Update on National University Stress Study

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In 2003/4, 13 Australian universities took part in a follow-up survey of occupational stress following an earlier one conducted in 2000. More than 6000 staff participated at each time, of whom 969 (stayers) participated at both times. This paper presents the cross-sectional data obtained on both occasions as well as the longitudinal data provided by the stayers. Overall, the cross-sectional data from all participants showed some encouraging improvements. For example, there were increases in organisational commitment, job involvement, job autonomy, procedural fairness, and trust in senior management, as well as decreases in work pressure and job insecurity. However, there were also increases in psychological strain and work-home conflict. Longitudinal results from the stayers showed a similar pattern. These participants also showed increases in job involvement, job autonomy, belief in procedural fairness, and trust in senior management, and a decrease in job insecurity, together with increased work-home conflict and increased psychological strain. However, they did not show improvements in organisational commitment or work pressure, and also reported reduced job satisfaction. Attrition analyses revealed some Time 1 differences between the stayers and dropouts that might explain the discrepant findings. Neither the cross-sectional nor longitudinal changes were uniform across all universities, or all categories of staff. The improvements were more marked for general than for academic staff, and for female than for male staff. Regression analyses found that the best predictors of organisational commitment were job satisfaction and trust in senior management; the best predictors of trust in senior management were procedural fairness and organisational commitment; and the best predictor of job satisfaction was procedural fairness. Interestingly, the only significant predictor of psychological strain was neuroticism. The next stage of the research is to try to find out what interventions were introduced at each university and to link them to the observed improvements.

Introduction

Academic work has traditionally been regarded as non-stressful, but recent evidence suggests that this is no longer the case. The university system is under strain and evidence to support this proposition is available both nationally and internationally. Over the past 20 years there have been major reductions in government funding of public universities in most developed countries, and reports are growing of stress in university staff due to increased work pressure and reduced social support. Examples of these trends are reported by Altbach (1996), Hogan, Carlson and Dua (2002), and Richard and Krieshok (1989) in the US; Abouserie (1996), Kinman (2001), Kinman, Jones and Kinman (2006), Tytherleigh et al. (2005) in the UK; Dua (1994), Gillespie et al., (2001), Winefield (2000, 2003), Winefield and Jarrett (2001), and Winefield et al. (2002, 2003), in Australia; Boyd and Wylie (1994) in New Zealand; and Taris, Schreurs and Van Iersel-Van Silfhout (2001) in the Netherlands.

Since universities play a vital role in the economic, environmental, intellectual, cultural and social life of Australia, these changes to working conditions have serious ramifications. Universities train the nation's scientists and other professionals and produce much of its cutting-edge research. In order to fulfil this role successfully they need to attract and retain high quality staff, and provide them with a supportive working environment. Their ability to do so has been threatened over the past decade by deteriorating working conditions resulting from cuts to their operating grants. In Australia, the Senate Employ-

ment, Workplace Relations and Education Committee report, *Universities in crisis* (2001), showed that despite increases in student enrolments, the Commonwealth Government's contribution to university operating grants declined from $4772m in 1994 to $4461m in 2000. Since 2000, the amount has continued to decline because funding has not been indexed to inflation. Also, the student-to-staff ratio increased from 12.9 in 1990 to 20.8 in 2003 (Universities Australia 2007).

The Australian Government's unwillingness to provide grant indexation since the mid-1990s has forced universities to compete with private providers for full-fee paying students, but, unlike the private providers, who are free to choose what and where they teach, Australian public universities are constrained by funding agreements with the government (Davis 2007; Gardner & Wells 2007).

In a recent media release, Professor Gerard Sutton, the President of the Australian Vice-Chancellors' Committee (AVCC), made the following comments on the Commonwealth Government's New Directions Paper:

> 'With a strong economy, Australia needs to invest more into education, enabling the nation to meet the challenges of the future by continuing to produce quality university graduates,' he said.
>
> 'Now that qualified Australian students have greater access to a university place, it is now time to look towards maintaining the quality of the university experience for our students, and to maintaining the reputation of Australian universities and their international competitiveness.
>
> 'To do this Australia's investment in university graduates must be increased.
>
> 'The sector is looking to a 15 per cent increase in the Government's contribution per student over three years, built up at five per cent a year', Professor Sutton said (AVCC 2007).

