



Journal of Health and Medical Sciences

Smith, Andrew P. (2019), Smoking, Wellbeing and Academic Attainment. In: *Journal of Health and Medical Sciences*, Vol.2, No.3, 279-284.

ISSN 2622-7258

DOI: 10.31014/aior.1994.02.03.48

The online version of this article can be found at:

<https://www.asianinstituteofresearch.org/>

Published by:
The Asian Institute of Research

The *Journal of Health and Medical Sciences* is an Open Access publication. It may be read, copied, and distributed free of charge according to the conditions of the Creative Commons Attribution 4.0 International license.

The Asian Institute of Research *Journal of Health and Medical Sciences* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Medicine and Public Health, including medicine, surgery, ophthalmology, gynecology and obstetrics, psychiatry, anesthesia, pediatrics, orthopedics, microbiology, pathology and laboratory medicine, medical education, research methodology, forensic medicine, medical ethics, community medicine, public health, community health, behavioral health, health policy, health service, health education, health economics, medical ethics, health protection, environmental health, and equity in health. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Journal of Health and Medical Sciences* aims to facilitate scholarly work on recent theoretical and practical aspects of Health and Medical Sciences.



ASIAN INSTITUTE OF RESEARCH
Connecting Scholars Worldwide



Smoking, Wellbeing and Academic Attainment

Andrew P. Smith¹

¹ School of Psychology, Cardiff University

Corresponding Author: Andrew Smith, Centre for Occupational and Health Psychology, School of Psychology, Cardiff University, 63 Park Place, Cardiff CF10 3AS, UK. Tel: +442920874757. E-mail: smithap@cardiff.ac.uk

Abstract

The research described here examined associations between smoking, wellbeing and academic attainment of university students. Wellbeing was investigated using the Student Wellbeing Process Questionnaire (WPQ) and academic attainment was assessed using Grade Point Average (GPA) and perceptions of work efficiency. 923 university students (94 males, 829 females; approximately 10% smokers) participated in the study. Univariate analyses showed that smokers were less conscientious, had lower positive wellbeing and lower attainment scores. Smokers also reported greater exposure to stressors, more negative coping and higher negative outcome scores. When established predictors of wellbeing (positive personality; social support; exposure to stressors and negative coping) and attainment (being conscientious) were co-varied, smoking still had a significant effect on academic attainment but not the wellbeing outcomes.

Keywords: Smoking, Wellbeing, Academic Attainment

1. Introduction

Recent research on wellbeing has considered it as a process and measured it using the Wellbeing Process Questionnaire (WPQ - Williams & Smith 2012, 2016, 2018a, 2018b; Williams, Pendlebury & Smith 2017; Williams, Thomas & Smith 2017) or the Smith Wellbeing Questionnaire (SWELL – Smith & Smith 2017a, 2017b, 2017c; Fan & Smith 2017a, 2017b, 2018). Versions of these questionnaires have been developed for research with students (Williams, Pendlebury, Thomas & Smith, 2017; Alharbi & Smith, 2019; Nor & Smith, 2019) and a key feature of these measures has been that they consist of short scales which have been shown to be correlated with longer established measuring instruments. These short questionnaires have been shown to have good reliability and validity. They have been used extensively in cross-sectional research and the WPQ has also been used in longitudinal studies which provide a better indication of causality (Galvin 2016; Nelson 2017). The underlying model of wellbeing was based on occupational stress research and the development of the Demands-Resources-Individual Effects (DRIVE) model (Mark & Smith 2008, 2011, 2012, 2018a, 2018b). This model emphasised the importance of measuring potential negative characteristics such as exposure to stressors, resources that help one deal with challenges, such as control and support, and individual differences in coping style and personality. An important feature of the model was that it is relatively easy to add new variables. This has led to the study of positive outcomes, such as life satisfaction, positive affect and happiness (Smith 2011a, 2011b; Smith & Wadsworth 2011; Smith et al., 2011; Wadsworth et al., 2010). These positive outcomes are

generally referred to as wellbeing but our approach to wellbeing has been to include both positive and negative characteristics (e.g. demands, control and support), appraisals (perceived stress and life satisfaction), individual differences (e.g. positive personality and negative coping) and outcomes (anxiety/depression and happiness). Other variables that have been included in the model relate to burnout and work-life balance (Omoshin & Smith 2019), psychological contract fulfilment (Ahmad et al., 2018a, 2018b), ethnicity (Capasso et al., 2016a, 2016b, 2018; Zurlo et al., 2018), resilience, and training attitudes (Nor & Smith 2018).

