

## ASSOCIATIONS BETWEEN DIET, SMOKING, ALCOHOL CONSUMPTION, SLEEP AND THE WELL-BEING OF UNIVERSITY STAFF

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### ABSTRACT

**Background:** Previous research has examined the associations between well-being and health-related behaviours (HRBs) in samples of students and workers. In recent studies, well-being has been measured with the well-being process questionnaire (WPQ), and this was continued in the present survey of university staff. Diet, smoking, alcohol consumption, and sleep were also recorded. **Methods:** An online survey of 120 university staff asked about well-being and HRBs in the last six months. **Results:** Correlational analyses showed that some HRBs were associated with well-being outcomes. Positive well-being was negatively associated with the frequency of alcohol consumption during the week and at the weekend. It was also negatively associated with the sleep problems. Negative well-being

was positively associated with sleep problems and negatively associated with coffee and fruit consumption. Regressions were carried out on the positive and negative well-being outcomes, and the established predictors of well-being and the HRBs were included as independent variables. Positive well-being was predicted by higher psychological capital scores, greater social support, job demands and more frequent consumption of fruit. Negative well-being was predicted by high job demands, greater use of negative coping and problems sleeping. **Conclusion:** Health-related behaviours were associated with certain well-being outcomes, but these associations were generally not significant when established predictors of well-being were included in the analyses. Indeed, only the associations between fruit consumption and positive well-being, and negative well-being and problems sleeping remained significant. These results confirm previous findings from surveys of students and other groups of

workers. Future research with longitudinal designs and interventions is required to identify underlying causal mechanisms.

**KEYWORDS:** University Staff; Well-being; Health Related Behaviours; Diet; Sleep; Fruit; Coffee; Alcohol.

## INTRODUCTION

There have been a number of studies<sup>[1-4]</sup> of associations between aspects of diet (e.g. caffeine, fruit, chocolate and breakfast) and well-being. This research has usually examined individual components of diet and focused on positive (e.g. happiness, positive affect and life satisfaction) and negative (negative affect, stress, anxiety and depression) well-being outcomes. Recent research has taken a more holistic approach when investigating associations between eating, drinking and well-being.<sup>[5-8]</sup> One important feature of this research has been the conceptualisation of well-being in terms of a well-being process with positive and negative predictors and outcomes.<sup>[9-10]</sup> A questionnaire, the Well-being Process Questionnaire (WPQ), has been developed to measure the different components of the well-being process model. The questionnaire has been used with workers from specific occupational sectors and the general working population.<sup>[11-35]</sup> The results from studies using the WPQ have shown that positive outcomes (e.g., happiness, life and job satisfaction, and negative affect) are largely predicted by positive individual (e.g. psychological capital – high self-esteem, self-efficacy and optimism) characteristics and positive features of the job (e.g., control and social support), and to a smaller extent, by the absence of negative factors (e.g., high job demands and negative coping). Negative outcomes (e.g., stress, negative affect, fatigue, anxiety and depression) are predicted by the opposite profile of individual and work characteristics. An advantage of the WPQ is that other questions can be included in the survey to examine associations between the well-being process and other factors.

Recent studies have used the WPQ to examine associations between well-being and health-related behaviours (HRBs) of adolescents and young adults. The initial study<sup>[5]</sup> investigated this topic in a survey completed by secondary school students. The focus of this study was on diet. Initial univariate analyses revealed that aspects of diet were associated with positive and negative well-being outcomes. However, when the established predictors of well-being were covaried, the majority of the associations were no longer significant. Those that remained significant showed that positive well-being was associated with lower consumption of fast food/takeaways and greater fruit and vegetable consumption.

Two other studies examined the associations between well-being and HRBs in university students.<sup>[6, 7]</sup> These studies took a more holistic approach to HRBs and measured smoking, alcohol consumption, diet, sleep and exercise, all of which can potentially influence well-being.<sup>[36-39]</sup> The first study<sup>[6]</sup> of university students involved a survey that was carried out as soon as they arrived at university and asked questions about the previous six months when they were still living at home. Again, the univariate analyses revealed significant correlations between both positive and negative well-being and HRBs. When the established predictors of well-being were included in the regression models, most of the associations between the well-being outcomes and HRBs failed to achieve significance. However, smoking and infrequent exercise were associated with poor physical health, which confirms previous findings and gives more confidence in the novel results.

The next study<sup>[7]</sup> involved a survey of students who had been at university for some time (6-30 months). Initial results confirmed that the established predictors of positive and negative well-being outcomes were significantly associated with them. HRBs were also correlated with well-being outcomes. Regressions, including the HRBs and the established predictors in the model, showed that most of the associations between positive and negative well-being outcomes were no longer significant. Those that remained significant showed that smoking was associated with greater negative well-being. Good sleep and more frequent consumption of alcohol were associated with lower negative well-being.

