

*Faculty of Humanities and Social Sciences*

*Humanities & Social Sciences papers*

---

Bond University

Year 2007

---

Can work preferences (personality based)  
differentiate between employees scoring  
high or low in general mental health?

Genevieve V. Colling

Richard Hicks  
Bond University

# Personal Work Attitudes and Characteristics Predict General Mental Health

**Genevieve V. S. Colling** ([gecollin@bond.edu.au](mailto:gecollin@bond.edu.au))

School of Social Sciences  
Bond University, Gold Coast QLD 4229 Australia

**Richard E. Hicks** ([rhicks@bond.edu.au](mailto:rhicks@bond.edu.au))

School of Social Sciences  
Bond University, Gold Coast QLD 4229 Australia

## Abstract

**Objectives** – The aim of this study was to investigate the relationship between personal work characteristics and general mental health and also to contribute to validity data on the Apollo Profile.

**Methods** – A battery of tests, including the 12-item General Health Questionnaire and the Apollo Profile, was given to 98 adult participants (60 female & 38 male) currently in full-time employment. A discriminant function analysis was conducted to determine whether the Apollo Profile characteristics could successfully discriminate between two mental health groups.

**Results** – The results indicated that of the 34 personal work characteristics, preferences and attitudes assessed by the Apollo Profile, eleven significantly differentiated between the two mental health groups. A canonical correlation of .69 and a significant effect size of .48 were obtained.

**Conclusions** – Strong relationships between personal work characteristics and mental health were identified in this study.

## Introduction

Workplace health issues are an ever-present phenomenon in today's society and a healthy workplace and workforce clearly benefits a nation. Research in the last two decades has begun to focus on the relationship between mental health and environmental workplace characteristics (Andrea et al., 2004; Danna & Griffin, 1999; Sousa-Poza & Sousa-Poza, 2000) but mental health in relation to personal work characteristics has received relatively limited attention.

One recent study on mental health and workplace characteristics (Grosch & Murphy, 1998) examined occupational differences and global health across 239 different occupations and 8,486 employees. Their results confirmed earlier research, indicating that depression levels and global health were better (healthier) for professional and managerial occupations than for occupations involving machine operation. In another study Stansfeld, Fuhrer, Shipley and Marmot (1999)

showed that increased risk of subsequent psychiatric illness was associated with direct environmental workplace characteristics.

More recently, Hanebuth, Meinel and Fischer (2006) investigated absenteeism at work and found that all reasons for absenteeism were related to "...increased perceptions of exhaustion and decreased health-quality of life" (Hanebuth, Meinel, & Fischer, 2006, p.36). The implication is that health has impacts on absenteeism which in turn has impacts on workplace efficiency and effectiveness. If correlates of health in the workplace can be identified among personal attitudes and attributes, considerable savings and increased efficiencies might occur for organisations in their selection, placement and development of staff.

## Health, Job Satisfaction, Job Performance and Work Values

Peterson and Wilson (1996) found that job satisfaction and perceptions of health were related to each other and that 'relationships among co-workers' was a strong predictor of current and future health perceptions. In other research, Sousa-Poza and Sousa-Poza (2000) found that subjective well-being was related to one's personal environment and not to geographical or cultural background (in a comparison of 21 nations). Judge and Bretz Jr (1992) found that work values were an essential contributor to person-organisation fit and therefore to the level of experienced workplace satisfaction.

If job satisfaction and performance are influenced by one's work values and goals, it could be speculated that health and well being, particularly mental health, can be influenced also by one's work values and goals. Indeed, Faragher, Cass and Cooper (2005) found in a meta-analysis, that both mental and physical well-being were related to job satisfaction.

Khurana and Singh (1990)) demonstrated that job performance could be predicted from the knowledge of Indian workers' scores on a mental health inventory. Further, Danna and Griffin (1999) in another review suggested that the health and well-being of employees significantly impacted on the

economics and morale (performance) of an organisation.

