

Effects of Mindfulness Training on Workplace Performance[♦]

[♦]Australian Psychological Society Limited, 11th Industrial and Organisational Psychology Conference, Melbourne VIC, Australia, July 2-4, 2015

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Abstract

Three Corporate Based Mindfulness Training (CBMT) programs were conducted for managers and project officers within NSW Health. (a) In 2013, 45 managers of the SESLHD (South East Sydney Local Health District) Mental Health Service completed a 4-month program of 10 minutes of daily mindfulness training coupled with one-hour weekly workshops on applying mindfulness at work and developing specific mental strategies. Two parallel programs were conducted, one for Eastern Suburbs Mental Health Service, and one for St George/Sutherland Mental Health Service. (b) In 2014, 19 project managers and administrative staff from the Leadership, Education Strategy and Implementation Portfolio of NSW HETI (Health Education and Training Institute) undertook the same program design but over a 4-week period. Measures included mean scores for mindfulness (awareness, focus, attention, and total), perceived stress, and work-life balance. (a) Statistically significant positive effects were noted within subjects for mindfulness (awareness, focus, and total), and work-life balance as determined across 2 observations over 16 weeks for one of the SESLHD groups who completed the parallel corporate based mindfulness training program, but not for the other. (b) In the case of the much shorter CBMT program at HETI, statistically significant positive effects were noted within subjects for mindfulness (awareness, focus, and total), work-life balance, and perceived stress as determined across 3 observations over 8 weeks. These results demonstrate that consistency of mindfulness training over time is a key element in the success of the CBMT program.

Introduction

The ascendancy of the knowledge worker in organisations brings a mixed benefit. The upside is competitive advantage in an increasingly complex and interconnected world. The downside is being “always on” in a constant flow of information overload while needing to make judgments and decisions on the spot. How can knowledge workers develop their capability to direct and focus their attention and avoid burnout? The answer, according to a number of robust findings, is mindfulness training.

Mindfulness is a quality of consciousness that consists of purposeful attention to and awareness of the present moment, approached with an attitude of openness, acceptance, and non-judgment (Brown et al, 2003). Research evidence shows that mindfulness has positive effects on mental health and psychological well-being (Grossman et al, 2004), physical health (Davidson et al, 2003), and quality of intimate relationships (Barnes et al, 2007). Mindfulness has even been shown to increase brain grey matter (Hölzel et al, 2011).

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Mindfulness training is receiving increased attention from corporations such as Google, Aetna, General Mills, and Target who see this as a personal and professional strategy to improve workplace performance and productivity. They report how introducing mindfulness has decreased employees' stress levels and improved their focus & clarity, listening & decision-making skills, and overall happiness and well-being (Schaufenbuel, 2014).

Mindfulness at work has been linked to better emotion regulation, reduced emotional exhaustion, and enhanced job satisfaction (Hülshager et al, 2013). There seems to

be a causal link between the capacity for attention and outcome measures such as well-being and job performance (Marianetti & Passmore, 2009). Work-related mental health and stress reduction have responded positively to mindfulness training programs (Glomb et al, 2011; Wolever et al, 2012; Van Gordon et al, 2014). Mindfulness is associated with improved resilience at work (Chaskalson, 2011), improved task performance (Dane, 2011), lowered turnover intention (Dane & Brummel, 2013), improved stress management (Chiesa & Seretti, 2009), reduced absent-mindedness (Reb et al, 2013), raised organisational citizenship behaviour (Reb et al, 2014), and higher quality work relationships (Giluk, 2010).

However, most knowledge workers would claim to have little or no time for just sitting still and contemplating their navels. At first glance mindfulness looks like a waste of time and resources. In particular, health care professionals in the State Health Service are affected by the competing demands of patient welfare and service performance expectations. They can become burnt out through clinical demands, budget and resource restrictions, administrative load, changes in policy direction, and just maintaining day-to-day focus on priorities.

Few mindfulness training programs have been tested in this environment. Mackenzie et al (2006) found 16 nurses and nurse aides who participated in a brief 4-week Mindfulness Based Stress Reduction (MBSR) program experienced significant improvements in burnout symptoms, relaxation, and life satisfaction in comparison with 14 wait-list control participants. Pipe et al (2009) reported the effectiveness of a brief 4-week mindfulness meditation course in reducing self-reported stress symptoms among 33 nurse leaders.

