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Flexible work in call centres: Working hours, work-life conflict & health

Philip Bohle*, Harold Willaby, Michael Quinlan, Maria McNamara

Work and Health Research Team, Ageing, Work and Health Research Unit, Faculty of Health Sciences, The University of Sydney, PO Box 170, Lidcombe NSW 1825, Australia

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ABSTRACT

Call-centre workers encounter major psychosocial pressures, including high work intensity and undesirable working hours. Little is known, however, about whether these pressures vary with employment status and how they affect work-life conflict and health. Questionnaire data were collected from 179 telephone operators in Sydney, Australia, of whom 124 (69.3%) were female and 54 (30.2%) were male. Ninety-three (52%) were permanent full-time workers, 37 (20.7%) were permanent part-time, and 49 (27.4%) were casual employees. Hypothesised structural relationships between employment status, working hours and work organisation, work-life conflict and health were tested using partial least squares modelling in PLS (Chin, 1998). The final model demonstrated satisfactory fit. It supported important elements of the hypothesised structure, although four of the proposed paths failed to reach significance and the fit was enhanced by adding a path. The final model indicated that casual workers reported more variable working hours which were relatively weakly associated with greater dissatisfaction with hours. The interaction of schedule control and variability of hours also predicted dissatisfaction with hours. Conversely, permanent workers reported greater work intensity, which was associated with both lower work schedule control and greater work-life conflict. Greater work-life conflict was associated with more fatigue and psychological symptoms. Labour market factors and the undesirability of longer hours in a stressful, high-intensity work environment appear to have contributed to the results.

1. Introduction

Call centres employ large numbers of service workers in both developed and developing countries (Norman et al., 2008; Nadeem, 2009). Over the past decade a growing body of research has investigated working conditions and employment in call centres (Russell, 2008). Many studies have found call-centre work to be physically and emotionally intensive with performance pressure, close surveillance and limited autonomy (Taylor et al., 2003; Barnes, 2006; Gavhead and Toomingas, 2007; Toomingas and Gavhead, 2008).

This combination of high work intensity and low autonomy raises concerns about working hours in call centres and the control that workers exert over work schedules. Flexible employment, which frequently entails irregular hours, is common in the industry and is likely to be associated with higher levels of work-life conflict. Many call centres operate in highly competitive markets, making labour productivity a central concern and encouraging practices that have been labelled 'time-theft' (Stevens and Lavin, 2007). The intensity of work, combined with the restrictions imposed on rest breaks, has called into question the appropriateness of long shifts, and even the desirability of shorter seven- or eight-hour shifts (Taylor and Bain, 1999; Bain and Taylor, 2000; Bain et al., 2002). Taylor and Bain (1999 p. 111) noted that preference of some employers for permanent part-time staff reflected '*the inherently stressful nature of the job and the desirability of shift patterns which correspond to the peaks of customer demand in the late afternoons, evenings or weekends*'. However, while constraining working hours in this way may have the benefit of limiting exposure in a highly demanding work environment, the concentration of work at socially undesirable times may heighten work-life conflict, even for part-time workers. In any case, the available evidence does suggest that the negative impact of high work intensity in call centres will increase as working hours increase.

There is evidence that many call-centre workers have limited control over their work schedules. A French study of predominantly full-time call handlers found that only 17.7 per cent reported that they could choose their working hours (Croidieu et al., 2008). Psychosocial constraints were more frequent amongst part-time call handlers, especially those who had not chosen their work schedule (Croidieu et al., 2008). A small Irish study of both permanent and temporary workers also noted an

* Corresponding author.
E-mail address: philip.bohle@sydney.edu.au (P. Bohle).