Honey (2003) in yet another study, interviewed 41 consumers of mental health services and concluded that mental illness or poor general mental health had substantial impacts on employment and performance at work.

It can be concluded from this selection of studies that performance and mental health are related. If personal work-related characteristics can be found to be related to mental health, then steps to selecting and developing employees via attention to the assessed workplace attributes ought in turn assist organisations to achieve higher levels of performance.

### **Environmental Work Characteristics and Health**

In confirmation of some of the studies already reported, Krupinski (1984) concluded that work characteristics such as work stressors impacted on mental health status. The reverse is also true; mental health may impact on the experience of workplace characteristics. That is, the degree of life fulfilment and mental health status could affect expressed work attitudes and responses to the environmental workplace characteristics, which was investigated in a longitudinal study which examined job demands, job control and supervisor support (work characteristics), and their causal relationships with mental health (de Lange, Taris, Kompier, Houtman, & Bongers, 2004). The results supported a *bi-directional* causal relationship between work characteristics and mental health, although the relationship was slightly stronger for work characteristics affecting mental health. In addition, Andrea, et al. (2004) found that subclinical anxiety and depression were common amongst the working population they examined and more specifically, they noted psychosocial or environmental work characteristics (psychological job demands; decision latitude; social support; emotional demands; conflict with supervisor and/or co-worker; executive function; job insecurity; job satisfaction) were associated with anxiety and depression. These studies demonstrate the existence of a relationship between mental health and environmental work characteristics.

These findings are consistent across many studies: personal values, goals, personality and mental health all impact on, and are impacted by, work and its related areas (such as satisfaction and performance). Recent interest has turned towards the impact of personality on general mental health in the workplace. Wilhelm, Kovess, Rios-Seidel and Finch (2004) reviewed work and mental health literature and concluded that the type of occupation can affect

the physical and mental health of an employee, and that the relationship between personality and work is bi-directional.

### **Summary**

It is evident that many studies have shown that job performance, job efficiency and job satisfaction are affected by and related to mental health. Further there are relationships evident between mental health and environmental work characteristics. However, there is little research relating mental health and personal work characteristics and attitudes. The present study thus examined whether the personal work characteristics of the Apollo Profile (work preferences, motivations and values) could predict mental health status.

### **Method**

#### **Participants**

Of 210 questionnaires, 109 were returned in this study; of these 98 were useable (yielding a response rate of 46.7% against the 210). All participants (60 females and 38 males) were aged between 18 and 65 ( $M=34.94$ ,  $SD=11.80$ ) and were currently employed fulltime. Participants were obtained by opportunity sampling from three states; Victoria, New South Wales and Queensland.

#### **Materials**

As part of a larger overall project, each participant was given a test battery which included the 12-item General Health Questionnaire and the Apollo Profile Questionnaire. The questionnaires in the test battery were presented in a counter balanced order using a Latin-squares design in order to control for any systematic variables, such as fatigue and carry-over effects. Both the General Health Questionnaire and the Apollo Profile are self-report measures.

**The General Health Questionnaire** The General Health Questionnaire (GHQ) is a mental health questionnaire designed for use in consulting settings and focuses its test items on breaks in normal functioning, such as depression and anxiety, rather than on lifelong qualities (Goldberg & Williams, 1988). The 12-item GHQ (GHQ-12), the version used for the current study, uses a five-point scale to measure the respondent's answers, ranging from 1 - 'not true of me at all' to 5 - 'definitely true of me'.

Despite the possibility of a slight difference for gender and race, the social class and age of respondents do not affect the test's outcome (Goldberg, Rickels, Downing, & Hesbacher, 1976). The GHQ-12 was found to correlate well with clinical assessment and also had reasonable correlations with the Symptom Checklist ( $r = 0.78$ ) and with anxiety and depression.

