

DIET, OTHER HEALTH-RELATED BEHAVIOURS, AND THE WELL-BEING OF NURSES

Andrew P. Smith*

Centre for Occupational and Health Psychology, School of Psychology, Cardiff University, 63 Park Place, Cardiff CF10 3AS, UK.

*Corresponding Author: Dr. Andrew P. Smith

Centre for Occupational and Health Psychology, School of Psychology, Cardiff University, 63 Park Place, Cardiff CF10 3AS, UK.

Article Received on 06/07/2023

Article Revised on 26/07/2023

Article Accepted on 16/08/2023

ABSTRACT

Background: Our previous research has examined the associations of health-related behaviours (HRBs) with well-being outcomes in samples of students. In these studies, well-being was measured with the well-being process questionnaire (WPQ), and this was continued in a survey of nurses. Diet, smoking, alcohol consumption, exercise, and sleep were also measured. **Methods:** An online survey of 170 nurses was carried out. The survey asked about well-being and HRBs in the last six months. **Results:** Univariate analyses showed that HRBs were associated with well-being outcomes. Positive well-being was associated with higher fruit consumption, more frequent breakfast consumption, longer hours of sleep, higher tea consumption, not smoking, lower chocolate intake, lower cola consumption, and not being an emotional eater. Negative well-being was associated with the opposite HRB profile. When established predictors of well-being were included in the regression model, most of the associations between HRBs and well-being outcomes were no longer significant. The exceptions were frequent fruit and breakfast consumption and positive well-being, and short sleep and negative well-being. **Conclusion:** Health-related behaviours were associated with well-being and outcomes. These associations were generally not significant when established predictors of well-being and health were included in the analyses. Indeed, only the associations between breakfast and fruit consumption and positive well-being, and negative well-being and short sleep, remained significant. These results confirm findings from surveys of students. Further research with longitudinal designs and interventions is required to identify causality and underlying mechanisms.

KEYWORDS: Nurses; Well-being; Health Related Behaviours; Diet; Exercise; Sleep; Breakfast; Fruit; Cola; Energy Drinks; Coffee; Tea.

INTRODUCTION

Diet and other health-related behaviours (HRBs), such as smoking, alcohol consumption, sleep and exercise, are major public health issues. Health and well-being are associated, with health status influencing well-being, and changes in well-being affecting health.^[1-10] One might expect, therefore, that health-related behaviours are associated with well-being. Most research in this area has used a simplistic model of well-being focusing solely on positive (e.g., happiness, life satisfaction, positive affect) or negative (e.g., stress, negative affect, anxiety, and depression) outcomes. A more holistic approach to well-being has been developed,^[11-12] and this well-being process model was used in the present study.

The well-being process model was developed from the Demands-Resources-Individual-Effects (DRIVE) model of stress.^[13-16] This model included negative (e.g., job demands) and positive (e.g., control, social support) job characteristics. Individual differences in coping and attributional style were also included, as were positive and negative outcomes. The well-being process model

included further positive and negative job characteristics, individual characteristics such as psychological capital, and well-being outcomes used in other approaches to well-being. The Well-being Process Questionnaire (WPQ) was developed to measure these constructs and has been extensively used with different groups of workers.^[17-43] The general results from this research have shown that positive outcomes are largely predicted by positive work and individual characteristics and, to a lesser extent, by the absence of negative factors. Negative outcomes are predicted by the opposite profile of work and individual characteristics. A major advantage of the WPQ is that it is short, and other questions can be added to the survey to examine associations between other factors and the well-being process.

Recent research has used the well-being process model to examine associations between HRBs and the well-being of adolescents and young adults. The initial studies largely focused on diet. One study^[44] investigated this area in a sample of secondary school students. Initial

univariate analyses revealed that health-related behaviours were associated with many well-being outcomes. However, when the established predictors of well-being were included in the regression models, many of the associations no longer achieved significance. However, some remained significant, with positive well-being being associated with higher fruit and vegetable consumption and lower consumption of fast food/takeaways.