MBSR, developed as a therapeutic intervention by Kabat-Zinn, has been the most popular mindfulness training intervention so far in the west - see Kabat-Zinn (2005). Google's Search Inside Yourself Leadership Institute has popularised the work of Chade-Meng Tan, and more recently, the CBMT program has been specifically designed for the challenges of a busy work life. The program has been developed by The Potential Project, a mind-training organisation based in Copenhagen, Denmark in collaboration with acknowledged experts in mind training and with international corporations. The program is specifically tailored for executives, managers and employees who might otherwise be reluctant to engage in the way mindfulness training has been presented traditionally. The program is designed for in-house training in workplaces for groups of up to 30 participants.

The CBMT program consists of three main components:

1. Formal daily mindfulness training. At a minimum, this is one 10-minute session per day - in a group at work or individually at work or home.
2. A strong emphasis on informal training through the application of mindfulness at work. During the first 8 weeks participants are trained in developing mindfulness through the activities such as setting goals, identifying priorities, planning and managing time, emailing, conducting meetings, working efficiently, making presentations, commuting/travelling, having breaks, and developing creativity and innovation.
3. The development of eight specific mental strategies during the mindfulness training and in daily activities: presence, patience, kindness, beginner's mind, joy, non-judging, acceptance and letting go.

CBMT program at SESLHD

Method

Procedure

In 2013, 45 managers of the SESLHD (South Eastern Sydney Local Health District) Mental Health Service undertook a 4-month CBMT program.

The South Eastern Sydney Local Health District (SESLHD) Mental Health Service (MHS) provides mental health care to a diverse socioeconomic and demographic population of more than 840,000 in an area stretching from inner city Sydney to the Royal National Park. MHS managers hold designated responsibility for the NSW Ministry of Health mental health budget, and for the provision of inpatient, community, rehabilitation and specialist services across two geographic areas: Eastern Suburbs Mental Health Service (ESMHS), and St George/Sutherland Mental Health Service (SSMHS).

Due to timing and geographical distance, two parallel programs were conducted – one for ESMHS, and one for SSMHS. The program started with a two-hour workshop. From then all participants were invited to take part in a daily 10-minute formal mindfulness training session as a group in a meeting room during work hours. Program champions were chosen from each area to help coordinate and drive daily training. The introduction workshop was followed by eight weekly 60-minute workshops where the informal training instructions and the mental strategies were introduced one by one. After the eight weeks there were two monthly general follow up sessions of 60 minutes.

Participants

Participants were, for the most part, health care professionals (Psychiatrists, Psychologists, Nursing Unit Managers, Clinical Nurse Consultants, and Allied Health Professionals).

45 participants (16 male and 29 female) commenced the program. Data was collected from 45 participants (19 at ESMHS, and 26 at SSMHS) at the commencement of the program, and matching data was collected from 32 participants (16 from ESMHS, and 16 at SSMHS) at the conclusion of the 4-month program (see Table 1.1).

Measures

Participants completed a paper-based, self-assessment before program commencement and the same self-assessment at the conclusion of the program. Four measures, including sub-scales, were included in the self-assessment:

Emotional Exhaustion using the Maslach Burnout Inventory (Maslach & Jackson, 1981). This asks how often (a 1-7 scale: never, a few times a year, monthly, a few times a month, every week, a few times a week, every day), and how strong (a 1-7 scale from very mild, to moderate, to very strong) participants experience 9 items related to exhaustion at work.

Mindfulness at Work (Reb, Narayanan, & Wei Ho, 2013). This is adapted from the Five Facet Mindfulness Questionnaire (Baer et al, 2006; 2008) to fit the work context. Using a 1-5 scale (strongly disagree, disagree, neither disagree or agree, agree, strongly agree), participants were asked to rate items specifically with respect to their behaviours and experiences at work rather than in general or outside of work. Scores for Total Mindfulness, and sub-scales for Awareness, Focus, and Attention, were generated. There were 11 items measuring Awareness including, “I am aware of my moods”, “I am aware of how my colleagues' behaviors affect me”, and “I am aware of how my actions affect my subordinates”; five items measuring Focus including, “When I’m doing something, I’m only focused on what I’m doing, nothing else”, and “It is easy for me to concentrate on what I am doing”; and four items measuring Attention including, “I find myself doing things without paying attention”, and “I rush through activities without being really attentive to them”.

