PSYCHOMETRIC PROPERTIES OF THE ABBREVIATED CHINESE VERSION MCCARRON-DIAL SYSTEM ON PEOPLE WITH MENTAL HANDICAP

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Psychometric Properties of the Abbreviated Chinese Version McCarron-Dial System on People With Mental Handicap

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CERTIFICATE OF ORIGINALITY

The idea of the present investigations and planning of the experiments were resulted from discussion between the author and supervisors.

All experiments in the present investigations were completed solely by the author.

The author hereby declares that this thesis is her own work and that, to the best of her knowledge and belief, it reproduces no material previously published or written, nor material that has been accepted for the award of any other degree or diploma, except where due acknowledgement has been made in the text.

Winsome Cheung Wai Ping

February 2006

Abstract of thesis entitled *Psychometric Properties of the Abbreviated Chinese Version McCarron-Dial System on People with Mental Handicap* submitted by Winsome Wai Ping Cheung for the degree of Master of Philosophy at the Hong Kong Polytechnic University (February 2006)

ABSTRACT

The purpose of this study is to examine the use of McCarron-Dial System (MDS) for exploring the vocational outcome of people with mental handicap (MH) in Hong Kong. MDS is a well-known evidence based neuropsychological vocational evaluation system. It identifies three neuropsychological factors (verbal-spatial-cognitive, sensori-motor and emotional-coping) as predictors of vocational competency in various levels of vocational placement, these include supported employment (SE), sheltered workshop (SWS) and day activity centre (DAC).

A total of 136 individuals with mild to moderate grade mental handicap who had been placed/ worked in SE, SWS or DAC over 3 months were recruited. The mean age of the participants was 24.02 years (SD = 7.51). They were assessed by the abbreviated version of the MDS (six subtests in Chinese version) on verbal-spatia-cognitive, sensori-motor and emotional-coping abilities. Work adjustment process was captured from 2 subjects who were engaged in supported employment.

In the content validity of the Chinese version of Observational Emotional Inventory-Revised (COEI-R), which was one of the subtests of the MDS, the result showed that there was good relevance and representativeness during expert panel review. In the panel review, which was consisted of six occupational therapists, the percentage of agreement in both relevance and representativeness on Chinese version of OEI-R was ranged from 67%-100%. In the inter-rater

reliability of COEI-R, the intra-class correlation (ICC) in two-way mixed effect model was 0.78 ($\underline{p} < 0.01$). The Results indicated that the overall accuracy of the MDS for classification was 75.7% (Wilks' Lambda = 0.22, $\underline{p} < 0.01$), and day activity centre was 90.2% (Wilks' Lambda = 0.22, $\underline{p} < 0.01$) accurately classified, the highest among the three placements. Three subtests, namely Street Survival Skill Questionnaire (SSSQ) (Wilks Lambda = 0.27, $\underline{p} < 0.01$), McCarron Assessment of Neuromuscular Development (MAND) (Wilks Lambda = 0.24, $\underline{p} < 0.01$) and Haptic Visual Discrimination Test (HVDT) (Wilks Lambda = 0.28, $\underline{p} < 0.01$) significantly contributed to the model.

The findings affirmed that the neuropsychological variables, especially sensori-motor and emotional-coping factors, were useful for differentiating among the three levels of vocational placement for people with MH.

Two cases, one with "better" MDS profile and the other with "less satisfactory" MDS profile, were illustrated to explore the differences among work adjustment process on supported employment with application of MDS profiles. The observations made during the follow-up period (post 3 months after job participation) suggested that both cases managed to demonstrate their adjustment to work setting during first three months of placement, although they had different MDS profiles. There were positive changes in their values, needs and behaviors which geared towards their job tenure. The two case illustrations showed different attitudes of changes. Case A (the one with "less satisfactory" MDS profile) adopted a reactive change pattern whereas Case B (the one with "better" MDS profile) adopted a more proactive change pattern.

OUTPUTS RELATED TO THE STUDY

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CHAPTER I

INTRODUCTION

This Chapter begins with background and justification of the present research study. Afterwards, a statement of purpose, a summary of objectives and hypotheses are presented. The organization of chapters is also summarized in the last part of this chapter.

Background and Justification

In the year 2001, the total population with disability in Hong Kong was 430, 248. From there, the number of people with mental handicap (MH) was estimated to be 139, 022, which constituted to the largest disabled group (32.31%) (Social Welfare Department, 2005). Because of this large proportion, service demand for MH continues to rise. Increase in independence and vocational resettlement have become the ultimate goals for rehabilitation of the people with MH. Independent living and vocational placement are the obvious indicators of successful disability adjustment and community integration. Vocational assessment is one of the important components in the process of vocational rehabilitation (Peterson, 1990). A comprehensive vocational assessment can facilitate formulation of one's future placement plan. These plans include preparation for open employment, supported employment, vocational training, sheltered workshop, day activity centre and so on. However, a review of existing literature suggests that there is a general lack of a vocational evaluation system which can objectively assess people with MH on their vocational abilities and potentials for the purpose of work placement.

A review of various vocational assessment instruments indicates that the McCarron-Dial System (MDS) developed by McCarron and Dial (1976) is a reliable and valid system for assessing vocational potential of neuropsychologically disabled in the United States (Botterbusch, 1982; McCarron and Dial, 1976). The MDS is a battery of neurometric and behavioural measures that is based on neuropsychological model. The variety of tests and measures assess verbal-spatial-cognitive, sensori-motor and emotional-coping functions. According to the MDS, mental retardation is subsumed under the neuropsychological category because of a pathological deviation of structure and function in the higher brain centers. Such kind of primary functional limitations involve one or more of the higher cortical systems which mediate cognition, learning, perception, memory, language, affect, or complex voluntary motor movement. The MDS aims at describing the functional integrity of the higher level brain systems via test performance, historical data and behavioural observation. It proposes to correlate the descriptive data profiles with complex activities of work and personal-social adjustments. It is an effective vocational evaluation system which is based on standardized methods of administration, scoring and interpretation (McCarron and Dial, 1986).

The present study therefore was conducted with a purpose to validate a set of selected tests of the MDS, and obtain evidence on the discriminant ability of the MDS abbreviated version for vocational placements of people with MH in Hong Kong.

Statement of Purpose

The present study aimed at testing the usefulness of the McCarron-Dial System (MDS) (Abbreviated Chinese version) for developing vocational placements of the people with mental handicap. Implication of the study will focus on exploring the possible indicators that can differentiate persons with mental handicap to suitable vocational placement. There were four objectives in this study. They were:

1. Translation and evaluation of equivalence to the instructions of three sub-tests of the MDS (Bender Visual Motor Gestalt Test (BVMGT), Haptic Visual Discrimination Test (HVDT), and McCarron Assessment of Neuromuscular Development (MAND)) which were specific to sensori-motor factor;
2. Content validation of the Observational Emotional Inventory-Revised (OEI-R) which was specific to emotional-coping factor of the MDS; Estimation of the inter-rater reliability of the Chinese version of the OEI-R (COEI-R);
3. Test the usefulness of the abbreviated Chinese version of MDS (AC-MDS) in terms of differentiation among people with MH with different vocational profiles, and explore psychometric properties of the AC-MDS for this population;
4. Explore the usefulness of the AC-MDS profile in terms of enhancing work adjustment process of people with MH under supported employment.

Hypotheses of the Study

The hypotheses of this study were as follows:

1. The verbal-spatial-cognitive, sensori-motor and emotional-coping abilities of the participants would not demonstrate significant different from the time they were

placed in vocational placements to the time they were assessed with the McCarron-Dial System.

2. The verbal-spatial-cognitive, sensori-motor and emotional-coping abilities of the participants would demonstrate significant different among day activity centre, sheltered workshop and supported employment showed in the AC-MDS classification model.

Organization of Chapters

The thesis consists of six chapters including the present chapter. Chapter II provides a literature review on six major aspects, including vocational abilities of people with mental handicap, existing vocational evaluation system in Hong Kong, vocational assessment models for people with MH, work adjustment model towards job tenure, application of the McCarron-Dial System and existing vocational placements for people with MH in Hong Kong. Chapter III describes the method of the study and is divided into four stages: 1) translation and evaluation of equivalence of the sub-tests of the MDS (sensori-motor factor); 2) content validation and estimation of the inter-rater reliability of the COEI-R (emotional-coping factor); 3) test the usefulness of the abbreviated Chinese version of the MDS (AC-MDS) for disciminating different levels of vocational placement; and 4) exploration of the usefulness of the AC-MDS profile to enhance work adjustment process under supported employment. Chapter IV summarizes the results obtained from the above study. Chapter V discusses the results and outcome of the study. Chapter VI provides an overall conclusion to this research study.

CHAPTER II

LITERATURE REVIEW

This chapter begins with an introduction of the abilities and deficits, especially on the vocational aspect, of people with mental handicap (MH). The focus is put on how such population is assisted in finding suitable vocational placements under the existing vocational rehabilitation system in Hong Kong. This is followed by an overview of the vocational assessment models currently used by practitioners for people with mental handicap. Afterwards, the work adjustment processes experienced by people with MH are explored with the feasibility of matching the McCarron-Dial System (MDS). The theory and constructs underlying the MDS and its subtests will be described. The application and utilization of the MDS will also be discussed later. This chapter ends with introducing different types of vocational placements for people with MH in Hong Kong.

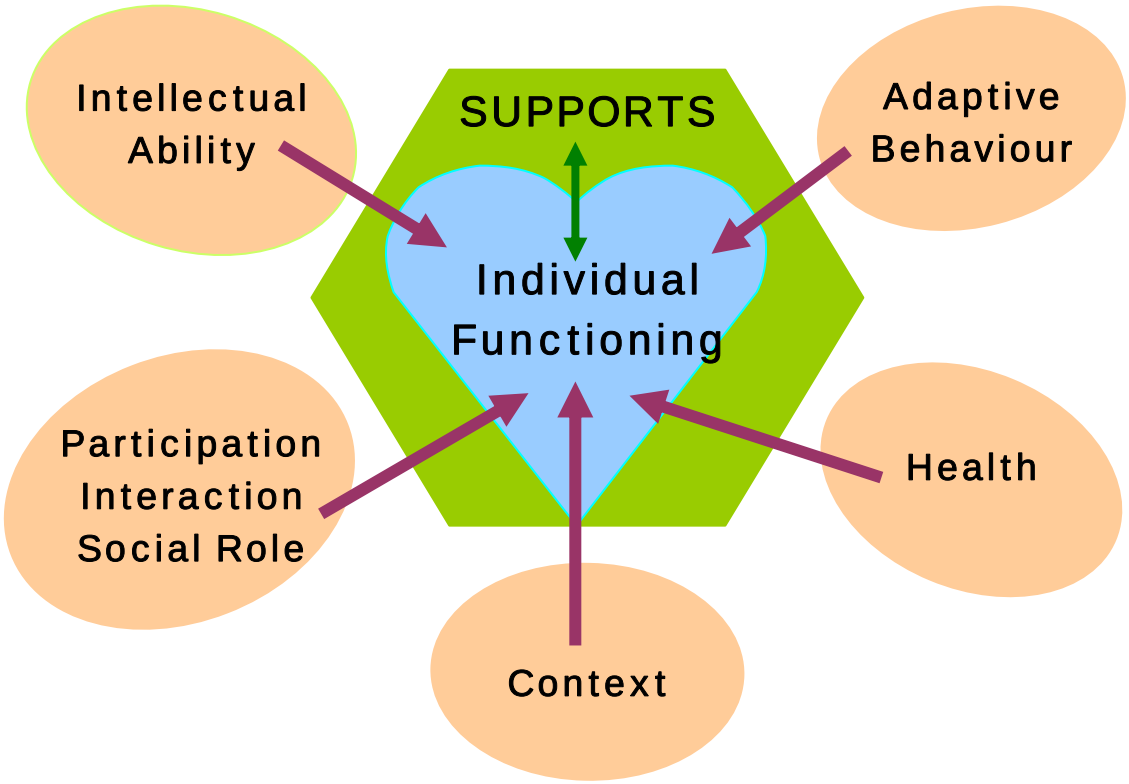
Mental Handicap and Work

According to the American Association on Mental Retardation (AAMR), the official definition of mental handicap (MH) is a disability characterized by significant limitations in both intellectual functioning and adaptive behavior. This disability originates before age 18 (American Association on Mental Retardation, 2002). Since 1876, the AAMR has served as a central role in understanding, defining and classifying the condition of mental retardation (MR) (Bellini, 2003). A modification from a four-dimension system in 1992 to a five-dimension system in 2002 as the theoretical model of MR makes it much more consistent with the

International Classification of Functioning, Disability, and Health (ICF) model of disability (World Health Organization, 2001). These five dimensions are intellectual abilities; adaptive behavior; participation, interactions and social roles; health; and context (Figure 2.1). Each of the multidimensional influences on the individual's functioning is mediated through the supports available to that person.

