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Situational assessment as a predictor of employment outcomes in people with chronic psychiatric illness

Key Messages

1. The Chinese Work Personality Profile is a reliable and valid instrument in measurement of job maintenance skills and employment potential of people with psychiatric illness.
2. There are significant differences in the job maintenance skill profiles of people undergoing rehabilitation in day hospitals, day training centres, and sheltered employment.
3. Situational assessment could be useful to differentiate clients with different employment potential, and could be used as a guide for referral of clients to vocational rehabilitation settings.

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Introduction

Over the past two decades, overseas studies have attempted to identify predictors of vocational rehabilitation outcomes in people with psychiatric illness. The key factors useful in predicting employment outcomes include: test of ego strength or self-concept; employment history; length and number of previous hospitalisations; performance in simulated job interviews and ratings of situational assessment.[1] Many of these reviews came up with a similar conclusion that "staff ratings of clients' prevocational skills in simulated work situations" is one of the best clinical predictors of future work performance and job tenure.[1-3]

The observational assessment of prevocational skills (also known as job maintenance skills) is generally labelled as "situational assessment". Situational assessment is the evaluation of general skills and behaviour important to any occupation in a simulated or real life setting. As a flexible and efficient mode of clinical evaluation, situational assessment is widely used in psychiatric rehabilitation settings to screen subjects for job placements, monitoring progress in vocational rehabilitation, and in outcome evaluation.

To improve the quality of observations, situational assessment is usually coupled with rating scales or behavioural checklists. Notable examples of these instruments include the Work Behaviour Rating Scale developed by Griffiths, Prevocational Assessment of Rehabilitative Potential of Psychiatric Patients, Thresholds Monthly Evaluation Rating Form, and the Work Personality Profile (WPP).[4] Although these rating scales use a variety of scaling methods, the content areas of these situational assessment scales tend to cluster in the areas of task-related skills, work readiness, work attitude, and interpersonal relations. In selected instruments, aspects like self-care, psychiatric symptoms, or personality characteristic were also included as part of situational assessment.

While overseas research findings supported the potential of situational assessment in work evaluation and prediction of work outcomes, there was a need to validate the applicability of such standardised instruments in local practice. Many local work rehabilitation settings have devised their own measures of work performance or adapted overseas instruments in situational assessment, but their reliability and validity was incompletely validated. Also, there was a lack of accepted common criteria (or assessment instruments) by which to compare and record work competence or employment outcomes across vocational rehabilitation settings.

Objectives

The objectives of this study was to develop and validate a Chinese version of the WPP for situational assessment of people with psychiatric illness; and to compare the job maintenance skills, or WPP, of such individuals in three types of vocational rehabilitation settings, namely: day hospitals, day training centres, and sheltered workshop.

Table 1. Profile of study sample

Variable	Clinical setting			Total (n=287)
	Day hospital (n=88)	Day training centre (n=29)	Sheltered workshop (n=170)	
Mean age (SD) [years]	35.2 (7.6)	36.2 (11.7)	38.7 (10.3)	37.4 (9.8)
Gender, No. (%)				
Female	36 (41)	16 (55)	87 (51)	139 (48)
Male	52 (59)	13 (45)	83 (49)	148 (52)
Diagnosis,* No. (%)				
Schizophrenia and psychotic disorders	69 (79)	26 (90)	100 (78)	195 (80)
Mental retardation with psychotic disorders	11 (13)	0	26 (20)	37 (15)
Mood disorders	6 (7)	3 (10)	0	9 (4)
Anxiety disorders	1 (1)	0	0	1 (0.4)
Substance abuse and dependence	0	0	3 (2)	3 (1)

* There are 245 valid cases for the diagnosis variable, one missing case for the day hospital sample, and 41 missing cases in the sheltered workshop sample

Methods

Subjects and procedures

This study was conducted from June 1996 to May 1998. The 287 study participants were recruited from two day hospitals (n=88), a day training centre (n=29), and a sheltered workshop (n=170) [Table 1]. These are the major types of rehabilitation settings providing prevocational training and work rehabilitation programmes for people with psychiatric illness in Hong Kong. Day hospitals are community-based medical rehabilitation facilities, located within a multi-purpose polyclinic, providing programmes run by a team of medical professionals. Attendees of day hospital programmes are expected to need more supervision and medical treatment, and be less ready for intensive vocational rehabilitation than those attending day training centres or sheltered workshops. Day training centres in Hong Kong are run by voluntary agencies and are financially supported by the Social Welfare Department. Day training centres are supposed to place a higher expectation on the social and vocational aspects of participants than day hospitals. Among the three types of settings, only sheltered workshops focus mainly on prevocational training and vocational rehabilitation.