Two further studies have examined the associations between well-being and HRBs in samples of university students.^[45, 46] These studies had a wider focus and examined HRBs such as smoking, alcohol consumption, as well as diet, exercise, and sleep. The first study^[45] of university students collected data as soon as they arrived at the university and asked about the time when they were still living at home. Again, univariate analyses revealed associations between the HRBs and well-being and health outcomes. When established predictors of well-being were included in the analyses, most of the associations between HRBs and well-being outcomes were no longer significant. However, smoking and infrequent exercise were associated with poor physical health.

The latest study^[46] involved a survey of university students who had been at university for 6-30 months. Univariate analyses confirmed that established predictors of well-being were associated with the well-being outcomes. HRBs were also correlated with well-being outcomes. Regressions, including established predictors and HRBs in the model, demonstrated that most of the associations between HRBs and outcomes were no longer significant. Some of the associations remained significant. For example, smoking was associated with higher negative well-being, whereas good sleep and more frequent consumption of alcohol were associated with lower negative well-being.

The aim of the present study was to extend the previous studies of students to the investigation of a working sample. The well-being and HRBs of nurses have been frequently studied, and they formed the sample in the present research. The first hypothesis was that well-being outcomes would be predicted by established work and individual predictors. The second was that HRBs would be correlated with well-being outcomes. The final hypothesis was that many of the associations between HRBs and well-being outcomes would no longer be significant when the established well-being predictors were covaried.

MATERIALS AND METHODS

An online survey was carried out. It had the approval of the Ethics Committee, School of Psychology, Cardiff University and the informed consent of the participants.

Participants:

One hundred and seventy nurses (155 female; 15 male; age range 19-69, mean age: 40 years) took part in the study. Most of the volunteers were married or living with a partner (66%) and were educated to a degree or higher degree level (86.6%). Participants were from all areas of nursing, including managers, practitioners, and educators. Participants were recruited through the Royal College of Nursing. They were given £10 gift vouchers and entered into a prize draw (3 prizes of £100).

Materials:

The questionnaire contained the Well-being Process Questionnaire and questions relating to diet and lifestyle (exercise, hours of sleep, smoking and alcohol consumption). These additional questions are shown below:

Lifestyle Questions:

In this section, we are interested in finding out about how you live your life.

1. Do you smoke cigarettes now?

Yes No

2. How many cigarettes do you smoke per day?

3. On average, how often do you drink during the week, that is weekdays?

Please tick ONE BOX only.

| | | | |
|-------|------------|--------|--------|
| Never | 1 - 2 Days | 3 Days | 4 Days |
|-------|------------|--------|--------|

4. How many units do you drink during an average week? _____ units

(1 unit = half a pint of beer/glass of wine/1 measure of spirits)

5. On average, how often do you drink at the weekends? Please tick ONE BOX only.

| | | |
|-------|------------|------------|
| Never | 1 - 2 Days | All 3 Days |
|-------|------------|------------|

6. How many units do you drink on an average weekend? _____ units

7. How often do you eat breakfast?

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

8. How often do you eat beans or peas?

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

9. How often do you eat wholemeal or whole-grain bread?

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

10. How often do you eat high-fibre food (e.g. bran; fruit, vegetables, nuts, seeds, pulses)?

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

11. How often do you have a snack or something to eat between meals or before going to bed?

Every day Most days Once or twice a week Less than once a week Never

12. When I feel anxious, I find myself eating.
Definitely true(4) mostly true (3) mostly false (2) definitely false (1)

13. When I feel depressed, I find myself eating.
Definitely true(4) mostly true (3) mostly false (2) definitely false (1)

14. When I feel lonely, I console myself by eating.
Definitely true(4) mostly true (3) mostly false (2) definitely false (1)

15. Do you drink tea
Yes ¹ No ⁰

16. What type of tea do you usually drink?

| | |
|---|--|
| Caffeinated <input type="checkbox"/> ₀ | Fruit / Herbal <input type="checkbox"/> ₂ |
| Decaffeinated <input type="checkbox"/> ₁ | Other <input type="checkbox"/> ₃ |