Figure 2.1

Theoretical model of mental retardation (American Association on Mental Retardation, 2002)



The operational definitions of the five dimensions are as follows: Dimension I is intellectual abilities, or intelligence, which refers to a general mental capability. It involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas and learn from experience (Arvey et al., 1994; Gottfredson, 1997).

Intellectual functioning is represented by an IQ score which is at least two standard deviations below the mean of an appropriate assessment instrument (American Association on Mental Retardation, 2002).

Dimension II is adaptive behavior, which is the collection of conceptual, social and practical adaptive skills that people have learned in corporate with their everyday lives (Luckasson, 2002). From there, conceptual skills refer to cognitive, communicative and academic skills such as receptive and expressive language, reading and writing, money concepts and self-directions. Social skills refer to social competence skills such as interpersonal skills, responsibility, self-esteem, gullibility (likelihood of being tricked or manipulated), follow rules, obey laws and avoid victimization. Practical skills refer to independent living skills, which involve personal activities of daily living such as dressing, toileting and feeding; and instrumental activities of daily living such as preparing meals, taking medicine and using telephone. Practical skills also include occupational skills and maintenance of a safety environment. Adaptive behavior deficiency is generally a characteristic associated with sub-average intellectual functioning in individual with MH because they usually have difficulties in adjusting to ordinary demands on their daily routines. This kind of impairment may affect people with MH in maturation, learning and also social adjustment. Significant limitations in adaptive behavior can be established through the use of standardized measures with at least two standard deviations below the mean of one of the three types of adaptive behaviors (American Association on Mental Retardation, 2002). Therefore, the assessment of adaptive behavior skills should refer to an individual's performance of conceptual, social and practical skills

during daily routines, both in typical environments and under changing circumstances (Bellini, 2003).

Dimension III is about participation, interactions and social roles. They are greatly influenced by the amount of opportunities available for an individual to experience. Participation refers to an individual's involvement in and execution of tasks in real life situations. Lack of participation and interactions can result in limitation of fulfillment in valued social roles (American Association on Mental Retardation, 2002).

Dimension IV is related to health that indicates both physical and mental health as well as etiological factors (American Association on Mental Retardation, 2002). The World Health Organization (WHO) defines health as a state of physical, mental and social well-being (World Health Organization, 2001).

Last but not the least, dimension V is context. It describes interrelated conditions that people live their everyday lives. Context includes environments and cultures. It refers to immediate social setting, such as family home; neighborhood, community and organization providing education and support; society and culture. Support aims to promote development, education, interest and personal well-being of a person (American Association on Mental Retardation, 2002).

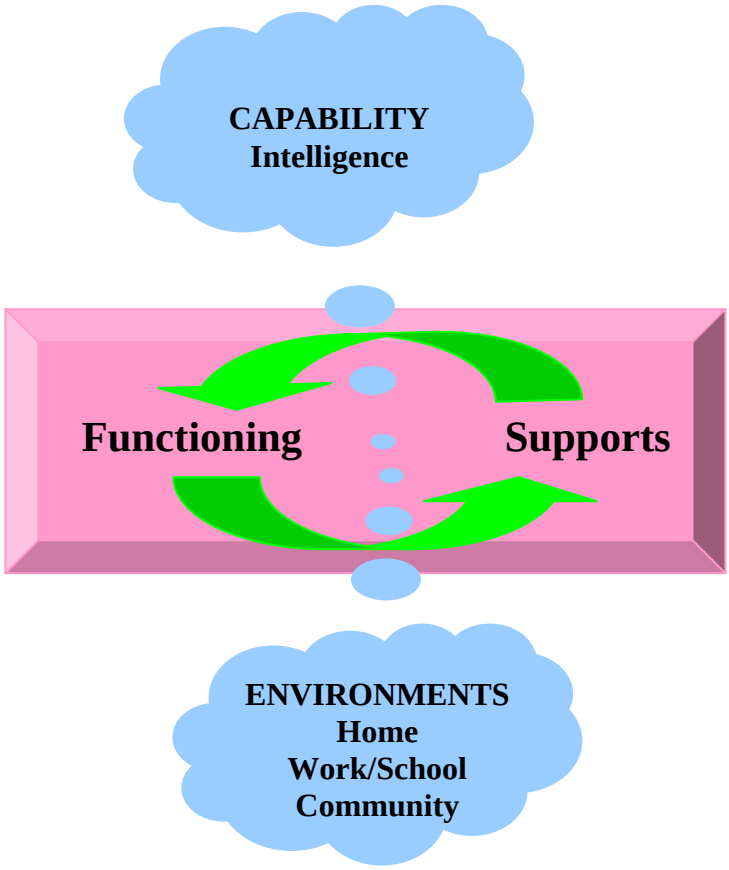
In the AAMR classification, people with MH have fundamental difficulty in learning and performing certain daily life skills. Levels of support, including intermittent, limited, extensive and pervasive, are used to describe how much support an individual needs in order to adapt to the environment (Zimmerman & Woo-Sam, 2001). The new definition of the AAMR 10th edition strongly reflects an

ecological approach to disability that stresses the power of person-environment interactions and the reduction of functional and activity limitations via person-centered support strategies (Bellini, 2003).

General structure of the definition of mental retardation is shown in Figure 2.2. From there, the personal and environmental factors interacting with each other indicate the needs for support that can reciprocally influence one's functioning.

Figure 2.2

Definition of Mental Retardation (American Association on Mental Retardation, 2002)



Another definition is originated from the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000), in which people are diagnosed as mental handicap when meeting the following criteria:

1. having significant sub-advantage intellectual functioning (Intelligence quotient (IQ) is approximately 70 or below on an individually administered IQ test);
2. having concurrent deficits or impairment in present adaptive functioning in at least two of the following skill areas: communication, self-care, home living, social/ interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health and safety; and
3. being onset before the age of 18.

The DSM-IV classification system describes mental retardation in terms of four degrees on the severity of impairment with respect to measured intellectual functioning (Table 2.1) (American Psychiatric Association, 2000).

Table 2.1

Classification of mental retardation (American Psychiatric Association, 2000)

Level of Classification	Intelligence Quotient (IQ)
Mild grade	IQ levels of 50 to 55 to approximately 70
Moderate grade	IQ levels ranging from 35 to 40 to 50 to 55
Severe grade	IQ levels of 20 to 25 to 35 to 40
Profound grade	IQ levels below 20 or 25

According to the DSM-IV, mental handicap is present if an individual has an IQ score obtained from a standardized test of approximately under 70. Four grading in terms of mild, moderate, severe and profound categories based on the IQ scores are used to describe the degree of intellectual disability (American Psychiatric Association, 2000). This classification has another indentation which varies from

that of the American Association on Mental Retardation (2002). The latter adopted the IQ measurement of approximately two standard deviations below the mean of the referent population group (American Association on Mental Retardation, 2002). The classification stressed on intensity of needed supports rather than severity of impairment. The IQ measurement method of the two approaches is different, with the former adopts a familiar IQ-based impairment category (American Psychiatric Association, 2000) whereas the latter adopts a supports-based classification (American Association on Mental Retardation, 2002), but to a certain extent, both parties identify that an IQ score is not the only parameter. More often, the criteria of significant limitations in present functioning and onset before age 18 are two essential elements for determining the diagnosis of mental handicap (American Psychiatric Association, 2000; American Association on Mental Retardation, 2002).

Another common definition of mental retardation is derived from the International Classification of Disease (ICD-10). MR is characterized by impairment of skills manifested during the developmental period. The condition of arrested or incomplete development of the mind would contribute to the overall level of intelligence, including cognitive, language, motor and social abilities. Adaptive behavior is always a deficit to people with MR. However, such deficit may not be so obvious for people with mild MR if they have good support in their social environments (World Health Organization, 2001).

Nevertheless, the overall definition of the AAMR is consistent with other contemporary models of disability such as the ICD-10, ICF, and DSM-IV (Bellini, 2003).

The population of Hong Kong was about 6.9 millions in 2004 (Census & Statistical Department, 2005). The total number of people with disabilities was estimated to be around 0.43 million yielding which constituted about 6.2% of the total population. Among them, people with mental handicap is the largest group (32.3%), followed by those with mental illness (21.9%), visual impairment (17.8%) and physical handicap (17.0%) (Social Welfare Department, 2001). Figure 2.3 indicates the number of people with disabilities in Hong Kong. The distribution related to the degree of mental handicap is shown in Table 2.2.

Figure 2.3

Number of people with disability in Hong Kong

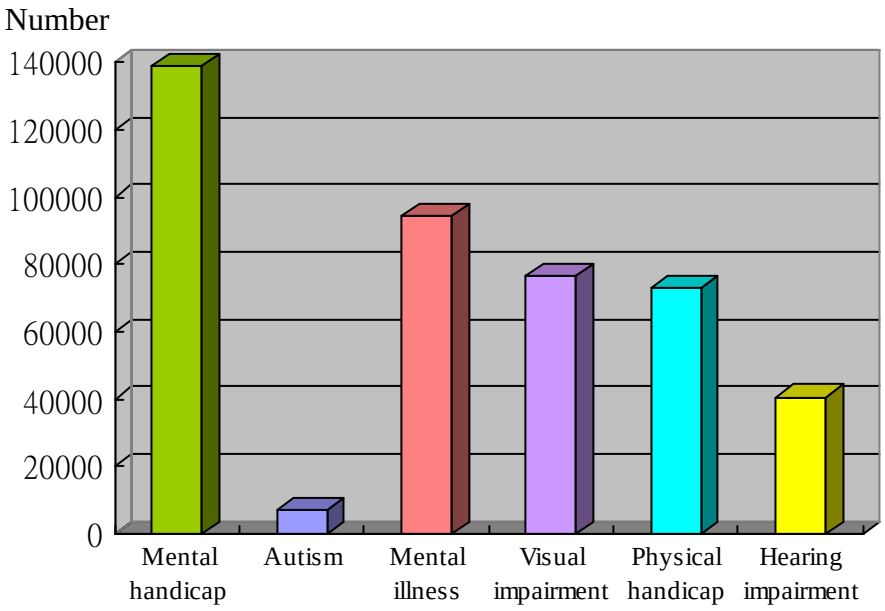


Table 2.2

Distribution of different levels of mental handicap among the total MH population in Hong Kong

Level	Percentage of MH population
Mild grade	85

Moderate grade	10
Severe grade	3-4
Profound grade	1-2

There is different assessment focus in different life spectrum. Functioning in intellectual, language, perceptual-motor, and social/ adaptive behavior is an impact in evaluating the status of preschool youngsters. While multiple areas of functioning must be evaluated during the elementary years, this includes not only intellectual functioning, but also academic achievement. Assessment during adolescent and adult years takes focus on intellectual and vocational functioning (Drew & Hardman, 2004).

Work is a complex phenomenon. It not only affects one's social interaction and psychological well-being, but also his life-style (Eliason, 1998; Eggleton, Robertson, Ryan & Kober, 1999; Stephens, Collins & Dodder, 2005). Work is a goal-directed activity. The general definition of work is an activity performed to produce goods or services value to others (Rothman, 1987; Super, 1990; Cinamon & Gifsh, 2004). Participation in the world of work signifies that a person is a vital and constructive member of the society. Involvement in the mainstream labor force fulfills both individual and societal expectations (Super, 1990). Work is related to many other terms, like task, position, job, occupation and career. Tasks are specific elements of jobs. They add together to form the building blocks for job function (Ettinger, 1991). A position is a specific term meaning a group of tasks performed by one person. A job means a group of similar, paid positions requiring similar

attributes in a single organization (Herr & Cramer, 1992). An occupation is a group of similar jobs found in different organizations. A career is defined as individual's lifelong work pattern and the sum of all life experiences (Isaacson & Brown, 2000). Career is actually a combination of work, family, and other life roles that vary over time and across individual.

