

## THE WELL-BEING AND PHYSICAL HEALTH OF UNIVERSITY STAFF

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## ABSTRACT

**Background:** Well-being and health have been shown to be strongly associated. This relationship is bi-directional, with well-being influencing health and health changing well-being. This association was examined here using the well-being process model and a physical health questionnaire. Associations between well-being and health outcomes were examined. In addition, the predictors of well-being and physical health were identified. **Methods:** An online survey of 120 university staff (76.7% female; mean age: 36.8 years; age range 21-69 years) was carried out. They completed the Well-being Process Questionnaire (WPQ), the WHO-5 well-being scale, and the Physical Health Questionnaire (PHQ). **Results:** Univariate analyses showed that the three well-being outcomes (positive well-being, negative well-being and WHO-5) were highly correlated. Physical health problems were significantly associated with negative well-being and showed a trend of being negatively correlated with positive well-being measures. Positive well-being was predicted by positive psychosocial variables (psychological capital, social support and positive coping) and negative well-being by negative psychosocial variables (job demands and negative coping). The established predictors of well-being were not significantly associated with physical health. Sleep and gastrointestinal problems were, however, associated with the well-being outcomes. **Conclusion:** Univariate analyses showed significant associations between well-being outcomes and physical health symptoms. However, factors predicting well-being and physical health were different. The well-being outcomes were associated with established predictors confirming the results of previous studies. Physical health was not associated with the well-being predictors but was correlated with the well-being outcomes.

**KEYWORDS:** Well-being; Health; Well-being Process Questionnaire (WPQ); WHO-5 well-being index (WHO-5); Physical Health Questionnaire (PHQ).

## INTRODUCTION

Well-being and health are strongly associated, and there is a two-way relationship between health and well-being.<sup>[1]</sup> Indeed, when asked about factors which influence well-being, people often put health at the top of the list.<sup>[2]</sup> Higher life satisfaction is also correlated with good health.<sup>[3]</sup> The effect of well-being on health varies depending on the measures used but can be of a similar magnitude to major public health factors such as diet.<sup>[4]</sup> The World Health Organization's (WHO) definition of health states that it involves physical, mental and social well-being and not just the absence of disease. The WHO state that "well-being exists in two dimensions, subjective and objective. It comprises an individual's experience of their life as well as a comparison of life circumstances with social norms and values".<sup>[5]</sup> Subjective experiences include psychological functioning, affective states and the overall sense of well-being. Life circumstances include health, social

relationships, the environment, education, housing, civic engagement, work-life balance and security.

Both mental and physical health influence well-being.<sup>[6]</sup> The relationship is often stronger between well-being and mental health<sup>[7]</sup> because mental health outcomes are often seen as part of the well-being process. Significant associations between well-being outcomes, predictors of well-being and general health often reflect mental health status. Chronic ill health can also affect well-being.<sup>[8]</sup> Studies have shown significant correlations between well-being and long-term physical health outcomes, greater pain tolerance, better cardiovascular health, slower disease progression and increased longevity.<sup>[9,10]</sup> Less is known about the relationship between well-being and acute symptoms in a generally healthy population. The first aim of the present analysis was to examine associations between the well-being process and acute physical health problems in a sample of university staff. The model of well-being used here was the well-being process approach.<sup>[11,12]</sup> This model was based on the

Demand-Resources-Individual-Effects (DRIVE) stress model.<sup>[13-16]</sup> The well-being process model used a questionnaire (the Well-being Process Questionnaire, WPQ) which included a number of positive outcomes (e.g. happiness, life and job satisfaction, and positive affect) and negative outcomes (e.g. stress, fatigue, negative affect, anxiety and depression). Work characteristics that predict the outcomes were also included, and, again, positive (e.g., control and support) and negative (e.g., job demands) were included. Positive and negative characteristics of the person were also included (e.g., positive: high psychological capital, positive coping, negative: negative coping style). Generally, positive factors predict positive outcomes, and negative factors predict negative outcomes. To a lesser extent, the absence of negative predictors leads to positive outcomes, and the absence of positive predictors leads to negative outcomes. These findings have been replicated in a large number of studies involving both the general working population and specific industry sectors.<sup>[17-44]</sup>

A second well-being measuring instrument was also used in the present study, the WHO5 Well-being Index.<sup>[45]</sup> Physical health was measured by the Physical Health Questionnaire (PHQ).<sup>[46]</sup> The original questionnaire<sup>[47]</sup> has been revised and used by a number of researchers.<sup>[48,49]</sup> A later study<sup>[50]</sup> has shown that it has good construct validity. Factor analysis has revealed four distinct dimensions of physical symptoms, namely gastrointestinal symptoms, headaches, sleep disturbances and respiratory illness. A major advantage of the PHQ is that it only contains 14 items. The present study examined the associations between the PHQ factors and the positive and negative well-being outcome scores. Secondly, it examined whether the established predictors of well-being were also significant predictors of physical symptoms.

## MATERIALS AND METHODS

An online survey was carried out. The research reported here was approved by the Ethics Committee, School of Psychology, Cardiff University and conducted with the informed consent of the participants. The survey included an information sheet describing the study and informing participants that it was entirely up to them to participate. Consent was obtained before starting the survey.

### Participants

One hundred and twenty members of staff from Cardiff University participated in the study. Staff from all areas of the university were able to participate, including finance, teaching, accommodation, and security, although the role of specific respondents was not recorded. They were aged 21-69 years (mean age =36.8 years), and 76.7% were female. The majority were married or living with a partner (63%) and were educated to a degree or higher degree level (73%). Most (81%) were full-time employees and worked fixed hours (79%).