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

18. Do you drink coffee?
Yes ₁ No ₀

19. What type of coffee do you usually drink?

| |
|---|
| Caffeinated <input type="checkbox"/> ₀ |
| Decaffeinated <input type="checkbox"/> ₁ |

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

21. Do you drink cola?
Yes ₁ No ₀

22. What type of cola do you usually drink?

| |
|---|
| Caffeinated <input type="checkbox"/> ₀ |
| Decaffeinated <input type="checkbox"/> ₁ |

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

24. Do you drink energy drinks?

Yes ₁ No ₀

25. On average, how many energy drinks do you have per day?

26. Which of the following foods have you eaten in the last week as a snack?

| | Twice or more a day | Once a day | 5-6 times a week | 3-4 times a week | Twice a week | Once a week | Not at all |
|---------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Fresh fruit | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Crisps | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Chocolate confectionery | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Yoghurt | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Dried fruit | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Cereal bar | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Biscuits | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Breakfast cereal | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Nuts | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Cake / cake bars | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| Toast / bread with spread | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |

27. How often do you take part in sports OR activities that are:

(Please tick ONE box per category)

| | Three times a week or more | once or twice a week | about once to three times a month | never/ hardly ever |
|---|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| a) Mildly energetic (e.g. walking, woodwork, weeding, hoeing, bicycle repair, playing darts, general housework) | <input type="checkbox"/> ₀ | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ |

| | | | | |
|---|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| b) Moderately energetic (e.g. scrubbing, polishing the car, chopping, dancing, golf, cycling, decorating, lawn mowing, leisurely swimming) | <input type="checkbox"/> ₀ | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ |
| c) Vigorous (e.g. running, hard swimming, tennis, squash, digging, cycle racing, aerobics) | <input type="checkbox"/> ₀ | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ |

28. Please give the average number of hours per week you spend in such sports or activities.

- a. Mildly energetic: Hours
 b. Moderately energetic : Hours
 c. Vigorous: Hours

29. How many hours of sleep do you have on an average weeknight?

| | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 5 hours or less | 6 hours | 7 hours | 8 hours | 9 hours or more |
| <input type="checkbox"/> ₀ | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ |

Statistical analyses:

Initial univariate analyses examined the association between health-related behaviours and well-being outcomes. Next, separate regressions were carried out with positive well-being and negative well-being as outcomes. The predictor variables were health-related behaviours and established well-being predictors.

RESULTS

Univariate analyses of associations between health-related behaviours, well-being predictors and outcomes.

Positive and negative well-being scores were highly correlated ($-0.85 p < 0.001$).

Positive well-being was associated with the following:

- Low chocolate consumption
- High fruit consumption
- Frequent breakfast consumption
- Being a non-smoker
- Longer hours of sleep
- Not being an emotional eater (not eating when anxious, depressed or lonely)
- High tea consumption
- Low cola consumption.

Negative well-being was associated with an opposite profile of associations.

The significant correlations between the health-related behaviours variables and the well-being outcomes are summarized in Table 1.

Table 1: Significant correlations between health-related Behaviours and Well-being outcomes

| | Negative well-being | Positive well-being |
|------------------------------|---------------------|---------------------|
| Low smoking | -0.23 $p < 0.005$ | 0.28 $p < 0.001$ |
| Low chocolate | -0.16 $p < 0.05$ | 0.22 $p < 0.005$ |
| Infrequent breakfast | 0.17 $p < 0.05$ | -0.28 $p < 0.001$ |
| Low fruit | 0.13 $p > 0.05$ | -0.25 $p < 0.001$ |
| High tea | -0.22 $p < 0.005$ | 0.19 $p < 0.05$ |
| High cola | 0.28 $p < 0.001$ | -0.24 $p < 0.001$ |
| Infrequent anxious eating | -0.26 $p < 0.001$ | 0.21 $p < 0.005$ |
| Infrequent depressed eating | -0.27 $p < 0.001$ | 0.26 $p < 0.001$ |
| Infrequent loneliness eating | -0.26 $p < 0.001$ | 0.27 $p < 0.001$ |
| Long sleep | -0.30 $p < 0.001$ | 0.20 $p < 0.01$ |