One important area that needs to be included in the model relates to health-related behaviours. Sleep has been shown to be important, with day-time sleepiness predicting wellbeing and academic attainment (Howells & Smith, 2019). The aim of the present study was to examine whether smoking was associated with wellbeing and attainment outcomes when the established predictor variables were statistically controlled. There is a large literature showing that smoking is associated with lower academic attainment (e.g. Busch et al., 2017; Sabado et al., 2017; Orpinas et al., 2016; Reingle-Gonzalez et al., 2016; & Stiby et al., 2015), although it should be noted that some studies have not found this result (e.g. Radovanovic, Dimitrijevic & Jamborcic, 1983; Warburton, Wesnes & Revell, 1984). Much of the literature on smoking and wellbeing has examined mental health, with studies showing that smoking is associated with more mental health problems (e.g. Fidalgo et al., 2018; Lovell et al., 2018). Other research has focused on specific aspects of wellbeing (e.g. happiness – Stickley et al., 2015; life satisfaction – Rissanen et al., 2013) and the general conclusion has been that smoking is associated with reduced wellbeing. Indeed, low levels of wellbeing may be a factor that maintains smoking behaviour (Brook et al., 2011). A major problem with most of the previous research is that correlated attributes of wellbeing and smoking have not been controlled for. Established predictors of wellbeing include exposure to stressors, negative coping (wishful thinking, avoidance and self-blame), positive personality (self-efficacy, self-esteem and optimism) and social support. Conscientiousness is a well-established predictor of attainment. The present study initially examined univariate association between smoking and wellbeing and attainment. Following this the established predictors were co-varied to determine whether any associations with smoking were still significant.

2. Method

This study involved a survey of the well-being of university students using the Student WPQ. It was carried out with the informed consent of the volunteers and approval from the ethics committee, School of Psychology, Cardiff University. Students were asked to complete an online survey presented using Qualtrics software. They were given course credits for completing the survey.

2.1 Participants

The participants were 923 university students (94 males, 829 females; mean age: 19.25 years s.d. 2.2 years; approximately 50% in year 1 and year 2) of whom 90 were smokers. The smokers smoked an average of 3.6 cigarettes a day (range = 1-30).

2.2 Measures

The following measures were derived from the survey:

- Positive Personality (self-efficacy, self-esteem and optimism)
- Social Support
- Exposure to student stressors
- Negative coping
- Positive outcomes
- Negative outcomes
- Self-reported performance efficiency
- Self-reported course stress

Marks for coursework and exams were obtained and combined to give a grade point average (GPA).

2.3 Statistical analysis

Initial univariate analyses examined associations between smoking and the predictors of wellbeing as well as the wellbeing outcomes. Subsequent analyses examined smoking and the wellbeing and attainment outcomes while

controlling for the established predictors (positive personality, exposure to stressors, social support and negative coping).

3. Results

The initial analyses used a t-test to compare smokers on the wellbeing predictors and outcomes. The results are shown in Table 1 and there were significant effects with smokers being less conscientious, having lower positive outcome scores, lower attainment scores but higher stress, negative coping and negative outcome scores.