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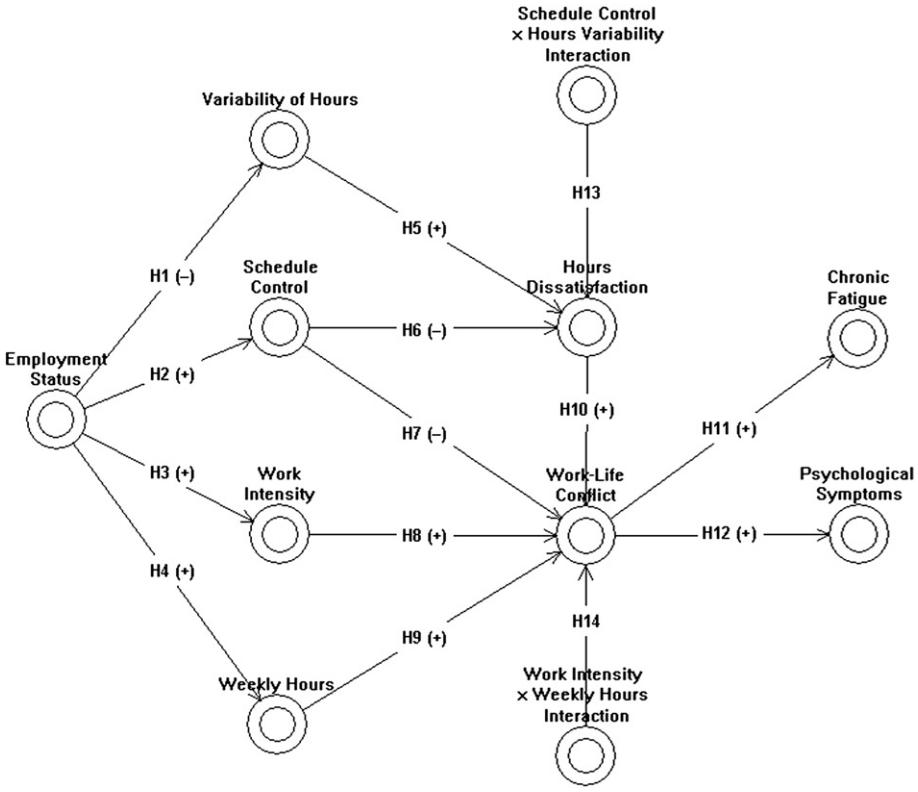

Fig. 1. Hypothesised structural model.

unwillingness to work beyond allotted hours (Cross et al., 2008). More generally, recent research in another segment of the service sector, accommodation hotels, demonstrated that greater work intensity is associated with less control over working hours (McNamara, 2009).

Structural relationships between work schedule control, work-life conflict and health have been consistently demonstrated in several studies conducted in the health care sector (Pisarski and Bohle, 2001; Pisarski et al., 2002, 2006). Greater control produced diminished work-life conflict and improved health. This research also demonstrated that schedule control may be significantly influenced by support from immediate supervisors, which may be limited in many call centres due to relatively authoritarian management cultures. It is also likely that the importance of schedule control will depend on the extent to which work schedules typically vary within particular workplaces or groups of workers.

Although research to date has highlighted important issues associated with flexible employment and working hours in call centres, the structural relationships between the key variables have not been systematically examined. Promisingly, however, McNamara (2009) did report evidence of significant relationships between many of these variables in a recent study of hotel workers.

This paper examines the structural relationships depicted in Fig. 1 within a sample of call-centre workers. The direction of the hypothesised relationships is indicated by a plus or minus for each path in the model. Testing the model will enhance knowledge of the influence of employment status on work intensity, weekly hours, variability of working hours and work schedule control. Importantly, it will also indicate how these variables predict work-life conflict, dissatisfaction with working hours and subjective health.

2. Method

2.1. Participants

The questionnaire survey was completed during working time by a sample of 187 marketing and customer service operators from ten metropolitan call centres in Sydney, Australia. Eight did not respond to more than 10% of the survey items and were excluded from further analysis, limiting the final sample to 179. Fifty-four (30.2%) were male, 124 (69.3%) were female, and one did not answer the item on gender. They were divided into three employment status groups: full-time permanent workers, part-time permanent workers and casuals. Casuals were paid by the hour, and had no set working hours or leave entitlements. The characteristics of the three groups are summarised in Table 1.

2.2. Procedure

Questionnaires and participant information statements were distributed to respondents in their workplaces, either directly by

Table 1
Characteristics of the three employment status groups.

	Permanent full-time	Permanent part-time	Casual
Number of participants	93 (52%)	37 (21%)	49 (27%)
Mean age (years)	36.3 (sd = 12.0)	43.4 (sd = 9.4)	29.4 (sd = 11.7)
Mean weekly working hours	40.9 (sd = 4.8)	26.1 (sd = 5.4)	20.2 (sd = 10.9)
Mean job tenure (years)	5.5 (sd = 6.5)	6.2 (sd = 4.7)	1.8 (sd = 1.8)

Note: sd = standard deviation.

the researchers or indirectly via call-centre managers. A stamped, addressed envelope was provided for completed questionnaires to be returned to the researchers. Ethical approval was secured from the Human Research Ethics Committee of The University of New South Wales (Approval No.: HREC 01247).