Some studies found that employment has positive impact to the lives of people with intellectual disabilities (Eggleton, Robertson, Ryan & Kober, 1999). People with work enjoy self-respect derived from economical self-sufficient. This is especially true in paid employment that it is crucial to people with disabilities in terms of increasing their self-esteem as well as quality of life (Robinson, 2000). More integrative employment enhances greater adaptive skills, such as physical abilities, cognitive abilities and social skills (Stephens, Collins & Dodder, 2005). Employing people with developmental disabilities not only provides economic benefits to the individuals and the community, but also relates to adaptive skill acquisition for them (Stephens, Collins & Dodder, 2005). However, people who are chronically unemployed are often in low self-esteem as they may depend on welfare subsidy for their basic living (Wolfensberger, 1972; Preiebe, Warner, Hubschmid & Eckle, 1998). People with disabilities always encounter problem of employment difficulty (Capella, Rocssler & Hemmeria, 2002).

In Hong Kong's mainstream culture, working and being productive are highly valued. However, recent work trends pose significant challenges to workers because of poor economic condition, fewer jobs and surplus of staff in job market, high unemployment rate, long working hours, over-time, low wages and

restructuring have become common. Disability complicates the interrelationships between people and work (Power, 2000). The success of individuals with disabilities in gaining meaningful, financially sufficient employment and maintaining independence in the community remains a problem (Luftig & Muthert, 2005). And disability is often related to both unemployment and poverty (Szymanski & Parker, 2003). Chronic unemployment has been a bane to people with disabilities. Some studies found that a majority (75%) of people with mild disabilities was unemployed as long as three years after their graduation from high school (Frank & Singleton, 2000).

In America, the Americans with Disabilities Act was designed to facilitate participation of people with disabilities in the labor market. Social Security Disability Insurance (SSDI) program is also available to support their life living. In United Kingdom, Disability Discrimination Act (DDA) was passed in 1995 to end the discrimination faced by people with disabilities. It protects disabled persons in employment and education (Disability Rights Commission, 1996). While in Hong Kong, the situation is similar to that of the foreign countries. The Disability Discrimination Ordinance (Disability Discrimination Ordinance, Cap. 487, 1996) was implemented by the Equal Opportunities Commission in 1996. The codes of Practice on Employment are issued to help employers and employees to understand their responsibilities under the ordinances and to provide practical guidelines for preventing discrimination and unlawful acts in the workplaces towards people with disabilities. The Interactive Selective Placement Service has recently been launched by the Selective Placement Division of the Labor Department. It provides employers

and disabled job seekers, including people with mental handicap, with useful employment information. On one hand, this service helps employers in placing vacancy orders, searching for suitable disabled job seekers and asking for interview arrangements. On the other hand, it helps disabled job seekers in viewing the latest vacancy information. Placement officers also provide vocational guidance and assessment to assist them in finding jobs that best suit their abilities in the open market. After matching the requirements of the job vacancies against the work abilities of the job seekers, placement officers will conduct job-matching and refer suitable job seekers to employers for job interviews. Follow-up service will be further provided for at least three months to ensure a harmonious relationship between employers and employees (Labor Department, 2005). In summary, labor market participation of people with disabilities is a complex phenomenon because it is influenced by trends in the labor market, structure of work, transfer payments, rights-related legislation and regulations (Szymanski & Parker, 2003).

Vocational placement is a major and prominent goal in most rehabilitation programs. Employment is viewed as a crucial means of enabling people with disabilities to achieve productive life (Bolton, 2001). The pursuit of meaningful work is increasingly a goal for people with mental disability (Moxley & Finch, 2003). Through work, people with MH are not only able to meet their financial needs but also gain a greater sense of dignity and feeling of self-worth (Bolton, 2001). They can obtain daily structure and also develop a network of interpersonal contacts. Involvement in work can help combat negative symptoms by providing a constructive alternative to a passive lifestyle. It also facilitates a higher self esteem

and perceived quality of life (Bond, Drake, & Becker, 1998).

There are various factors, i.e. environmental and individual factors, that influence the employment of people with mental handicap. The environmental factors include general economic climate, attitudes of both employers and rehabilitation professionals towards people with MH, and effectiveness of vocational rehabilitation organizations in job placement and training (Salzberg, Agran & Lignugaris, 1986). Some studies found that poor socio-economic conditions in childhood can increase the risk of unemployment in young adulthood because family background in terms of social resources can affect children's level of achievement and young adults' educational career (Montgomery, Bartley, Cook & Wadsworth, 1996; Kivinen & Rinne, 1996) as well as teenage aspirations for adult occupational attainment (Schoon & Parsons, 2002; Ek, Sovio, Remes & Jarvelin, 2005). Having the knowledge of environment's impact is important in understanding people with mental retardation, environmental factors is currently more recognized in addressing the needs of people with MR (Pledger, 2003; Luckasson, 2002). The individual factors include how vocationally competent the worker is. Vocational competence is related to job responsibility, task-production competence, and social vocational competence. Job responsibility refers to behaviors that manifest job commitment, such as punctuality (Wehman, 1981). Task-production competence refers to accuracy and expected rates for production of work tasks and meeting company standard. Social vocational competence indicates the adequacy of an individual's interactions with co-workers and supervisors (Rusch, Schutz & Agran, 1982).

Another study showed that employee performance is the main factor for

successful job placements (Chiocchio & Frigon, 2005). Previous studies also found that IQ score and age were related to employment of people with MR (Cimera, 1998; McDermott, Martin & Butkus, 1999; Moran, McDermott & Butkus, 2001). Other studies found that matching interests and abilities to jobs of people with MR rather than focusing on deficits in intelligence or behavior can reduce problems in job retention (Pierce, McDermott & Butkus, 2003). Roe and Ester (1999) pointed out that work values play an important role in work-related outcomes such as job satisfaction, motivation, organizational commitment, and work performance. Work values are the crucial predictors in determining the fitness between the individual and the employment organization because people will be eager to work in the organization if their values are congruent with those emphasized in the organization. People will be more committed, satisfied, motivated and happier when working in line with their values. In the vice versa, the organizations also want to hire individuals with compatible values (Judge & Bretz, 1992).

Besides the deficits in intellectual functioning, it is common for people with mental handicap manifest problems in adaptive functioning, such as problems in the work environment, as well as social and interpersonal situations. Adaptive skill in the workplace is crucial in understanding vocational behavior (Cronshaw & Jethmalani, 2005). Adaptive skill is the competencies that enable people to manage themselves to the demands of conformity and changing environment. Adaptive skills are acquired in the course of life experience (Fine & Cronshaw, 1999). For instance, behavioral and emotional challenges of persons with mental retardation present barriers to vocational adjustment and community living (Gardner, Watson & Nania,

2004). Studies found out that the rate of behavioral problems in teenagers with MR was 40-50% greater than their more able peers (McCarthy, 2005). Emotional problems are often considered as barriers to both competitive and non-competitive employment (Pierce, McDermott & Butkus, 2003). Previous studies indicated that the mal-adaptive functioning was partly attributable to their lowered cognitive skills such as poor abstract thinking, memory, and explicit learning ability. This is particularly obvious if the task demands exceed their own abilities (Bramston, 2000). For instance, they may experience difficulties in understanding multiple and delayed instructions. As a result, they may fail to follow instructions and hence not able to perform tasks as required. Some studies indicated that the best predictor for behavioral problems is level of functioning. The less able the individual with MR, the more at risk they are having behavioral problems (Chadwick et al., 2000). Other overt behavioral difficulties include verbal and physical aggression, excessive disruptive activity levels, sexually inappropriate acts, impulsive agitated or disruptive episodes, ritualistic or compulsive routines, property damage or destruction, excessive negativism, and acts of self-injury (Gardner, Watson & Nania, 2004). People with MH may also manifest other psychological difficulties such as excessive fears, specific phobias, dysphoric mood, excessive anger, excessive shyness, poor self-esteem and related avoidance of activities requiring close social contacts, specific and generalized anxiety, as well as general irritability (Matson & Sevin, 1994; Prout & Strohmer, 1998). Increased rates of psychiatric disorders and behavioral problems may be linked to factors in family environment, such as marital difficulties, parental mental health, family adjustment to the individual and child

management practice (Emerson, 2003; Gath & Gumley, 1986).

Holden et al. (2003) in a recent study suggested that the manifestation of challenging behaviors probably played a pivotal role in determining successfulness of vocational placement in people with mental handicap. Challenging behavior refers to the culturally abnormal behavior that the physical safety of the person or others is likely to be damaged, or the behavior seriously limits the use of ordinary community facilities (Emerson, 2001). These behaviors can be in the form of aggression towards others, screaming, non-compliance, self-injurious behaviors, destruction of property, inappropriate communication, eating inedible objects as well as inappropriate social and sexual conduct (Holden & Gitlesen, 2003; Hastings, 1997). Emerson et al. (2001) reported that about 15% of the people with mental handicap had challenging behaviors. Results of these studies further speculated that challenging behaviors interfered individual's healthy adjustment to the environment (Emerson, 2001; Harris, 1993; Holden & Gitlesen, 2003). In a work setting, these behaviors can be perceived as dangerous to the individual, co-workers and supervisors. More importantly, they are less acceptable by the public (Holden & Gitlesen, 2003; Hastings, 1997). Holden's study (2003) also found out that there was an association between challenging behavior and psychiatric symptoms, especially anxiety and psychosis (Pyles et al., 1997; Holden & Gitlesen, 2003). Moss et al. (2000) revealed that depressive mood was most correlated with challenging behavior, whereas anxiety was likely to correlate with self-injurious behavior. Psychiatric symptoms tended to be more prevalent in persons with mild and moderate grades of MR than persons with severe and profound grades. As a result, unstable mental

condition can have a negative impact on adjustment to work environment, and henceforth enter into a competitive job placement. The assessment on challenging behavior and emotional stability of the people with mental handicap would be useful for predicting the successfulness and types of vocational placement (Holden & Gitlesen, 2003).

Vocational Evaluation System for People with Mental Handicap

Evaluation on the abilities of people with mental handicap provides important information on the goals of the vocational rehabilitation, job placement options, and prediction of adjustments at work setting. Apart from individual's abilities, vocational evaluation should cover the person (or worker) and environment (or work setting) interactions (Power, 2000). It is because a high level of interest alone is not sufficient for success in a given career, but a person with both interest and abilities suitable for a given occupation will be more likely to do well and to be satisfied with that occupation (Dawis, 1996).

In the past, vocational evaluations developed for people with mental handicap were administered by the staff who usually did not possess suitable assessment skills, knowledge and experience. Their limited knowledge on vocational evaluation might lead to problems in selecting suitable assessment instruments, administrating the tests or interpreting the test results (Power, 2000). In view of this, assessment devices and resources have grown substantially in numbers and types in recent years. According to a review conducted by Murphy, Plake, Impara, and Spies (2002), there were a total of 2,780 standardized tests and inventories available through commercial publishers. Goldman and Mitchell (2002) also reported another

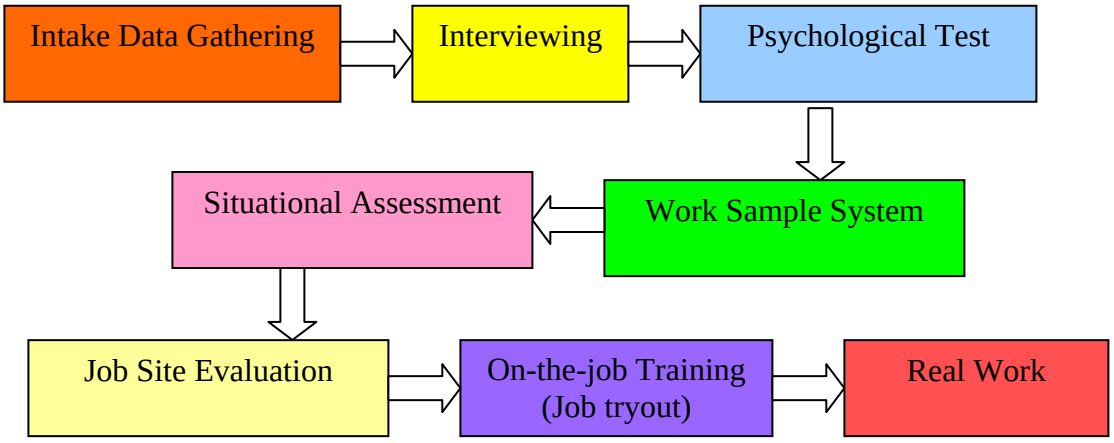
10,209 instruments which are not commercially available. This indicates that more and more skills and knowledge on vocational evaluation have been developed since 1980.