The current research was funded by two ARC SPIRT (Strategic Partnerships with Industry Research and Training, now known as Linkage) grants, with the NTEU as the industry partner, and financial contributions from 19 Australian Vice-Chancellors. In late 1999, we conducted 22 focus groups with a representative sample of 178 academic and general staff from 15 Australian universities. The groups focused on understanding staff's experience of occupational stress, and perceptions of the sources, consequences and moderators of stress. Both general and academic staff reported a dramatic increase in stress during the previous five years. As a group, academic staff reported higher levels of stress than general staff. Five major sources of stress were identified: insufficient funding and resources, work overload, poor management practice, job insecurity, and insufficient recognition and reward. The majority of the focus groups reported that job-related stress was having a deleterious impact on their professional work and personal welfare (Gillespie et al. 2001).

Informed by the focus group findings, in 2000 we conducted an anonymous national survey of all non-casual staff at a representative sample of 17 Australian public universities (two of the universities which had provided initial funding withdrew from the study). All mainland states were represented, and the 17 universities comprised 3 'old' (pre-1912), 6 'middle' (1954-1974) and 8 'new' (1988-1992, including Australian Technology Network [ATN] universities). We received 8732 replies, representing a response rate of 25%. Because the participants were anonymous, we were unable to chase up non-responders, but we felt that anonymity was essential if we wanted them to be as frank and outspoken as they wished. However, we asked them to provide code identifiers which enabled us to match them in a later survey.

We found that psychological strain was high, particularly in academic staff. Job satisfaction in academic staff was low compared with other occupational groups, but was average in general staff.

The sample was representative in a number of respects such as demographics (e.g., age, gender, rank) and, most importantly, in 'neuroticism' (emotional stability), an indicator of 'negative affectivity' or vulnerability to psychological stress. Both men and women were close to the published norms on a well-validated neuroticism scale (Costa & McCrae 1992). Neuroticism correlated with both of our stress measures, psychological strain ($r = .47$) and job satisfaction ($r = -.23$).

The survey addressed the following three questions:

- What is the level of occupational stress among Australian university staff?
- Which groups of university staff experience most stress?
- What are the principal factors that contribute to stress among university staff?

Overall, the survey results confirmed the findings from the focus groups. We found that psychological strain was high, particularly in academic staff. Job satisfaction in academic staff was low compared with other occupational groups, but was average in general staff. Academic staff expressed dissatisfaction with five aspects of their job, (in rank order, university management, hours of work, industrial relations, chance of promotion and rate of pay) whereas general staff were dissatisfied with only one (chance of promotion).

Stress was highest in junior academics (Levels B and C), particularly those working in Humanities and Social Sciences. For academic, but not for general staff, job satisfaction was higher at the three old, than at the other (newer) universities.

At the *university* level, the best predictors of psychological strain were financial pressures (university investment income for academic staff and cuts in government grants for general staff) whereas the best predictors of job satisfaction were low staffing pressures (i.e., lower student/staff ratio for academic staff, and lower staff cuts for general staff). At the individual level, the organisational factors that best predicted psychological strain were job insecurity and work demands. The best predictors of job satisfaction were perceived procedural fairness, trust in heads, trust in senior management, and autonomy. Trust in senior management and perceived procedural fairness were both low.

Individual reports were sent to participating Vice-Chancellors enabling them to benchmark the results from their own university with those from similar universities. In addition, a monograph was published and widely distributed reporting the results of the study (Winefield et al. 2002).

The follow-up survey

As planned, a follow-up survey was distributed in 2003/4. Because four of the Vice-Chancellors whose universities had taken part in 2000 decided to withdraw from the project, the survey was based on 13 of the original 17 universities.

The follow-up survey addressed the following three questions:

- Was there a change in occupational stress among Australian university staff from 2000 to 2003/4?
- Were the causes of stress the same in 2003/4 as in 2000?
- Were there any changes in organisational attitudes that might have been attributed to reforms introduced on the basis of the recommendations we made following the results of the 2000 survey?