2.3. Measures

All measures used in this study were based on self-reports from the questionnaire survey:

Employment status was coded as a dichotomous variable (0 = casual, 1 = permanent) with full-time and part-time permanent workers included in the permanent category.

Variability of working hours: Respondents completed a log of starting times and finishing times retrospectively for a fortnight. Total working time each day was calculated from starting and finishing times. Mean absolute deviations of starting times, finishing times and daily working time were calculated for each respondent. Mean absolute deviations were used in preference to standard deviations because they are easily interpretable, less sensitive to differences in the number of observations between subjects, and robust to deviations from normality (Barnett and Lewis, 1978; Huber, 1981). The Average Variance Explained (AVE) by this variable was .711.

Schedule Control was measured using two items: '*I have sufficient control over the shifts that I work*', rated on a five-point scale ranging from 1 = *Strongly Disagree* to 5 = *Strongly Agree*, and a dichotomous variable asking respondents whether or not it was easy to change shifts. These items were standardized and load highly on the same latent construct. The AVE was .680.

Work Intensity was measured using five items developed by the authors: "*my current workload is too high*", "*there are insufficient people at work to do the tasks effectively and safely*", "*there is not enough time to do the jobs I am allocated without rushing*", "*my workload is increasing*" and "*how often do you experience insufficient time between calls*". The first four were rated on a five-point scale ranging from 1 = *Strongly Disagree* to 5 = *Strongly Agree* and the final item was rated on a five-point scale from 1 = *Never* to 5 = *Always*. The AVE was .616.

Weekly hours were obtained by summing the daily hours calculated from the 14-day log of starting and finishing times (see above) and dividing the total by two.

Hours dissatisfaction, in terms of dissatisfaction with the number of hours worked each week, was measured using 2 items developed by the authors which required respondents to rate how often they experienced "*insufficient work hours*" and "*excessive work hours*" on a five-point scale from 1 = *Never* to 5 = *Always*. The AVE was .782.

Work-life conflict was measured using the items reported by Bohle and Tilley (1998) plus seven items described by Frone and Yardley (1996). The AVE was .503.

Chronic fatigue was measured using a single item, "*how often do you feel fatigued while working?*". Respondents were asked to mark a point on a 10 cm visual analogue scale ranging from 'rarely' (left) to 'always' (right). Scores were obtained by measuring the distance, in centimetres, from the left pole to the mark.

Psychological symptoms were measured using the 12-item General Health Questionnaire (GHQ12; Goldberg, 1972) and the Likert scoring method (see Banks et al., 1980). The AVE was .455.

2.4. Data analysis strategy

SPSS Version 17 for Windows was used to examine the frequency distributions of each item for missing data and univariate outliers. Skewness and kurtosis indices were evaluated to assess normality. Only missing data proved to be problematic. Data from eight participants were excluded from further analysis because 10% or more of their responses were missing.

PLS Graph 3.0 Build 1126 (Chin, 2001; Chin et al., 2003) was used to estimate the structural model using the bootstrapping resampling procedure (with 500 sub-samples). PLS is a second generation structural equation modelling technique developed by Wold (1982) that employs a component-based approach for estimation. PLS was used for several reasons. Unlike covariance-based approaches, PLS places minimal restrictions on measurement scales, sample size and residual distributions (Chin et al., 2003). In PLS, constructs may be measured by a single item, whereas at least four items per latent variable are required in covariance-based approaches (Bontis et al., 2007). The PLS approach is also better suited to exploration and model development (Chin, 1998) and, given the lack of previous research on precariousness and working hours, it was considered more suitable for this study. PLS, being component-based, also avoids the problems with inadmissible solutions and factor indeterminacy often encountered by covariance-based approaches (Fornell and Bookstein, 1982).

PLS requires at least ten times as many cases as the larger of either 1) the maximum number of indicators for any construct or 2) the maximum number of incoming links to any construct (Chin et al., 2003). A minimum of 120 cases is therefore acceptable for this analysis. The present sample of 179 exceeds this level comfortably. Chin (1998) recommends analysis of PLS models in two stages: assessment of measurement followed by evaluation of the structural path model. This approach is taken in this paper. Traditional parametric techniques for significance testing or evaluation are not appropriate in PLS, as it makes no distribution assumptions other than predictor specification in the procedure for estimating parameters (Chin, 1998). The R^2 for dependent latent variables and Average Variance Extracted (AVE; Fornell and Larcker, 1981) are therefore used to assess predictiveness of the model (Chin, 1998).

