Relationship between work performance and personality traits in Hong Kong organisational settings

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Abstract

Four hundred and thirty-seven employees from 4 Hong Kong organisations completed the Traditional Chinese versions of the 15FQ+ and the CPAI-2 (indigenous scales) personality questionnaires and provided objective and memory-based performance appraisal scores. A number of significant bivariate correlations were found between personality and performance scores. Hierarchical multiple regression analyses revealed that a number of the scales from the 15FQ+ contributed to significantly predicting four of the performance competency dimensions, but that the CPAI-2 indigenous scales contributed no incremental validity in performance prediction over and above the 15FQ+. Results are discussed in the light of previous research and a call made for continued research to further develop and increase the reliability of the Chinese instruments used in the study and to enable generalisation of the findings with confidence.

Keywords

work performance, China, Asia,

CPAI, 15FQ, Fifteen Factor Questionnaire, personality

Research in the West has generally given support to the limited utility of personality assessment, alongside other reliable and valid forms of assessment, as an aid to selection and development of employees (Barrick, Mount & Judge, 2001; Tett, Steele, & Beauregard, 2003; Thoresen, Bradley, Bliese, & Thoresen, 2004; Waldman, Atwater & Davidson, 2004). The majority of researchers tend to report correlations and predictions based upon the 'big-5'labels originally put forward by Norman (1963), although supported and corroborated both before and subsequent to Norman's official taxonomy by a number of other personality theorists (e.g., Fiske, 1949; Borgatta, 1964). Although this model is generally accepted, it has not always been agreed upon that five major factors explain personality, neither has the definition of each factor received consensus (Barrick et al., 2001). However and despite shortcomings, the model does provide a unifying ground in which theorists and practitioners may study, communicate and utilise personality as a tool in the workplace.

Barrick et al., (2001) discuss various 'phases' in research assessing the predictive validity of personality instruments in performance. Their paper provides convincing reasoning for the lack of significant findings in this domain up to the mid-1980s and implicitly cautions researchers not to simply enter all independent variables into an analysis in an attempt to find correlations. In recent times, the findings have been more positive and researchers appear to be heeding another of Barrick et al.'s assertions -- to use different levels of personality measurement. For example, Timmerman (2004) found significant correlations between NEO PI-R Conscientiousness (r=.16), Agreeableness (r=.16) and supervisor's performance ratings in call-centre staff in the USA. He then went on to examine correlations at the facet level and found that a number of Conscientiousness facets, but only one Agreeableness facet, were significantly correlated with performance.

Given the evidence cited in numerous publications and more specifically, in Barrick & Mount's (2001) meta-analysis, one is able to conclude that, when used responsibly and in a

standardised manner by appropriately trained personnel, personality assessments based on the 5-factor model add an element to the prediction of an individual's workplace performance that is not accounted for by other human resource tools and methods. However, the question of whether this holds universally, across cultures, needs to be addressed. The answer to this question will depend not only on the structure of personality across cultures, but also on the meaning of this structure and how it translates in terms of behavioural and thus performance predictions.

In order to assess and measure personality across cultures, it is necessary to ensure that the questionnaire(s) being used do measure all aspects of personality in that given culture. McCrae & Costa (1997) provide evidence to suggest that both the factor and facet structures of the NEO-PI-R are similar across seven different language groups. Research in Asia has provided additional support that questionnaires which 'tune in' to universally accepted personality traits, such as those originally set forth by Cattell and colleagues (Cattell, Eber & Tatsuoka, 1970) in their Sixteen Factor Model, factor down to a solution that at least approximates their original expected solution. However, there is a scarcity in terms of research that attempts to draw links between these traits and workplace performance variables in Asia, and more specifically, for the purposes of this study, in Hong Kong, China.

Psychological test usage in China has progressed at a slower pace than that of Western nations (Higgens & Sun, 2002). One of the reasons for this can be traced back to China's cultural revolution as before such time, the Chinese demonstrated interest in the assessment of individual differences for thousands of years. However, in more recent centuries in the People's Republic of China, psychological testing was viewed as being a bourgeoisie tool (Higgens & Sun, 2002). Following the cultural revolution, China renewed its interest in testing. Due to a scarcity of professionals with understanding of the principles, processes, and applications of psychometric assessment, China had few tests available as recently as the 1970s. It is primarily for this reason, alongside a growing acceptance of the science of

psychometric assessment as a necessity in both educational and clinical settings, that China accepted Western measures and the theories that underlay them. It did so with ambivalence as, Western culture is distinctly different from Asian culture and thus the tests may, in some way, be biased (Higgens & Sun, 2002).