The conventional vocational evaluation methods are interviewing, psychometric testing, work sample, situational assessment, job site evaluation and job try-out (Lassiter, 1983; Power, 2000; Fouad and Tang, 2001). Computerized career development programs are also common nowadays. Testing, Orienting, and Work Evaluation in Rehabilitation (TOWER) is one of the examples of this type. The details of each vocational evaluation method will be described in the followings.

Figure 2.4 illustrates a model of vocational evaluation process (Power, 2000). The process begins with diagnostic interviewing and counseling sessions to gather background information and past history of the individual. Afterwards, psychological tests are used to identify academic ability and explore interests. Then specific work samples are conducted to explore wider range of occupations and functional skills. Thereafter, situational assessment is administered for identifying work personality characteristics that promote or hinder success. Job site evaluation is carried out in order to evaluate specific ability on particular jobs. Finally, job tryout is used to assess work performance in an actual work setting.

Figure 2.4

Vocational evaluation process



Interview

Interview is defined as a conversation between a counselor and a client with a mutually accepted purpose (Power, 2000). Interviewing refers to obtaining and sharing information with the individual. It provides a rich source of self-reported information and an opportunity to observe the individual. It can also provide useful information related to the planning of vocational rehabilitation program for people with mental handicap. It is probably the most widely used of all assessment methods (Berven, 2004).

Interview can be carried out by means of contextual interview or personal interview. It involves initial, post task and exit interviewing. Observations can include interpersonal skills, thinking process, affect, and deficits in memory etc (Berven, 2004). Four communicative skills, namely attending, observing, listening and responding, are usually applied in an interview so as to maintain a fruitful and productive interaction of both parties during the interview. In order to create a

climate with mutual understanding, open-ended and indirect questions are used to encourage the expression of ideas and obtain specific information from the client (Cohen, 2003). But it is not restricted to prespecified questions and directions of inquiry (Berven, 2004). Family background should be a focus during the interview as client's family will cost the most significant influences on the client. Exploring client's interpersonal relationship with family members can indicate the family support or obstacles to one's future vocational rehabilitation, and the achievement of rehabilitation goals (Power, 2000).

However, there are many potential errors in information obtained through interviews (Berven, 2001; Kaplan & Saccuzzo, 1997). These include subjectivity in interpretation of statements and observations during the interview, varied interviewing skills and clinical judgment among different practitioners, intentional or unintentional distortions in information reported by the individual, assessors' manner in asking questions may influence the responses obtained, the relationship established between the individual and the assessor may influence openness in responding. Observations made during interviews may be situation-specific and difficult to generalize to other situations that may affect the predictions on the individual's behaviors. In addition, the information and observations obtained via interviews were highly inconsistent, and may not particularly useful in making good inferences and prediction of future behaviors. In view of this, the reliability and validity of interview assessments were poor when compared with standardized assessments.

Psychological Test

In general, psychological test aims at gathering information on client's psychological aspects that will enhance one's efficient and effective rehabilitation (Power, 2000). Psychological test, or another term called psychometric test, includes verbal (reading), nonverbal (non-reading), and performance assessments via standardized psychometric instruments. A good psychological assessment depends on the selection of a suitable instrument. Psychological tests are clustered into four types. They are intelligent test (general mental ability tests) such as Wechsler Adult Intelligence Scale (WAIS) and Stanford-Binet (SB); general ability and vocationally relevant aptitude tests related to clerical, mechanical and manual dexterity such as Vocational Capacity Scale (VSC) and the General Aptitude Test Battery (GATB); occupational interest inventories such as Vocational Interest and Sophistication Assessment (VISA); and personality tests, such as Minnesota Multiphasic Personality Inventory (MMPI). Intelligence tests can be carried out in group or individual format. Typical group tests measure quantitative, numerical, qualitative, spatial-perceptual ability and aptitude. However, it is difficult to assess motivation, health, attentiveness and other factors in group situation in which these factors are found to be important in giving information on vocational potential. Interest is related to job tenure and job stability (Lassiter, 1983; Power, 2000). Aptitude tests may measure a host of aptitudes associated with numerous jobs or measure aptitudes only related to specific vocations. A successful worker is the one who is interested in his job and also has aptitude that enables him to perform successfully on the job.

However, personality characteristics may outweigh one's aptitude level and it is questionable whether the aptitude test is actually a predictor of success on a particular job (Lassiter, 1983; Power, 2000). Interest test is used to predict job satisfaction and vocational preference. Interests related to working conditions, such as inside versus outside, sedentary versus active, innovation and adaptation versus repetition, are more significant than pinpointing interests to specific job. But most of the interest tests are of little utility for people with disability, such as people with motor and coordination problems as well as people with MH. It is because some interest tests use pictures as major content, however, it is uneasy for the clients to understand the meaning of the pictures if they are unclear and unfamiliar (Lassiter, 1983; Power, 2000). Personality test is useful in understanding personality dynamics such as leadership-followship styles, assertiveness, cooperativeness, prestige needs (Lassiter, 1983; Power, 2000), extroversion-introversion, dominance, altruism, sociability, self-control, anxiety and emotional stability (Tziner, 1990). The outcomes of psychological tests can be categorized into three different aspects, namely 1) cognitive ability outcomes which comprise learning ability, problem solving, logical thinking and spatial abilities; 2) motor and physical ability outcomes which comprise sensory-perceptual and psychomotor reactions such as finger dexterity and quickness of reaction response; 3) affective attributes outcomes which comprise personality traits, motives, needs and occupational interests (Tziner, 1990).

There are drawbacks in using psychological tests. Psychological test result may not always give a true picture of the client. It is especially ineffective in evaluating work potential of certain disabled population, such as people with physical disability,

mental handicap and emotionally disturbed. It is because most of the psychological tests require verbal and comprehensive skills. Persons with low or non-verbal skills may have poor results in the standardized assessment. Also, most psychological tests demand certain academic achievement in reading and writing. People with educational deficiency may have lower result in the test. Furthermore, the tests request good intellectual functioning skills. It has basic assumption that the client can understand, comprehend and follow instructions with little demonstration. These may further be a disadvantage to people with mental handicap (Lassiter, 1983) as they may do poorly on these standardized tests due to their inability to understand and follow directions. Despite vocational interest or aptitude test provide information on inclination and job inspiration, it may not be particularly useful to people with mental handicap since their options on job are usually limited by their comparatively low physical and/or mental abilities. During the psychological testing, persons with MH are passive and do not have much opportunity for self-exploration. The internal factors of a client, such as motivation, anxiety, frustration, attentiveness and concentration on the tasks, are not easy to control when performing the tests. Nevertheless, psychological tests do not yield an absolute score. It emphasizes on a norm group comparison appraisal. A person's performance is reference by normative data (Tziner, 1990). Therefore, a large representative sample is required in order to have norm comparison. People with mental handicap are often not within the standardized norm groups. Therefore, this group of population always performs poorly on the percentiles and standard scores of the psychological test (Lassiter, 1983).

Work Sample

Work sample system is defined as a well-defined work activity involving tasks, materials, and tools that are identical or similar to those in an actual job or cluster of jobs. Work sample is used to assess a person's vocational aptitude, work characteristics and vocational interest (Power, 2000). It is a direct, one-to-one correspondence with that job or cluster (Dowd, 1993). It can predict an individual's future job performance and also his performance on a given job or group of jobs by generalizing from the measured performance of a representative sample of work from that job. Work performance and behavioral observation is obtained on simulated samples of the job. Work sample is a common and frequently used vocational evaluation techniques and is widely used in rehabilitation counseling practice. It represents the most popular vocational assessment strategy in use today (Menchetti, Rusch, & Owens, 1983; Berven, 2004). It can be classified into: actual/ applied job samples, simulated work samples, single trait work samples, and cluster trait work samples (Lassiter, 1983). Actual/ applied job sample is taken from an occupational setting. The machines, equipment, tools, work aids and materials used in the work sample are the same as those used on the job (Costello, 1991).

Simulated work sample is a representation of the common critical factors of a given occupation. It is more general than applied job sample because it relates to occupational traits rather than specific job requirement. Single trait work sample assesses a single worker trait and its characteristic. It evaluates a single, isolated factor, such as intelligence, spatial aptitude and finger dexterity. Cluster trait work sample contains a number of traits that are related to a job or jobs. It is used to assess

one's potential in performing various jobs (Lassiter, 1983; Power, 2000). Many commercial work sample systems utilize this approach.

The well-known examples are the Philadelphia's Jewish Employment and Vocational Service (JEVS), which include the Vocational Interest, Temperament, and Aptitude System (VITAS) that consists of 22 work samples such as crafts and production work, the APTICOM computerized career assessment system delivers a multiple aptitude battery, interest inventory and educational skill battery, the Valpar Commercial Component Work Sample System (VCWS) is also a pronounced example of work sample. It offers 22 types of component work samples such as small tools (mechanical) (VCWS 1), size discrimination (VCWS 2), whole body range of motion (VCWS 9) and so on. McCarron-Dial System (MDS) is also one of the work sample systems. It consists of nine separate instruments that assess three neuropsychological factors. There is a computer assessment program that can interprets the MDS assessment data and generate consultation report for rehabilitation purpose. It provides predictive information regarding work potential for people with mental handicap (McCarron & Dial, 1986). In this study, MDS is used and it will be further illustrated in the later section.

There are many advantages in using work sample. First, it can reduce the cultural, educational and language barriers of one's vocational potential. Persons who perform poorly on psychological tests can be effectively evaluated by work sample evaluation (Wright, 1980). It is because it reflects the face validity of the client. And it emphasizes psychomotor ability and skills, instead of verbal ability (Power, 2000). The client is performing a work task, rather than taking a test only.

Besides, work sample is more interesting, non-threatening and funny. It is the closest approximation of real job and client's performance is very similar to that required in actual work setting. It can also provide experience to a wide range of occupations. Other than assessing skills, assets and limitations, work sample evaluation helps to assess one's personality, interests, motivation, self concept, interpersonal relationship, initiation, concentration, attention span, stamina, ability to follow instructions, emotional maturity and attitudes toward that particular job (Lassiter, 1983). Through work sample evaluation, client can understand and relate work related tasks more easily than abstracted tasks.

However, one of the problems with work sample is often limited reliability and validity information. However, the MDS used in the present study was reported with good evidence based research background. Its high reliability and validity is most extensively documented. Another problem of a standardized work sample assessment is the huge cost of commercial work samples. The advantage of MDS is that the work evaluation can either be done in comprehensive version or abbreviated version such that the cost of purchasing the equipment is flexible enough to suit the practitioner's budget and choice. In other words, the major two problems that occur in work samples are not happened to the MDS. Therefore, the MDS is chosen as the chief vocational evaluation instrument in the present study.

Situational Assessment

According to Bolton (2001), the term "situational assessment" is often used interchangeably with "job tryout", "on-the-job evaluation" and "job site evaluation". Situational assessment refers to the systematic observation of individuals in a

simulated work setting. It aims at predicting future work performance and behavior in work related situation. It puts major emphasis on behavioral data. In contrast to work samples that involve only simulation of tasks in a particular occupation or cluster of occupations, situational assessment involves simulation of the entire work environments (Berven, 2004). Some of the key employment factors are measured in situational assessment, such as attendance, punctuality, appropriateness of dressing, grooming, production level, quality of work, on-task and off-task behaviors. Situational assessment usually takes over an extended period of time. The client must function in a team with other workers, follow a set of production, quality, behaviors and schedules of work. Therefore, the work adjustment process of the individual can also be assessed. If the assessment occurs in the community, on-the-job evaluation may be used (Bolton, 2001). For example, work environments have been simulated in sheltered employment settings so that work behaviors and employment potential can be assessed in order to target for intervention and to facilitate employability (Berven, 2004).