3. Results

3.1. Assessment of the measurement model

To evaluate measurement and factorial validity, it is necessary to assess construct validity by examining the convergent and divergent validities of the latent constructs, which capture aspects of the goodness of fit of the measurement model. Convergent validity requires each measurement item to load significantly on its latent construct (Gefen and Straub, 2005). Typically, the *t*-value should be significant at least at the .05 level (Chin, 1998; Gefen and Straub, 2005). The significance of the loadings was checked using the bootstrap resampling procedure (500 sub-samples), as recommended by Chin (1998). All *t*-values were significant ($p < .01$). The individual reflective-item reliability for each item (indicator) is given by the loadings or correlations between the item and the construct. The minimum acceptable level recommended by Falk and Miller (1992) is .55. The loadings for all items in the model exceeded this level, except for one from the GHQ12. As the *t*-statistic for this item was significant, and the GHQ12 is a widely validated measure, it was retained.

Internal consistency or construct reliability is indicated by the composite reliability scores generated in PLS (Santosa et al., 2005) instead of Cronbach's alpha (Sanchez-Franco, 2006). The composite reliabilities for the latent constructs ranged from .81 (Schedule Control) to .92 (Work-life Conflict), which are well over the minimum recommended level of .7 during model development (Nunnally, 1976).

Discriminant validity of the measures at the indicator level is demonstrated when each indicator loads more highly on its theoretically assigned latent construct than on other latent constructs

(Gefen and Straub, 2005). The loadings satisfied this condition. At the construct level, discriminant validity can be assessed by examining AVEs (Gefen and Straub, 2005; Tenenhaus et al., 2005), the amount of variance captured by the construct relative to the amount of variance attributable to measurement error (Santosa et al., 2005). AVE is generated automatically in the bootstrap procedure. Discriminant validity of the measures is evaluated by examining the square root of the AVE for each measure (Tenenhaus et al. 2005; Fornell and Larcker, 1981). The square roots of the AVEs for each construct were greater than the correlations between them and all other constructs in the model. An AVE score of .5 also indicates an acceptable level (Fornell and Larcker, 1981; Chin, 1998; Hair et al., 1998). The AVE for each construct was greater than .5, except for the .46 achieved by psychological symptoms (GHQ12). The loadings, composite reliabilities, AVEs, standard errors and *t*-statistics for all items are presented in Table 2. The square roots of the AVE for all latent constructs and the correlations between all latent constructs are presented in Table 3.

3.2. Assessment of the structural model

The structural path model was evaluated by examining the path coefficients (similar to standardized regression weights), the significance of the path coefficients, and the proportion of the

Table 2
Individual item loadings, composite reliabilities and convergent validity coefficients.

Construct/item	Loading	Composite reliability	AVE	Standard error	*t*-Statistic
Variability of hours		.879	.711		
OV1	.943			.021	44.396**
OV2	.861			.044	19.551**
OV3	.708			.064	11.080**
Schedule control		.808	.680		
SC1	.898			.057	15.907**
SC2	−.744			.107	6.953**
Work intensity			.616		
WI1	.828			.028	29.825**
WI2	.849			.027	31.740**
WI3	.691			.055	12.580**
WI4	.835			.030	28.183**
WI5	.706			.045	15.868**
Hours dissatisfaction		.878	.782		
HS1	.895			.032	28.082**
HS2	.873			.057	15.453**
Work-life conflict		.923	.503		
WLC1	.727			.048	15.221**
WLC2	.706			.051	13.888**
WLC3	.630			.071	8.883**
WLC4	.739			.048	15.329**
WLC5	.691			.064	10.876**
WLC6	.768			.050	15.329**
WLC7	.610			.055	11.170**
WLC8	.689			.044	15.672**
WLC9	.613			.061	10.077**
WLC10	.778			.036	21.697**
WLC11	.754			.046	16.401**
WLC12	.775			.035	21.871**
GHQ12		.907	.455		
GHQ1	.565			.082	6.933**
GHQ2	.609			.072	8.489**
GHQ3	.469			.097	4.851**
GHQ4	.567			.093	6.105**
GHQ5	.707			.054	13.134**
GHQ6	.706			.068	10.349**
GHQ7	.737			.047	15.558**
GHQ8	.659			.072	9.194**
GHQ9	.811			.036	22.577**
GHQ10	.806			.046	17.502**
GHQ11	.662			.075	8.722**
GHQ12	.711			.058	12.314**

Note: $^{*}p < .05$, $^{**}p < .01$.