Since the 1970s, a number of tests have been developed and normed on the Chinese population (e.g., Chinese Children's Development Scale: Zhou & Zhang, 1994). However, just as historically in the West, it has been the use of tests in educational and clinical settings that have been advanced at the expense of tests for occupational settings. Indeed, Zhang (1994) remarks that most tests used in China are used for classification and assessment rather than for diagnosis or prediction. With the rapid economical development sustained by China, the retraction from a Marxist system (wherein career was defined and given by the state and linked to family) and continued international interest through globalisation, it is essential that China has tests which measure and predict local traits, behaviour and performance.

In relation to these local traits in China, separate teams of researchers at the Chinese University of Hong Kong and the University of Hong Kong have been involved in the development of personality assessment tools for the Chinese people. The Chinese Personality Assessment Inventory (CPAI: Cheung, Leung, Fan, Song, Zhang, Zhang, 1996) and The Chinese Personality at Work Questionnaire (CPW: Hui, 2000) are reported measures of 'Chinese personality'. The CPAI was developed using a combined emic/etic approach with adjectives that measure the 'universal' personality traits from the 'big-5'model being combined with adjectives purported to measure indigenous Chinese traits. The CPAI research team contends that there may be a 'blind spot' in Western personality theory given that the indigenous traits form a separate factor (Interpersonal Relatedness) outside of the 'big-5' in Chinese samples (Cheung et al., 1996), as well as in non-Chinese samples that have completed the English version of this questionnaire in Singapore and the USA (Cheung, Cheung, Leung, Ward & Leong, 2003; Lin, 2003).

In Western developed nations it is clear that personality assessment is a popular tool in organisational settings. O'Meara (1994) estimated that 5,000 to 6,000 organisations in the USA use personality assessment as part of their hiring process. However, the pattern of use in Hong Kong is somewhat difficult to assess as noted by Chan and Lee (1995) in their review. The majority of the review focuses on tests that are most frequently used in educational and clinical settings and in the main ignores the use of occupational assessments. More recently, Cheung and colleagues at the Chinese University of Hong Kong have contacted members of the Hong Kong Psychological Society (HKPS) by email in order to update Chan & Lee's survey. However, the online questionnaire contained checkboxes that listed mainly educational and clinical tests, showing a potential lack of awareness of the organisational, personality- and aptitude-based assessments in use in Hong Kong. With the import of Western consultants for brief periods of time, the non-necessity of statutory registration/membership of the HKPS and the fact that many non-psychologists (e.g. human resource professionals) use psychological tests, one may assume that even if organisation-based tests were listed in their entirety in such a survey, it would not be sufficiently representative of test use in Hong Kong. This survey excludes non-HKPS members by definition, it also excludes HKPS members without email contacts and those without time or interest to reply. Certainly, anecdotal and experiential evidence suggests that personality and aptitude tests that have traditionally been used in work settings in the West are also used to a large extent in Hong Kong, even if this cannot be supported by current surveys of test use.

Kwong and Cheung (2003) have examined the relationship between two domains of contextual job performance and personality variables. Their research, based on the CPAI, was carried out with an organisation in Hong Kong. This Inventory has been updated, re-standardised and renamed the Cross-Cultural Personality Assessment Inventory (CPAI-2: Cheung, 2002) recognising that indigenous scales may also measure and explain personality

in non-Chinese cultures. Kwong and Cheung based their findings of a relationship between personality and job performance on a series of bivariate correlations.

The current paper attempts to add to the dearth of research in China linking personality with performance. Although Kwong & Cheung (2003) examined relationships between indigenous personality variables and performance in Hong Kong, there are few others. Furthermore, the current study merges two areas and examines relationships between both universally accepted aspects of personality (related to the 'big-5', but also taking into account primary-level factors) and the indigenous scales of the CPAI-2. From a practical perspective, there is a need to know whether imported tests can be useful in Chinese organisations and whether there is any benefit in the use of the newer indigenous tests/scales developed through emic approaches. In line with these intentions, it was hypothesised that the primary scales of the 15FQ+ would significantly correlate with a number of performance competencies and, furthermore, form a model that aids in the prediction of competency scores. Following Cheung et al., (2003) and Kwong & Cheung (2003), it was anticipated that the indigenous scales of the CPAI-2 would significantly correlate with a number of performance competencies and add incremental validity over and above the 15FQ+ in the prediction of workplace performance.

Method

Participants

Four Hong Kong organisations agreed to participate in the present study with 437 valid cases (2 cases were removed due to incomplete/invalid data). Of the total cases, 364 (83%) were from airline staff, 17 (4%) were from a 5-star hotel, 36 (8%) from a major bus company and 20 (5%) from an international security company. Hereafter, and to preserve confidentiality, reference is made to the above organisations as Organisation 1, 2, 3 and 4, respectively. Of the total sample, 356 (82%) described themselves as Hong Kong Chinese, 20 (5%) as

mainland Chinese and 61 (14%) as other. Although to be able to complete the questionnaires, all respondents had to understand written traditional Chinese, 367 (84%) respondents stated their first language as Chinese Cantonese, 56 (13%) Chinese Mandarin, 12 (3%) English, and 2 (0.5%) as other. Participants ranged in age from 21 to 57 (M age = 34.00 years, SD = 7.79 years). There were 163 (37%) male and 264 (63%) females. Tenure ranged from 0 to 36 years (M = 9.98 years, SD = 7.72 years). Two-hundred and ten (48%) participants were described as clerical/junior, 172 (39%) as lower-middle management, 42 (10%) as upper-middle management, 8 (2%) as lower-senior management and 2 (0.5%) as upper-senior management.

