Van Wanrooy & Wilson (2006) report Australian workers who work long hours (45 hours per week or more) believe their hours are too long and would prefer to work less. Similarly, Reynolds & Aletraris (2007) report that when work hours are perceived to interfere with family life Australian workers express stronger preferences for reduced hours.

In Australia the longest average work hours are observed in blue-collar, traditionally male industries, including construction (van Wanrooy, 2007). Lingard & Francis (2004) report that the average number of hours worked each week was 63 among site-based employees in direct construction activity and 56 hours among employees who worked mostly in site office. The number of hours worked per week by Australian construction workers was positively linked to WIF and burnout (Lingard & Francis, 2005).

*Research hypotheses*

It was expected that work hours would be positively associated with work-family conflict and negatively associated with work-family enrichment in the present Australian construction sample. Further, because demands are more strongly related to negative interaction than they are to positive work-family interaction between work and family and the impact of demands on work-family outcomes is domain specific, it was expected that:

(a) Work time demands would be more strongly associated with work-family conflict than with work-family enrichment; and
(b) Work time demands would be more strongly associated with WIF than with FIW.

*Work time control and work-family interaction*

Work-family researchers have investigated the extent to which the degree of control afforded to workers over how (and when) they do their jobs is an antecedent of work-family interaction (see, for example, Mauno, Kinnunen & Ruokolainen, 2006). Work time control refers to an individual's 'autonomy regarding issues, such as starting and finishing times, breaks, days off, vacations and the number of work hours' (Guerts, Beckers, Taris, Kompier & Smulders, 2009: p.231). Grzywacz, Carlson & Shulkin (2008) suggest that control over work time is a resource that helps workers to respond to role-related demands across the work and family domains. Hill, Grzywacz, Allen, Blanchard, Matz-costa, Shulkin & Pitt-Catsouphes (2008) argue that workers' choice about how to arrange core aspects of their everyday work is linked to optimal work, family and community outcomes. Moen, Kelly & Huang (2008) report that work time control is associated with lower levels of WIF, while Shockley & Allen (2007) found flexibility in work time to be more strongly (inversely) related to WIF than it was to FIW.

Thus it was expected that work time control would be positively associated with work-family enrichment and negatively associated with work-family conflict in the Australian construction sample. Further, because resources are more strongly related to positive work-family interaction than to work-family conflict and that the impact of demands and resources on work-family outcomes is domain-specific, it was expected that:

(a) Work time control would be more strongly associated with work-family enrichment than work-family conflict; and
(b) Work time control would be more strongly associated with work-to-family enrichment than family-to-work enrichment.

*Social support and work-family interaction*

Social support involves 'the exchange of resources between at least two persons, with the aim of helping the person who receives the support' (van Daalen, Willemsen & Sanders, 2006: p. 464). Social support helps individuals to retain existing resources and obtain new resources (Sieger & Wiese, 2009). There is extensive evidence linking social support to experiences of work-family interaction. Grzywacz & Marks (2000) report that social support from either work or home generates positive affect in the source domain and enhances the quality of life in the other domain. Lu, Siu, Spector & Shi (2009) report workers with family-friendly supervisors and coworkers experience higher levels of work-family facilitation (or positive interaction). Although support is a resource that positively impacts upon work-family interaction, the absence of support is also associated with work-family conflict. For example, Wadsworth & Owens (2007) report that supervisor social support was negatively related to perceptions of WIF as well as positively related to work to family enhancement. Similarly, Janssen, Peeters, de Jonge, Houkes & Tummers (2004) report that the absence of social support predicts negative work-home interference and employee burnout. In a comprehensive meta-analysis of the work-family literature, Michel *et al.* (2010) found that workers who enjoy strong social support systems have reduced perceptions of stressors in the work and/or

family domains and lower levels of work-family conflict. Research also suggests that the impact of social support on work-family interaction depends upon the source of the support. Social support from within the workplace is believed to reduce WIF, while support from the family (e.g. from one's partner) reduces FIW (Sieger & Wiese, 2009; Lapierre & Allen, 2006). In particular, Lapierre & Allen (2006) suggest that supervisors play a key role in helping subordinates to avoid work-to-family conflict.

Thus, it was expected that **s**upervisor support would be positively associated with work-family enrichment and negatively associated with work-family conflict in the Australian construction sample. Further, because resources are more strongly related to positive work-family interaction than to work-family conflict and the impact of demands and resources on work-family outcomes is domain-specific, it was expected that:

a) supervisor support would be more strongly associated with work-family enrichment than work-family conflict; and
b) supervisor support would be more strongly associated with work-to-family enrichment than family-to-work enrichment.