A study by Tennant (1977) found that the four versions of the GHQ used as a screening instrument in Australia, were all acceptably reliable and valid. Goldberg and Williams (1988) found that for such a short test, the GHQ-12 is a robust instrument for measuring mental health. In addition, studies have shown that the GHQ was very good at detecting minor psychiatric disorders (Araya, Wynn, & Lewis, 1992). Pevalin (2000) found that there was no evidence of negative test-retest or memory effects and that the GHQ-12 was a consistent and reliable instrument for use in general population samples (Pevalin, 2000).

**The Apollo Profile Questionnaire** The Apollo Profile was created in 1996 (The Apollonean Institute, 1996) and the current version was released in September 2002. The questionnaire is a multi-purpose instrument measuring work preferences, motivations and values across 34 categories and is intended primarily as a career assessment instrument. It consists of 110 questions using a 7-point Likert scale and 70 questions using a modified ipsative scale (140 items paired in a forced choice format) (Hicks, 1996). The paper and pencil version of the inventory was used in the current study.

The main general norm group for the Apollo Profile was based on 4,070 online respondents to the Apollo Profile Questionnaire (the on-line and hard-copy versions yield similar results), and the norm group on-line is continually updated. The psychometric properties are sound with moderate to high Cronbach Alpha correlation coefficients for the 34 categories (ranging from 0.57 to 0.85 in a sample of over 4070 respondents); and earlier split-half reliability figures ranging from 0.66 to 0.91; and temporal stability was assessed for a small sample as 0.90 (test-retest). Content and construct validity is also strong (Hicks, 1996, 2005a).

Relevant categories from the Apollo Profile have been compared with categories on a variety of other questionnaires including the NEO-Personality Inventory-Revised (Smith, 2005; Smith & Hicks, 2007); *Cattell's 16PF*, *Gordon's Survey of Personal Values*, and *Gordon's Survey of Interpersonal Values* (Hicks, 2004b, 2005b). Construct validity has also been supported through exploratory factor analyses, revealing seven underlying factors (Hicks, 2005a). However, the current study is the first relating the Apollo Profile categories to health-related questionnaires (in this instance, the 12-item General Health Questionnaire: GHQ-12).

The current research reported in this article is not about differentiating performance at work but about differentiating between mentally healthy and

less mentally healthy groups using the personal work characteristics and preferences of the Apollo Profile.

## Procedure

Approval was received from Bond University Human Research and Ethics Committee for the study. Participants completed the test battery in their own time and returned it to the researchers.

Scoring for the Apollo Profile Questionnaire was made available by the Apollonean Institute to the researchers, while scoring for the 12-item General Health Questionnaire was based directly on the negatively worded questions (1, 3, 4, 7, 8 & 12) and reverse scoring of the positively worded questions (2, 5, 6, 9, 10 & 11). The total score was obtained by summing the 12 responses, providing each participant's mental health score, with high scores indicating the mentally unwell direction and low scores indicating the mentally healthy direction of the scoring. Once each test had been scored, these results were entered into SPSS. The results of the analyses are presented next.

## Results

Preliminary data diagnostics were produced to identify any underlying violations of assumptions and to certify that the data was reasonably normally distributed. Of the original 109 cases, 11 cases were removed due to incomplete or missing data prior to further analyses. Discriminant function analysis (DFA) was used as the preferred statistical analysis and was performed using the 34 characteristics of the Apollo Profile as predictors of membership of two groups. As the mental health score is continuous, a median split was used to create a dichotomous variable yielding the two mental health groups ("higher mental health" and "lower mental health"). Despite its flaws, the median split provided a dichotomous variable without the loss of participants and provided a more conservative result.

The analysis resulted in one significant function which significantly differed for participants with higher and lower mental health ( $\chi^2 = 51.55$ ,  $df = 34$ ,  $p < 0.05$ ). Wilks'  $\lambda$  was .521, indicating moderate discrimination between groups; and the canonical correlation indicated 69.2% of the variance in mental health status was accounted for. The canonical correlation of .69 was associated with a significant effect size of .48 (eta squared). There was no violation of Box's M. Functions at group centroids indicated that successful separation of the two mental health groups had occurred, with higher mental health = -.912 and lower mental health = .989.