Measures

The measures reported in this study were part of a larger-scale/longer-term study examining indigenous and universal aspects of Chinese personality and their relation to performance at work.

Personality Measures. 'Universal' aspects of personality were measured with the 200-item 15FQ+ Form A (Psychometrics Ltd, 2002). The 15FQ+ is a normal-range, trichotomous response personality questionnaire that has been designed for use specifically in industrial and organisational settings. One hundred and eighty-three questions provide either a 'true, false, uncertain' or 'sometimes, rarely, never' response option to questions such as 'I enjoy going to the cinema'. The remaining 17 questions require a choice to be made as to which of two activities is preferred - for example, 'I prefer to (a) go to parties (b) uncertain (c) read books'. Although the Reasoning factor has been replaced with a meta-cognitive personality variable termed 'Intellectance', the 15FQ+ is still seen to measure Cattell's (1946) primary personality factors (see Tyler, 2003, for a review of 15FQ+). During 2004, the 15FQ+ was translated into both traditional and simplified Chinese. The traditional Chinese version underwent trialling with final-year undergraduate and first-year postgraduate Business Studies students (n=178)

at a University in Hong Kong as part of the larger-scale study. It was then subjected to item analysis and further refining before being used in the current study (for a report on the development process and psychometric properties see Tyler, G., 2004. *The structure of personality in China, the UK and* Australia. Manuscript in preparation,).

Indigenous aspects of personality were assessed using the 103 items that compose the indigenous sales of the CPAI-2 (Cheung, 2002). All questions require a 'True or False' response to a self-statement (e.g., 'I am not an energetic person'). The CPAI-2 claims to measure, in addition to normal and clinical personality traits, 10 indigenous scales of personality composed of Face, Family Orientation, Defensiveness, Graciousness vs. Meanness, Veraciousness vs. Slickness, Traditionalism vs. Modernity, Ren Qing (relationship orientation), Harmony, and Thrift vs. Extravagance. It is the 'Interpersonal Relatedness' scales such as those above that, according to Cheung (2001), are not captured by Western personality measures.

Performance Measures. Two performance measures were used in the present study. Regular performance appraisal scores (where participants were appraised on an annual basis by their immediate supervisors on a number of competencies) were only available for one of the four organisations involved in this study. Within this organisation, 199 participants gave permission to retrieve their performance records. This number reduced to 149 with invalid or unidentifiable employee IDs removed. However, this data existed in different performance appraisal systems with different competencies being graded for each participant. This resulted in a final N that varied between 10 and 149 depending on the competency under analysis. For the second measure of performance, participants from all organisations were asked to provide their most recent performance appraisal composite score, but only if they were able to remember or to retrieve it.

Procedure

In Organisations 1 and 3, lunch-time and day-end seminars on personality and performance were advertised and arranged in order to generate initial interest and "word-of-mouth" advertising of the study. For each of these seminars, over 50 people attended. These two organisations also used posters to generate further interest in the study. Organisation 1 additionally sent invitation emails to approximately 1000 employees and advertised the study in the 'hot news' section of their corporate intranet. Seventeen individuals from Organisation 2 completed paper versions of the questionnaire, as did 32 participants from Organisation 3. Online versions of the questionnaires were completed by 4 individuals from Organisation 3, all 20 participants from Organisation 4, and all 364 participants from Organisation 1.

The procedure for completing the paper-versions of the questionnaire was similar, in part, to that employed by Cheung et al., (2003). A best-practice approach was adopted by requesting that (a) questionnaires should only be accepted by those interested in the study (b) uncompleted questionnaires were to be returned (c) questionnaires were to be completed within one week, away from distractions and following understanding of the standardised instructions and (d) questionnaires were not to be copied for any reason (footnote added to questionnaires that copying is illegal). Whilst it is acknowledged that strict standardised administration is the goal, in the organisational research setting, this is rarely possible.

Those who underwent internet-based administration were referred to a private, secure, username and password-protected website where they completed the questionnaires. Use of 'cookies' and 'session IDs' ensured that questionnaires could only be completed once per participant and only by invited participants.

Following questionnaire completion by those at Organisation 1, the Human Resource Department was contacted for retrieval of performance appraisal scores. Upon completion

and input of all questionnaires by all participants, a free, sensitive, and individual feedback report was emailed to respondents who had provided their email address.