Perceived Stress Scale (Cohen & Williamson, 1988). This asks participants to rate their feelings and thoughts during the last month using a 1-5 scale (Never, almost never, sometimes, fairly often, very often) in relation to nine items, including “In the last month, how often have you been upset because of something that happened unexpectedly?” and “In the last month, how often have you felt that you were on top of things?”

Work- Life Balance using the 9-item, 5-point scale (Strongly disagree, disagree, neither disagree or agree, agree, strongly agree) developed by Greenhaus, Collins, & Shaw (2003). Example items are: “I feel successful in balancing my paid work and family life”, and “I am satisfied with the balance I have achieved between my work and life”.

Results

Tests

Crosstabs in conjunction with the Cramer’s V statistic were used to determine if gender ratios differed significantly between groups (Bennett & Allen, 2008).

T-tests and one-way ANOVAs were used for basic between group comparisons including demographic variables (Jaccard & Becker, 2009).

Factorial ANCOVAs in conjunction with simple effects (using one-way ANOVAs with family-wise corrections) were used to examine the effect of the program on survey scores while also looking for interaction effects between the program and possible confounding variables including age, gender and site (Jaccard & Becker, 2009; Bennett & Allen, 2008).

Assumptions of normality and homogeneity of variance were examined prior to testing (Bennett & Allen, 2008). Normality was tested using QQ plots and observations of skewness and kurtosis values less than |2|. Homogeneity of variance was tested using Levene's test (Bennett & Allen, 2008). Missing data was treated using list-wise deletion such that any participants with missing data for the variables of interest were excluded (Bennett & Allen, 2008).

An alpha level of $\alpha=.05$ was used as the level of significance for all statistical comparisons.

Demographics

A dropout rate of 29% (13 participants) was observed over the course of the program, most of these dropouts were observed at the St George/Sutherland site (n=10). Demographic differences between groups before and after the program are presented below in Table 1.1. Age, years in organisation and years in current position did not significantly differ as a result of this dropout as determined by t-tests. Furthermore ratios of gender, site and work level were also not significantly different before/after the program as determined by crosstabs and the observations of standardised residuals. As these variables were statistically similar between groups it was conclude that they were controlled for.

Table 1.1 Participant demographics before/after program.

	Before Program (n=45)	After Program (n=32)
<i>Age</i>	M= 44.57 (10.35)	M= 46.50 (9.97)
<i>Tenure</i>		
Years in Organisation	M= 8.94 (8.91)	M= 8.55 (7.21)
Years in Current Position	M= 3.94 (5.51)	M= 4.24 (3.95)
<i>Site</i>		
Eastern Suburbs	19	16
St George/Sutherland	26	16
<i>Gender</i>		
Male	16	7
Female	29	25
<i>Work Level</i>		
Non-Management	6	8
First Line-Supervisor	12	7
Middle-Management	19	11
Upper-Management	6	4

Comparisons between Sites

An independent samples t-test on the data collected at the commencement of the program revealed that participants from St George/Sutherland were significantly older (M=47.5, SD=8.63) than those from the Eastern Suburbs (M=40.34, SD=11.36), $t(40)=-2.36, p=.023$.

Years in the organisation, years in current position and gender ration were not statistically significant between groups at the time of commencement of the program. Thus any interaction effects between the program and site cannot be attributed to these variables.

Before/After Program Comparisons

Half of the measures showed no difference between groups as a result of the program. No main effect was found for Emotional Exhaustion Frequency/Strength, Mindfulness Attention and Perceived Stress as determined by a factorial ANCOVA.

For the remaining variables, interaction effects were present and were explored using simple comparisons. For all of these variables differences were found such that participants from the St George/Sutherland region showed significant increases in Mindfulness: Awareness, $F(1, 62) = 12.58, p < .05$, Focus, $F(1, 62) = 10.40, p < .05$, Total, $F(1, 62) = 47.42, p < .05$, and Work-Life Balance, $F(1, 71) = 8.83, p < .05$, as a result of the program while participants from the Eastern Suburbs showed no significant increases in any measure as a result of the program.