Method

Participants

The 13 participating universities in the 2003/4 survey were still fairly representative of the sector, with 3 'old' universities, 3 'middle' and 7 'new'. In 2003/4 we decided to use an online survey instead of the paper version, but this change had no effect on the response rate. We shortened the survey in 2003/4, removing some scales that did not predict stress (e.g., some of the personality scales) so that it could be easily completed in 30 minutes. In 2003/4, we received responses from 6301 (a response rate of 25%) of whom 969 had also responded in 2000. The numbers of participants from the 13 universities are shown in Table 1.

Measures

The 12 survey measures that were the focus of this report are summarised in Table 2. Each of the survey measures used a 5-point response scale, with three exceptions. Work pressure and psychological strain used a 4-point scale, and job satisfaction used a 7-point scale. In the results, the means shown for psychological strain, job satisfaction, and neuroticism are all based on the total scores, whereas for the other nine measures they are based on the item means.

As in 2000, the questionnaire also contained demographic and other questions, but this paper is concerned with the work attitudes and measures of psychological well-being listed in Table 2.

Procedure

In 2000 hard copies of the questionnaire were circulated, but in 2003/4 the questionnaire was administered electronically. This required the cooperation of the Vice-Chancellor who authorised distribution using the university's staff email address list. As in 2000, participants were anonymous, but supplied code identifiers that enabled responses to be matched from Time 1 to Time 2.

Results

In all the analyses, differences associated with $p \leq .05$ are treated as statistically significant. Although numerous tests were conducted, they were not all based on a single data set, but on several. For example, each of the 12 measures at Time 1 comprised 12 data sets. Likewise at Time 2, they comprised 12 more data sets. Moreover all of the contrasts were planned (rather than *post hoc*), consequently we did not believe that Bonferroni adjustments were required. Instead,

Table 1: Number of Individual University Responses to Surveys

University	*Time 1 (2000)*	*Time 2 (2003/4)*	*Both*
Murdoch (Middle)	311	259	59
UWA (Old)	730	591	116
Adelaide (Old)	662	306	63
UniSA (ATN)	601	834	143
Melbourne (Old)	1033	386*	46
RMIT (ATN)	937	975	131
Swinburne (New)	266	208	23
Deakin (Middle)	679	898	141
UTS (ATN)	342	603	50
Canberra (New)	216	156	35
JCU (Middle)	343	275	46
USQ (New)	299	409	69
CQU (New)	326	401	47
Total	6745	6301	969

** Only academic staff were surveyed at Melbourne at Time 2. This explains the much smaller number of respondents at Time 2.*

we have reported an effect size measure (Cohen's *d*), and highlighted statistically significant effects that are greater than 'small' ($d \geq .20$).

In some of the following tables maximum numbers are quoted because missing data sometimes led to lower numbers.

Table 2: List of Measures at Times 1 and 2

Stress / well-being outcomes	
Measure	**Psychological Strain (12 items)**
Description	Psychological health symptoms
Source	GHQ–12; Goldberg & Williams 1988
Sample item	Have you recently felt constantly under strain?
Scale	0-3
Measure	**Job Satisfaction (15 items)**
Description	Satisfaction with 15 work features (e.g., fellow workers, pay, recognition, skill use, responsibility)
Source	Warr et al. 1979
Sample item	How satisfied are you with your hours of work?
Scale	1-7
Measure	**Organisational Commitment (5 items)**
Description	Identification with/commitment to the university
Source	Porter et al. 1974
Sample item	I am willing to put in a great deal of effort beyond that normally expected in order to help this university be successful.
Scale	1-5
Job demands / stressors	
Measure	**Work Pressure (3 items)**
Description	Perception of time pressure associated with work
Source	Beehr et al. 1976
Sample item	I'm rushed in doing my job.
Scale	1-4
Measure	**Work-Home Conflict (3 items)**
Description	Extent to which work interferes with home life
Source	Frone & Yardley 1996
Sample item	My family dislike how often I am preoccupied with my work while I am at home.
Scale	1-5
Measure	**Job Insecurity (3 items)**
Description	Perceived insecurity of current position
Source	Ashford et al. 1989
Sample item	How likely is it that you will be moved to a different department?
Scale	1-5