### The Survey

The survey consisted of the WPQ,<sup>[26]</sup> the WHO 5 Well-being Index<sup>[45]</sup> and the PHQ.<sup>[50]</sup> The following WPQ scores were used in the analyses:

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

The WHO-5 total score was used.

The PHQ scores were:

- Gastrointestinal problems.
- Headaches.
- Respiratory symptoms
- Sleep problems.

### Analysis strategy

The correlations between the outcome variables (positive and negative well-being) and the PHQ factors were calculated in order to examine the overlap between the well-being and physical health constructs. Regressions then examined which predictor variables were significantly associated with WPQ and PHQ outcomes. A separate analysis was carried out for each outcome. The aim of the regressions was to determine whether well-being and physical health outcomes were predicted by the same or different job and individual characteristics.

## RESULTS

### Correlations

The correlations between the well-being outcomes and the PHQ factors are shown in Table 1. The correlations show that the positive well-being score from the WPQ was significantly correlated with the WHO-5 score and negatively correlated with the PHQ scores, although only the correlation with gastrointestinal symptoms was significant. The negative well-being score from the WPQ showed the opposite pattern of associations, and all the correlations with the PHQ factors, except with upper respiratory symptoms, were significant.

**Table 1: Correlations between well-being outcomes and physical health factors.**

	Positive well-being	Negative well-being	WHO-5
<b>WHO-5</b>	0.47 p<0.001	-0.41 p<0.001	1.00
<b>Gastrointestinal problems</b>	-0.19 p<0.05	0.31 p<0.001	-0.27 p<0.005
<b>Sleep problems</b>	-0.15 p>0.05	0.27 p<0.005	-0.32 p<0.001
<b>Headaches</b>	-0.16 p>0.05	0.24 p<0.01	-0.32 p<0.001
<b>Upper respiratory symptoms</b>	-0.09 p>0.05	0.19 P<0.05	-0.15 p=0.10

**Regressions with established well-being predictors**

Separate regressions were carried out for all the well-being and physical health outcomes. The significant predictors for the well-being outcomes are shown in Table 2. These results generally confirm previous findings, with positive predictors having positive associations with positive well-being outcomes and negative predictors being associated with negative well-being.

In contrast, few of the well-being predictors were associated with physical health outcomes. Gastrointestinal and upper respiratory symptoms had no significant predictors, whereas sleep problems and headache were only negatively associated with psychological capital (sleep problems: beta=-0.37

t=-2.62 p =0.01; headache: beta = -0.39 t = -2.84 p < 0.01).

**Regressions with established predictors and well-being outcomes as independent variables**

These analyses showed that positive and negative well-being were significant predictors of the WHO-5 scores (positive well-being: beta = 2.91 t -5.76 p<0.001; negative well-being: beta = -2.76 t = -7.02 p <0.001). Headache and upper respiratory tract symptoms were not significantly predicted by any variables. Sleep problems were significantly predicted by negative well-being (beta = 0.29 t =2.21 p <0.05) and gastrointestinal problems by both positive and negative well-being (positive well-being: beta = -0.48 t = - 2.8 p <0.01; negative well-being: beta = 0.29 t = 2.21 p < 0.05).

**Table 2: Significant predictors of the well-being outcomes.**

	Beta	t value	p-value
<b>Positive well-being</b>			
Psychological capital	0.70	7.68	<0.001
Positive coping	0.13	2.14	<0.05
Social support	0.35	4.64	<0.001
<b>Negative well-being</b>			
Job demands	0.38	4.89	<0.001
Negative coping	0.36	3.36	<0.001
<b>WHO-5</b>			
Psychological capital	2.42	4.90	<0.001
Social support	0.15	2.50	<0.05

**DISCUSSION**

Previous research shows that well-being can influence health and that health status is also associated with well-being. The present studies showed significant correlations between well-being and physical health symptoms, with associations being stronger for negative well-being outcomes than positive well-being outcomes. It is important to study physical health because the term general health also covers mental health. Mental health

outcomes are part of the well-being process, so it is not surprising that well-being is associated with general health. The physical health symptoms studied here also included factors which are related to brain function. For example, sleep disorders are often considered in the domain of mental health, which makes it unsurprising that they are related to well-being outcomes. Similarly, there are strong connections between the gut and the

brain, which again can account for the correlations between well-being and gastrointestinal symptoms.

The present study did identify differences between the predictors of well-being and the predictors of physical health symptoms. All three well-being outcomes were predicted by the established variables, with positive outcomes being predicted by positive factors and negative outcomes by negative variables. This replication of previous results gives more confidence in the more novel findings reported here. One important new finding was that the well-being outcomes from the WPQ were significantly correlated with another measure of well-being, the WHO-5.

The present study has some limitations. It was a cross-sectional survey which means that one cannot infer causality. Longitudinal studies, preferably with interventions, are needed to address underlying mechanisms. The sample also came from a specific occupational sector, and further research must determine whether the results presented here apply to the general population. There are also other measures of physical ill-health which address chronic and acute illness, and these should be used to further our knowledge of the association between well-being and physical health.

## CONCLUSION

Well-being and health are strongly associated, and this is because of a two-way relationship with well-being influencing health and health-changing well-being. This association was investigated using the well-being process questionnaire, WHO-5 and the physical health questionnaire. This online survey of university staff showed that the three well-being outcomes (positive well-being, negative well-being and WHO-5) were highly correlated. Physical health problems were significantly correlated with negative well-being and were negatively correlated with the two positive well-being measures. The well-being outcomes were associated with the established predictors confirming previous findings. Positive psychosocial variables (psychological capital, social support and positive coping) predicted positive well-being and negative psychosocial variables (job demands and negative coping) were associated with negative well-being. These established correlates of well-being were not significant predictors of physical health. Physical health was not associated with the well-being predictors but sleep and gastrointestinal problems were significantly correlated with the well-being outcomes.

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