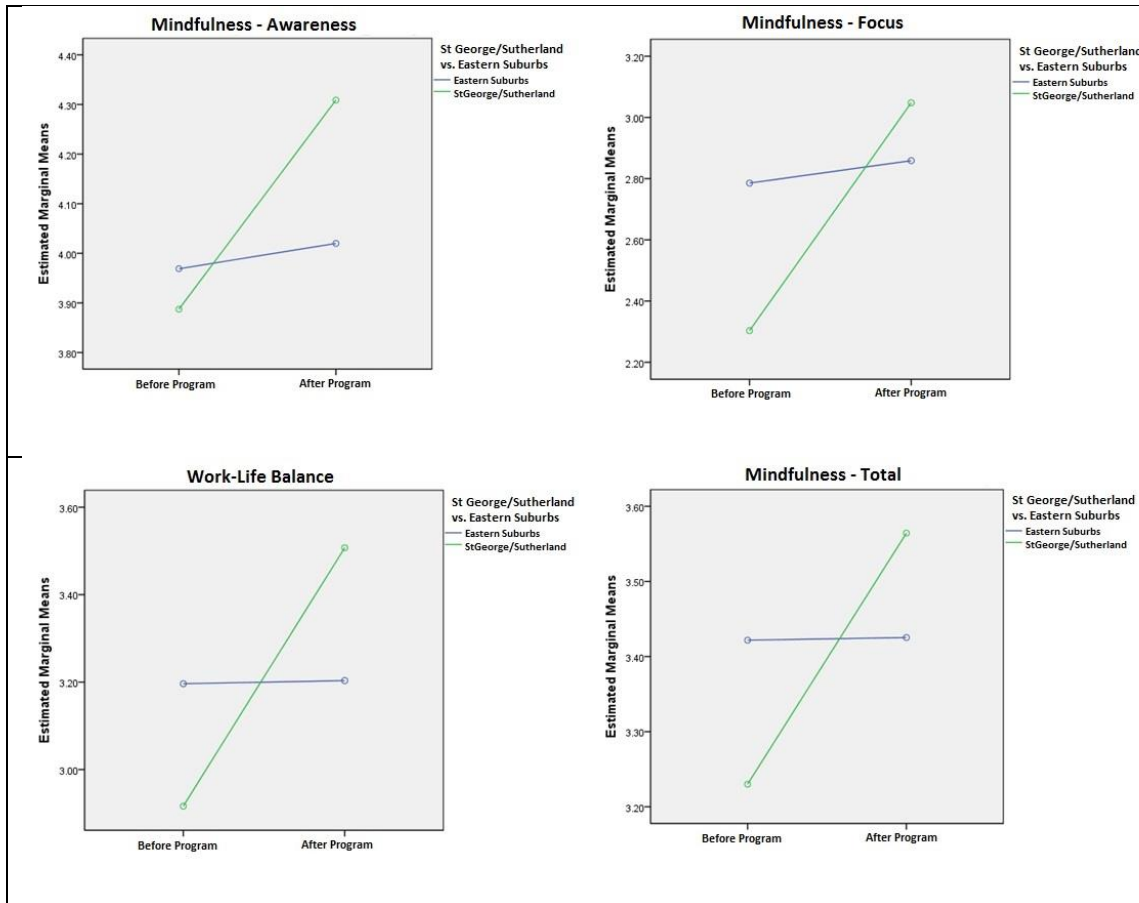
For a graphical representation for these significant interaction effects, see Figure 1.1.

Controlling for Dropout

As ID's were not tracked before and after the program participants were matched as closely as possible on age/employment length/position (3 participants from the Eastern Suburbs could not be matched). Pre-program participants that had no post-program match were labelled as dropouts.

One-way ANOVAs showed no significant differences between survey scores prior to the program between dropouts and non-dropouts. This result was found for participants from both sites suggesting that participant dropout could not account for the significant effects of the program on participants from the St George/Sutherland area.