The advantage of situational assessment is that it is realistic and possible to evaluate in actual physical, social and emotional settings. Situational assessment method is appropriate for people with severe disability which involves observing workers in real or simulated work settings (Lassiter, 1983). An integrated work setting means that the work is real and the individual may have a chance to be hired (Fewell, 1988). It also gives more time, job reinforcement and job focus on the client. Moreover, the clients can learn more about themselves and be evaluated by direct contact with things, data and people in the actual work place. Thus, the assessment

can increase self-awareness of strengths and limitations (Fewell, 1988). In addition, there is less concern with validity and reliability. It is because an individual who can do the job is indicated by his/ her ability in performing the job that can satisfy the employer.

But a major disadvantage and criticism of situational assessment is that it is difficult to determine whether the client's performance is good, average or bad and the reasons for such performance in a certain period of time. Except an in-depth interview is arranged to identify what and why some significant issues happen, the evaluator cannot know clearly about how well they are doing over a period of time. However, interview usually is less fruitful with less verbal and cognitive skill people, such as people with mental handicap. Another problem is that the time and money spent in situational assessment is not so cost effective. Person-centered situational assessment mostly required 40 hours on the job contact with the client for a period of two weeks. And it may involve insurance, wage and scheduling issues (Abrams et al., 1994). In addition, the validity of such kind of assessments is questionable because of the diversity from real work environment and the clients may encounter different impacts every time that the behaviors observed may be difficult to generalize (Berven, 2004).

Job Site Evaluation and Job Try-out

Job site evaluation refers to an evaluation conducted in actual competitive job setting rather than in rehabilitation setting. It frequently includes supervision in assessment of actual job duties. It is based on the assumption that vocational rehabilitation incorporates a learning potential and training format so as to assist

client to develop their work strengths and remediate work deficits in an employment environment (Power, 2000). It involves a correspondence between the constructs of occupational information sets and client information sets. The former information sets can be obtained by job analysis with the use of the Dictionary of Occupational Titles. The latter information sets can be obtained by evaluating the client's vocational skills, aptitudes, interests and characteristics in the actual work setting. The evaluation is often performed by the employer of the setting concerned.

Job try-out is most closely aligned with placement function of the rehabilitation settings (Lassiter, 1983; Power, 2000). The client can experience the job demand and specific tasks in the job while the employer can evaluate the client's performance, skills and aptitudes against performance standards as new employees. Normally the evaluation period ranges from three days to two months or above. The client may participate in more than one job tryout to cater for occupational information needs. Observations of individual functioning in real work can be viewed as the most definitive of all assessment approaches in determining work potential, skills, and behaviors related to functioning in that specific environment or other similar environments (Berven, 2004).

At present, it seems that ecological assessment, which emphasizes on observation of individual in real environments, has been advocated as a preferred method of vocational assessment for people with severe disabilities (Browder, 1991; Parker & Schaller, 1996; Parker, Szymanski, & Hanley-Maxwell, 1989). In assessing the congruence between the individual and the environment, discrepancies between environmental demands and individual's capacities, skills and other personal

characteristics can be resolved (Berven, 2004). However, the opportunity in using such kind of job tryouts is greatly relied on current local labour market and how good it is for the practitioners in developing their real work environment network as well as locating potential real work environments for carrying out the assessments. It is also time consuming and not cost-effective to observe for a long period of time before interpretation and synthesis of information.

Apart from assessing the person's performance on the assigned tasks, it is common for the evaluation to cover a wide range of job-related factors such as motivation, self-concepts, interpersonal relationships, initiation, ability to accept criticism, emotional maturity, and physical as well as mental capabilities (Wright, 1980). In addition, vocational interest and value inventories are useful in exploring client's choice in selecting their potential occupations (Fouad and Tang, 2001).

Among different evaluation approaches, it seems that the assessment carried out under a real work situation be the most preferential because of its high naturalistic validity. However, this approach is mostly difficult and impractical to be conducted. It is necessary to have good communication between the assessor and employer in real work assessment to ensure that other employees' work not being disturbed and that the employer understands the usage of the assessment. In addition, the worker being assessed needs to work as usual to ensure that the quality of work not being affected by the assessment. Another approach which retains a certain extent of naturalistic validity is assessment carried out under simulate work situations.

Vocational Assessment Models for People with Mental Handicap

Theory plays a significant role in vocational assessment. It can identify the domain of relevant behavior and specify the constructs to vocational decision making (Fitzgerald & Betz, 1994). But only a few vocational tests are based on a particular theory. Theory-based test development involves selecting items that their content is highly related to the theoretical construct measured by the test. McCarron-Dial System (MDS) is a good example of a theory-based vocational assessment system. It is based on a neuropsychological model which incorporates traditional views of brain function, as well as the concepts of A.R.Luria (1970). A multi-factor approach to data gathering was essential in evaluation of higher cortical functions (McCarron & Dial, 1986). Details of the theory related to MDS and its construct will be discussed later.

The study of career development is ever increasing in recent decades (Lent & Hackett, 1994; Fitzgerald & Betz, 1994; Vondracek & Fouad, 1994; Brown & Brooks, 1996a, 1996b). It is important to understand how the concepts of career development theories can help us in planning vocational assessment, vocational intervention and post evaluation. These useful concepts include individual's decision-making ability, self-concept, gender, psychosocial factors and environmental influences (Power & Hershenson, 2001). Career development or vocational guidance was first developed by Frank Parsons. He stressed on three-step process in choosing a vocation. The first step was gaining information about the client. The second step was gaining information about the world of work. The third step was matching these two for an appropriate occupation of that client. Later, some

(Ginzberg et al., 1951) proposed that occupational choice was a developmental process instead of a one-time event. Super (1957) suggested that career development was a complicated and lifelong process. Career development theories were based on normal developmental process. However, these concepts of career development and career choice are not easily applicable and may not be relevant to people with disabilities because of the following reasons: 1) they have disability-related functional limitations, which is different from general healthy population; 2) their options and experiences are often very restricted and stressful when compare to the general non-disabled population, they may have negative effect on decision-making ability; 3) they may have poor self-concept and ambivalence about the world of work if they are frequently exposed to negative societal attitudes towards disability 4) they have limited access to occupational information and trial work experience if they do not approach the support of employment service. This, in turn, affect their realistic aspirations; 5) they mostly have prolonged periods of medical treatment that throw social and career development out of schedule (Bolton, 2001). Therefore, in 1960s, theories of work adjustment emerged (Lofquist & Dawis, 1969; Hershenson, 1974, 1981), a job-specific, person-environment matching and developmental approach was adopted to explain vocational behavior of people with disability.

Currently, several theoretical approaches related to career development are applicable to people with disabilities. The most common and well-known theories are: 1) person-environment interaction theories; 2) Holland's (1985) theory; 3) Super's (1990) theory; 4) Krumboltz's social learning theory (Mitchell & Krumboltz, 1990); 5) sociocognitive approach (Lent & Hackett, 1994); 6) developmental

contextualism (Vondracek, Lerner & Schulenberg, 1986); and 7) other selected additional counseling-related career theories.

Person-environment interaction theories dated back from models of vocational counseling. It is now referred to “trait and factor models” which indicate the matching between individual traits and environmental factors (Hackett & Lent, 1992). One of the examples is the Minnesota Theory of Work Adjustment (MTWA) (Lofquist & Dawis, 1969, 1991, 2002; Dawis, 1996; Tinsley, 1993) specially designed to people with disabilities. According to MTWA, work adjustment is a dynamic process that persons attain and preserve correspondence with their work environments. Stronger person-environment correspondence leads to increased tenure, which is the chief outcome of work adjustment. More specifically, tenure depends on both individuals’ satisfaction with the environment and their satisfactoriness in meeting environmental demands (Hackett & Lent, 1992). Good matches of individual traits and job requirements are predictors of job success and satisfaction (Brown, 1990b). And that a variety of traits, such as personality, vocational interests, work values and cognitive abilities, are predictive of work behaviors (Rounds & Tracey, 1990). Evaluating these traits and comparing their correspondence with potential environments facilitates vocational counselors in making more accurate predictions on an individual’s probable satisfaction. Based on a review of career development theories and work adjustment theories, Szymanski and colleagues derived in 1996 a five-factor conceptual model applicable to career development and work adjustment of people with disabilities (Bolton, 2001). The five factors are: 1) individual’s factors, including both physical and psychological

attributes of the person such as gender, race, work skills, limitations, values, needs and interests; 2) contextual factors, including individual's external situation such as education level, socioeconomic status, family and chance factors; 3) mediating factors, including individual, societal, and environmental factors affecting the relationship of persons and environment, such as habits, behavioral patterns, culture, adjustment to disability and career maturity; 4) work environmental factors, such as skill requirements, behavioral expectations, rewards and opportunities of the work setting; 5) outcome factors, referring to satisfaction, tenure and productivity (Bolton, 2001).

Hershenson (1996a, 1996b) revised Szymanski's developmental model of work adjustment into a system format. It involves a sequential interactive and dynamic development of three subsystems, namely work personality, work competencies and work goals. Work adjustment is the sum of three components: work role behavior (i.e. whether one acts appropriately to his position at work), task performance (i.e. quality and quantity of one's work output) and worker satisfaction (i.e. gratification resulting from one's work). Each involves interaction between one of the subsystems within the person and the element of work environment. And the three components are affected by the intervening environments such as family, school, peer group and living environments (Power & Hershenson, 2001).

Holland's theory is another person-environment fit theory added with developmental elements. It has assumed that both people and the environments in which they live and work can be characterized by six personality types and model environments, i.e. realistic, investigative, artistic, social, enterprising and

conventional. By pairing up persons and environments, outcomes such as vocational choice, vocational stability and achievement, personal competence, social behaviors and susceptibility to influence can be predicted (Holland, 1997).

Donald Super's "Life-span, life-space" theory (1994) contains many elements of the person-environment theories, and adopts a developmental approach. He pointed out 14 important propositions applicable to people with disabilities. Some propositions suggested that people differ in their abilities and personalities, needs, values, interests, traits and self concepts. People are qualified to have a number of occupations. In each occupation, it requires a characteristic pattern of ability and personality traits. Vocational preference, competencies and self-concept will change over time and experience. This process of change can be summed up as life stages. The nature of career pattern is determined by socioeconomic level, mental ability, education, skills and personality characteristics. The primary emphasis is on the individual's unique motivations and needs, rather than the environment. Krumboltz's social learning theory (Mitchell & Krumboltz, 1990, 1996) pointed out four factors influencing individual career decision-making. They are genetic endowment and special abilities, environmental conditions, learning experiences and task approach skills. The focus of the theory is on environment rather than on individual. The environment shapes the behavior of individuals through learning experiences.

Another class of approach is the social cognitive career theory developed by Lent and Hackett (1994). Self-efficacy is the focus on the theory and is one of the factors to career development and performance outcome.