Table 3 compares the mean differences on the 12 measures based on all respondents from the 13 participating universities who responded at Time 1 with all who responded at Time 2 (the maximum number of respondents was just over 6000 at each time). Because general staff at the University of Mel-

Job resources	
Measure	**Autonomy (9 items)**
Description	General level of workplace autonomy
Source	From Moos & Insel 1974
Sample item	Staff are encouraged to make their own decisions.
Scale	1-5
Measure	**Trust in Heads of Department (8 items)**
Description	Perceived trustworthiness of heads of department
Source	Based on Butler 1991; Mayer & Davis 1999
Sample item	My head of department/school/unit deals honestly with staff.
Scale	1-5
Measure	**Trust in Senior Management (8 items)**
Description	Perceived trustworthiness of senior management
Source	As above
Sample item	Senior management at this university deals honestly with staff.
Scale	1-5
Measure	**Procedural Fairness (4 items)**
Description	Perceived fairness of performance appraisal, appointment, promotion and redundancy procedures
Source	Based on Gillespie et al. 2001
Sample item	Promotions procedures are fair.
Scale	1-5
Personality characteristics/ job-related attitudes	
Measure	**Negative Affectivity (Neuroticism; 12 items)**
Description	Disposition to experience negative emotions
Source	NEO–FFI (Costa & McCrae 1992)
Sample item	When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.
Scale	0-4
Measure	**Job Involvement (5 items)**
Description	Extent to which staff prioritise, derive satisfaction from their work
Source	Lodahl & Kejner 1965
Sample item	The most important things that happen to me involve my work.
Scale	1-5

bourne were inadvertently not surveyed at Time 2, their Time 1 results were excluded from the analyses. As can be seen from Table 3, there were the following improvements: increased organisational commitment, reduced work pressure, reduced job insecurity, increased job involvement, increased autonomy, increased procedural fairness, and increased trust in senior management. On the other hand, there were deteriorations on two measures: increased psychological strain and work-home conflict. With the exception of increased trust in senior management, all of the differences were small.

Table 3: Means and Standard Deviations on 12 Measures at Time 1 and Time 2

Measure	*Time*	*Mean*	*SD*	*t*	*d***
Psychological Strain (GHQ)	Time 1	13.24	6.04	6.56*	.14
	Time 2	14.06	6.65		
Job Satisfaction	Time 1	65.31	14.07	1.91	.04
	Time 2	65.85	15.04		
Organisational Commitment	Time 1	3.42	0.70	8.95*	.18
	Time 2	3.55	0.75		
Work Pressure	Time 1	3.16	0.64	6.25*	.12
	Time 2	3.08	0.68		
Work-Home Conflict	Time 1	3.25	1.04	6.42*	.12
	Time 2	3.38	0.97		
Job Insecurity	Time 1	2.66	0.94	7.19*	.14
	Time 2	2.53	0.93		
Job Involvement	Time 1	2.87	0.69	3.20*	.06
	Time 2	2.91	0.69		
Job Autonomy	Time 1	3.05	0.55	8.53*	.17
	Time 2	3.14	0.61		
Procedural Fairness	Time 1	2.89	0.86	6.58*	.13
	Time 2	3.01	0.97		
Trust in Heads	Time 1	3.29	1.05	0.23	.00
	Time 2	3.29	1.08		
Trust in Senior Management	Time 1	2.53	0.89	11.14*	.22***
	Time 2	2.72	0.92		
Neuroticism	Time 1	19.22	7.73	1.31	.03
	Time 2	19.42	7.75		

**p ≤ .05*
***Cohen's d is a measure of effect size. Cohen (1988) suggests that d values of .20, .50, and .80 correspond to small, moderate and large effects, respectively.*
****Effect more than small (d ≥ .20)*

Similar changes occurred in the 969 people who responded on both occasions. Before looking at their results however, it is necessary to show that they were not a biased sample (e.g., significantly more stressed at Time 1 than those who participated only at Time 1). To do this we need to conduct attrition analyses, comparing these 969 'stayers' (defined as those who responded at both times) with the 5776 'dropouts' (defined as those who responded only at Time 1).