Table 1: Means, Standard Deviations and Tests of Equality of Group Means for 34 Apollo Profile Characteristics.

Characteristic Name	Mean		Standard Deviation		F	Sig.
	Higher Mental Health	Lower Mental Health	Higher Mental Health	Lower Mental Health		
<i>Extraversion</i>	122	117	14.9	13.6	3.99	.049 *
<i>Conscientious</i>	100	104.5	15.3	12.9	2.27	.136
<i>Innovations</i>	90	84	11.3	12.0	5.80	.018 *
<i>Stress/Emotional Resilience</i>	82	73	9.6	11.4	19.32	.000 *
<i>Agreeable</i>	86	89	16.3	12.2	1.42	.236
<i>Teamwork</i>	107	103	16.10	18.5	1.66	.201
<i>Achievement</i>	70	66	9.2	9.5	4.78	.031 *
<i>Remuneration</i>	51	53	12.0	10.8	0.74	.393
<i>Independence</i>	60	60	9.4	10.0	0.03	.870
<i>Decisive</i>	67	68	9.5	10.3	0.12	.731
<i>Power</i>	49	46	15.8	12.4	1.49	.225
<i>Assertive (Facet of Extraversion)</i>	54	50	7.9	8.7	5.14	.026 *
<i>Conformity – Pragmatism</i>	29	35	6.3	6.4	20.36	.000 *
<i>Collaborating</i>	38	38	4.7	3.9	0.00	.995
<i>Trust-Openness</i>	33	33	4.2	3.5	0.07	.791
<i>Goal-Setting</i>	46	47	9.3	9.3	0.46	.499
<i>Security</i>	51	57	13.2	15.6	3.65	.059
<i>Ambition</i>	57	52	12.5	13.0	5.08	.026 *
<i>Recognition</i>	60	58	6.6	7.2	2.87	.094
<i>Responsibility</i>	37	33	6.5	7.3	5.09	.026 *
<i>Delegating</i>	56	55	8.1	6.9	0.46	.501
<i>Detail (Facet of Conscientious)</i>	23	22	4.1	3.8	.52	.471
<i>Self-Organisation (Facet of Proactive)</i>	22	22	4.3	3.9	.26	.609
<i>Persuasive (Facet of Directive)</i>	45	44	9.0	6.1	.60	.440
<i>Proactive</i>	33	34	7.8	6.7	0.44	.509
<i>Analysing</i>	42	40	11.3	10.8	1.06	.306
<i>Directive</i>	99	96	15.6	10.70	1.28	.260
<i>Compromising</i>	33	36	5.1	5.6	6.63	.012 *
<i>Coaching (Facet of Altruism)</i>	30	30	6.3	6.4	.18	.673
<i>Loyalty</i>	40	40	5.3	5.3	0.27	.602
<i>Sensitivity (Facet of Stress Resilience)</i>	24	28	5.7	5.9	11.79	.001 *
<i>Intimacy</i>	35	35	4.5	4.3	0.00	.966
<i>Altruism (Facet of Teamwork)</i>	56	57	12.4	11.8	.09	.768
<i>Competing</i>	12	15	3.8	3.8	11.22	.001 *

Table 1 shows the mean and standard deviation for each characteristic when predicting higher mental health and lower mental health. Table 1 also shows that mental health status significantly differed on eleven of the 34 Apollo Profile characteristics. These characteristics are stress/emotional resilience, conformity – pragmatism, sensitivity (facet of stress/emotional resilience), assertive, competing, compromising, innovation, ambition, responsibility, achievement and extraversion.

Consequently the structure matrix of correlations between predictor variables and the discriminant function, indicated that the eleven largest contributors to the function were the eleven significant

characteristics. The four main contributors to the function were stress/emotional resilience (indicating the importance of this element), conformity-pragmatism, sensitivity (facet of stress/emotional resilience) and competing, with  $p < 0.01$ .