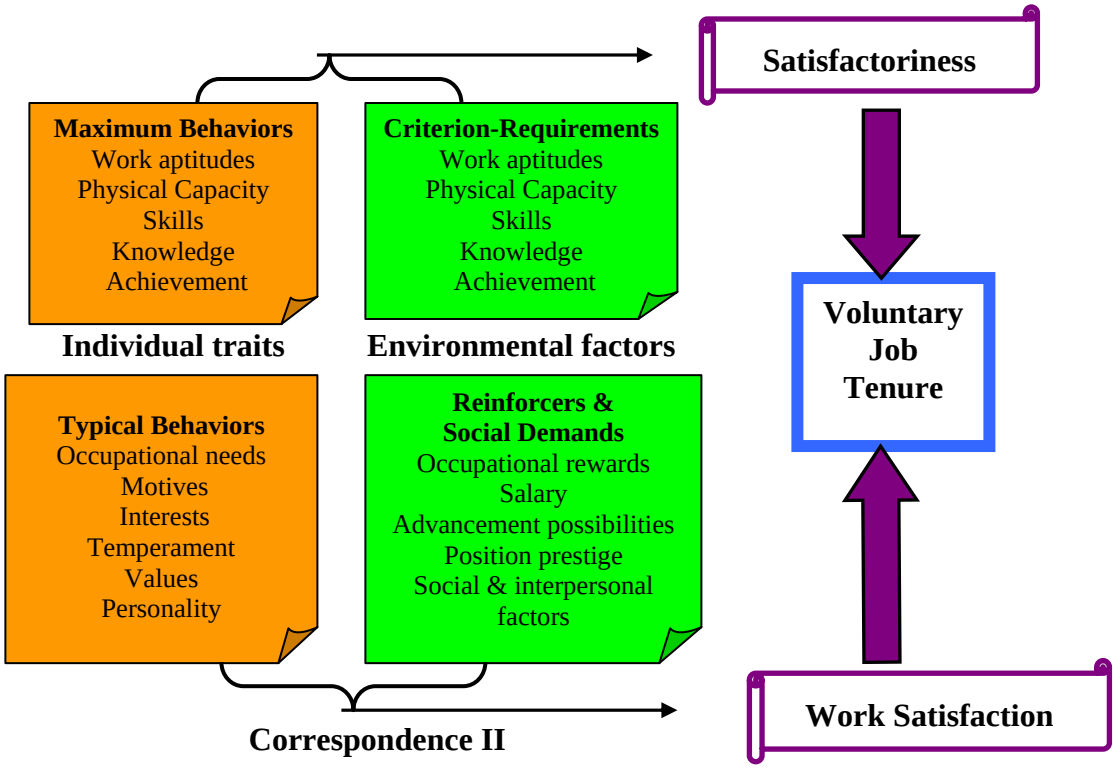
Work Adjustment for People with Mental Handicap

To a certain extent, it is necessary to make reasonable adjustments both for people with MH and their employers to engage into work. Previous studies applied a Person-Environment Fit (P-E Fit) framework in the field of MH to obtain more understanding on job tenure and satisfaction (Melchiori & Church, 1997). Environment integration of people with MH is based on the premise that its success depends on an optimal fit between a person and his/ her work environment (Fortin & Carrier, 2000; McDermott, Martin & Butkuss, 1999). Dawis & Lofquist's (1984) Theory of Work Adjustment (TWA) is one of the frameworks of P-E Fit. Work adjustment means the notion of interaction and reciprocity between individuals and their work environments. It is a continuous and dynamic process by which the individual seeks to achieve and maintain correspondence with the work environment (Lofquist & Dawis, 1969, 1991; Dawis & Lofquist, 1984). The TWA posits that individual attributes can be clustered into two categories: performance relevant capacities, such as an individual's aptitude, skills, knowledge and personality traits are related and relevant to the demands of the job; and also the needs and motives of the employees commensurate with reinforcers available in the organization to satisfy them. The central concept of the TWA is the notion of correspondence between the individual and the work environment. Correspondence means a harmonious relationship between an individual and his work environment which indicating that an individual is suitable to the work environment and in the vice versa. In order to achieve this correspondence, the individual's skills, knowledge, abilities, and personality traits should fulfil the requirements of the job and the organizational

environment (Correspondence I). Also, the job and organizational environment should satisfy the employee's work-related needs (Correspondence II) (Tziner, 1990). In other words, employee satisfaction (ES) and flexibility of work environment moderate the functional relationship between satisfaction in work environment (WS) and correspondence between job requirement and employee's abilities (Dawis & Lofquist, 1984). Figure 2.5 shows the interrelationships of the TWA Components.

Figure 2.5

The interrelationships of the components of TWA (Tziner, 1990; Maki & Riggar, 2004)



From the figure, Correspondence I is a match between a person's abilities and the ability requirements of a work environment. It has been assumed to incur satisfactoriness, denoting the extent to which an individual employee fulfils job, organizational requirements and expectations, and that he is able to perform the job.

Correspondence II is a match between the person's needs and the reinforcer systems of the work environment. It has been postulated to lead to work satisfaction, denoting the degree to which the individual experiences fulfilment of work-related needs. Both work satisfaction and satisfactoriness are essential to the individual employee so as to develop work adjustment and that finally the individual employee choose voluntarily to stay with his or her work organization and maintain the job tenure. It is a transactional approach seeking correspondence between an individual's maximum and typical behaviours with the criterion-requirements of job demands and reinforcers present in the environment. Both employee and work environment are engaged in the dynamic process of work adjustment and contribute simultaneously to maintain correspondence. High satisfaction leads to high correspondence and that a long correspondence results in long job tenure. On the opposite, a small correspondence fosters high turnover (Lofquist & Dawis, 1991). Discorrespondence happens when there exists a lack of person-environment fit. There is flexibility in terms of a threshold beyond individuals who feel dissatisfied or employers who find workers unsatisfactory (Dawis & Lofquist, 1976; 1978; Lofquist & Dawis, 1991). The higher the threshold, the more flexible the individual tolerates the discorrespondence. In order to have adjustment for person-environment fit, active and reactive adjustment modes will be used as the indicator of change and initiative. Active modes represent efforts by individuals to change their environments so that correspondence is regained, such as individual's needs are being met by the environment or the environment's skill requirements are more in line with what an individual can offer. It is an internal locus of control. An

individual who exhibits an internal locus of control is more assertive in seeking information that will help him to take control of the situations (Maximovitch, 2002). Whereas for reactive modes, it indicates that individuals make changes to themselves, such as taking actions to modify their own personal needs so that it is more closely matched with the environment that can provide or individuals change their own skills so that it is better matched with the environmental requirements (Maximovitch, 2002). Reactive mode reflects an external locus of control and that the rewards are controlled by factors outside the individual's control such that he may not try to change his environments. It is suggested that individuals who adopted external locus of control are more susceptible to influence, more easily to suffer from psychological maladjustment in stressful life situations and having greater risk of occupational burnout (Maximovitch, 2002).

In the present study, the focus was put on the measurement of individual traits with the application of the MDS. Traits indicative of maximum performance describe a person's capacities and capabilities. These traits include physical capacity, cognitive ability, aptitudes and achievement, emotion and temperaments, and other indicators of ability. In evaluating these traits, more accurate predictions can be made regarding the satisfactoriness of a person's capacity to perform the essential functions and tasks required in particular employment (Maki & Riggar, 2004).

Examples of reasonable work adjustments that may be appropriate for employers include: providing equipment or altering working arrangements as workplace may aggravate the condition and contribute to the level of absence; providing training for employee because the employee's absences may be stress-

related due to the voluminous work or changing work practices; training may help the employee to manage their workload and time more effectively; reallocating, temporarily or permanently, some of the employee's duties to other staff, particularly duties or tasks that are urgent in nature or cannot wait until the employee returns to work; transferring the employee to a suitable alternative vacancy where the employee's unpredictable absences could be more easily accommodated; additional adjustments may still be required in the alternative job; making adjustments to premises; allocating some of the disabled person's duties to another person; transferring the person to fill an existing vacancy; altering the person's hours of working or training; assigning the person to a different place of work or training; allowing the person to be absent during working or training hours for rehabilitation, assessment or treatment; giving, or arranging for, training or mentoring (whether for the disabled person or any other person); acquiring or modifying equipment; modifying instructions or reference manuals; modifying procedures for testing or assessment; providing a reader or interpreter; providing supervision or other support (Disability Rights Commission, 1996).

The McCarron-Dial System (MDS)

The McCarron-Dial System (MDS) was introduced to the rehabilitation field in 1973 (McCarron & Dial, 1976; 1986). And it is generally regarded as one of the most extensively validated neuropsychological-based vocational evaluation systems in the United States rehabilitation field for clients with neuropsychological disabilities (Botterbusch, 1982). Being subsumed under the neuropsychological category, mental handicap can be evaluated by the MDS. It is hopeful that this

comprehensively validated vocational instrument could better predict the vocational placement of people with MH in Hong Kong.

The MDS was conceptualized from a neuropsychological perspective (McCarron & Dial, 1976) as well as Luria's Functional Systems Theory (Luria, 1970). It comprises a series of tests, in which each test, sub-test and behavioral rating scale is hypothesized to reflect one or more "higher cortical function", i.e. cognition, memory, language, perception, voluntary motor movement and affect. It consists of nine separate instruments in assessing three major constructs of neuropsychological factors: Verbal-Spatial-Cognitive (VSC), Sensori-Motor (SM), and Emotional-Coping (EC). Data from these factors are used to describe individual abilities, skills and aptitudes as well as to predict vocational placement levels as criteria.

The Verbal-Spatial-Cognitive (VSC) factor is defined as the individual ability to use language for communication, to process and retain verbal and spatial information, and to learn. This factor relates to the individual's ability to attend to, perceive, associate, store and to retrieve both verbal and spatial information. The VSC factor data contribute to the prediction of vocational competency and future learning in academic environments (McCarron & Dial, 1986). In this study, another substitute test is used other than Wechsler Scales WAIS) and Peabody Picture Vocabulary Test (PPVT). Test of Non-verbal Intelligence (TONI) is adopted in this study because it is more suitable for people with MH as it omit the part of verbal intelligence that can be an obvious deficit to them.

The Sensori-Motor (SM) factor is related to the basic mechanisms of

receiving and perceiving information from the environment and responding in a purposeful and adaptive manner. Adequate sensory functions are necessary for both cognitive development and motor function. In vocational evaluation, visual, auditory and haptic senses are emphasized. In this study, the Bender Visual Motor Gesltalt Test (BVMGT), the Haptic Visual Discrimination Test (HVDT) and the McCarron Assessment of Neuromuscular Development (MAND) are used to assess the sensori-motor factor. The BVMGT assesses individual's perceptual and motor integration skills. It is a pencil and paper test. An individual needs to copy a series of nine designs. Four types of errors will be scored. It includes distortions of figures, failure to integrate various elements into a unified whole, rotation of figure, and perseveration of figure. The accuracy of the reproductions is influenced by developmental age as well as pathological conditions of the central nervous system or severe emotional problems. The result of distortions may indicate individual's motor tremors or spasticity. Poor integration of figures may be associated with generalized brain dysfunction such as mental retardation and/ or correlated with disorganization in basic sensori-motor processing. The HVDT is another sensori-motor subtest of the MDS. The test measures the ability to integrate tactual and visual information. The ability to recognize objects by haptic manipulation primarily involves sensory, cutaneokinesthetic and visual processes. Tactile-visual discrimination and integration skills are possessed by parietal-occipital areas of the brain. Higher cortical functions involves in organization of bimodal sensory input and conceptualization related to performance of haptic-visual tasks in a synthesis and integration of particular elements into a unified whole. Therefore, haptic-visual

discrimination is partly a cognitive function and associated with intelligence (McCarron & Horn, 1979). The MAND is used to assess gross motor and fine motor functioning. Four factors of neuromuscular functions which directly related to development and vocational ability are persistent control, muscle power, kinesthetic integration and bimanual dexterity. Each factor is assessed by different sub-tests of the MAND. Persistent control involves the integration of perceptual skills with regulation of hand-arm movement. In the subtests of rod slide and finger-nose-finger, the tasks require controlled eye-hand coordination, the ability to focus attention while inhibiting extraneous motor movements and integration of proprioceptive feedback. In vocational setting, poor persistent control scores may indicate poor quality in work, tendencies to make frequent errors and increased risk of accidents. Muscle power is measured by hand strength and jumping subtests. It involves healthy functioning of skeletal muscles reflecting timing and coordination. Poor muscle power may interfere with tasks that require lifting, carrying, pushing and pulling. Kinesthetic integration involves the control of balance and orientation of the body in space. It is assessed by the subtests of heel-toe-walk and standing on one foot. Deficits in balance and gross motor coordination may interfere work tasks such as extended reaching, crawling and climbing etc. Bimanual dexterity indicates precise coordination. It is measured by beads on rod as well as nut and bolt subtests. The former subtest requires integration of visual information with fine motor coordination of both hands. The latter subtest requires the inhibition of movement in one hand while simultaneously manipulating the fingers and wrist of the preferred hand. Deficits in this area may interfere several types of work tasks which require

coordinated performance such as driving and operating machinery (McCarron & Dial, 1986).

The Emotional-Coping (EC) factor refers to the person's characteristic responses to stress, general personality development, emotional-behavioral functioning, adaptive behavior on activities of daily living, personal-social adjustment and work adjustment. Many people with MH have difficulties in interpreting social cues such as facial expressions, body language as well as showing appropriate responses to oral communications such as not understanding the punch line of a joke and making inappropriate comments. There are several subtests of the MDS measuring social-emotional factors which have been identified as significantly influencing vocational potential, they are the Observational emotional inventory-revised (OEI-R) and Emotional behavioral checklist (EBC). The former contains seven factors, namely frustration-impulsivity, anxiety, depression-withdrawal, socialization, self-concept, aggressiveness and reality disorientation. The OEI-R items are grouped together according to what the individual says, what the individual does and how the individual interacts with others (McCarron & Dial, 1986). The latter is the abbreviated version of the OEI-R. There are two integration-coping measures in the MDS, namely Behavior Rating Scales (BRS) and Street Survival Skills Questionnaire (SSSQ). The BRS includes items which relate to the individual's ability to function autonomously in the community and work environment. The SSSQ provides a measure of adaptive behavior in nine content areas, including basic concepts, functional signs, tool identification and use, domestic management, health, first aid and safety, public services, time, money and

measurement.