The stayers and dropouts were similar on demographic characteristics (age, sex, role, status). On the measures where the groups differed, the stayers were generally better off. Specifically, they showed greater job satisfaction, greater organi-

Table 4: Changes From Time 1 to Time 2 in All Stayers (max n = 969)

Measure	*Time*	*Mean*	*SD*	*t*	*d*
Psychological Strain (GHQ)	Time 1	13.24	5.83	3.10*	.22**
	Time 2	14.01	6.55		
Job Satisfaction	Time 1	66.56	13.49	1.97*	.14
	Time 2	65.72	14.77		
Organisational Commitment	Time 1	3.49	0.70	1.18	.08
	Time 2	3.52	0.79		
Work Pressure	Time 1	3.23	0.63	0.02	.00
	Time 2	3.23	0.66		
Work-Home Conflict	Time 1	3.32	1.03	8.08*	.56**
	Time 2	3.55	0.96		
Job Insecurity	Time 1	2.58	0.93	2.07*	.14
	Time 2	2.51	0.94		
Job Involvement	Time 1	2.87	0.67	3.76*	.26**
	Time 2	2.94	0.68		
Job Autonomy	Time 1	3.06	0.54	2.51*	.17
	Time 2	3.12	0.62		
Procedural Fairness	Time 1	2.93	0.81	2.20*	.15
	Time 2	3.00	0.98		
Trust in Heads	Time 1	3.35	1.02	1.93	.13
	Time 2	3.27	1.09		
Trust in Senior Management	Time 1	2.55	0.86	2.87*	.20**
	Time 2	2.63	0.94		
Neuroticism	Time 1	19.42	7.85	1.81	.13
	Time 2	19.03	7.96		

**p ≤ .05*
***Effect more than small (d ≥ .20)*

sational commitment, less job insecurity and greater trust in Heads than the dropouts. On the other hand, they also reported greater work pressure. However, the only effect that was more than small (marginally so) was the difference in job satisfaction. Overall then, there was little evidence of attrition bias.

Table 4 shows differences between Time 1 and Time 2 for the stayers. On the positive side, they showed reduced job insecurity, increased job involvement, increased job autonomy, increased procedural fairness and increased trust in senior management at Time 2. On the negative side, they showed increased psychological strain, reduced job satisfaction, and increased work-home conflict.

Tables 5 and 6 show the Time 1 and Time 2 differences for academic and general staff (stayers), respectively. As Table 5 shows, there were only two measures where the academics showed a significant change—one positive and one negative. They showed increased job involvement, but also increased work-home conflict.

The general staff (stayers), by contrast, showed changes on most of the measures, as shown in Table 6. On the positive side, they showed increased organisational commitment, reduced job insecurity, increased job involvement, increased job autonomy, increased procedural fairness and increased trust in senior management. On the negative side, they

Table 5: Changes From Time 1 to Time 2 in Academic Staff Stayers (max n = 447)

Measure	*Time*	*Mean*	*SD*	*t*	*d*
Psychological Strain (GHQ)	Time 1	13.73	6.00	1.40	.15
	Time 2	14.24	6.55		
Job Satisfaction	Time 1	63.72	13.47	1.53	.16
	Time 2	62.81	14.22		
Organisational Commitment	Time 1	3.34	0.73	0.61	.06
	Time 2	3.32	0.83		
Work Pressure	Time 1	3.46	0.55	0.16	.02
	Time 2	3.45	0.54		
Work-Home Conflict	Time 1	3.80	0.96	4.56*	.48**
	Time 2	3.98	0.79		
Job Insecurity	Time 1	2.62	0.95	0.75	.08
	Time 2	2.58	0.96		
Job Involvement	Time 1	3.08	0.64	2.71*	.29**
	Time 2	3.16	0.66		
Job Autonomy	Time 1	3.09	0.55	0.49	.05
	Time 2	3.07	0.64		
Procedural Fairness	Time 1	2.83	0.78	0.34	.04
	Time 2	2.84	0.97		
Trust in Heads	Time 1	3.36	1.07	1.77	.19
	Time 2	3.24	1.13		
Trust in Senior Management	Time 1	2.37	0.90	1.45	.15
	Time 2	2.43	0.93		
Neuroticism	Time 1	19.52	8.15	1.34	.14
	Time 2	19.10	8.27		