For overall group membership, the function successfully predicted the outcome for 80.6% of cases, with accurate predictions being made for 80.4% of the participants who had higher mental health and 80.9% of the participants who had lower mental health. Cross-validation showed a success rate of 59.2%, which is better than chance but suggests that further studies are required.

## Discussion

The overall aim of the current study was to investigate whether personal work preferences, motivations and values (work characteristics) would discriminate between respondents with healthier and less healthy mental functioning (that is, respondents with good versus poor mental health, as defined in this study).

Eleven of the 34 Apollo Profile characteristics significantly differentiated between the two groups.

### The Findings Related to Previous Research

These findings show that a relationship exists between personal characteristics we bring to the workplace and mental health. This supports de Lange et al.'s (2004) and Andrea et al.'s (2000) findings. The current study also had similar findings to those of Honey (2003) and of Danna and Griffin (1999). In general the results support the contention that personal characteristics (personality, attitudes, values and motives) are related to mental health functioning. Further research is needed to examine the weightings that might be assigned to the relevant personal characteristics.

### Limitations

Despite the findings of the current study, there were distinct limitations. The first limitation was the method of sampling; the use of opportunity sampling. The second limitation was the small number of participants in this study with  $n$  less than 100. The third limitation was the self-report nature of the measures. A further possible limitation was the use of a median split as opposed to criteria to accurately determine mental health classification (in this respect the use of a group of those already assessed/classified with low mental health would allow for a clearer differentiation between the two mental health groups). However, the current study despite its limitations obtained a significant discrimination, and suggests that the attributes assessed by the Apollo Profile may be useful in normal populations to predict those more likely to have positive mental health attitudes in the workplace.

### Summary of Aims, Results and Conclusions

The aim of the study was to examine whether personal work characteristics could predict mental health. The results show that there is such a relationship. The findings are beneficial because they confirm that mental health and personal work-related characteristics are associated.

The outcome of this study adds to the literature currently available. Researchers may wish to investigate further these similarities between mental health (subjective feelings, and subjective well-being), and personality and related attributes at work. However, the current study itself has confirmed in general what previous research had already found; that a relationship exists between work characteristics and mental health (Barnes, 1984; Gureje & Obikoya, 1990; Honey, 2003;

Judge & Bretz Jr, 1992; Krupinski, 1984; Stansfeld, Fuhrer, Shipley, & Marmot, 1999; Wilhelm, Kovess, Rios-Seidel, & Finch, 2004) and, more specifically, that selected *personal work characteristics* (preferences, attitudes) can predict differences in mental health status. The ramifications for selection in the workplace and for training and awareness programs may be considerable, especially given the impacts that positive well-being and health can have on performance in the workplace.

## References

- Andrea, H., Bultman, U., Beurskens, A. J. H. M., Swaen, G. M. H., van Schayck, C. P., & Kant, I. J. (2004). Anxiety and Depression in the Working Population Using the HAD Scale: Psychometrics, Prevalence and Relationships with Psychosocial Work Characteristics. *Social Psychiatry and Psychiatric Epidemiology*, 39(8), 637-646.
- Araya, R., Wynn, R., & Lewis, G. (1992). Comparison of Two Self Administered Psychiatric Questionnaires (GHQ-12 and SRQ-20) in Primary Care in Chile. *Social Psychiatry and Psychiatric Epidemiology*, 27, 168-173.
- Barnes, B. L. (1984). Relationship Between Mental Health and Job Efficiency. *Acta Psychiatrica Scandinavica*, 69(6), 466-471.
- Danna, K., & Griffin, R. W. (1999). Health and Well-Being in the Workplace: A Review and Synthesis of the Literature. *Journal of Management*, 25(3), 357-384.
- de Lange, A. H., Taris, T. W., Kompier, M. A. J., Houtman, I. L. D., & Bongers, P. M. (2004). The Relationships Between Work Characteristics and Mental Health: Examining Normal, Reversed and Reciprocal Relationships in A 4-Wave Study. *Work & Stress*, 18(2), 149-166.
- Faragher, E. B., Cass, M., & Cooper, C. L. (2005). The Relationship Between Job Satisfaction and Health: A Meta-Analysis. *Occupational and Environmental Medicine*, 62(2), 105-112.
- Goldberg, D. P., Rickels, K., Downing, R., & Hesbacher, P. (1976). A Comparison of Two Psychiatric Screening Tests. *British Journal of Psychiatry*, 129, 61-67.
- Goldberg, D. P., & Williams, P. (1988). *A User's Guide to the General Health Questionnaire*. Windsor: NFER-NELSON Publishing Company Ltd.
- Grosch, J. W., & Murphy, L. R. (1998). Occupational Difference in Depression and Global Health: Results from a National Sample of US Workers. *Journal of Occupational and Environmental Medicine*, 40(2), 153-164.