Multivariate analysis of Predictors and Well-being

Separate regressions were carried out for the positive and negative well-being outcomes. The established predictors of well-being were included, as were the significant health-related behaviours from the correlational analyses. The results are shown in Table 2. Positive well-being was significantly predicted by:

- High psychological capital (high self-esteem, self-efficacy and optimism)
- High social support
- Low negative coping (Self-blame; wishful thinking; avoidance)
- Frequent fruit consumption
- Frequent breakfast consumption

- Infrequent eating when depressed.
- Negative well-being was predicted by:
- High job demands
 - High negative coping
 - Low psychological capital
 - Low social support
 - Short sleep

Table 2: Significant predictors of Positive and Negative well-being outcomes.

| | Standardised Beta | t-value | p-value |
|-----------------------------|-------------------|---------|--------------|
| Positive Well-being: | | | |
| Psychological capital | 0.43 | 6.84 | <0.001 |
| Social support | 0.25 | 4.08 | <0.001 |
| Negative coping | -0.20 | -3.31 | <0.005 |
| Infrequent Breakfast | -0.09 | -1.68 | <0.05 1-tail |
| Low Fruit | -0.14 | -2.67 | <0.01 |
| Infrequent depressed eating | 0.24 | 2.24 | <0.05 |
| Negative well-being | | | |
| Job demands | 0.18 | 3.53 | <0.001 |
| Negative coping | 0.27 | 4.67 | <0.001 |
| Psychological capital | -0.36 | -6.08 | <0.001 |
| Social support | -0.17 | -2.81 | <0.01 |
| Hours of sleep | -0.16 | -3.05 | <0.005 |

DISCUSSION

Previous research with students has shown that HRBs are correlated with well-being outcomes but that many of these associations are no longer significant when psychosocial predictors of well-being are covaried. The present study, with a sample of nurses, confirmed these findings. In all of the studies, the established predictors of well-being had significant associations with the well-being outcomes, which gives one confidence in the more novel results.

The more robust associations between HRBs and positive well-being were the consumption of breakfast, fruit and infrequent emotional eating. These findings confirm the extensive literature on the beneficial effects of these aspects of diet.^[45-47] In contrast, no aspects of diet were associated with negative well-being. Indeed, the only HRB to be associated with negative well-being was fewer hours sleeping. Again, this confirms previous results which have demonstrated reliable associations between sleep and well-being.^[48]

Other HRBS, such as exercise and alcohol consumption, showed no evidence of associations with well-being. This may reflect the limited range of scores for these variables in the present sample. The study had a number of limitations. First, it was a cross-sectional study which makes it difficult to define causality. Indeed, reverse causality may occur, with well-being influencing diet rather than diet-changing well-being. Longitudinal studies with interventions are required to identify the causal mechanisms linking HRBs and well-being. The present sample was also rather specific, covering one occupational sector, nursing, and consisting of mainly female participants. Future research should use a sample which is more representative of the working population.

CONCLUSION

Previous research has investigated associations between HRBs and the well-being of students. The well-being process questionnaire (WPQ) provided a holistic approach to well-being and was used in the present study involving a survey of nurses. Diet, sleep, smoking, exercise and alcohol consumption were also measured.

The online survey asked questions about HRBs and well-being in the last six months. Univariate analyses showed that HRBs were correlated with well-being outcomes. Positive well-being was associated with not smoking, longer hours of sleep, more frequent fruit consumption, more frequent breakfast, higher tea consumption, lower chocolate intake, lower cola consumption, and not being an emotional eater. Negative well-being was associated with the opposite HRB profile. When established psychosocial predictors of well-being were included in the analyses, most of the associations between well-being outcomes and HRBs were no longer significant. The exceptions were associations between frequent breakfast and fruit consumption and positive well-being, and negative well-being and short sleep. The established predictors had their usual significant associations with well-being. These results confirm earlier findings from studies of students. Future research should have longitudinal designs and interventions so that causality and underlying mechanisms can be identified.