**p ≤ .05*
***Effect more than small (d ≥ .20)*

Table 6: Changes From Time 1 to Time 2 in General Staff Stayers (max n = 522)

Measure	*Time*	*Mean*	*SD*	*t*	*d*
Psychological Strain (GHQ)	Time 1	12.86	5.67	2.87*	.27**
	Time 2	13.82	6.55		
Job Satisfaction	Time 1	68.71	13.11	1.32	.12
	Time 2	67.91	14.82		
Organisational Commitment	Time 1	3.60	0.65	2.25*	.20**
	Time 2	3.66	0.73		
Work Pressure	Time 1	3.06	0.63	0.13	.01
	Time 2	3.06	0.70		
Work-Home Conflict	Time 1	2.96	0.93	6.69*	.62**
	Time 2	3.22	0.95		
Job Insecurity	Time 1	2.55	0.92	2.07*	.19
	Time 2	2.46	0.93		
Job Involvement	Time 1	2.71	0.65	2.63*	.24**
	Time 2	2.78	0.65		
Job Autonomy	Time 1	3.05	0.54	3.72*	.34**
	Time 2	3.15	0.61		
Procedural Fairness	Time 1	3.01	0.82	2.58*	.24**
	Time 2	3.12	0.97		
Trust in Heads	Time 1	3.34	0.97	0.96	.09
	Time 2	3.29	1.05		
Trust in Senior Management	Time 1	2.69	0.80	2.54*	.23**
	Time 2	2.78	0.92		
Neuroticism	Time 1	19.33	7.60	1.23	.11
	Time 2	18.98	7.71		

**p ≤ .05*
***Effect more than small (d ≥ .20)*

showed increased psychological strain and increased work-home conflict.

Tables 7 and 8 show the changes from Time 1 to Time 2 for the men and women (stayers), respectively. The men showed changes only on three measures, one positive and two negative, as shown in Table 7. They showed increased job involvement, but also increased work-home conflict and decreased trust in Heads.

By contrast, the women stayers showed changes on six of the measures, as shown in Table 8. On the positive side, they showed reduced job insecurity, increased job autonomy, increased trust in senior management and reduced neuroticism. On the negative side, they showed increased psychological strain and increased work-home conflict.

Finally, for the 969 stayers, we report results of regression analyses in which we examined the best work attitude predictors at Time 1 of some key measures taken at Time 2 (Organisational Commitment, Trust in Senior Management, Job Satisfaction). We report results for the overall sample of people who responded at both times, and for academic staff and general staff. We only report statistically significant predictors for which the standardised regression coefficients or beta (ß) weights were at least .20.

Table 7: Changes From Time 1 to Time 2 in Male Stayers (max n = 333)

Measure	*Time*	*Mean*	*SD*	*t*	*d*
Psychological Strain (GHQ)	Time 1	13.64	5.96	1.68	.19
	Time 2	14.24	6.46		
Job Satisfaction	Time 1	64.42	14.69	1.37	.16
	Time 2	63.48	15.83		
Organisational Commitment	Time 1	3.43	0.76	0.30	.03
	Time 2	3.42	0.86		
Work Pressure	Time 1	3.27	0.63	0.12	.01
	Time 2	3.28	0.63		
Work-Home Conflict	Time 1	3.41	1.00	5.34*	.60**
	Time 2	3.64	0.93		
Job Insecurity	Time 1	2.62	0.95	0.12	.01
	Time 2	2.61	1.00		
Job Involvement	Time 1	2.97	0.68	3.71*	.41**
	Time 2	3.08	0.69		
Job Autonomy	Time 1	3.03	0.56	0.80	.09
	Time 2	3.06	0.67		
Procedural Fairness	Time 1	2.89	0.84	1.93	.22**
	Time 2	2.99	1.04		
Trust in Heads	Time 1	3.39	1.02	2.18*	.24**
	Time 2	3.24	1.12		
Trust in Senior Management	Time 1	2.51	0.88	1.17	.13
	Time 2	2.56	0.97		
Neuroticism	Time 1	18.74	8.18	0.20	.02
	Time 2	18.80	8.67		