Figure 1.1 Statistically significant results



Discussion

Interaction effects revealed that the mean scores for Mindfulness sub-measures, including Awareness and Focus, and for the Total Mindfulness measure increased significantly as a result of the CBMT program for participants in St George/Sutherland group but not for those from the Eastern Suburbs. The same pattern of significant results was also found for mean Work-Life Balance scores.

As all variables except age were statistically similar between groups, both before and after the program, age differences might have been used to explain the differing effects of the program between participants from different sites. However age was included as a covariate in all analyses and did not show any significant effects or interaction effects with the program for any measure. To confirm this, Pearson's correlations were conducted between age and each one of the survey variables of which there were no significant correlations or trends in the data.

As no other variables (demographic or otherwise) measured in this survey could be used to explain this pattern of results, it must be concluded that the CBMT program was more effective for participants in the St George/Sutherland area for some other reason or variable.

One plausible explanation is that participants in this region were more engaged and motivated by the program and more willing to persist with the daily training, despite the fact that participants in this region had a higher dropout rate (38.5%). Indeed there was stronger support from program champions from the St George/Sutherland area than from those in the Eastern Suburbs. The St George/Sutherland area champions were dedicated and purposeful and were more successful in motivating their colleagues to undertake the daily mindfulness training. They even invited office administration staff who were not part of the program to attend the daily training. As a consequence, SSMHS managers did more regular training than their ESMHS counterparts.

Participants in the Eastern Suburbs struggled to find time to meet as a group during working hours and their champions found it difficult to coordinate and motivate their colleagues. In part, this may have been due to the unpredictable demands on managers to attend locations other than their main hospital campus.

The difference in results between the two areas suggests that just like any exercise training program, persistence is the key to getting results with mindfulness training. The benefits only derive from actually doing the exercises regularly over time. Despite the statistical differences between the outcomes of the SSMHS and ESMHS managers, all participants reported a positive benefit in attending the program.

CBMT program at HETI

Method

Procedure

The NSW Health Education and Training Institute (HETI) develops and promotes coordinated education and training across the State of NSW to support the public health system including patient care, administration, and allied services.

In July 2014 the Director of the Leadership, Education Strategy and Implementation Portfolio of HETI approved a pilot CBMT program over four weeks with the aim of assessing whether CBMT could be a valuable addition to the training curriculum across NSW Health.

Participants

Accordingly, 19 project managers and administrative staff from the Leadership, Education Strategy and Implementation Portfolio of HETI based in Gladesville NSW undertook a 4-week pilot CBMT program.

Measures

As with the SELHD Program, participants completed a paper-based, self-assessment before program commencement (Pre-program), the same self-assessment at the conclusion of the program (Post-1), and again 8 weeks later (Post-2). Three measures, including sub-scales, were included in the self-assessment: *Mindfulness at Work* (Reb, Narayanan, & Wei Ho, 2013) with sub-scales for Awareness, Focus, and Attention; *Perceived Stress Scale* (Cohen & Williamson, 1988); and *Work-Life Balance* (Greenhaus, Collins, & Shaw, 2003). Given that it showed non-significant findings in the SELHD program, the Maslach Burnout Inventory for *Emotional Exhaustion* was not included.

Results

Tests

Most participants were matched such that repeated measure ANOVAs were used to examine the effectiveness of the program.

Normality was examined prior to testing using QQ plots and observations of skewness values less than |2|. Sphericity was tested using Mauchly's Test of Sphericity, and if sphericity was violated, the Greenhouse-Geisser was applied and reported (Bennett & Allen, 2008).

Missing data was treated using list-wise deletion such that any participants with missing data for the variables of interest were excluded (Bennett & Allen, 2008).

An alpha level of $\alpha=.05$ was used as the level of significance for all statistical comparisons.

Skewness values were larger than |2| for the Post-1 data for Mindfulness Focus and Work-Life Balance variables (-2.28 and 2.38 respectively). To account for this small violation, non-parametric tests (Friedman's test) were conducted on this data to ensure the accuracy of parametric test results.

Demographics

12 out of 19 participants had complete data, thus a dropout rate of 36.8% was observed over the course of the program. Demographic differences between groups before and after the program are presented below in Table 1.2.

As a within subjects t-test was used, participants acted as their own controls. Therefore there was no need to control for age and gender between observations.

Table 1.2 Participant demographics before/after program.