Table 2.3

MDS factors and Instruments for adults with neuropsychologically disability

Factor	Instrument
Verbal-Spatial-	Wechsler Adult intelligence Scale-Revised (WAIS-R)
Cognitive	Peabody Picture Vocabulary Test-Revised (PPVT-R)*
Sensori-Motor	Bender Visual Motor Gestalt Test (BVMGT)*
	Haptic Visual Discrimination Test (HVDT)*
	McCarron Assessment of Neuromuscular Development (MAND)*
Emotional-	Observational Emotional Inventory-Revised (OEI-R)
Coping	Emotional Behavioral Checklist (EBC)
	Street Survival Skills Questionnaire (SSSQ)
	Dial Behavior Rating Scale (BRS)

Note. * Abbreviated version of the MDS

Table 2.4

Test construct of each of the MDS sub-test

Instrument	Test Construct
WAIS-IV (Wechsler, 1955).	Verbal scale intelligence quotient (VIQ) • Information • Comprehension • Arithmetic • Similarities • Digit span • Vocabulary Performance scale intelligence quotient (PIQ) • Digit symbol • Picture completion • Block design • Picture arrangement

	• Object assembly Full scale intelligence quotient (FIQ)
PPVT-R (Dunn, 1965).	Measuring the ability to associate a vocalized word (a noun or a verb) with a pictorial representation of the word.
BVMGT (Bender, 1938).	Copying a series of nine designs • Distortions of figures • Failure to integrate various elements into a unified whole • Rotation of the figure or its parts • Perseveration of the figure or its parts
HVDT (McCarron & Dial, 1976).	Tactile discrimination on particular • Shape • Size • Texture • configuration (Spatial arrangements)
MAND (McCarron & Dial, 1976, 1986).	Fine motor scale • Beads in box • Beads on rod • Finger tapping • Nut and bolt • Rod slide Gross motor scale • Hand strength • Finger-nose-finger • Jumping • Heel-toe-walk • Standing on one foot Persistent control (Rod slide & Finger-nose-finger) Muscle power (Hand strength & Jumping) Kinesthetic integration (Heel-toe-walk & Standing on one foot) Bimanual dexterity (Beads on rod & Nut and bolt)
EBC (Dial, Mezger, Massey & McCarron, 1986).	A shorter form of OEI-R 7 factors as the same as OEI-R
SSSQ (Linkenhoker & McCarron, 1980).	A measure of adaptive behaviors in nine content areas • Basic concepts • Functional signs • Tool identification and use • Domestic management • Health, first aid and safety

	• Public services • Time • Money • Measurement
BRS (McCarron & Dial, 1973).	Assess personal, social and work adjustment behaviors of the individual.

The MDS is one of the most appropriate vocational evaluation systems for people with MH. It has a clear statement of purpose, reliability, validity and appropriate norms for MH population. First, the test manual states clearly what the instruments were designed to measure. Second, each instrument of the MDS possesses adequate reliability, especially the test-retest reliability ($\underline{r} > 0.80$). Third, the MDS was fruitful in its evidence of validity. Over the past 20 years, numerous research studies have been conducted to validate the utility of the MDS as a vocational evaluation system. Brown et al. (1994) identified the construct, concurrent, and predictive validity as a major strength of the MDS. Most studies have focused on documenting the system's concurrent validity to rehabilitation program placement (Packard, Henke & McCollum, 1976), concurrent validity of the abbreviated battery to predicting vocational competency (Carsrud, Carsrud, Dodd, Thompson & Gray, 1981). Others are related to predictive validity to actual program placement following a 12-month interval (Dial, Freeman, McCarron & Swearingen, 1979). The MDS was administered to 200 neuropsychologically disabled clients on their initial entry into various rehabilitation programs in Texas. The criterion measures of work competency (San Francisco Vocational Competency Scale (SFVCS)) and productivity (Fishing Tackle Assembly Task (FTA)) were obtained at

12 and 18 month intervals to determine the predictive validity of the MDS factors to vocational competency. The step-wise regression analysis results indicated that the MDS neuropsychological variables were highly predictive of clients' work performance levels and productivity. The multiple R of the regression results for predicting the SFVCS levels was 0.90 and FTA work productivity was 0.69 (McCarron & Dial, 1976). The predictive validity of an abbreviated version (Table 2.3) of the MDS was administered to 58 adults with mental handicap in different vocational placement levels (day care, work activity, extended sheltered workshop, transitional sheltered workshop and community program). The multiple R of the regression results for predicting the SFVCS levels was 0.83 and actual program placement was 0.92 which indicated good predictive validity (Packard et al., 1976). Fourth, norms are available for most of the instruments under the MDS.

Vocational placements in Hong Kong

In recent years, job market of Hong Kong has experienced rapid changes. According to the Labour Department, the unemployment rate has reached a historical high of 8.5% in 2003 (Census and Statistics Department, 2005). This is partly due to the declining economy. But more importantly, there have been changes in the human resources policy of companies. Many labour intensive jobs are shifted to labour market in the Mainland China where labour supplies are much cheaper than those in Hong Kong. The consequence is that employers in Hong Kong only seek for employees whose skills are specialized or highly trained. These changes are very critical and disadvantageous to the employment of people with mental handicap as they have lower abilities and educational level, and limited repertoire of skills.

Although the unemployment rate has reduced to 6.5% in 2004, there are approximately 22,700 persons unemployed. These include people with disabilities (Census and Statistics Department, 2005). Thus, the complex and rapidly changing nature of the labour market, the variety of occupations, the numerous advances in rehabilitation engineering and technology enabling the disabled make occupational selection increasingly difficult for vocational counselors (Fouad and Tang, 2001).

Vocational placements for people with MH in Hong Kong include day activity centre, sheltered workshop, supported employment and open employment. Students with mental retardation in Hong Kong generally attend special schools until they are 15 to 18 years old. They then transfer to one of the four alternate vocational environments as similar to what in the western countries. Some of them may be unemployed and laid idle at home.

Day Activity Centre

According to the Handbook on Rehabilitation Services of Social Welfare Department (2002), Day Activity Centre (DAC) provides day care and training in daily living skills and simple work skills to adults with MH who are unable to benefit from vocational training or sheltered workshop employment. The purpose of a DAC is to provide day activities, train people with MH to be more independent in their daily living, and prepare them for better integration into the community and for transition to other forms of service or care where appropriate. First established in 1981, day activity centres are formerly known as work activity centres. There are several objectives of a DAC, they are mainly focus on nurturing a non-income based vocational place for people with MH to acquire basic self-care, social and simple

work skills via the provision of day care and meaningful activities. Moreover, DAC also enables the service recipients to become more independent in their activities of daily living and social functioning in order to facilitate them to live as independently as possible. In addition, preparing them to progress to sheltered employment is one of the impact goals of DAC.

So, the training elements are dominant in DAC. It provides an individual or group basis training in the areas of motor skills, self-help skills, communication skills, domestic skills, community living skills, simple work skills, social and interpersonal skills, leisure and recreation skills to meet the physical, social and emotional needs of the individuals with MH. Another major difference between DAC and other vocational placements is that the former provides a variety of caring activities, including provision of nursing and personal care, arrangement of mid-day meals, transportation and/ or escort service to and from the centre where necessary; and provision of supportive services, such as physiotherapy, occupational therapy and clinical psychology.

As at April 1998, there were 65 DACs operated by Social Welfare Department (SWD) and Non-governmental Organizations (NGO) providing a total of 3,426 places for people with MH (Review of Day Activity Centre Service, Rehabilitation and Medical Social Services Branch, Social Welfare Department, 2002). The target group of DAC is persons with MH who aged 15 and over. Priority is given to those with severe or moderate grade MH. However, a maximum of 10% service recipients within each DAC may have mild grade MH.

Sheltered Workshop

Sheltered Workshop (SWS) provides persons with learning or physical disabilities a working environment. As a long-term but transitional placement, SWS is specially designed to accommodate the limitations arising from their disabilities. Through the SWS, they can be trained to engage in income-generating work process, learn to adjust to normal work requirements, develop social skills and relationships as well as prepare for potential advancement to supported or open employment where possible. In sheltered workshop, people with mental disabilities are trained in the fixed, known standards and norms in a specific workplace. People there are given opportunity to learn a small range of simple manual tasks (Cinamon & Gifsh, 2004). The work tasks are mostly labour-intensive benchwork, assembly, packaging, and collating tasks that are routine, repetitive, and unskilled (Ross & Bachner, 2004). It is a welfare-oriented service without an employer-employee relationship between the workshop operators and the sheltered workers (Social Welfare Department, 2002).

The purpose of SWS is to provide vocational rehabilitation service through 1) providing work opportunity in a planned environment; 2) giving opportunities for work adjustment and advancement with the ultimate objective of enabling people with disabilities to move on to supported and open employment where possible; 3) training to people with disabilities to develop and maintain social and economic potential; and 4) providing skill training (Social Welfare Department, 2002).

The target group for SWS is people with disabilities aged 15 or above with a need for sheltered work. They must be capable of basic self-care, mentally and

emotionally stable with no severe disturbing behavior and having adequate work motivation as well as work ability.

According to the 2002 Annual Report of the Social Welfare Department, there are altogether 7487 places of sheltered workshop directly serving for people with disabilities through the SWD and subvention to NGOs.

It is being criticized that people work in SWS are placed in a segregated setting with little success in competitive employment (Parent, Hill, & Wehman, 1989).

Supported Employment

Supported Employment (SE) provides support to people with disabilities in employment. It allows them to work in an integrated open setting with necessary support service and to have access to the usual benefits of having a job such as income at market rates and job security (Social Welfare Department, 2002). Supported employment varies from other traditional models of placement due to the fact that a "place and train" approach rather than a "train and place" approach is applied (Stensrud & Gilbride, 2004).

There are four characteristics of supported employment: paid work, an integrated work setting, on-going support for life of employment and a severe disability that required support for employment can be provided (Musgrave et al, 1990). The objectives of supported employment are: 1) to serve as an avenue for upward mobility of people with disabilities in sheltered workshops and a necessary step towards integration for those people with disabilities who cannot take up open

employment; and 2) to prepare people with disabilities to work in an open and competitive setting independently.

The services provided by SE include the following aspects: 1) arrangement of job placement such as job analysis and job matching; 2) provision of support services including employment related skills training, on-the-job coaching and supervision, job-related guidance and advice to the service users, their family members and the job providers; and 3) the program will allow flexibility to go with the changing needs of the labour market and economic structure to ensure that its supports to service users are matching with reality.

The SE model does not require an individual to be job ready before any placement can be arranged. Rather, necessary work and social skills are taught in the work setting with the use of train-place-train-follow-up (Lagomarcino, 1986) or place-train-follow-up (Wehman, 1986) model.

There are several supported work models. These include 1) individual placement approach in which individuals are placed in integrated and regular community jobs. Job coach support is provided at the work site on one-to-one basis; 2) enclave approach focuses on training up of a small group of individuals by a full time supervisor. They are being supervised together in mainstream work environments; 3) mobile crew approach in which a single purpose business is established by a service provider and that the crew will be under one supervisor, travel to multiple work sites in the community; 4) bench-work approach, which is more individualized and focus more on behavioral problems (Power, 2000); 5) entrepreneurial business is a private business; 6) transitional employment is typically

part-time work with a period of time lasts for 3 to 9 months. It operated on a subcontract basis and that people without disabilities work as coworkers; 7) supported jobs model emphasizes on individuals who are integrated into an employment, but paid sub-minimum wage based on productivity and receiving ongoing training and advocacy from a job coach (Ross & Bachner, 2004).

The target group of SE is people with moderate disablement with working abilities lying between sheltered workshop and open employment without support, i.e. the majority of people with moderate grade and those with mild grade MH coupled with other disabilities; and people with moderate disablement with good working abilities but unable to adjust to the competitive open job market in the absence of support, i.e. those people with severe physical, sensory, visceral or psychiatric disabilities.