Table 3
Discriminant validity coefficients (with the square root of AVE on the diagonal in bold).

	Employment status	Weekly hours	Variability of hours	Schedule control	Work intensity	Hours dissatisfaction	Work-life conflict	Chronic fatigue	Psychological symptoms	Work intensity × Weekly hours	Schedule control × Hours variability
Employment status	**n/a**										
Weekly hours	.626	**n/a**									
Variability of hours	−.539	−.321	**.843**								
Schedule control	−.107	−.256	.031	**.825**							
Work intensity	.439	.220	−.204	−.339	**.785**						
Hours dissatisfaction	−.389	−.222	.270	−.107	.069	**.884**					
Work-life conflict	.144	.147	.067	−.295	.477	.216	**.709**				
Chronic fatigue	−.339	.036	.019	−.117	.423	.195	.431	**n/a**			
Psychological symptoms	.040	.026	−.015	−.016	.302	.071	.328	.416	**.675**		
Work intensity × Weekly hours	.287	.113	−.095	−.276	.935	.152	.473	.418	.345	**.775**	
Schedule control × Hours variability interaction	−.101	−.162	−.180	.651	−.223	−.249	−.256	−.152	−.114	−.188	**.728**

variance in the latent variables explained by the indicators (R^2). Falk and Miller (1992) recommend a minimum value of .10 for R^2. Chin (1998) recommends that standardized path coefficients should be at least .20 and ideally above .30 to be considered meaningful. The significance of the regression paths may be evaluated by examining the *t*-values produced by bootstrapping or jackknifing (Chin, 1998; Santosa et al., 2005). In general, re-samples of 500 tend to provide reasonable standard error estimates (Chin, 1998).

The hypothesised structural model (see Fig. 1) was tested and nine of the 14 paths were retained. The paths between employment status and schedule control, and between schedule control and work-life conflict, were not significant and were deleted from the model. Although the path between employment status and weekly working hours was significant, with casual workers reporting significantly fewer hours than permanent workers, it was deleted because both the onward pathway to work-life conflict and the path from the work intensity × weekly hours interaction to work-life conflict were not significant and were therefore deleted. Conversely, the non-significant path between schedule control and hours dissatisfaction (main effect) had to be retained, as the path from the schedule control × hours variability interaction to hours dissatisfaction was significant.

The final model, with path coefficients and R^2 values, is presented in Fig. 2. Employment status was significantly related to variability of hours ($\beta = -0.54$, $p < .01$), with casual workers more likely to report variable hours. Hours variability which was, in turn, positively with hours dissatisfaction ($\beta = 0.24$, $p < .01$) indicating that those who report greater variability are more likely to be dissatisfied. Employment status was also significantly related to work intensity ($\beta = 0.44$, $p < .01$) indicating that permanent workers report higher levels of work intensity.

Work intensity was negatively related to schedule control ($\beta = -.34$, $p < .01$), indicating that higher levels of work intensity are associated with lower levels of control. Contrary to our hypothesis, schedule control did not have a significant effect on dissatisfaction with working hours. However, this pathway was not removed from the model as it is required to test the effect of the interaction between schedule control and hours variability on hours dissatisfaction, which was significant ($\beta = -0.23$, $p < .05$).

Hours dissatisfaction ($\beta = .184$, $p < .01$) and work intensity ($\beta = 0.46$, $p < .01$) had significant effects on work-life conflict. Increases in work intensity and dissatisfaction were associated with increases in work-life conflict. Work-life conflict had significant positive effects on chronic fatigue ($\beta = 0.43$, $p < .01$) and psychological symptoms ($\beta = .33$, $p < .01$).

4. Discussion

The results of this study confirmed most of the paths in the hypothesised structural model. Permanent workers reported greater work intensity than casual workers, which was associated with greater work-life conflict, supporting the findings of McNamara's (2009) study of hotel workers. Work-life conflict was, in turn, associated with higher levels of fatigue and psychological symptoms. Although not hypothesised, a negative path between work intensity and schedule control enhanced the fit of the final model. This negative association suggests that permanent workers tend to experience less work schedule control due to greater work intensity. This effect remained even when differences in overall hours were controlled by retaining the significant path from employment status to weekly hours in the model.