REFERENCES

1. Diener E, Chan MY. Happy People Live Longer: Subjective Well-Being Contributes to Health and Longevity, *Applied Psychology: Health and Well-Being*, 2011; 3(1): 1-43.
2. Dolan P, Peasgood T, White M. Do we really know what makes us happy A review of the economic literature on the factors associated with subjective well-being, *Journal of Economic Psychology*, 2008; 29(1): 94-122.
3. Haller M, Hadler M. How social relations and structures can produce happiness and unhappiness: An international comparative analysis, *Social Indicators Research*, 2006; 75(2): 169-216.
4. Howell RT, Kern ML, Lyubomirsky S. Health benefits: Meta-analytically determining the impact of well-being on objective health outcomes, *Health Psychology Review*, 2007; 1(1): 83-136.
5. Keyes CLM., 2005, Mental illness and/or mental health? Investigating axioms of the complete state model of health, *Journal of Consulting and Clinical Psychology*, 2005; 73(3): 539-548.

6. ONS. Measuring What Matters – National Statistician's Reflections on the National Debate on Measuring National Well-being, ONS July, 2011.
7. Shields MA, Price SW. Exploring the economic and social determinants of psychological well-being and perceived social support in England, *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 2005; 168(3): 513-37.
8. Steptoe A, Deaton A, Stone AA. Subjective well-being, health, and ageing. *Lancet*, 2015; 14, 385(9968): 640-648. doi: 10.1016/S0140-6736(13)61489
9. Stoll L, Michaelson J, Seaford, C. Well-being evidence for policy: a review. New Economics Foundation, London, 2012.
10. WHO. Measurement of and target-setting for well-being: an initiative by the WHO Regional Office for Europe, report of the second meeting of the expert group, Paris, France, 2012; 25-26.
11. Williams, G, Smith AP. Measuring well-being in the workplace: Single item scales of depression and anxiety. In *Contemporary Ergonomics and Human Factors 2013*. Martin Anderson (ed). CRC Press: Taylor & Francis. London. ISBN 978-1-138-00042-1, 87-94.
12. Williams GM, Smith, A.P. A holistic approach to stress and well-being. Part 6: The Well-being Process Questionnaire (WPQ Short Form). *Occupational Health (At Work)*, 2012; 9, 1: 29-31.
13. Mark GM, Smith AP. Stress models: A review and suggested new direction. In: *Occupational Health Psychology: European Perspectives on Research, Education and Practice*. EA-OHP series. Edited by J. Houdmont & S. Leka. Nottingham University Press, 2008; 3: 111-144.
14. Mark G, Smith AP. Effects of occupational stress, job characteristics, coping and attributional style on the mental health and job satisfaction of university employees. *Anxiety, Stress and Coping*, 2011; 25: 63-78. doi: 10.1080/10615806.2010.548088
15. Mark G, Smith AP. Occupational stress, job characteristics, coping and mental health of nurses. *British Journal of Health Psychology*, 2012; 17: 505-521. doi: 10.1111/j.2044-8287.2011.02051.x
16. Margrove G, Smith AP. The Demands-Resources-Individual Effects (DRIVE) Model: Past, Present and Future Research Trends. Chapter 2, in "Complexities and Strategies of Occupational Stress in the Dynamic Business World". Edited by Dr Adnam ul Haque. IGI Global, 2022; doi: 10.4018/978-1-6684-3937-1