Table 1. Significant effects of smoking (scores are the means and s.e.s)

Variable	Smokers	Non-smokers	Significance (p value)
Conscientiousness	6.03 (0.18)	6.76 (0.06)	p < 0.001
Positive personality	18.37 (0.43)	19.06 (0.15)	n.s.
Negative coping	19.25 (0.50)	17.10 (0.16)	p < 0.001
Social support	32.90 (0.69)	33.75 (0.19)	n.s.
Stressors	38.20 (1.05)	34.95 (0.33)	p < 0.005
Negative outcomes	21.9 (0.71)	19.73 (0.23)	p < 0.005
Positive outcomes	18.75 (0.38)	19.70 (0.12)	p < 0.05
Course stress	7.00 (0.17)	7.00 (0.06)	n.s.
Work efficiency	5.10 (0.21)	6.17 (0.06)	p < 0.001
GPA (%)	60.40 (1.03)	63.10 (0.24)	p < 0.05

The next analysis involved a MANOVA with smoking as the independent variable, positive personality, social support, stressors, negative coping and conscientiousness as the covariates, and negative outcomes, positive outcomes, course stress, work efficiency and GPA as the dependent variables. The only significant effects of smoking were for GPA and work efficiency (see Table 2).

Table 2. Significant effects of smoking after adjustment of established predictors (adjusted means and s.e.s)

Variable	Smokers	Non-Smokers	Significance
GPA (%)	61.14 (0.76)	63.02 (0.25)	p < 0.02
Work efficiency	5.43 (0.19)	6.13 (0.06)	p < 0.001

4. Discussion

The univariate results from the present study showed that smoking was associated with reduced wellbeing and poorer academic performance. However, smoking was also associated with established predictors of negative wellbeing (exposure to stressors and negative coping) and attainment (conscientiousness). When these variables were co-varied the effects of smoking on wellbeing were no longer significant. However, the association between smoking and GPA and working efficiency were still significant. These results demonstrate the importance of conducting multi-variate analyses and controlling for confounders. One limitation of the study was that it was cross-sectional and future research should be longitudinal, preferably with a smoking cessation intervention. Another limitation is that the present study does not inform on the underlying mechanisms linking smoking and poorer academic attainment. These mechanisms could take several forms. First, there are toxicological mechanisms related to inhalation of tobacco smoke that could influence the brain and behaviour. Nicotine withdrawal during periods of assessment may also reduce performance. Finally, there may other characteristics of smoking that have not been measured here that can account for the poor academic performance. Future research should address the underlying mechanisms and use a multi-variate longitudinal approach to assess the benefits of smoking cessation. There is also a need to examine other health-related behaviours as negative ones rarely occur in isolation and there is a need to examine combined effects of risk factors.