Criteria for selection of subjects were: (1) attendance at the rehabilitation programme for more than 1 month, and (2) demonstrated regular attendance at the rehabilitation programmes. Around 85% of the clients that we recruited achieved an average attendance of over 80%. The researchers and assistants conducted briefing about the study and those who agreed to participate were required to sign a consent form prior to joining the study.

All research assistants and case therapists who participated in the data collection received a 2-hour training session on situational assessment and in administration of the Chinese WPP. Reliability testing and discussion on criteria for rating was conducted before the start of data collection. The researchers collected demographic data from case records. Based on an observation period of no less than 10 working days, they used the Chinese WPP to rate the job maintenance skills of the subjects.

Instrumentation

The study used a questionnaire to record demographic characteristics, ratings of situational assessment, and employment outcomes. Demographic characteristics collected included gender, age, psychiatric diagnosis, length of stay, and attendance record in the rehabilitation programme. For employment outcomes, we recorded changes in employment status (or training status) and earnings (incentives or salary) of the clients in a 6-month follow-up.

Situational assessment ratings were obtained using the Chinese WPP, which was translated and developed from the WPP.[4] The WPP is a 58-item behavioural rating scale designed for the assessment of critical work role requirements of people in vocational rehabilitation workshops and facilities. The instrument measures "work personality" (work attitudes, values, habits, and behaviours that are essential for satisfying the basic requirements of the worker role) and for maintenance of employment. The work personality represents the modifiable aspects of job maintenance skills, which could be acquired in work adjustment training or interventions. Using the Chinese WPP, research assistants rate a subject performance on a 4-point continuum from "a definite strength", "an employability assessment", "a problem area", to "will definitely limit the person's chance for employment".

A study was conducted to evaluate content validity, factor structure, and reliability of the Chinese version of WPP. An expert panel of five rehabilitation professionals evaluated the content and cultural relevance of the WPP. An explorative factor analysis was conducted based on a sample of 362 participants of vocational rehabilitation programmes. Eighty subjects were recruited for the reliability study. Forty of these were assessed twice to estimate test-retest reliability, whilst three assessors simultaneously rated the remainder to estimate inter-rater reliability.

Results

Based on the review of content validity and factor analysis, three items (listed 36, 51, and 53) in the English version

Table 2. Classification of clients according to discriminant functions: original and cross-validated matrices

Settings	Predicted group membership No. (%)			Total No.
	Day hospital	Day training centre	Sheltered workshop	
Day hospital	30 (34)	10 (11)	48 (55)	88
Day training centres	14 (48)	4 (14)	11 (38)	29
Sheltered workshop	10 (6)	1 (1)	159 (94)	170
Rates of correct classification	-	-	-	67%

of WPP were deleted, as the expert panel considered these items were not culturally relevant to Chinese culture. Based on a sample of 362 cases, the five-factor solution accounted for 67% of the total variance. The five factors were labelled: Task Orientation, Social Skills, Work Conformance, Teamwork, and Personal Presentation. Three more items (listed 11, 20, 57) were deleted from the Chinese WPP as they did not load significantly onto any of the five factors.

The five-factor solution of Chinese WPP was largely consistent with the original English version of the WPP. Four of the five factors (Task Orientation, Social Skills, Work Conformance, and Personal Presentation), extracted in the Chinese WPP actually resembled the four corresponding factors of the original. The key difference in the Chinese WPP was that it does not have a factor on Work Motivation; the items of the Work Motivation subscales of the WPP having been distributed among the Social Skills and Work Conformance factors of the Chinese WPP. Also, the Teamwork factor of the Chinese WPP was not present in the original WPP. The latter consists of two items on group interaction skills and two items on task-related skills related to working as a group. Personal Presentation in the Chinese WPP only refers to personal hygiene and appropriate dressing at work and does not include any aspects of social presentation, as in the English WPP.

The five factorial subscales of the 52-item Chinese WPP demonstrated satisfactory test-retest reliability ($r=0.70$-0.90) and internal consistency ($r=0.80$-0.90), and acceptable inter-rater reliability (0.56-0.90). Results on the content validity and reliability were replicated by Chan.[5] The descriptive statistics and 95% confidence intervals were calculated for the Chinese WPP and its subscales (available from the author), and could form an initial basis for further accumulation of normative data for people with psychiatric illness.

When the factor scale scores of the 287 subjects from the three types of rehabilitation settings were compared, the day training centres yielded the lowest mean scores for all subscales, except for Personal Presentation. The scores of sheltered workers varied least among the three types of settings. In preparation for multivariate analysis, the data set was tested for normality, multicollinearity or singularity, and homogeneity of variance-covariance matrices; no significant threats to such analysis being detected. However, seven cases were identified as multivariate outliers (with

Mahalanobis distance at $P<0.001$), and were excluded from further analysis.