Results

A series of one-way ANOVAs were carried out on each of the personality scales (all sixteen 15FQ+ primary scales, the five 15FQ+ global factors, and the 9 CPAI-2 indigenous scales) in order to assess for significant differences between method of test administration and organisation from which participants came. For administration method (all paper-based respondents were analysed with an equal numbered random sample of web-based respondents), results revealed a significant difference only on the 15FQ+ ß Intellectance scale, F (1,96) = 4.068, p= .046. Post hoc analyses revealed that those who completed web-based questionnaires reported significantly higher (M = 14.61, SD = 5.27) Intellectance than those who completed paper questionnaires (M = 12.35, SD = 5.84). Given that later analyses revealed no significant relationships between this scale and performance, the results were not considered to confound subsequent analyses. In terms of organisation, the ANOVAs revealed a significant difference on the 'big-5' Agreeableness factor, F (3, 433) = 3.038, p = .029. Post hoc analyses revealed that Organisation 1 participants reported significantly lower Agreeableness (M = 5.44, SD = 1.78) than did participants from Organization 2 (M = 6.32, SD = 1.42). Given that there were no further significant differences on any scale, all further analyses were collapsed across organisation.

Descriptive data, including reliability estimates for each scale of the 15FQ+, is presented in Table 1. As can be seen from this table, seven of the 15FQ+ primary personality scales, as well as the social-desirability scale, obtained alpha coefficients less than the accepted convention of .70 (Rust & Golombok, 1989). The median alpha was satisfactory at .77.

Insert Table 1 about here

Descriptive data, including reliability estimates for each indigenous scale of the CPAI-2, is presented in Table 2. Only one CPAI-2 indigenous scale reached a conventional and acceptable level of reliability, although another two scales were borderline. The pattern of coefficients is similar to that seen in the standardisation sample (Cheung et al., 2004). It should be noted that a number of these scales have had greater normative sample reliability reported (e.g., Cheung et al., 1996), although these have related to the first version of the questionnaire.

Insert Table 2 about here

Correlations between objective performance appraisal competencies and the 'big-5' personality traits (Table 3), Primary-Factors of the 15FQ+ (Table 4) and CPAI-2 Indigenous Scales (Table 5) revealed a number of interesting relationships. Only those competencies with $n > 40$ were included in these analyses. The competencies used were objective, supervisor-rated competencies that, with the exception of one (Performance Appraisal Score), were only relevant to Organisation 1. Performance Appraisal Score is a memory/honesty-based competency elicited by asking respondents to enter their most recent appraisal score (they were prompted to leave this field blank if they could not remember or access these records).

Insert Tables 3, 4 & 5 about here

A series of hierarchical regression analyses were conducted with only those 15FQ+ primary and CPAI-2 factors which showed significant bivariate relationships with the performance competencies being included as predictors (so that statistical power was maintained at an acceptable level). In order to test the hypothesis regarding the incremental

validity of the CPAI-2 indigenous scales over and above the 15FQ+ in predicting performance, the 15FQ+ factors were entered at Step 1 and the CPAI-2 factors at Step 2. Of the 12 competencies analysed in the present study, 9 showed significant bivariate relationships with 15FQ+ primary factors, thus it was these 9 competencies that were included as outcome measures in the hierarchical regression analyses. Of these 9 competencies, 4 models (Overall Non-Weighted Performance, Customer Service, Planning and Organising and Problem-Solving) were significant, R^2s $\geq$.156, ps<.05, with two further competencies (Managing Change and Quality) demonstrating a significant trend. Further, for each of the 4 significant models, introduction of the CPAI-2 factors at Step 2 did not significantly add to prediction. The data relating to the significant models is presented in Tables 6 and 7.

Insert Tables 6 & 7 about here

Discussion

The main objective of this paper was to assess the relationship between personality variables and workplace performance in Chinese organisations. To this end, the 15FQ+ Chinese was utilised alongside the indigenous scales of the CPAI-2. Given that cross-cultural research has demonstrated the universality of personality attributes, and that the CPAI research team claimed a 'blind-spot' in Western theories, it was expected that scores on scales from both personality assessments would be associated with performance scores. The correlational analyses revealed that indeed, there was a significant relationship between some dimensions of personality and performance. In terms of the hypotheses, these were partly supported in that a number of 15FQ+ primary factors were found to have significant bivariate correlations with, and predict, performance dimensions. Three CPAI-2 Indigenous factors also showed significant bivariate correlations with performance dimensions. However, the

hypothesis regarding the CPAI-2 indigenous factors adding incremental validity (over and above the 15FQ+) to the prediction of performance was not supported, given that the CPAI-2 factors did not add significant predictive value to any model.