- Gureje, O., & Obikoya, B. (1990). The GHQ-12 as a screening tool in a primary care setting. *Social Psychiatry and Psychiatric Epidemiology*, 25, 276-280.
- Hanebuth, D., Meinel, M., & Fischer, J. E. (2006). Health-Related Quality of Life, Psychosocial Work Conditions, and Absenteeism in an Industrial Sample of Blue- and White-Collar Employees: A Comparison of Potential Predictors. *Journal of Occupational and Environmental Medicine*, 48(1), 28-37.
- Hicks, R. E. (1996). The Apollo Profile - Development and Technical Report. *Unpublished manuscript*.
- Hicks, R. E. (2004). *Right title to come- CORRECT THIS*
- Hicks, R. E. (2005). *The Abbreviated Technical Manual on the Apollo Profile*. Unpublished manuscript.
- Honey, A. (2003). The Impact of Mental Illness on Employment: Consumers' Perspectives. *Work & Stress*, 20(3), 267-276.
- Judge, T. A., & Bretz Jr, R. D. (1992). Effects of Work Values on Job Choice Decisions. *Journal of Applied Psychology*, 77(3), 261-271.
- Khurana, A., & Singh, A. (1990). Mental Health and Job Performance of Industrial Workers. *Indian Journal of Behaviour*, 14(4), 5-16.
- Krupinski, J. (1984). Psychological Disturbances and Work Fulfilment. *Australian & New Zealand Journal of Sociology*, 20(1), 56-65.
- Peterson, M., & Wilson, J. (1996). Job Satisfaction and Perceptions of Health. *Journal of Occupational and Environmental Medicine*, 38(9), 891-898.
- Pevalin, D. J. (2000). Multiple Applications of the GHQ-12 in a General Population Sample: An Investigation of Long-term Retest Effects. *Social Psychiatry and Psychiatric Epidemiology*, 35, 508-512.
- Smith, K. D. (2005). *A Construct Validation Study Comparing the Apollo Profile and the revised NEO Personality Inventory*. Unpublished Postgraduate Diploma in Psychology Thesis, Bond University, Gold Coast.
- Sousa-Poza, A., & Sousa-Poza, A. A. (2000). Well-being at Work: A Cross-National Analysis of the Levels and Determinants of Job Satisfaction. *Journal of Socio-Economics*, 29(6), 517-538.
- Stansfeld, S. A., Fuhrer, R., Shipley, M. J., & Marmot, M. G. (1999). Work Characteristics Predict Psychiatric Disorder: Prospective Results From the Whitehall II Study. *Occupational and Environmental Medicine*, 56(5), 302-307.
- Tennant, C. (1977). The General Health Questionnaire: A Valid Index of Psychological Impairment in Australian Populations. *The Medical Journal of Australia*, 12(2), 392-394.
- The Apollonean Institute. (1996). Retrieved May 25th, 2005, from <http://www.apollonean.com.au/>
- Wilhelm, K., Kovess, V., Rios-Seidel, C., & Finch, A. (2004). Work and Mental Health. *Social Psychiatry and Psychiatric Epidemiology*, 39(11), 866-873.