The latest study<sup>[8]</sup> continued this line of research with a sample of nurses. Initial bivariate correlational analyses showed that positive and negative well-being outcomes were significantly associated with HRBs. Positive well-being was associated with more frequent breakfast, greater fruit consumption, higher tea consumption, lower chocolate intake, lower cola consumption, not being an emotional eater, longer hours of sleep and not smoking. Negative well-being was significantly associated with the opposite profile of HRBs. When established predictors of positive and negative well-being were covaried, the majority of the associations between HRBs and positive and negative well-being failed to achieve significance. The three remaining significant effects were the associations between short sleep and negative well-being, frequent fruit and breakfast consumption and positive well-being.

The aim of the present study was to extend the research to the investigation of another sample of workers, namely university staff. The first hypothesis was that positive and negative well-

being outcomes would be predicted by the established work and individual characteristic predictors. The second was that HRBs would be correlated with positive and negative well-being outcomes. The third hypothesis was that the majority of the associations between the positive and negative well-being outcomes and HRBs would no longer be significant when the established well-being predictors were included in the regression models. It was predicted that consumption of fruit and breakfast and sleep duration were the most likely HRBS to show associations that were independent of those of the established well-being predictors.

## **MATERIALS AND METHODS**

This study was approved by the Ethics Committee, School of Psychology, Cardiff University and carried out with the participants' informed consent. The online survey included an information sheet describing the study and informing participants that they were free to avoid answering certain questions, could withdraw at any time, and that their data would be anonymous. Informed consent was obtained before starting the survey.

### **Participants**

One hundred and twenty Cardiff University staff completed the study. Staff from all sectors of the university were recruited, including teaching, finance, security and accommodation. The job title of respondents was not recorded in order to maintain anonymity. The mean age was 36.8 years, with an age range of 21-69 years, and 76.7% were female. The majority of the participants were married or living with a partner (63%) and were educated to a degree level (73%). Most (81%) worked full-time employees and had fixed hours (79%).

### **The Survey**

The survey included the WPQ.<sup>[33]</sup> and the following WPQ scores were used in the analyses,

- Psychological capital (optimism, self-esteem, self-efficacy).
- Job demands.
- Social support.
- Job control.
- Positive coping (problem-solving, seeking support).
- Negative coping (wishful thinking, self-blame).
- Positive well-being (Happiness, life satisfaction, positive affect).
- Negative well-being (Stress, negative affect, anxiety and depression).

The following questions recorded information on health-related behaviours

Do you smoke cigarettes now?

- (1) Yes (2) No

On average, how often do you drink alcohol during the week? That is weekdays.

- (1) Never  
(2) 1-2 days  
(3) 3 days  
(4) 4 days

How many units do you drink during an average week? (1 unit = half a pint of beer/glass of wine/1 measure of spirits).

UNITS

On average, how often do you drink at the weekends?

- (1) Never  
(2) 1-2 days  
(3) All three days

How many units do you drink on an average weekend?

UNITS

Do you drink tea?

- (1) Yes  
(2) No

If yes, what type of tea do you usually drink?

- (1) Caffeinated  
(2) Fruit/Herbal  
(3) Decaffeinated  
(4) Other

On average, how many cups of tea do you drink per day?

Do you drink coffee?

- (1) Yes  
(2) No

If yes, what type of coffee do you usually drink?

- (1) Caffeinated
- (2) Decaffeinated
- (3) Other

On average, how many cups of coffee do you drink per day?

Do you drink cola?

- (1) Yes
- (2) No

If yes, what type of cola do you usually drink?

- (1) Caffeinated
- (2) Decaffeinated
- (3) Other

On average, how many colas do you drink per day?

Do you drink energy drinks (like Red Bull)?

- (1) Yes
- (2) No

If yes, how many energy drinks do you drink per day?

Do you chew gum?

- (1) No
- (2) Yes

How often do you eat breakfast?

Every day Most days(3-6) Once or twice a week Less than once a week Never

How often do you have a snack between meals?

Every day Most days (3-6) Once or twice a week Less than once a week Never.

How often do you eat chocolate?

Every day Most days (3-6) Once or twice a week Less than once a week Never.

How often do you eat crisps?

Every day Most days (3-6) Once or twice a week Less than once a week Never

How often do you eat biscuits?

Every day Most days (3-6) Once or twice a week Less than once a week Never

How often do you eat five pieces of fruit a day?

Every day Most days (3-6) Once or twice a week Less than once a week Never

How often do you eat nuts?

Every day Most days (3-6) Once or twice a week Less than once a week Never

How often have you had difficulty getting to sleep at night?

(1) Not at all

(2) Rarely

(3) Once in a while

(4) Some of the time

(5) Fairly often

(6) Often

(7) All of the time

How often have you woken up during the night?

(1) Not at all

(2) Rarely

(3) Once in a while

(4) Some of the time

(5) Fairly often

(6) Often

(7) All of the time

How often have you had nightmares or disturbing dreams?