Four of the 'big-5' factors were found to correlate significantly with performance dimensions. Global Factor N correlated negatively with two dimensions (Project Management and Quality), O negatively with three (Overall Performance, Customer Service and Managing Change), A positively with one (Time Management) and C positively with one (Performance Appraisal score). Factor E did not significantly correlate with any performance dimensions. The findings for Factor E are partially in line with Barrick et al., (2001), whose meta-analysis showed that E tends to relate to specific occupations or criteria, rather than being a predictor of performance across a range of occupations. Interestingly, and contrary to Barrick et al., (2001), Overall Non-Weighted Performance (average of all performance scores) did not appear to be related to Conscientiousness in this study, although self-reported 'recent appraisal score' was positively related.

It may also appear surprising that Openness to Experience was negatively related to Overall Performance. Traditionally in China, maintenance of the status quo, rather than being creative and open to novel approaches to doing things, has been rewarded. However, Barrick et al., (2001) have warned against relying on the 'big-5' at the expense of other levels of personality analysis and Timmerman (2004), among others, went on to examine facet level relationships having first considered the 'big-5' traits. Moving to the primary factor level in the analyses for the present study revealed that Overall Non-Weighted Performance correlated significantly with fM- and fO-. Factor fM is a contributor to the global (or 'big-5') Openness (O) factor. Thus, although it appeared that there was a relationship between Openness and performance, the more precise relationship was with thinking style - those who are more concrete, down-to-earth and solution-focussed do better in terms of overall performance. This highlights the importance of examining the more specific primary factors rather than simply

concluding at the global level. The negative correlation with primary factor fO reveals that those who are more secure, self-assured, and unworried tend to also do better in terms of overall performance score. Again, inspection of correlations at the global level alone would have missed this relationship as the global anxiety (N) factor, to which fO contributes, showed no significant correlations with overall performance score.

Those participants who were appraised more highly in terms of customer service tended to be somewhat hard-headed and tough-minded (possibly because part of this competency revolves around not giving the customer whatever they want at the expense of the organisation), whilst also being solution-focussed, diplomatic, socially astute, and self-sufficient. There was a significant negative correlation between global factor Openness (O) and Customer Service. Primaries fI and fM contribute to this global factor and, from the explanation above, it becomes clearer as to why scoring less on global Openness is correlated with increased Customer Service performance. Likewise, the relationship between Managing Change and the global Openness is better seen in light of the primary fM alone. The well-appraised change manager appeared to be more likely to be solution-focussed and practical. Although there was no significant correlation between the globals and problem-solving, there was a significant correlation between this competency and fM. There was a significant correlation between those who are calm, mature and phlegmatic (fC) and their rating on Project Management. Lower fO scores (thus greater confidence of one's ability to successfully deal with challenges) also were associated with higher Project Management ratings. Although quality was related to lower global Anxiety (N) scores, this was not reflected in the analysis of primary factors. None of the factors which contributed to the N scale were found to correlate significantly with Quality. However, there was a significant negative correlation between Quality and fH, suggesting that those who are timid and hesitant in social settings may actually produce work of a better quality. It is assumed that those people would spend less time chatting and therefore complete the work in a more relaxed

manner that focuses on quality. Finally, Time-Management was significantly correlated with an individual's preference for conventional, tried and tested methods (fQ1). Maybe these people spend little time considering new and novel approaches and thus complete the task in the conventional way, and on time. Given the additional information afforded by the primary factor fQ1, it may not be stubbornness (global A-) that leads to less effective time-management but rather a tendency to try untried methods. Three competencies were found to have no relationship with the 15FQ+ primaries: Cost-Awareness, Initiates Improvements, and Teamwork.

Three CPAI indigenous scales were significantly correlated with three competencies. Face was negatively correlated with Cost Awareness. It may be that those who are less concerned about protecting face and the interpersonal ramifications of 'losing face' are thus more aware of issues of cost within the organisation. The CPAI-2 adds something that was not contributed by the 15FQ+ in that the 15FQ+ showed no relationship between this competency and personality. Kwong and Cheung (2003) reported a significant positive correlation between Face and Interpersonal contextual behaviours in their hotel supervisor sample. In the present study, the significant negative correlation with Face and Cost Awareness is not considered an interpersonal contextual competency, rather a technical competency. Further comparison with Kwong & Cheung's findings is not possible due to the nature of their categorisation of performance dimensions into two factors. Graciousness versus Meanness on the CPAI-2 was found to correlate positively with Quality. Given that Graciousness measures attributes such as patience, forgiveness and self-sacrifice, it would seem that those possessing greater amounts of these attributes spend more time patiently working on organisational issues, resulting in a higher quality outcome. Finally for the CPAI-2, Customer Service showed a significant positive correlation with Thrift versus Extravagance. This factor requires more caution in interpretation due to the low alpha of .46 (.54 in standardisation sample), however, there may be some relationship between those who

tend to save rather than waste and their customer service score. As with the 15FQ+, this may relate to organisational objectives that would wish to see happy customers, but not at the expense of organisational profitability, so again, not giving customers everything they may ask for.