References

- Ahmad, M. I., Firman, K., Smith, H., & Smith, A. P. (2018a). Short measures of organisational commitment, citizenship behaviour and other employee attitudes and behaviours: associations with well-being. *BMIJ*, 6(3), 516-550. <https://doi.org/10.15295/bmij.v6i3.391>
- Ahmad, M. I., Firman, K., Smith, H., & Smith, A. P. (2018b). Psychological contract fulfilment and well-being. *Advances in Social Sciences Research Journal*, 5(12), 90-101. <https://doi.org/10.14738/assrj.512.5758>
- Alharbi, E., & Smith, A. P. (2019). Studying-away strategies: A three-wave longitudinal study of the wellbeing of international students in the United Kingdom. *The European Educational Researcher*, 2(1), 59-77. <https://doi.org/10.10.31757/euer.215>
- Brook, D. W., Rubenstone, E., Zhang, C., Morojele, N. K., & Brook, J. S. (2011). Environmental stressors, low well-being, smoking and alcohol use among South African adolescents. *Social Science & Medicine*, 72(9), 1447-1453. <https://doi.org/10.1016/j.socscimed.2011.02.041>
- Busch, V., Laninga-Wijnen, L., Petrus Schrijvers, A. J., & De Leeuw, J. R. J. (2017). Associations of health behaviors, school performance and psychosocial problems in adolescents in The Netherlands. *Health Promotion International*, 32(2), 280-291. <https://doi.org/10.1093/heapro/dav058>
- Capasso, R., Zurlo, M. C., & Smith, A. P. (2016a). Ethnicity, work-related stress and subjective reports of health by migrant workers: a multi-dimensional model. *Ethnicity and Health*, 23(2), 174-193. <https://doi.org/10.1080/13557858.2016.1258041>
- Capasso, R., Zurlo, M. C., & Smith, A. P. (2016b). Ethnicity and work-related stress in Eastern European care workers for the elderly: an application of a proposed multi-dimensional model. *Diversity and Equality in Health and Care*, 13(2), 197-205. <https://doi.org/10.21767/2049-5471.100052>
- Capasso, R., Zurlo, M. C., & Smith, A. P. (2018). Stress in factory workers in Italy: an application of the Ethnicity and work-related stress model in Moroccan factory workers. *Psychology and Developing Societies*, 30(2), 1-34. <https://doi.org/10.1177/0971333618783397>
- Fan, J., & Smith, A. P. (2017a). Positive well-being and work-life balance among UK railway staff. *Open Journal of Social Sciences*, 5, 1-6. <https://doi.org/10.4236/jss.2017.56001>
- Fan, J., & Smith, A. P. (2017b). The impact of workload and fatigue on performance. In L. Longo & M.C. Leva (Eds.), *Human Mental Workload: Models and Applications*. H-WORKLOAD 2017. Communications in Computer and Information Science (Vol. 726, pp. 90-105), Cham: Springer. https://doi.org/10.1007/978-3-319-61061-0_6
- Fan, J., & Smith, A. P. (2018). The mediating effect of fatigue on work-life balance and positive well-being in railway staff. *Open Journal of Social Sciences*, 6, 1-10. <https://doi.org/10.4236/jss.2018.66001>
- Fidalgo, T. M., Sanchez, Z. M., Caetano, S. C., Maia, L. O., Carlini, E. A., & Martins, S. S. (2016). The association of psychiatric symptomology with patterns of alcohol, tobacco, and marijuana use among Brazilian high school students. *The American Journal of Addictions*, 25(5), 416-425. <https://doi.org/10.1111/ajad.12407>
- Galvin, J. (2016). *A multi-method approach to researching stress and mental health in two groups of healthcare students: nursing students and trainee clinical psychologists*. (PhD Thesis, Cardiff University, Cardiff). Retrieved from: <http://orca.cf.ac.uk/98616>
- Lovell, M. E., Bruno, R., Johnston, J., Matthews, A., McGregor, I., Allsop, D. J., & Lintzeris, N. (2018). Cognitive, physical, and mental health outcomes between long-term cannabis and tobacco users. *Addictive Behaviors*, 79, 178-188. <https://doi.org/10.1016/j.addbeh.2017.12.009>
- Mark, G. M., & Smith, A. P. (2008). Stress models: A review and suggested new direction. In J. Houdmont & S. Leka (Eds.), *Occupational health psychology: European perspectives on research, education and practice* (pp. 111-144), Nottingham: Nottingham University Press.
- Mark, G., & Smith, A. P. (2011). Effects of occupational stress, job characteristics, coping and attributional style on the mental health and job satisfaction of university employees. *Anxiety, Stress and Coping*, 25, 63-78. <https://doi.org/10.1080/10615806.2010.548088>
- Mark, G., & Smith, A. P. (2012). Occupational stress, job characteristics, coping and mental health of nurses. *British Journal of Health Psychology*, 17, 505-521. <https://doi.org/10.1111/j.2044-8287.2011.02051.x>
- Mark, G., & Smith, A. P. (2018a). A qualitative study of stress in university staff. *Advances in Social Sciences Research Journal*, 5(2), 238-247. <https://doi.org/10.14738/assrj.52.4195>
- Mark, G., & Smith, A. P. (2018b). Coping and its relation to gender, anxiety, depression, fatigue, cognitive difficulties and somatic symptoms. *Journal of Education, Society and Behavioral Science*, 25(4), 1-22. <https://doi.org/10.9734/jesbs/2018/41894>
- Nelson, K. (2017). Behind the frontlines: occupational stress and well-being in Jamaican police officers. (PhD Thesis, Cardiff University, Cardiff). Retrieved from: <http://orca.cf.ac.uk/99877/>
- Nor, N. I. Z., & Smith, A. P. (2018). Attitudes to training and its relation to the well-being of workers. *Journal of Education, Society and Behavioural Science*, 27(2), 1-19. <https://doi.org/10.9734/jesbs/2018/44445>