(1) Not at all

(2) Rarely

(3) Once in a while

(4) Some of the time

(5) Fairly often

- (6) Often
- (7) All of the time

How often has your sleep been peaceful and undisturbed?

- (1) Not at all
- (2) Rarely
- (3) Once in a while
- (4) Some of the time
- (5) Fairly often
- (6) Often
- (7) All of the time

### **Analysis strategy**

The correlations between the outcome variables (positive and negative well-being) and the HRB scores were calculated in order to examine the associations between the well-being and the HRB constructs. Regressions then examined which predictor variables (established well-being predictors and HRBs) were significantly associated with the WPQ outcomes.

## **RESULTS**

### ***Associations between health-related behaviours predictors and the outcomes***

Positive well-being was negatively associated with frequency of alcohol consumption (alcohol during the week:  $r = -0.20$   $p < 0.05$ ; alcohol at the weekend ( $r = -0.21$ ,  $p < 0.05$ ). It was also negatively associated with the sleep problems factor ( $r = -0.19$ ,  $p < 0.05$ ). Negative well-being was positively associated with sleep problems ( $r = 0.27$ ,  $p < 0.05$ ) and negatively associated with coffee ( $r = -0.23$ ,  $p < 0.05$ ) and fruit ( $r = -0.21$ ,  $p < 0.05$ ) consumption.

### ***Multivariate analysis of predictors and well-being***

The significant predictors of positive and negative well-being are shown in Tables 1 and 2. Positive well-being was predicted by higher psychological capital scores, greater social support, job demands and more frequent consumption of fruit. Negative well-being was predicted by high job demands, greater use of negative coping and problems sleeping.

**Table 1: Significant predictors of positive well-being.**

Predictor	Standardised beta	t-value	p-value
Psychological capital	0.74	8.35	<0.001
Social Support	0.33	5.29	<0.001
Fruit	0.16	2.73	<0.01
Job demands	0.12	2.21	<0.05

**Table 2: Significant predictors of positive well-being.**

Predictor	Standardised beta	t-value	p-value
Job demands	0.34	4.85	<0.001
Negative coping	0.35	3.02	<0.005
Sleep problems	0.14	2.20	<0.05

## DISCUSSION

Our previous research with students and nurses has shown that certain HRBs are correlated with well-being outcomes but that when psychosocial predictors of well-being are covaried, many of these associations are no longer significant. The present study, with a sample of university staff, confirmed this general profile of results. In addition, the results from all of the studies have confirmed that the established predictors of well-being have significant associations with positive and negative well-being outcomes. This replication of established findings gives one confidence in the more novel results.

One more robust association between HRBs and positive well-being was the consumption of fruit. This result confirms the results obtained in an intervention study.<sup>[4]</sup> Another robust effect was the negative association between positive well-being and problems sleeping. Sleep is strongly related to well-being in that negative well-being was also significantly associated with sleep problems. Again, this confirms previous results which have demonstrated reliable associations between well-being and sleep.<sup>[39]</sup>

Other HRBS showed no evidence of associations with positive and negative well-being outcomes, which may reflect a limited range of scores for certain variables in the present sample. The study had several limitations. First, it was a cross-sectional study, which makes it difficult to assign causality. Reverse causality may occur, with well-being influencing diet and sleep rather than diet/sleep changing well-being. Longitudinal studies, preferably with interventions, are needed to identify the causal mechanisms linking well-being and HRBs. A second problem was that certain HRBs, such as exercise, were not measured. The present sample was also rather specific, covering one occupational sector, university staff, being

selected from one location, and consisting largely of female participants. Future research should use a more representative sample of the working population.

## CONCLUSION

Previous research has investigated associations between HRBs and the well-being of students and workers. The well-being process questionnaire (WPQ) provides a holistic approach to well-being and was used in the present study involving a survey of university staff. Diet, sleep, smoking, and alcohol consumption were also measured. The online survey asked questions about HRBs and well-being in the last six months. Initial analyses showed that some HRBs were associated with positive and negative well-being outcomes. Positive well-being was negatively associated with the frequency of alcohol consumption and was also negatively associated with sleep problems. Negative well-being was positively associated with sleep problems and negatively associated with fruit and coffee consumption. Regressions with the established predictors of well-being and the HRBs in the model were carried out. Positive well-being was predicted by greater social support, higher psychological capital scores, job demands and more frequent consumption of fruit. Negative well-being was significantly associated with high job demands, greater use of negative coping and problems sleeping. In conclusion, certain health-related behaviours were associated with well-being outcomes, but these associations were generally not significant when established predictors of well-being were included in the regression model. Indeed, only the associations between fruit consumption and positive well-being, and negative well-being and problems sleeping remained significant. These results confirm findings previous findings from other groups of workers and students. Future research using longitudinal designs and interventions is now required to identify underlying causal mechanisms.

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