	Total sample ($n = 19$)	Those with complete data ($n=12$)
Age	M = 40.31 (11.10) ($n = 16$)	M = 37.55 (11.26) ($n = 11$)
<i>Gender</i>		
Male	14	4
Female	4	8
Missing	1	0

Longitudinal Program Comparisons

Overall one-way repeated measures ANOVAs revealed significant effects for Mindfulness Awareness, Focus and Total Mindfulness, and Perceived Stress.

Means, standard deviations and sample sizes, and ANOVA significance are presented below in Table 1.3.

Table 1.3: Means (SD) before and after program and significance of repeated measure ANOVA.

	n	M	SD	F	p
Mindfulness Awareness - Pre	12	3.82	.37	8.85	.002
Mindfulness Awareness – Post-1		4.11	.47		
Mindfulness Awareness – Post-2		4.32	.47		

Mindfulness Focus - Pre	12	2.62	.59	14.88*	.001
Mindfulness Focus – Post-1		3.61	.59		
Mindfulness Focus – Post-2		3.33	.81		
Mindfulness Attention - Pre	12	2.69	.74	1.60	.225
Mindfulness Attention – Post-1		2.33	.5		
Mindfulness Attention – Post-2		2.33	.79		
Total Mindfulness - Pre	12	3.29	.24	14.33	.000
Total Mindfulness – Post-1		3.62	.28		
Total Mindfulness – Post-2		3.67	.36		
Perceived Stress - Pre	12	1.36	.54	3.92	.035
Perceived Stress – Post-1		1.23	.35		
Perceived Stress – Post-2		1.31	.51		
Work Life Balance - Pre	11	3.10	.62	1.57*	.239
Work Life Balance – Post-1		3.81	1.31		
Work Life Balance – Post-2		3.50	.46		

*Greenhouse-Geisser corrections applied

For Mindfulness-Focus and Work Life Balance non-parametric Friedman’s tests were used to confirm results of the ANOVA (as skewness was present for this data). These tests showed the same patterns of significance.

Pairwise Comparisons

Pairwise comparisons compare each stage of program assessment against each other level, the labels of these stages and results for significant ANOVAs are as follows:

Table 2.1: Mindfulness – Awareness

		Mean Difference	Sig
Pre	Post 2	-.283	.044*
	Post 3	-.499	.002*
Post 2	Pre	.283	.044*
	3	-.216	.068
Post 3	Pre	.499	.002*
	2	.216	.068

Table 2.2: Mindfulness – Focus

		Mean Difference	Sig
Pre	Post 2	-.992	.000*
	Post 3	-.717	.013*
Post 2	Pre	.992	.000*
	3	.275	.110
Post 3	Pre	.717	.013*
	2	-.275	.110

Table 2.3: Mindfulness – Total

		Mean Difference	Sig
Pre	Post 2	-.333	.001*
	Post 3	-.379	.000*
Post 2	Pre	.333	.001*
	3	-.046	.587
Post 3	Pre	.379	.000*
	2	.046	.587

Table 2.4: Perceived Stress

		Mean Difference	Sig
Pre	Post 2	.405	.024*
	Post 3	.325	.077
Post 2	Pre	-.405	.024*
	3	-.079	.572
Post 3	Pre	-.325	.077
	2	.079	.572

* Significant at $\alpha = .05$

Note that not all post survey results are significantly different from pre survey results.

Discussion

Overall the CBMT program had a positive effect in terms of increasing every measure of mindfulness, decreasing stress and improving work-life balance. In terms of “significant findings”, repeated measure ANOVA’s revealed an overall significant effect for Awareness, Focus, and Total Mindfulness - improvements which persisted for 8 weeks after the program was completed.

For perceived stress there was only a significant difference between the pre-program and Post-1 (the first stages of post-program survey).