Finally, building on the JDC and JDC-S theories, it was expected that:

a) respondents in jobs that have high time demands and low time control would report the highest levels of WIF and lowest levels of work-to-family enrichment;
b) respondents in jobs that have low time demands and high time control would report the lowest levels of WIF and the highest levels of work-to-family enrichment;
c) respondents in jobs that have high time demands and low supervisor support would report the highest levels of WIF and lowest levels of work-to-family enrichment; and
d) respondents in jobs that have low time demands and high supervisor support would report the lowest levels of WIF and the highest levels of work-to-family enrichment.

## Research Methods

*Data collection*

Data were collected within two Australian construction organizations. Study one was undertaken with workers engaged at a large civil engineering infrastructure construction project in Melbourne. Study two was undertaken with workers in a building and civil engineering contracting organization, also based in Melbourne. Data were collected using a survey administered using the 'Turning Point' automated response system.

*Work hours* were measured using categorical scale, where 1=less than 35 hours worked per week; 2=35-40 hours; 3=41-45 hours; 4=46-50 hours; 5=51-55 hours; 6=56-60 hours; 7=61-65 hours; and 8=more than 65 hours. *Work-family conflict* (WFC) was measured using a bi-directional and multi-faceted scale developed by Carlson, Kacmar & Williams (2000). This scale comprises six subscales. Each direction of WFC (i.e., WIF and FIW) is nested within three dimensions of conflict (i.e., time-based, strain-based and behaviour-based). Owing to the fact that the sample was heterogeneous, one item was removed from the dataset prior to analysis. The wording of this item suggested that all respondents were partnered with children, which was not the case. *Work time control* was measured using seven items adapted from Thomas & Ganster (1995). An example item is "how much choice do you have over when you begin and end each workday or each workweek?" Items were rated on a five point Likert scale ranging from very little (1) to very great (5). *Supervisor support* was measured using four items taken from Lambert (2000) and Thomas & Ganster, (1995). *Work-family enrichment* was measured using six items drawn from the National Survey of Midlife Development in the United States, as cited in Grzywacz & Marks (2000). This scale has been widely used to measure positive work-family interaction (Wayne, Musisca & Fleeson (2004;

Innstrand, Langballe, Espnes, Falkum & Aasland 2008; Grzywacz & Butler 2005). The items imply a transfer of energy or behaviours that also *improve performance* in the other role (Hanson, Hammer & Colton, 2006).

*Data analysis*
The internal consistency reliability of the subscales was assessed using Cronbach's alpha. Pearson correlations were conducted to explore the relationship between job characteristics and work-family interaction. A median-split method was used to position groups in hypothetical quadrants according to: (a) their reported work time demands and work time control; and (b) their reported work time demands and supervisor support.

In accordance with Karesek's (1979) terminology, in the time demands-time control analysis the groups were labelled: (i) "low strain" (low time demands, high time control); (ii) "passive" (low time demands, low time control); (iii) "active" (high time demands, high time control); and (iv) "high strain" (high time demands, low time control). In the time demands-supervisor support analysis, quadrants were not ascribed labels and were just classified as follows: (i) low time demands-low supervisor support; (ii) low time demands-high supervisor support; (iii) high time demands-high supervisor support; and (iv) high time demands-low supervisor support.

Owing to the fact that the scores of respondents assigned to the four quadrants were not normally distributed, non-parametric (Kruskal Wallis) tests were conducted to ascertain whether significant differences exist between the work-family conflict and work-family facilitation of participants in the hypothetical job 'types.'

## Results

*The sample*
Two hundred and sixty one participants completed the survey, 169 (64.8%) from the civil engineering project and 92 (35.2) from the building/civil engineering construction contractor. The majority of respondents were male (n=235, 90.0%). Ten respondents (10.0%) were female. The proportion of males and females in the sample generally reflected the gender breakdown in the Australian construction industry. For 2009, the Australian Bureau of Statistics (2009) identified that the construction workforce was represented by 88% of males and 12% of females. Eighty two respondents (31.4%) were aged 30 or younger. Eighty respondents (30.7%) were between the ages of 31 and 40, while 61 respondents (23.4%) were between 41 and 50. Twenty seven respondents (10.3%) were between 51 and 60, and eight respondents (3.1%) were over 60. One hundred and forty seven respondents (56.3%) indicated that they were parents, while 113 (43.3%) were child-free. The majority of respondents (n=197, 75.5%) were partnered and 63 (24.1%) were single. One hundred and forty one respondents (54.0%) indicated they work on site, and a further 103 (41.0%) indicated they are based in a site office.