It was seen to be important to investigate the utility of the personality measures in predicting performance competencies. Hierarchical multiple regression analyses revealed that significant models could be determined for Overall Non-Weighted Performance, Customer Service, Planning & Organising and Problem-Solving, explaining 16%, 28%, 19% and 33% of the variance respectively. Additionally, Managing Change (n = 52) and Quality (n = 94) showed significant trends that might benefit from a larger N's increase in statistical power. Introduction of the 3 CPAI factors (that had shown significant bivariate correlations with the performance dimensions) did not significantly add to prediction. Factors fO- and fN- were predictors in 5 out of the 6 models, demonstrating that being confident, diplomatic and socially aware are important attributes in the Chinese organisation under study. It is surprising to note the emergence of factor fC-, (i.e., emotional, changeable and labile) as a predictor in Planning & Organising, Customer Service and Overall Non-Weighted Performance. The 15FQ+ manual does reveal however that this '…emotional temperament may also be a source of drive, spurring them on to resolve situations they find unsatisfactory or unrewarding.' (Psychometrics Limited, 2002, p14).

Caveats to the above findings relate to sample size and reliability of the instruments used. Due to the complexities of the appraisal system used in the study, the valid N for some competencies was too low for their inclusion in the analyses. Furthermore, some of those used in the analyses were still low, although acceptable. To maintain statistical power at an acceptable level, it was necessary to not include all the personality variables in the regression analyses. Potentially valuable predictors may therefore remain hidden. Both of the questionnaires used show reliability less than the conventional level on a number of scales.

The median reliability for the CPAI-2 scales was lower than convention, with all but one scale falling short of 0.7 and this pattern was also reflected in the standardisation sample (Cheung et al., 2004). The 15FQ+ demonstrates higher reliability, although with half of its scales below conventional reliability, further development work is also necessary here.

Future research may include further development of these two questionnaires to enhance their reliability within the Chinese population. Although notoriously difficult to achieve in organisational research, future goals may also revolve around much larger sample sizes and the use of appraisal systems where all employees are rated on the same attributes. This study falls at the commencement of research in Asia linking personality with performance and more studies of this nature are needed pan-Asia in order to allow wider generalisation of the findings.

Acknowledgements

This study has been financially supported by an International Postgraduate Research Scholarship award from the University of Queensland, Australia. Travel and subsistence was awarded by PsyAsia International, Hong Kong. The assistance of Psytech International and the Chinese University of Hong Kong in allowing the personality instruments to be used in this study is gratefully acknowledged. Likewise, the advice of Professor Paul Barrett at the University of Auckland, New Zealand, is highly appreciated. Finally, many thanks goes to the organisations and their employees who took the time to participate in this research programme.

Test Publisher's Note

The publisher of the 15FQ+ wishes to advise that the 15FQ+ (Traditional Chinese) version that was used in this study is part of an ongoing development and research project. Updated versions have since been released.

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Table 1:

Descriptive data and reliability estimates for each scale of the 15FQ+ used in the study.

					Cronbach's Alpha Reliability	
15FQ+ Factor	**Min**	**Max**	**Mean**	**SD**	**Hong Kong Professional Sample Current Study (n=437)**	**UK Professional Sample See Tyler (2003) (n=325)**
fA: Distant Aloof - Empathic	2.00	23.00	15.61	4.24	.72	.78
ß: Low Intellectance - High Intellectance	0.00	24.00	13.68	5.29	.80	.80
fC: Affected by Feelings - Emotionally Stable	0.00	24.00	13.97	4.73	.76	.77
fE: Accommodating – Dominant	0.00	23.00	12.81	4.29	.67	.79
fF: Sober Serious – Enthusiastic	0.00	24.00	10.43	4.69	.72	.78
fG: Expedient - Conscientious	4.00	24.00	17.47	4.48	.72	.81
fH: Retiring - Socially-bold	0.00	24.00	10.95	6.02	.83	.81
fI: Hard-headed - Tender-minded	2.00	24.00	15.48	4.25	.64	.77
fL: Trusting - Suspicious	0.00	22.00	9.10	4.25	.68	.77
fM: Concrete - Abstract	0.00	20.00	9.42	4.01	.64	.79
fN: Direct – Restrained	3.00	23.00	17.10	3.40	.61	.78
fO: Confident - Self-doubting	0.00	24.00	14.78	4.95	.73	.83
fQ1: Conventional - Radical	0.00	20.00	9.00	4.05	.61	.79
fQ2: Group-oriented - Self-sufficient	0.00	23.00	10.52	5.09	.74	.78
fQ3: Informal – Self-disciplined	2.00	24.00	17.54	3.62	.61	.76
fQ4: Composed - Tense-driven	0.00	24.00	10.57	5.99	.83	.81
Social-desirability	0.00	16.00	9.22	3.34	.63	.70
			Median Alpha		**.72**	**.78**

Table 2:

Descriptive statistics and reliability estimates for each indigenous scale of the CPAI used in the study.