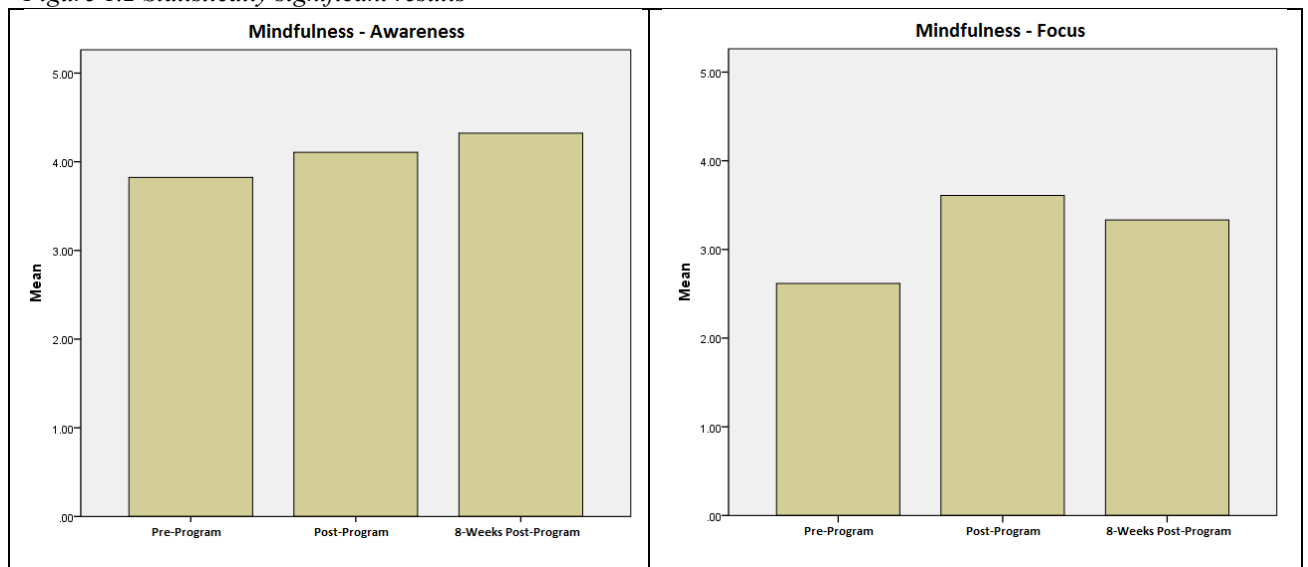
Pairwise comparisons showed that for mindfulness, including awareness, focus and total, there was a significant difference between pre-program and both stages of post-program survey.