*Factor structure of work-family interaction variables*
The principal components analysis (PCA) yielded a three factor structure for work-family conflict. Time and strain-based WIF items loaded together on the first factor, which explained 30.7% of the variance. Time and strain-based FIW items loaded on the second factor, which explained 14.25% of the variance. All of the behaviour-based work-family conflict items (i.e. those describing behaviour-based WIF and FIW) loaded on the third factor, which explained 11.36% of the variance. The alpha coefficients were .865 for Factor 1, .825 for Factor 2, and .705 for Factor 3. The PCA yielded a two factor structure for enrichment. Family-to-work enrichment items loaded together on the first factor, which explained 37.38% of the variance. Work-to-family enrichment items loaded on the second factor, which explained 19.72% of the

variance. The two factor solution explained 57.1% of the variance. The alpha coefficients were .664 for Factor 1, and .542 for Factor 2. Pallant (2007) notes that it is common to find low Cronbach values with short scales (scales with fewer than 10 items) and suggests it is appropriate to report the mean inter-item correlation as an alternative measure of internal consistency reliability. The optimal range for the inter-item correlation is from .2 to .4. The mean inter-item correlations were .392 for Factor 1 and .287 for Factor 2.

*Bivariate correlations*

Table 1 shows the bivariate correlations between job characteristics and the various dimensions of work-family conflict and work-family enrichment. Work hours were significantly and positively correlated with time- and strain-based WIF (r=.252, p=.000), and significantly and negatively correlated with time- and strain-based FIW (r=-.170, p=.006). No significant relationship was found between work hours and either work-to-family enrichment or family-to-work enrichment. Work hours were not significantly associated with work-family enrichment, but were significantly correlated with work-family conflict. The correlation between work hours and WIF was stronger than that between work hours and FIW. It is also noteworthy that the negative relationship between work hours and time- and strain-based FIW was in the opposite direction to that expected.

Work time control was significantly (negatively) correlated with time- and strain-based WIF (r=-.367, p=.000) and behaviour-based work-family conflict (r=-.127, p=.040). No significant relationship was found between work time control and FIW. Work time control was also significantly (positively) correlated with both family-to-work enrichment (r=.338, p=.000) and work-to-family enrichment (r=.167, p=.007). The strongest correlation between work time control and any of the work-family interaction variables was found for time and strain-based WIF (a conflict variable). The relationship between work time control and work-to-family enrichment was not stronger than that between work time control and family-to-work enrichment.

Supervisor support was significantly and positively correlated family-to-work enrichment (r=.302, p=.000) and work-to-family enrichment (r=.179, p=.004). Supervisor support was also significantly negatively correlated with time-and strain-based WIF (r=-.298, p=.000) and behaviour-based work-family conflict (r=-.127, p=.040). No significant correlation was found between supervisor support and time- and strain-based FIW. The strongest correlation between supervisor support and any of the work-family interaction variables was found for family-to-work enrichment. The relationship between supervisor support and family-to-work enrichment was stronger than that between supervisor support and work-to-family enrichment.

**Table 1: Bivariate correlations between work time demands (hours), supervisor support, work time control and work-family interactions.**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Work time demands (hours) | | | | | | | | |
| 2. Supervisor support | .108 | .799 | | | | | | |
| 3. Work time control | -.103 | .399** | .659 | | | | | |
| 4. Time and strain-based WIF | .252** | -.298** | -.367** | .865 | | | | |
| 5. Time and strain-based FIW | -.170** | -.094 | -.094 | .000 | 825 | | | |
| 6. Behaviour-based WFC | -.062 | -.127* | -.141* | .000 | .000 | .705 | | |
| 7. Family-to-work enrichment | -.009 | .302** | .338** | -.136* | -.185** | -.208** | .392 | |
| 8. Work-to-family enrichment | -.029 | .179** | .167** | -.145* | .137* | -.132* | .000 | .287 |

*Correlation is significant at the 0.05 level (2-tailed), **Correlation is significant at the 0.01 level (2-tailed), NB: Cronbach's alpha coefficients on the diagonal.