- Nor, N. I. Z., & Smith, A. P. (2019). Psychosocial characteristics, training attitudes and well-being of students: A longitudinal study. *Journal of Education, Society and Behavioral Science*, 29(1), 1-26. <https://doi.org/10.9734/JESBS/2019/v29i130100>
- Omosihin, O., & Smith, A. P. (2019). Adding new variables to the Well-being Process Questionnaire (WPQ) – Further studies of workers and students. *Journal of Education, Society and Behavioral Science*, 28(3), 1-19. <https://doi.org/10.9734/jesbs/2018/45535>
- Orpinas, P., Lacy, B., Nahapetyan, L., Dube, S. R., & Song, X. (2016). Cigarette smoking trajectories from sixth to twelfth grade: Associated substance use and high school dropout. *Nicotine & Tobacco Research*, 18(2), 156-162. <https://doi.org/10.1093/ntr/ntv040>
- Radovanovic, Z., Eric, L., Dimitrijevic, L., & Jamboric, V. (1983). Cigarette smoking among first-year medical students in Yugoslavia and their academic success. *Journal of American College Health*, 31(6), 253-255. <https://doi.org/10.1080/07448481.1983.9939569>
- Reingle Gonzalez, J. M., Salas-Wright, C. P., Connell, N. M., Jetelina, K. K., Clipper, S. J., & Businelle, M. S. (2016). The long-term effects of school dropout and GED attainment on substance use disorders. *Drug and Alcohol Dependence*, 158, 60-66. <https://doi.org/10.1016/j.drugalcdep.2015.11.002>
- Rissanen, T., Lehto, S. M., Hintikka, J., Honkalampi, K., Saharinen, T., Viinamaki, H., & Koivumaa-Honkanen, H. (2013). Biological and other health related correlates of long-term life dissatisfaction burden. *BMC Psychiatry*, 13, ArtID 202. <https://doi.org/10.1186/1471-244x-13-202>
- Sabado, M. D., Haynie, D., Gilman, S. E., Simons-Morton, B., & Choi, K. (2017). High school cigarette smoking and post-secondary education enrollment: longitudinal findings from the NEXT Generation Health Study. *Preventive Medicine*, 105, 250-256. <https://doi.org/10.1016/j.ypmed.2017.09.025>
- Smith, A. P. (2011a). A holistic approach to stress and well-being. *Occupational Health (At Work)*, 7(4), 34-35.
- Smith, A. P. (2011b). A holistic approach to stress and well-being. Part 2: Stress at work: models, practice and policy. *Occupational Health (At Work)*, 8(1), 33-35.
- Smith, A. P., & Smith, H. N. (2017a). An international survey of the wellbeing of employees in the business process outsourcing industry. *Psychology*, 8(1), 160-167. <https://doi.org/10.4236/psych.2017.81010>
- Smith, A. P., & Smith, H. N. (2017b). Workload, fatigue and performance in the rail industry. In L. Longo & M. C. Leva (Eds.), *Human Mental Workload: Models and Applications*. H-WORKLOAD 2017. Communications in Computer and Information Science (Vol. 726, pp. 251-263), Cham: Springer. https://doi.org/10.1007/978-3-319-61061-0_17
- Smith, A. P., & Smith, H. N. (2017c). A short questionnaire to measure wellbeing at work (Short-SWELL) and to examine the interaction between the employee and organisation. In R. Charles & J. Wilkinson (Eds.), *Contemporary Ergonomics and Human Factors 2017* (pp. 200-205). Chartered Institute of Ergonomics and Human Factors.
- Smith, A. P., & Wadsworth, E. (2011). A holistic approach to stress and well-being. Part 5: what is a good job?. *Occupational Health (At Work)*, 8(4): 25-27.
- Smith, A. P., Wadsworth, E. J. K., Chaplin, K., Allen, P. H. and Mark, G. (2011). *The relationship between work/well-being and improved health and well-being*. Leicester: IOSH.
- Stiby, A. I., Hickman, M., Munafo, M. R., Heron, J., Yip, V. L., & Macleod, J. (2015). Adolescent cannabis and tobacco use and educational outcomes at age 16: Birth cohort study. *Addiction*, 110(4), 658-668. <https://doi.org/10.1111/add.12827>
- Stickley, A., Koyanagi, A., Roberts, B., Leinsalu, M., Goryakin, Y., & McKee, M. (2015). Smoking status, nicotine dependence and happiness in nine countries of the former Soviet Union. *Tobacco Control: An International Journal*, 24(2), 190-197. <https://doi.org/10.1136/tobaccocontrol-2014-052092>
- Wadsworth, E. J. K., Chaplin, K., Allen, P. H., & Smith, A. P. (2010). What is a Good Job? Current Perspectives on Work and Improved Health and Well-being. *The Open Health & Safety Journal*, 2, 9-15. <https://doi.org/10.2174/1876216601002010009>
- Warburton, D. M., Wesnes, K., & Revell, A. (1984). Smoking and academic performance. *Current Psychological Research & Reviews*, 3(3), 25-31. <https://doi.org/10.1007/bf02686521>
- Williams, G. M., & Smith, A. P. (2012). A holistic approach to stress and well-being. Part 6: The Wellbeing Process Questionnaire (WPQ Short Form). *Occupational Health (At Work)*, 9(1), 29-31.
- Williams, G. M., & Smith, A. P. (2016). Using single-item measures to examine the relationships between work, personality, and well-being in the workplace. *Psychology: Special Edition on Positive Psychology*, 7, 753-767. <https://doi.org/10.4236/psych.2016.76078>
- Williams, G. M., & Smith, A. P. (2018a). A longitudinal study of the well-being of students using the student well-being questionnaire (WPQ). *Journal of Education, Society and Behavioral Science*, 24(4), 1-6. <https://doi.org/10.9734/jesbs/2018/40105>
- Williams, G. M., & Smith, A. P. (2018b). Diagnostic validity of the anxiety and depression questions from the Well-Being Process Questionnaire. *Journal of Clinical and Translational Research*, 10. <https://doi.org/10.18053/jctres.04.201802.001>