The key path relationships for casual workers were different. Casual employment was associated with more variable working hours. Variability was associated with greater dissatisfaction with working hours, which predicted greater work-life conflict and subsequently fatigue and psychological symptoms. However, the interaction between schedule control and hours variability also significantly affected hours dissatisfaction. The negative path coefficient indicated that the greater the level of schedule control, the smaller the effect of hours variability on dissatisfaction (and vice versa). These findings indicate it is important to ensure sufficient individual worker control over work schedules if variability increases, particularly in casual work which is usually characterised by greater variability. Variability dictated by organisational requirements can be expected to have more negative effects than variability arising from individual control. It should be noted, however, that the paths from hours variability and the schedule control × hours variability interaction to hours dissatisfaction and work-life conflict were weaker and less direct than the one from work intensity to work-life conflict. This difference suggests that the greater work intensity associated with permanent work has a stronger effect on work-life conflict than those of the hours variability and dissatisfaction with hours associated with casual employment.

The confirmation of the hypotheses that work-life conflict would be associated with higher levels of both chronic fatigue and psychological symptoms supported the findings of several studies in the health care sector (Bohle and Tilley, 1989; Pisarski and Bohle, 2001; Pisarski et al., 2002, 2006). Interestingly, however, the direct relationship between schedule control and work-life conflict was not confirmed. This finding may partially reflect the significant contribution of the schedule control × hours variability interaction

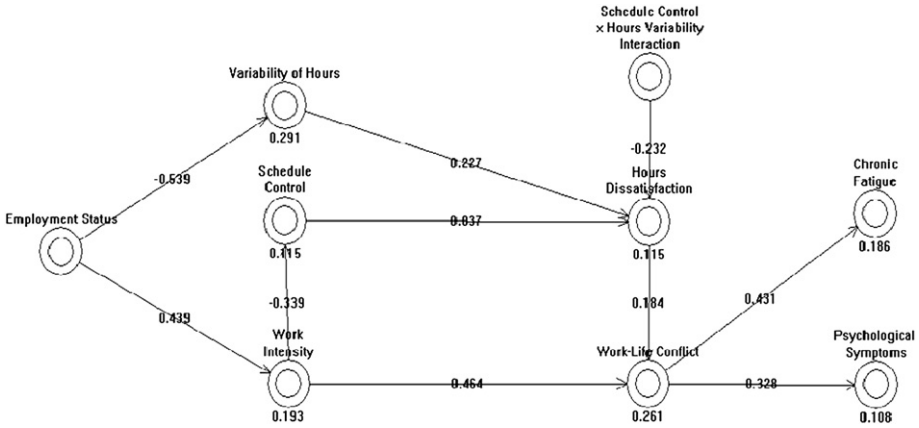

Fig. 2. Final PLS structural model.

to the present model. It may also reflect differences in the absolute level of variability between the workplaces studied or the salience of the variability to the non-work activities of the workers studied.

Casuals in this study encountered less of the intensity of call-centre work than permanent workers (whether part-time or full-time). The failure to find more negative effects on casuals is therefore consistent with evidence that strategies to counter work intensity in call centres are advisable (Bain and Taylor, 2000; Taylor and Bain, 1999). On the other hand, the present findings conflict with a wider body of research which tends to indicate that permanent workers experience more positive occupational health outcomes than casual workers (Quinlan et al., 2001). It appears the greater work intensity characteristic of permanent employment offset the negative effects usually associated with insecure casual work. Further, the more intense work may make full-time or permanent employment less attractive to casual call-centre workers than it might be in other industries, especially as the greater market power they command in an industry characterised by limited labour supply and high turnover may confer its own form of security. Labour market power may also deliver casuals in call centres greater control over work schedules than their counterparts in other industries who face less favourable market conditions.

The present findings provide new insights into the effects of employment status on working hours, work-life conflict and health in call centres. They particularly highlight the relationship between work intensity and work-life conflict and the effect of the interaction between work schedule control and hours variability on satisfaction with hours, especially for casual workers. They indicate that strategies should be put in place to ensure adequate levels of individual worker control over working time as the variability of hours increases. More generally, they point to the role that labour market factors may play in determining the level of control that casuals exert over their work schedules. Unfortunately, the cross-sectional design and reliance on self-report data does not provide a strong basis for demonstrating the causality implied in the hypothesised model. Nevertheless, the results do provide a promising structural framework to be tested and elaborated using more objective measures and longitudinal designs in the future.

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