17. Ahmad MI, Firman K, Smith H, Smith AP. Short Measures Of Organisational Commitment, Citizenship Behaviour And Other Employee Attitudes And Behaviours: Associations With Well-Being, *BMIJ*, 2018; 6(3): 516-550 doi: <http://dx.doi.org/10.15295/bmij.v6i3.391>
18. Ahmad MI, Firman K, Smith H, Smith AP. Psychological Contract Fulfilment and Well-Being. *Advances in Social Sciences Research Journal*, 2018; 5(12): 90-101. doi:10.14738/assrj.512.5758.
19. Fan J, Smith AP. Positive well-being and work-life balance among UK railway staff. *Open Journal of Social Sciences*, 2017; 5: 1-6. <http://dx.doi.org/10.4236/jss.2017.56001>
20. Fan J, Smith AP. The Mediating Effect of Fatigue on Work-Life Balance and Positive Well-Being in Railway Staff. *Open Journal of Social Sciences*, 2018; 6: 1-10. Doi: 10.4236/jss.2018.66001
21. Galvin J, Smith AP. Stress in trainee mental health professionals: A multi-dimensional comparison study. *British Journal of Education, Society & Behavioural Science*, 2005; 9: 161-175.
22. Langer J, Smith AP, Taylour, J. Occupant psychological well-being and environmental satisfaction after an open-plan office redesign. In: Charles, R. & Golightly, D. (eds), *Contemporary Ergonomics and Human Factors*. Chartered Institute of Ergonomics and Human Factors, 2019; 223-233.
23. Langer J, Taylour J, Smith AP. Noise exposure, satisfaction with the working environment and the well-being process. ICBEN2021. http://www.icben.org/2021/ICBEN%202021%20Papers/full_paper_28010.pdf
24. Nelson K, Smith AP. Occupational stress, coping and mental health in Jamaican police officers. *Occupational Medicine*, 2016. doi: 10.1093/occmed/kqw055.
25. Nor NIZ, Smith AP. The Association between Psychosocial Characteristics, Training Variables and Well-Being: An Exploratory Study among Organizational Workers. *International Journal of Psychological and Behavioral Sciences*. World Academy of Science, Engineering and Technology, 2018; 5: 6.
26. Nor NIZ, Smith AP. 2018. Attitudes to Training and Its Relation to the Well-being of Workers. *Journal of Education, Society and Behavioural Science*, 2018; 27(2): 1-19. DOI: 10.9734/JESBS/2018/44445
27. Omosehin O, Smith, A.P. Adding new variables to the Well-being Process Questionnaire (WPQ) – Further studies of Workers and Students. *Journal of Education, Society and Behavioral Science*, 2019; 28(3): 1-19, DOI: 10.9734/JESBS/2018/45535
28. Smith AP. Stress and well-being at work: An update. In *Contemporary Ergonomics and Human Factors*. Sarah Sharples, Steve Shorrock & Pat Waterson (eds). CRC Press: Taylor & Francis. London. ISBN 978-1-138-02803-6, 2015; 415-422.
29. Smith AP, Smith, H.N. A short questionnaire to measure well-being at work (Short-SWELL) and to examine the interaction between the employee and organisation. In: Charles, R. & Wilkinson, J. eds. *Contemporary Ergonomics and Human Factors* Chartered Institute of Ergonomics and Human Factors. ISBN: 978-1-5272-0762-2, 2017; 200-205.
30. Smith AP, Smith, H.N. An international survey of the well-being of employees in the business process