					Cronbach's Alpha Reliability	
					Hong Kong Professional Sample Current Study	**Mainland China & Hong Kong Representative Sample Cheung et al (2004)**
CPAI-2 Scale	**Min**	**Max**	**Mean**	**SD**	**(n=437)**	**(n=1,911)**
Face (FAC)	0.00	11.00	5.16	2.40	.62	.59
Family Orientation (FAM)	0.00	10.00	6.67	2.39	.73	.66
Defensiveness (Ah-Q Mentality) (DEF)	0.00	9.00	2.38	2.03	.68	.69
Graciousness vs. Meanness (G-M)	0.00	10.00	7.14	2.23	.69	.66
Veraciousness vs. Slickness V-S	0.00	10.00	7.90	1.90	.62	.69
Traditionalism vs. Modernity T-M	0.00	13.00	5.21	2.77	.66	.65
Ren Qing (Relationship Orientation) REN	2.00	12.00	8.36	1.87	.40	.49
Harmony HAR	1.00	14.00	11.14	2.19	.63	.53
Thrift vs. Extravagance T-E	0.00	10.00	6.13	1.84	.46	.54
			Median Alpha		**.63**	**.65**

Table 3:

Correlations between objective performance appraisal competencies and the 'big-5' personality traits.

Competency	**N**	**'big-5' correlates from 15FQ+**				
		N	**E**	**O**	**A**	**C**
Overall non-weighted performance	149	-.01	-.07	**-.17***	.00	-.01
Cost Awareness	61	-.08	-.12	-.15	-.04	.03
Customer Service	91	-.14	-.05	**-.24***	.09	.15
Initiating Improvement	99	.03	.07	-.10	-.09	.02
Managing Change	52	-.08	-.26	**-.34***	.17	.02
Problem-solving	102	-.07	-.01	-.04	-.01	.02
Project Management	44	**-.35***	-.01	-.01	-.03	.16
Planning & Organising	96	-.10	.01	.01	-.10	.11
Quality	94	**-.20***	-.13	-.07	.11	.05
Teamwork	111	.00	-.02	-.14	.01	-.06
Time-management	52	-.12	-.15	-.24	**.27***	.13
Recent appraisal score	85	.09	-.03	-.16	.02	**.28***
All organisations (memory/honesty-based)						

* p<.05 (two-tailed). Significant correlations shown in bold typeface.
N: Emotional Stability E: Extraversion O: Openness to experience A: Agreeableness C: Conscientiousness

Table 4:
Correlations between objective performance appraisal competencies and the Primary-Factors of the 15FQ+.

Competency	**N**	**Primary Factor correlates from 15FQ+** *(see Table 1 for Factor Labels)*														
		fA	**ß**	**fC**	**fE**	**fF**	**fG**	**fH**	**fI**	**fL**	**fM**	**fN**	**fO**	**fQ1**	**fQ2**	**fQ3**	**fQ4**
Overall non-weighted performance	149	-.12	.01	.02	-.09	.03	-.07	-.11	-.07	.14	**-.24***	.15	**-.19***	-.02	.08	-.03	.09
Cost Awareness	61	-.17	.06	.10	.02	-.12	.06	-.13	-.03	.05	-.20	.01	-.24	-.02	-.01	-.01	.09
Customer Service	91	.13	.04	.04	-.13	.05	.03	-.07	**-.22***	.05	**-.22***	**.26***	-.20	-.13	**.22***	.10	-.17
Initiating Improvement	99	.02	.05	-.02	.13	.03	-.03	-.01	-.07	.02	-.13	.12	-.10	-.03	-.16	.02	.14
Managing Change	52	-.19	-.09	-.05	-.23	-.21	-.06	-.22	-.17	.24	**-.28***	.05	-.26	-.20	.20	.10	-.11
Problem-solving	102	-.07	.08	.03	-.13	-.02	-.11	-.13	.01	.05	-.15	**.22***	-.11	.08	-.13	.02	-.08
Project Management	44	.03	.16	**.34***	.03	-.06	.10	-.04	.15	-.07	-.21	.18	**-.40***	-.04	-.05	.09	-.21
Planning & Organising	96	-.11	.06	.07	.07	.06	.15	-.10	.12	.00	-.17	.20	**-.28***	.10	-.11	-.08	.04
Quality	94	-.14	-.01	.20	-.13	-.02	.06	**-.21***	.01	-.02	-.08	.19	-.19	-.06	.10	-.09	-.16
Teamwork	111	.02	.10	.00	-.10	.06	-.16	-.09	-.05	.18	-.17	.13	-.06	-.13	.07	-.01	-.01
Time-management	52	-.18	-.15	.20	-.14	.01	.20	-.25	.03	-.09	-.26	.12	-.18	**-.30***	.12	-.06	.06
Recent appraisal score	85	-.02	-.01	-.08	-.07	.12	.18	-.16	-.09	.12	-.18	**.26***	-.05	-.05	.08	.19	.16
All organisations (memory/honesty-based)																	

* p<.05 (two-tailed). Significant correlations shown in bold typeface.
NB: Significant positive correlation between Overall non-weighted performance & Performance appraisal score (.74* n=49)

Table 5:
Correlations between objective performance appraisal competencies and the indigenous scales of the CPAI-2.