*Comparison of work-family interaction between job "types"*

Table 2 reports the hours worked per week and the level of work time control for the four work time demand-work-time control job "types". The results of the Kruskal-Wallis test for significant differences in mean rank between respondents occupying the four job type 'quadrants' are presented in Table 3.

**Table 2: Work schedule demands and control for the four job 'types' based on the work time demands-work time control model**

| | N | % | Work hours | | Work time control | |
|---|---|---|---|---|---|---|
| | | | M | SD | M | SD |
| Passive | 49 | 18.8 | 3.20 | 0.83 | 1.19 | 0.21 |
| Low strain | 68 | 26.1 | 3.16 | 0.84 | 1.97 | 0.36 |
| Active | 76 | 29.1 | 5.76 | 0.92 | 1.93 | 0.36 |
| High strain | 68 | 26.1 | 6.06 | 1.15 | 1.17 | 0.21 |

Note: Work hours were measured using a scale ranging from 1=less than 35 hours worked per week; 2=35-40 hours; 3=41-45 hours; 4=46-50 hours; 5=51-55 hours; 6=56-60 hours; 7=61-65 hours; and 8=more than 65 hours.

Significant differences between job "types" were found for time- and strain-based WIF (Chi-square =34.61, p=.000), time-and strain-based FIW (Chi-square 7.92, p=.048) and work-to-family enrichment (Chi-square =21.13, p=.000). "High strain" jobs had the highest mean rank score for time- and strain-based WIF. However, the lowest mean rank score for work-to-family enrichment was reported among "passive" job holders, i.e. those whose jobs are low in time demands and also low in time control. Low strain jobs had the lowest mean rank score for time-and strain-based WIF. However, the highest work-to-family enrichment score was reported among "active" job holders, i.e. those that have high time demands and high time control.

**Table 3: Work-family interaction comparison between respondents in different Job Demands-Control types**

| Work time demands-work time control type | Time- and Strain-Based WIF | | Time- and Strain- Based FIW | | Behaviour-Based WFC | | Work-to-Family Enrichment | | Family-to-Work Enrichment | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean rank | N | Mean rank | N | Mean rank | N | Mean rank | N | Mean rank |
| Passive | 50 | 126.52 | 50 | 154.42 | 50 | 153.24 | 50 | 104.34 | 50 | 126.92 |
| Low strain | 68 | 100.00 | 68 | 136.00 | 68 | 119.66 | 68 | 144.54 | 68 | 139.13 |
| Active | 76 | 123.38 | 76 | 120.14 | 76 | 126.93 | 76 | 154.84 | 76 | 140.01 |
| High strain | 67 | 174.45 | 67 | 120.76 | 67 | 130.52 | 67 | 110.11 | 67 | 115.57 |
| | Chi-square = 34.61 df = 3 *p*=.000 | | Chi-square = 7.92 df = 3 *p*=.048 | | Chi-square = 6.10 df = 3 *p*=.107 | | Chi-square = 21.13 df = 3 *p*=.000 | | Chi-square = 4.82 df = 3 *p*=.186 | |

Table 4 reports the hours worked per week and supervisor support for the four work time demand-supervisor support job "types". The results of the Kruskal-Wallis test for significant differences in mean rank between respondents occupying the four job type 'quadrants' are presented in Table 5.

**Table 4: Work schedule demands and control for the four job 'types' based on a work time demands-supervisor support model**

| | N | % | Work hours | | Supervisor support | |
|---|---|---|---|---|---|---|
| | | | M | SD | M | SD |
| Low demands-Low support | 63 | 24.1 | 3.17 | 0.79 | 2.27 | 0.67 |
| Low demands-High support | 54 | 20.7 | 3.18 | 0.88 | 3.80 | 0.46 |
| High demands – High support | 76 | 29.1 | 5.93 | 1.11 | 4.04 | 0.50 |
| High demands-Low support | 68 | 26.1 | 5.87 | 0.96 | 2.31 | 0.68 |

Note: Work hours were measured using a scale ranging from 1=less than 35 hours worked per week; 2=35-40 hours; 3=41-45 hours; 4=46-50 hours; 5=51-55 hours; 6=56-60 hours; 7=61-65 hours; and 8=more than 65 hours.