**p ≤ .05*
***Effect more than small (d ≥ .20)*

Table 8 Changes From Time 1 to Time 2 in Female Stayers (max n = 535)

Measure	*Time*	*Mean*	*SD*	*t*	*d*
Psychological Strain (GHQ)	Time 1	12.99	5.74	2.60*	.23**
	Time 2	13.86	6.60		
Job Satisfaction	Time 1	67.90	12.50	1.43	.13
	Time 2	67.12	13.90		
Organisational Commitment	Time 1	3.52	0.65	1.87	.16
	Time 2	3.57	0.74		
Work Pressure	Time 1	3.20	0.62	0.07	.01
	Time 2	3.20	0.68		
Work-Home Conflict	Time 1	3.27	1.05	6.10*	.54**
	Time 2	3.50	0.97		
Job Insecurity	Time 1	2.56	0.92	2.52*	.22**
	Time 2	2.45	0.90		
Job Involvement	Time 1	2.80	0.66	1.93	.17
	Time 2	2.85	0.66		
Job Autonomy	Time 1	3.08	0.53	2.57*	.23**
	Time 2	3.15	0.59		
Procedural Fairness	Time 1	2.95	0.79	1.30	.12
	Time 2	3.01	0.94		
Trust in Heads	Time 1	3.33	1.02	0.78	.07
	Time 2	3.28	1.06		
Trust in Senior Management	Time 1	2.57	0.84	2.71*	.24**
	Time 2	2.67	0.92		
Neuroticism	Time 1	19.83	7.61	2.44*	.22**
	Time 2	19.17	7.49		

**p ≤ .05*
***Effect more than small (d ≥ .20)*

Time 1 Predictors of Organisational Commitment at Time 2

For all staff, the best Time 1 predictors of Organisational Commitment at Time 2 were Job Satisfaction (ß = .27, p < .001) and Trust in Senior Management (ß = .24, p < .001). For academic staff, the best Time 1 predictor was Job Satisfaction (ß = .22, p = .015). The results were similar for general staff, for whom the best Time 1 predictors were Job Satisfaction (ß = .25, p < .001) and Trust in Senior Management (ß = .25, p < .001).

Time 1 Predictors of Trust in Senior Management at Time 2

For all staff, the statistically significant Time 1 predictors of Trust in Senior Management at Time 2 were Procedural Fairness (ß = .25, p < .001) and Organisational Commitment (ß = .22, p < .001). In the case of academic staff, the best predictors were Procedural Fairness (ß = .38, p < .001) and Organisational Commitment (ß = .21, p < .001). For general staff the best predictor was Organisational Commitment (ß = .20, p < .001).

Time 1 Predictors of Job Satisfaction at Time 2

For all staff, the best Time 1 predictor of Job Satisfaction at Time 2 was Procedural Fairness (ß = .20, p < .001). For academic staff the best Time 1 predictor was also Procedural Fairness (ß = .32, p < .001). (For general staff none of the Time 1 predictors were associated with a ß ≥ .2).

Time 1 Predictors of other Time 2 measures

We also looked at two other Time 2 outcome variables: Psychological Strain (GHQ) and Work-Home Conflict. In the case of Psychological Strain at Time 2, the only statistically significant Time 1 predictor was Neuroticism (ß = .33, p < .001). The results were similar for academic staff (ß = .29, p < .001) and for general staff (ß = .37, p < .001).

Turning to Work-Home Conflict at Time 2, the best Time 1 predictors overall were Work Pressure (ß = .33, p < .001), Job Satisfaction (ß = -.29, p < .001), and Job Involvement (ß = .21, p < .001). For academic staff the best predictors were Work Pressure (ß = .32, p < .001) and Job Satisfaction (ß = -.32, p < .001) and likewise for general staff the best predictors were Work Pressure (ß = .29, p < .001) and Job Satisfaction (ß = -.23, p = .002).