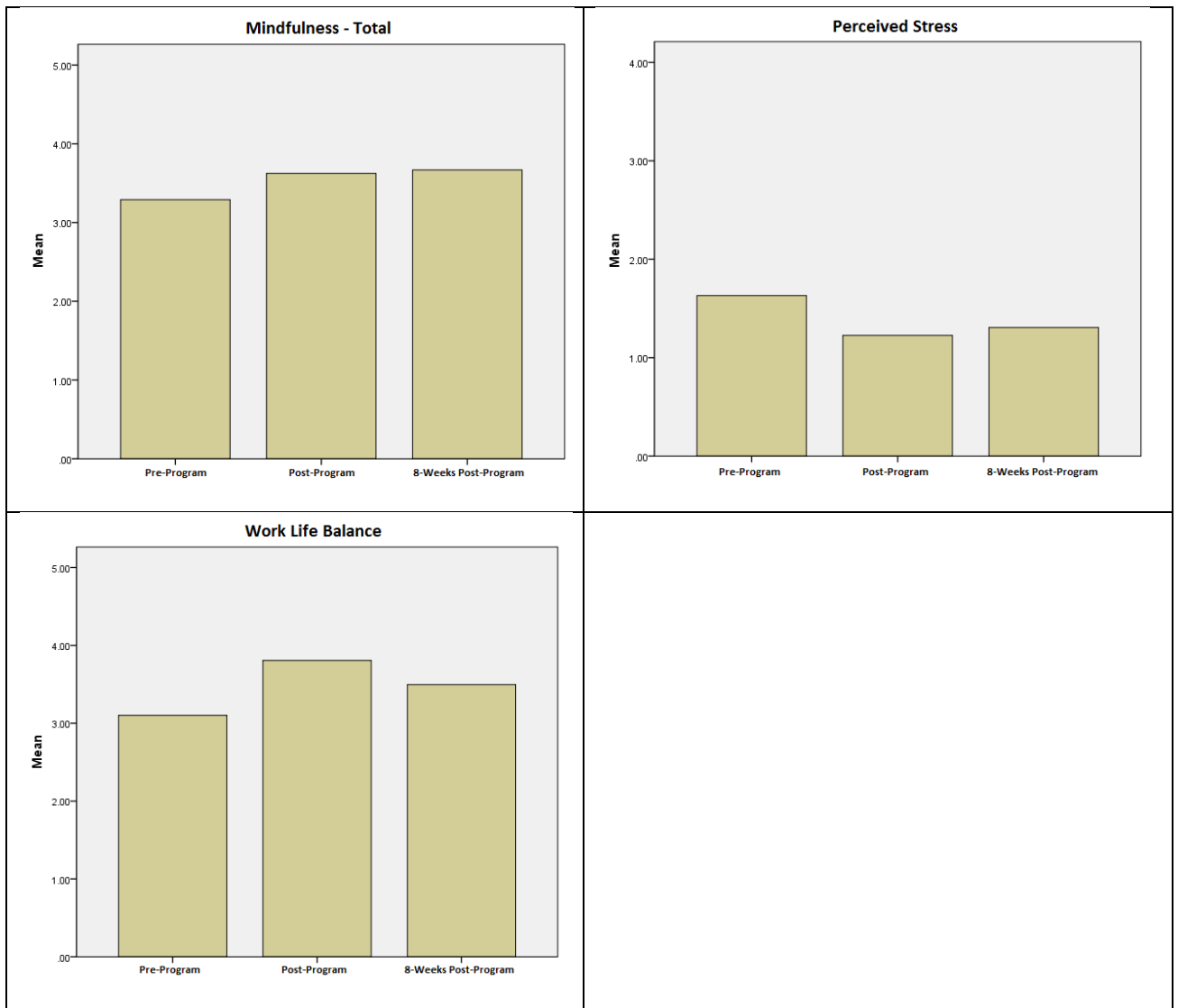
Although the sample size for the HETI Mindfulness Program was small, statistically significant improvements were found and these results were achieved over just 4 weeks of training compared to the normal design of 8-10 weeks.

Participants enjoyed attending the four weekly one-hour modules and the daily 10-minute training sessions over the course of 4 weeks. Overall they felt it was beneficial, work-related and practical, with the added benefit of bringing together staff from diverse areas who would not normally meet regularly.

Graphs of the means for this data are presented below in Figure 1.2.

Figure 1.2 Statistically significant results





Conclusions

Mindfulness training is more than a nice-to-have “lifestyle” program. It is a powerful methodology for enhancing workplace performance and productivity for knowledge workers through having a calmer, more open and undistracted mind, greater self-awareness, and an enhanced capacity for self-transformation (Aikens et al, 2014).

Knowledge workers in both corporate and government agency sectors undertake extensive training, ranging from technical skills through to communication and leadership skills. Yet, nowhere do they receive the most important training of all – training the mind for sharper focus, undistracted attention, and broader awareness. The consequences are a steady rise in stress, anxiety and depression in the workplace, and falling work output, effectiveness and productivity.

The mindfulness training interventions reported here demonstrate that for a fraction of the corporate training budget, even brief mindfulness training can result in significant benefits for individuals and for the workplace, results which have been shown persist for months after training. As one of the participants in the SESLHD mindfulness training program reported, “There is definitely a ‘buzz’ around the service regarding mindfulness, and when things happen in meetings etc, people feel free to remind others to share the ‘joy’ or to take time out to breathe. I believe it has made us more aware of our colleagues and how our behaviour can affect them. It has been a very positive experience and very helpful to the organisation.” And in the HETI mindfulness training program, a participant commented, “One of the effects of mindfulness training is that it carefully guides my mind to think much more

broadly, for the long term and in a way that is sensitive to others – which is a very handy ‘tool’ to have when addressing work related projects or issues.”

A key distinction between most standard training courses and mindfulness training is that the exercises must be practiced on a daily basis. As we have seen in the case of the two SESLHD programs, without persistent practice the expected benefits do not result. This is akin to taking out a membership at your local gym but then turning up for training sporadically and complaining of poor results. Exercising the “muscles” of focus, attention and awareness are no different. And the return on investment can be significant and widespread for knowledge workers and their organisations.

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