Competency	**N**	**Indigenous Factors** *(see Table 2 for Factor Labels)*								
		FAC	**FAM**	**DEF**	**G-M**	**V-S**	**T-M**	**REN**	**HAR**	**T-E**
Overall non-weighted performance	149	-.04	-.02	.03	-.01	-.08	.06	-.14	.00	-.07
Cost Awareness	61	**-.30***	.17	-.12	.07	.10	-.03	-.05	-.07	.08
Customer Service	91	-.03	.12	.07	.01	-.15	.16	-.03	.15	**.22***
Initiating Improvement	99	-.05	.17	-.05	-.03	-.13	.00	-.16	-.13	-.10
Managing Change	52	-.09	.08	-.02	-.02	-.04	.08	-.14	.09	.08
Problem-solving	102	-.09	-.03	-.05	.06	.03	.15	-.10	.04	-.02
Project Management	44	.06	.21	-.14	.11	.12	.10	-.17	.07	-.15
Planning & Organising	96	-.06	.08	.00	-.02	-.05	.01	-.13	.00	-.08
Quality	94	-.05	.00	-.10	**.21***	.10	.02	-.20	.12	.03
Teamwork	111	.02	.01	.13	-.02	-.15	.10	.00	.15	.14
Time-management	52	.15	.01	.12	-.03	.00	.14	.12	-.04	.24
Recent appraisal score	85	.02	-.12	.03	-.10	-.08	.18	.06	-.14	.08
All organisations (memory/honesty-based)										

* p<.05 (two-tailed). Significant correlations shown in bold typeface.

Table 6:

Beta weights, ΔR^2, and R^2 for model predicting Overall non-weighted performance, Customer service and Managing change from personality variables.

		Overall N-W Performance				Customer Service				Managing Change			
		Beta Weights				Beta Weights				Beta Weights			
Step	Predictors	Step 1	Step 2	ΔR^2	F	Step 1	Step 2	ΔR^2	F	Step 1	Step 2	ΔR^2	F
1	fC	-.23*	-.21*	.151	3.11**	-.18	-.19	.260	3.61**	-.57**	-.59**	.336	2.72*
	fH	-.10	-.09			.13	.10			-.24	-.22		
	fI	.01	-.01			-.15	-.14			-.13	-.14		
	fM	-.19*	-.19*			-.10	-.09			-.01	.00		
	fN	.18*	.19*			.31**	.30**			.14	.16		
	fO	-.36**	-.35**			-.31*	-.31*			-.77**	-.76**		
	fQ1	.06	.03			-.05	.02			-.27	-.29		
	fQ2	.09	.07			.32**	.31*			-.14	-.12		
2	FAC		-.04	.005	<1		.01	.019	<1		-.02	.002	<1
	G-M		-.06				.04				.06		
	T-E		-.07				.15				-.02		
Full model				.156	2.31*			.279	2.79**			.339	1.86

* p<.05, **p<.01

Table 7:

Beta weights, ΔR^2, and R^2 for model predicting Problem-solving, Planning & Organising and Quality from personality variables.

		Problem-solving				Planning & organising				Quality			
		Beta Weights				Beta Weights				Beta Weights			
Step	Predictors	Step 1	Step 2	ΔR^2	F	Step 1	Step 2	ΔR^2	F	Step 1	Step 2	ΔR^2	F
1	fC	-.16	-.12	.184	2.62*	-.29*	-.19	.267	3.97**	.09	.02	.166	2.11*
	fH	-.33**	-.34**			-.32**	-.36**			-.27*	-.28*		
	fI	.02	.02			.15	.17			.07	.06		
	fM	-.06	-.05			-.06	-.01			.07	.05		
	fN	.28**	.30**			.29**	.33**			.23*	.20*		
	fO	-.29*	-.29			-.52**	-.63**			-.25	-.23		
	fQ1	.21*	.22			.18	.25*			.06	.06		
	fQ2	-.20	-.24			-.11	-.23			.08	.16		
2	FAC		-.05	.008	<1		.05	.064	2.67		.08	.031	1.05
	G-M		-.11				-.33*				.23		
	T-E		.03				.02				-.02		
Full model				.192	1.94*			.331	3.78**			.197	1.82

* p<.05, **p<.01