Discussion

This paper summarises the results of two national surveys of occupational stress at Australian universities, a baseline survey, conducted in 2000, and a follow-up survey in 2003/4.

As in 2000, in 2003/4 we established that respondents were broadly representative in terms of demographics and were close to the published norms on neuroticism. We also conducted attrition analyses in order to check for possible attrition bias. Although the 969 stayers were similar to the 5776 dropouts in terms of demographics (e.g. age, sex, work role) they differed on several of the work attitude measures at Time 1. Specifically, the stayers showed higher job satisfaction, higher organisational commitment, higher work pressure, lower job insecurity, and higher trust in heads of department than the dropouts, although, with the exception of job satisfaction, the differences were small. Nevertheless, some of these differences could account, in part, for some of the changes, as well as the lack of changes shown in the stayers from Time 1 to Time 2. For example, they showed a slight decline in job satisfaction (although job satisfaction was moderately high in both groups at both times). Also, they showed no significant increase in organisational commitment, which again could have been because they were high on organisational commitment at Time 1.

It appears then, that although university employees continue to experience high (and increased) levels of psychological strain and increased levels of work-home conflict, they are better off on five key measures.

Taking the overall cross-sectional and longitudinal results together (Tables 3 and 4, respectively), we can be reasonably confident that the significant differences that were shown in both, are likely to be reliable. This applies to two negative changes (increased psychological strain and increased work-home conflict) and to five positive changes (reduced job insecurity, increased job involvement, increased job autonomy, increased procedural fairness and increased trust in senior management). It appears then, that although university employees continue to experience high (and increased) levels of psychological strain and increased levels of work-home conflict, they are better off on five key measures. More detailed analyses of the longitudinal data suggest that general staff seem to have benefited more than academic staff, and that women seem to have benefited more than men.

For the 969 stayers, regression analyses were conducted on several Time 2 outcome measures in which Time 1 measures were used as possible predictors. We looked at organisational commitment (which has been shown in the literature to be correlated with job performance), as well as trust in senior management, job satisfaction, psychological strain, and work-home conflict. The results were similar for both academic and general staff. Organisational commitment was best predicted by job satisfaction and trust in senior management; trust in senior management was best predicted by procedural fairness and organisational commitment; and job satisfaction was best

predicted by procedural fairness. These results suggest reciprocal causation between organisational commitment and trust in senior management. They also highlight the importance of procedural fairness, which seems to have direct effects on trust in senior management and job satisfaction, both of which predict organisational commitment.

Surprisingly, none of the work attitude measures predicted psychological strain. The only measure that did so was neuroticism. Not surprisingly, work-home conflict was predicted (positively) by work pressure and (negatively) by job satisfaction.

We believe that all of the 13 participating universities have introduced measures designed to reduce job stress and improve morale between 2000 and 2003/4. Some of these measures might have been in response to the findings and recommendations reported in our 2002 monograph (Winefield et al. 2002) and/or to the findings and recommendations contained in the individual reports sent in confidence to the 13 Vice-Chancellors in 2001. The next stage of the research is to try to gather more information about what measures were introduced and relate them to the observed changes within each university. Three of the seven recommendations contained in Winefield et al. (2002) addressed the issues of procedural fairness, job insecurity, and leadership practices (pertaining to senior management), respectively. It is therefore pleasing to note that the cross-sectional and longitudinal data reported here showed significant improvements on these three measures. We have also shown that in one of the participating universities, staff who answered positively to the question "During the past four years has your university undertaken any measures to reduce stress among its employees?" showed greater job satisfaction, greater organisational commitment, more trust in senior management, and a greater belief in procedural fairness than those who answered negatively (Pignata & Winefield 2006).

The next step is to build on the current findings by further analyses of the qualitative, as well as quantitative, data gathered in 2003/4 and to seek further information from the universities themselves about what steps they took between 2000 and 2003/4 so that we can try to show what measures were most effective. Although the results presented here are encouraging, there are still concerns. In particular the high and increasing levels of psychological strain as well as the increased levels of work-home conflict, suggest that the introduction of more flexible work practices for both men and women might need to be addressed next.

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