The univariate F tests revealed significant differences between the three groups in mean scores for the subscales of Social Skills, Work Conformance ($F=5.83$, $P<0.01$), Teamwork ($F=25.64$, $P<0.001$), Personal Presentation ($F=23.46$, $P<0.001$). There were no differences in means between the groups for the Task Orientation scale. A multivariate analysis of variance also showed that the three profiles of the settings were different in levels (Wilk's $\lambda=0.684$, $P<0.001$).

Discriminant analysis was then performed to predict group membership of the subjects in the three types of rehabilitation setting, using the factor scores (comprising five subscales) of the Chinese WPP (Table 2). Two discriminant functions were obtained which accounted for 90 and 10% of the between-group variance. The two functions had a combined χ^2 (10)$=106.96$, $P<0.001$. After the first function was removed, the second function was still significant at χ^2 (4)$=11.88$, $P<0.05$. The first function mainly separated sheltered workshop workers from the other two groups, and the second differentiated day hospital subjects from the two other groups. The derived discriminant function correctly predicted the group membership of 200 (70%) of the 287 cases. Rates of correct classification varied from 94% for sheltered workers, to a lowest of 17% for those in day training centres. A cross-validation run using the jack-knifed method resulted in a slightly lower rate of 67%; such a small difference between the original and the cross-validated rates indicated that the classification scheme had a high degree of consistency.

Discussion

The analysis of variance and discriminant analysis based on the Chinese WPP scores, revealed clear differences in the three types of rehabilitation settings. The differences in profiles are unlikely to be due to demographic characteristics, as the three groups had similar mean ages and similar proportions of different diagnoses. Also, the subscale scores of males and females are only different for the Task Orientation subscale ($t=2.01$, $P<0.05$), but not for the other four Chinese WPP subscales. Differences in the WPP scores among the three groups could be attributed to characteristics of the three types of programmes (eg referral criteria, focus and principles of rehabilitation, progress

within these programmes).

The discriminant functions obtained could correctly classified 70% of all the cases to the three groups, which illustrated that the Chinese WPP scores were useful in differentiating between different rehabilitation settings. Thus, to some extent it is possible to predict affiliation to different programmes using the situational assessment ratings, which was also consistent with the key predictive study of the WPP by Brown,[6] showing significant differences in situational assessment ratings across different types of vocational rehabilitation programmes. Furthermore, the Chinese WPP is able to reveal differences in the job maintenance skills among the groups.

On the other hand, the satisfactory classification rates should be interpreted with care. The correct classification rate (17%) was quite low for those in day training centres, especially in comparison with sheltered workers (94%). Such differences may reflect the lack of commonly agreed criteria to guide referrals to different psychosocial and vocational rehabilitation settings in Hong Kong, particularly for day hospitals and day training centres. Moreover, as sheltered workers had the highest proportion in the sample, there was a higher probability of being classified correctly.

The results also highlighted differences between sheltered workers and the two other groups in that the former had less satisfactory Personal Presentation, but were more enthusiastic in Teamwork and had higher Social Skills. Subjects in day training centres could be differentiated from the other groups as they faired best on the Personal Presentation subscale but worst on all four of the other subscales. These results challenge the common view that sheltered workers generally have the highest vocational potential or best work performance, while those in day hospitals or day training centres should be referred to sheltered workshops for 'further' vocational preparation. Subjects in different settings differ in their "worker profile" instead of "levels of competence", as there is no evidence that a particular type of rehabilitation setting might be superior on all the Chinese WPP subscale scores. This emphasises the need for standardised and more sensitive employability instruments, so as to plan more credible and appropriate programmes for them.

This study had several limitations. First, it recruited convenient samples from various types of vocational rehabilitation settings, without controlling for sampling error. Second, there were no established criteria for referral of subjects to different vocational rehabilitation settings in Hong Kong. The differences in work performance reflected by the Chinese WPP scores might mainly reflect current referral practices by frontline practitioners, instead of any established referral practices or screening criteria. Third, the major instrument of this study, the Chinese WPP, was translated from the English WPP. Although there was a thorough review of the cultural relevance of the WPP in the Chinese population, there is a need to revise it and theories pertaining to vocational rehabilitation in light of local experience.

Vocational rehabilitation is a rapidly developing area in health and social services. Bringing the disabled back to work is a major challenge in patients with chronic psychiatric illness. This research contributes to the practice of the vocational rehabilitation in three ways: (1) it developed and validated a standardised tool (the Chinese WPP) for situational assessment of work behaviour of people with psychiatric illness; (2) it highlighted differences in WPP among patients undergoing rehabilitation in day hospitals, day training centres, and sheltered workshops; and (3) it showed that situational assessment (using the Chinese WPP) could differentiate the membership of clients in different rehabilitation programmes. These results provide an important reference for the development of guidelines for referral of patients with psychiatric illness to different rehabilitation settings.

Acknowledgements

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