- Williams, G. M., & Smith, A. P. (2018c). A practical method of predicting wellbeing at work: the Wellbeing Process Tool. *Advances in Social Sciences Research Journal*, 5(2), 86-93. <https://doi.org/10.14738/assrj.52.4158>
- Williams, G., Pendlebury, H., Thomas, K., & Smith, A. P. (2017). The student wellbeing process questionnaire (Student WPQ). *Psychology*, 8, 1748-1761 <https://doi.org/10.4236/psych.2017.811115>
- Williams, G., Pendlebury, H., & Smith, A. P. (2017). Stress and well-being of nurses: An Investigation using the Demands-Resources- Individual Effects (DRIVE) model and Well-being Process Questionnaire (WPQ). *Jacobs Journal of Depression and Anxiety*, 1, 1-8.
- Williams, G., Thomas, K., & Smith, A. P. (2017). Stress and well-being of university staff: An investigation using the Demands-Resources- Individual Effects (DRIVE) model and Well-being Process Questionnaire (WPQ). *Psychology*, 8, 1919-1940. <https://doi.org/10.4236/psych.2017.812124>
- Zurlo, M. C., Vallone, F., & Smith, A. P. (2018). Effects of individual differences and job characteristics on the psychological health of Italian nurses. *Europe's Journal of Psychology*, 14(1), 159-175. <https://doi.org/10.5964/ejop.v14i1.1478>