- outsourcing industry. *Psychology*, 2017; 8: 160-167. DOI:10.4236/psych.2017.81010
31. Smith AP, Smith H.N. Effects of noise on the well-being of railway staff. *ICBEN*, 2017. http://www.icben.org/2017/ICBEN%202017%20Papers/SubjectArea06_Smith_0602_2460.pdf
 32. Smith AP, Smith HN. Well-being at work and the lie scale. *Journal of Health and Medical Sciences*, 2019; 2(1): 40-51. DOI: 10.31014/aior.1994.02.01.18
 33. Smith AP. Stress and well-being of Nurses: An Update. *International Journal of Arts, Humanities and Social Science*, 2019; 4(6): 1-6. <http://www.ijahss.com/Paper/04062019/1179495063.pdf>
 34. Smith AP. Alcohol, Smoking, Well-being and Health and Safety of Workers. *Journal of Health and Medical Sciences*, 2019; 2(4): 429-448. DOI: 10.31014/aior.1994.02.04.67
 35. Smith AP. A combined effects approach to the Demands-Resources-Individual Effects (DRIVE) model of well-being. *International Journal of Humanities Social Sciences and Education (IJHSSE)*, 2021; 8(9): 28-38. <https://doi.org/10.20431/2349-0381.0809003>
 36. Smith AP, James A. The well-being of working mothers before and after a COVID-19 lockdown. *Journal of Education, Society and Behavioural Science*, 2021; 34(11): 133-140. DOI: 10.9734/JESBS/2021/v34i1130373.378.
 37. Smith AP. A holistic approach to the well-being of nurses: A combined effects approach. *Advances in Social Science Research Journal*, 2022; 9 (1): 475-484. Doi: 10.14738/assrj.91.11650
 38. Williams G, Smith AP. Measuring well-being in the workplace: Single item scales of depression and anxiety. In *Contemporary Ergonomics and Human Factors* Martin Anderson (ed). CRC Press: Taylor & Francis. London, 2013; 87-94.
 39. Williams GM, Smith AP. Using single-item measures to examine the relationships between work, personality, and well-being in the workplace. *Psychology: Special Edition on Positive Psychology*, 2016; 7: 753-767.
 40. Williams G, Thomas K, Smith, A.P. Stress and Well-being of University Staff: an Investigation using the Demands-Resources- Individual Effects (DRIVE) model and Well-being Process Questionnaire (WPQ). *Psychology*, 2017; 8: 1919-1940. <https://doi.org/10.4236/psych.2017.812124>
 41. Zhang J, Li H, Ma Y, Smith AP. Switch Off Totally or Switch Off Strategically? The Consequences of Thinking about Work on Job Performance. *Psychological Reports*, 2020. <https://doi.org/10.1177%2F0033294120968080>
 42. Zhang J, Smith AP. A new perspective on effects of different types of job demands on the well-being of a sample of Chinese workers. *International Journal of Business and Social Science*, 2021; 12 (6): 61-68. doi:10.30845/ijbss.v12n6p8
 43. Smith AP, James A. Diet and other health-related behaviours: Associations with the well-being of Secondary School Students. *World Journal of Pharmaceutical and Medical Research*, 2023; 9 (6): 220-228. https://www.wjpmr.com/home/article_abstract/4899 ISSN 2455-3301
 44. Almobayed S, Smith AP. Associations between diet, other health-related behaviours, well-being and physical health: A survey of students about to start university. *European Journal of Pharmaceutical and Medical Research*, 2023; 10 (7): 44-49.
 45. Almobayed S, Smith AP. Associations between diet, other health-related behaviours, well-being and general health: A survey of university students. *World Journal of Pharmaceutical and Medical Research*, 2023; 9 (8): 19-25.
 46. Smith, AP. Breakfast and Adult's and Children's Behavior. In: *Diet, Brain, Behavior: Practical Implications*. Eds: R.B. Kanarek & H.R. Lieberman. Taylor & Francis, 2011; 53-70.
 47. Smith AP. Eating, Drinking and Well-being. In: H. L. Meiselman (ed.), *Handbook of Eating and Drinking*, 2020. https://doi.org/10.1007/978-3-319-75388-1_174-1
 48. Smith AP, Rogers R. Positive effects of a healthy snack (fruit) versus an unhealthy snack (chocolate/crisps) on subjective reports of mental and physical health: A preliminary intervention study. *Frontiers in Nutrition*, 2014; 1:10. doi: 10.3389/fnut.2014.00010
 49. Howells K, Smith, A.P. Daytime sleepiness and the well-being and academic attainment of university students. *OBM Neurobiology*, 2019; 3 (3): 1-18. doi:10.21926/obm.neurobiol.1903032