**Table 5: Work-family interaction comparison between respondents in different Job demands-Support types**

| Job Demands-Support type | Time- and Strain-Based WIF | | Time- and Strain-Based FIW | | Behaviour-Based WFC | | Work-to-Family Enrichment | | Family-to-Work Enrichment | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean rank | N | Mean rank | N | Mean rank | N | Mean Rank | N | Mean rank |
| Low demands-Low support | 63 | 123.79 | 63 | 144.29 | 63 | 138.11 | 63 | 114.03 | 63 | 126.83 |
| Low demands-High support | 54 | 97.07 | 54 | 141.56 | 54 | 130.43 | 54 | 143.70 | 54 | 140.85 |
| High demands – High support | 76 | 123.36 | 76 | 117.66 | 76 | 121.97 | 76 | 152.43 | 76 | 135.90 |
| High demands-Low support | 68 | 173.16 | 68 | 125.22 | 68 | 134.96 | 68 | 112.68 | 68 | 121.57 |
| | Chi-square = 33.47<br>df = 3<br>*p*=.000 | | Chi-square = 5.78<br>df = 3<br>*p*=.123 | | Chi-square = 1.84<br>df = 3<br>*p*=.607 | | Chi-square = 14.84<br>df = 3<br>*p*=.002 | | Chi-square = 22.50<br>df = 3<br>*p*=.476 | |

Significant differences between job types were found for time- and strain-based WIF (Chi-square =33.47, p=.000) and work-to-family enrichment (Chi-square =14.84, p=.000). Jobs that are high in time demands and low in supervisor support exhibited the highest mean rank score for time and strain-based WIF. The high time demand-low supervisor support job category also exhibited the lowest mean rank score for work-to-family enrichment. Jobs that are low in time demands and high in supervisor support exhibited the lowest levels of time- and strain-based WIF. However, the highest mean rank score for work-to-family enrichment was found for jobs that are high in both time demands and supervisor support.

## Discussion

*Correlates of work-family conflict and enrichment*

The results support the notion that work-family conflict and work-family enrichment should be treated as distinct concepts. Work time demands, work time control and supervisor support were related to work-family conflict and enrichment in different ways.

Work time demands were significant correlates of time and strain-based work-family conflict but were not significantly related to work-family enrichment. The fact that work time demands were not correlated with work-family enrichment supports theories that position demands as an antecedent of conflict but not of positive work-family interaction. Work time demands were positively correlated with time and strain-based WIF but were unexpectedly negatively correlated with time and strain-based FIW. Thus, as work hours increase, respondents experienced increased time and strain-based WIF but decreased time and strain-based FIW. The strong and positive relationship between work time demands and time and strain-based WIF is consistent with previous research (van Hooff *et al.* 2006). However, it is not clear why work hours would be negatively correlated with time and strain-based FIW. The respondents to the survey were predominantly male and generally reported working very long hours. The modal number of hours worked was between 51 and 55 per week (n=66, 25.3%) and only 25 respondents (9.6%) reported working under 40 hours per week. It is possible that those working longer hours either have fewer family demands or have these demands met by others, for example a domestic partner. It is possible that respondents who have extensive family demands, or who cannot rely on the help of a domestic partner or others to meet their family demands, are forced to work fewer hours and experience higher levels of FIW. The cross-sectional nature of the survey does not permit any analysis of the direction of relationships between the variables and longitudinal research is recommended to further investigate this possibility.

Work time control and supervisor support were unrelated to time- and strain-based FIW but were significantly (inversely) correlated with time- and strain-based WIF and behaviour-based work-family conflict. Work time control and supervisor support were also both positively correlated with family-to-work enrichment and work-to-family enrichment. The domain specificity hypothesis was not supported by the bivariate correlations because work domain resources of work time control and supervisor support were more strongly (inversely) related to family-to-work enrichment than they were to work-to-family enrichment. One possible explanation for this could relate to the importance of recovering from work in the home domain. According to the Effort-Recovery model advanced by Meijman & Mulder (1998), the negative health effects associated with working long hours depend upon the opportunity to recover from work. Peeters, Montgomery, Bakkers & Schuafeli (2005) suggest that when negative effects associated with work demands build up and ‘spill over’ into family life, the opportunity for recovery in the home domain is reduced. It is possible that work time control and supervisor support are work domain resources that enable workers to better align the effort they invest in work with their non-work commitments and need for recovery. Opportunities for recovery in the home domain may be higher for workers who enjoy high

levels of work time control and supervisor support, resulting in higher levels of family-to-work enrichment.

The fact that work-to-family and family-to-work enrichment were significantly correlated (inversely) with work hours and (positively) with supervisor support and work time control suggests that, while reducing time demands may help to alleviate work-family conflict, the provision of resources (like work time control and supervisor support) may also be required to achieve positive interaction between work and family in the Australian construction context.

*Job types and work-family interaction*

Time and strain-based WIF was highest among respondents who reported high work time demands and low work time control (i.e. "high strain") jobs and lowest among respondents who reported low work time demands and high work time control (i.e. "low strain") jobs. Taris *et al.* (2006) propose that workers in jobs that afford them a high level of control can maximise the opportunity for recovery by taking rest breaks when they need them and alternating tasks if necessary, resulting in lower levels of time- and strain-based WIF than workers whose jobs are low in control. Occupants of 'high strain' jobs did not experience the highest levels of time and strain-based FIW, nor did occupants of 'low strain' jobs experience the lowest levels of time and strain-based FIW. This may be explained by the domain-specificity hypothesis, which suggests that demands and resources in the work role are more influential in reducing conflicts that originate at work (Shockley & Allen, 2007).

The highest levels of work-to-family enrichment were not reported among respondents in "low strain" jobs, but among those who reported high levels of both work time demands and work time control (i.e., those in "active" jobs). The lowest levels of work-to-family enrichment were reported among respondents who reported low work time demands and low work time control (i.e. who were in "passive" jobs). Although the JDC job strain model appears to explain the experience of time and strain-based WIF quite well, it does not adequately explain the experience of work-family enrichment.

A similar pattern of results was found when work time demands and supervisor support were combined. The highest level of time and strain-based WIF were reported by respondents who fell within the "high work time demands – low supervisory support" job type, while the lowest levels were found in the "low work time demands – high supervisor support" job type. However, the highest levels of work-to-family enrichment were found in the "high work time demands – high supervisor support" job type. Occupants of "high work time demands – low supervisor support" jobs reported the lowest levels of work-to-family enrichment.

It is possible that some workers choose to work long hours because they are engaged in their work and derive satisfaction or other benefits from their work (see also van der Hulst *et al.* 2006). The Resource-Gain-Development model suggested by Wayne, Grzywacz, Carlson & Kacmar (2007) may help to explain this phenomenon. This model posits that work-family enrichment is enabled by environmental resources (objects, conditions, energies, and support) that "contribute to the development of new skills and perspectives (developmental gains), positive emotion (affective gains), economic, social, or health assets (capital gains), and greater efficiency (efficiency gains) in one system, which enhance functioning of the other system" (p.66).

## Conclusions

The strong correlation between work time demands and conflict and time- and strain-based WIF suggests that the long hours culture of the Australian construction industry presents a high risk environment for work-to-family conflict and the undesirable health effects associated with WIF. However, although work time demands were positively correlated with

WIF, work domain resources of work time control and supervisor support were inversely related to WIF to a similar degree of magnitude. Thus, reductions in WIF may be achieved through a reduction in work time demands coupled with strategies to increase work time control and/or supervisor support. Work time demands were unrelated to work-family enrichment. While it is desirable to reduce work-family conflict, there is a growing recognition that optimal outcomes occur when participation in one domain enhances the quality of experience in the other domain. The results suggest that a reduction in work time demands is an important but insufficient development to promote work-family enrichment, which is likely to require the provision of resources, such as work time control and supervisor support.

From a research perspective the results highlight the need to include work-family conflict and work-family enrichment as distinct variables in future work-family research in the construction context. The results also raise a number of issues that require further investigation. Firstly, the unexpected finding that work time control and supervisor support have a stronger positive relationship with family-to-work enrichment than work-to-family enrichment and warrants further research. Also, the JDC and Job demands-support models failed to explain experiences of FIW or work-family enrichment. Alternative theories to explain the positive side of the work-family interface need to be explored.

*Limitations and future research*

The research utilised a cross-sectional in design. It is therefore impossible to make causal inferences. Future research using longitudinal designs to is recommended to establish causation. In particular, it would be very helpful to investigate why work hours were negatively correlated with FIW in the construction sample. Another important avenue for future research is to examine how work domain demands and resources are related to WIF. There are two competing hypotheses. First, that work domain demands and resources are antecedents to WIF (the additive hypothesis) and, second, that work domain resources act as a buffer, protecting workers against the ill-effects of long hours (the interactive hypothesis). If the buffer hypothesis is supported, it may be enough to increase resource availability to counteract high strain. However, if the additive hypothesis is supported, increasing control or support will not be particularly helpful as long as work domain demands remain high.

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