To be eligible for a SE place, the individual with MH should be aged 15 or above; capable of or likely capable of open employment if provided with special support program; having adequate self-care and daily living skills; and having motivation to take up open employment (Social Welfare Department, 2002). From the 2002 Annual Report of Social Welfare Department, there are 1810 places for supported employment services.

In 2002-2003, there was a provision of seed money from the SWD for NGOs to commerce operation in order to employ people with disabilities, including those with MH, under the “Enhancing Employment of People with Disabilities Through Small Enterprises Project (3 E project). The businesses include cleaning service, catering service, car beauty service, mobile massage service, setting up of retail

shops, vegetable supply and processing etc. A total of 166 employment opportunities were provided. From there, 119 positions were offered to people with disabilities. It is expected that more businesses will be granted support in 2003-2004 (Social Welfare Department, 2002).

Open Employment

No vocational rehabilitation service is provided for people with MH in open, competitive job market. In 2002-2003, there was a total of 1015 people with disabilities had secured open employment through SWS, SE service and other related services, such as on the job training program for people with disabilities (OJT), 3E project and Marketing Consultancy Office for Rehabilitation (MCO-R) (Social Welfare Department, 2002).

CHAPTER III

METHOD OF INVESTIGATION

This chapter describes the methods used to conduct the four-part study. The first part is to translate the instructions of Bender Visual Motor Gestalt Test (BVMGT), Haptic Visual Discrimination Test (HVDT), and McCarron Assessment of Neuromuscular Development (MAND) of the McCarron-Dial System (MDS). The second part is to translate and validate the content of the Observational Emotional Inventory-Revised (OEI-R) for assessing the emotional and coping abilities of people with mental handicap. The third part is to establish the performance profile of people in day activity centre, sheltered workshop and supported employment. The fourth part is to test the work adjustment processes of people with MH associated with different MDS profiles. The method of investigation includes objectives, sampling, instrumentation, data collection and data analysis.

Study One

Translation of Test Instructions

Objectives

This part of the study aimed to translate the English administration instructions of Bender Visual Motor Gestalt Test (BVMGT), Haptic Visual Discrimination Test (HVDT), and McCarron Assessment of Neuromuscular Development (MAND) into Chinese. The translation process included four components. They are 1) obtaining approval for translation and validation study; 2) translation of equivalence; 3) expert

panel review for equivalence; 4) discussion on the equivalence, clarity of the Chinese instructions and revision.

Approval for translation and validation study

An email attached with a brief proposal of the study was sent to the copyright holder of the McCarron-Dial System, Dr Jack G. Dial, to seek approval for conducting a translated and validation study of the MDS from English into Chinese version. The purpose was to ensure that the present study would not infringe the copyright of the MDS. The translation process began after formal approval was received via email.

Translation of Equivalence

The English instructions of Bender Visual Motor Gestalt Test (BVMGT), Haptic Visual Discrimination Test (HVDT) and McCarron Assessment of Neuromuscular Development (MAND) were translated into Chinese. The equivalence of the content of the translated and original versions was evaluated.

Sampling

A qualified translator, who obtained Bachelor of Art degree in Translation of Chinese bilingual study and had a minimum of three years working experience as Chinese language officer, was recruited by convenient sampling to translate the original instructions into Cantonese. Both the translator and researcher were fluent in both English and Chinese languages.

Data Collection

A copy of the English instructions of the three sub-tests was given to the translator for review one week prior to the meeting. After that, the researcher

organized an one-hour discussion meeting with the translator to explain the purposes and the utilization of the sub-tests to people with mental handicap. This was to ensure the translation was endowed with appropriate Chinese wordings and easily understandable by people with mild to moderate grade mental retardation. The translator was asked to translate all the test instructions into Chinese and submit the first draft of the translated version in one month's time after the first meeting. The researcher preliminary compared the translation with the original version to assess the compatibility of the meanings between the two versions (Satorius & Kuyken, 1994). A second one-hour meeting was arranged afterwards between the translator and the researcher to evaluate the initial translated draft. The researcher discussed the discrepancies identified with the translator before modifications were made on the translated version. Discrepancies mainly referred to words or terms with a distorted meaning. After discussion and compromise, the translator agreed to submit the final draft with necessary amendments within two weeks' time. Then the final draft of the Chinese instructions of the three sub-tests was submitted to an expert panel composed by five professional experts.

Expert Panel Review

An expert panel was formed to evaluate the fluency and equivalence of the translated instructions of BVGMT, HVDT and MAND.

Sampling

The experts of the panel were six occupational therapists who had a minimum of one-year clinical experience in mental handicap rehabilitation. They were recruited by means of convenient sampling from local hospitals and non-government

organizations, including Duchess of Kent Children's Hospital, Ruttonjee Hospital, Tuen Mun Hospital, The Spastics Association of Hong Kong and Caritas Jockey Club Lok Yee Special School. The panel members were contacted by telephone. After obtaining their verbal agreement, formal invitation letters were sent to each panel member for confirmation of participation (Appendix I).

Instrumentation

A questionnaire was designed to facilitate the panel members' evaluation in the review (Portney & Watkins, 2000). The questionnaire consisted of closed and open-ended questions to evaluate the fluency, technical equivalence, including grammar and syntax, and semantic equivalence, including denotative and connotative sameness of the words (Appendix II). In the closed-ended section, the panel members rated each item against a four-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (4).

In the open-ended section, the members were to suggest modifications of the translated instructions whenever they gave a "disagree" (2) or "strongly disagree" (1) rating on the item. One of the examples used in this section was shown in the following:

Instructions for McCarron Assessment of Neuromuscular Development (MAND).

Please circle the most appropriate rating in each question below.

1. Beads In Box

   i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

*** Please justify your rating and give suggestions on the translated version ***

Data Collection

The expert panel review lasted for three hours. It was held in Room FJ502, a research laboratory of Department of Rehabilitation Sciences at the Hong Kong Polytechnic University. Before the review, the panel members signed the informed consent form (Appendix II). The researcher explained the purpose and the design of the study, the clinical usage of the MDS, as well as the terms and their definitions contained in the questionnaire (Appendix II). The panel members were given one hour to complete the questionnaire by assigning ratings and comments. They received the questionnaire separately. During the review, they were reminded not to communicate or discuss with each other to ensure the independence of ratings and opinions. After completing the questionnaire, panel members were gathered together to present their ratings and discuss on possible modifications of the instructions. The final decisions on modification were reached by means of group consensus (Appendix III).

Data Analysis

The demographic characteristics of the panel members were presented. For each item of evaluation, the mode of the rating on each item was computed. The

percentages of agreement (Po) of the mode rating indicating consistency of the rating among the panel members was expressed as:

$$Po = \frac{\text{Number of exact agreement}}{\text{Number of possible agreements}}$$

(Portney & Watkins, 2000).

A mode of the rating of 3 or above indicated that a majority of the panel members agreed to the fluency and equivalence of the Chinese translation of the item. A mode of 2 or below indicated that the panel members disagreed with the translation. The latter mode rater became a cut off for discussion and decision on possible modifications of the translated instructions. The percentage of agreement closer to 100% indicated higher consistency among the panel members.

Study Two

Translation, Content Validation and Reliability study of COEI-R

Objective

The validation also involved gathering of evidence on content-related validity. The content validation of the COEI-R included translation of the impulsivity-frustration, anxiety, depression-withdrawal, socialization, self-concept, aggressiveness and reality disorientation subscales into Chinese. The reliability study was examined in terms of inter-rater reliability.

Test content translation

The English test items of Observational Emotional Inventory Revised (OEI-R) were translated into Chinese. The equivalence of the content of the translated and original versions was evaluated.

Sampling

A qualified translator, who obtained Bachelor of Art degree in Translation of Chinese bilingual study and had a minimum of three years working experience as Chinese language officer, was recruited by convenient sampling to translate the original test items into Chinese. Both the translator and researcher were fluent in both English and Chinese languages.

Data Collection

A copy of the English test items of the OEI-R was given to the translator for review one week prior to the meeting. After that, the researcher organized a one-hour discussion meeting with the translator to explain the purposes and the utilization of the OEI-R to people with mental handicap. This was to ensure that the translation was endowed with appropriate Chinese wordings. The translator was asked to translate all the test items into Chinese and submit the first draft of the translated version in one month's time after the first meeting. The researcher preliminary compared the translated and English versions to assess the compatibility of the meanings between the two versions (Satorius & Kuyken, 1994). A second one-hour meeting was arranged afterwards between the translator and the researcher to evaluate the initial translated draft. The researcher discussed the discrepancies identified with the translator before modifications were made on the translated version. Discrepancies mainly referred to words or terms with a distorted meaning. After discussion and compromise, the translator agreed to submit the final draft with necessary amendments within two weeks' time. Then the final draft of the Chinese test contents of the OEI-R was submitted to an expert panel composed by seven

professional experts.

Content Evaluation of the Chinese Observational Emotional Inventory - Revised

Validity refers to determining how accurately a test measures the trait or construct it claims to quantify (Bolton, 2001). Content validity, on the other hand called domain validity or intrinsic validity, is related to the adequacy with which this content universe is sampled by a test (Portney and Watkins, 2000). In this study, Chinese OEI-R (COEI-R) is said to have content validity if it covers all parts of the universe of content and reflects the relative importance of each part.

Sampling

An expert panel was formed to evaluate the fluency of the wordings and equivalence of the test contents. A total of seven rehabilitation therapists, with at least eight years of clinical experience on neuropsychological disabilities were recruited by convenience sampling from local hospitals. The panel members were contacted by telephone. After obtaining their verbal agreement, formal invitation letters were sent to each panel member for confirmation of participation (Appendix IV).

Instrumentation

A questionnaire was designed to facilitate the panel members' review. The questionnaire consisted of two sections: relevance and representativeness. "Relevance" referred to the appropriateness of the test items to the targeted construct and function of OEI-R (Portney and Watkins, 2000). "Representativeness" referred to the degree to which the test items are proportional to the facets of emotional coping abilities (Portney and Watkins, 2000). The questionnaire consisted of both

closed-ended and open-ended portions (Appendix V). In each item, the panel members were responsible to rate against a four-point Likert scale with "1" referring to "poor" relevance/ representativeness and "4" referring to "excellent" relevance/ representativeness in relation to the emotional coping abilities of people with mental handicap in vocational aspect. In the open-ended question, the members were requested to provide written comments on the items which they had assigned a "fair" (2) or "poor" (1) ratings. One of the sample items of the questionnaire was shown in the following:

Please circle the most appropriate rating in each question below.

1. Impulsivity-Frustration subscale

   i) How is the content of this item relevant to the assessment of emotional coping ability for people with mental handicap when working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

   Please justify your rating and give suggestions:

   _____

   ii) How well is the content of this item representing the entire domain of the impulsivity-frustration when assessing the people with mental handicap working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

Data Collection

The expert panel review lasted for four hours. It was held in Room FJ502, a research laboratory of Department of Rehabilitation Sciences at the Hong Kong Polytechnic University. Before the review, all panel members attended a 30 minutes orientation session in which the purpose of the OEI-R was introduced. The theoretical framework, test domains and psychometric properties of OEI-R were also presented. The panel members were given two hours to complete the questionnaire by assigning ratings and comments. They received the questionnaire separately. During the review, they were informed not to communicate or discuss among each other to ensure the independence of ratings and opinions. After completing the questionnaire, panel members were gathered together to present their ratings discuss on possible modifications of the test items which they had assigned a “fair” (2) or “poor” (1) ratings. In particular, the researchers prompted the panel members to make recommendations related to the testing of people with mental handicap. Final decisions on possible modifications were made based on group consensus (Appendix VI).

Data Analysis

The demographic characteristics of the panel members were presented. For each item of evaluation, the mode of the rating on each item was computed in descriptive statistics as the ratings were in ordinal data. The degree of relevance and representativeness of the items were reported in terms of frequency count, mode

index and percentages of agreement (Po) (Chan & Lee, 1999). A mode of the rating of 3 or above indicated that majority of the panel members agreed to the relevance and representativeness of the test items in Chinese version of OEI-R. A mode of 2 or below indicated that the panel members disagreed with the translated version. The latter mode rater became a cut off for discussion and decision on possible modifications of the content items. The percentage of agreement closer to 100% indicated higher consistency among the panel members.

Inter-rater Reliability of the Chinese Observational Emotional Inventory Revised

Reliability refers to the precision of the measuring process (Bolton, 2001). Inter-rater reliability refers to the variations between two or more raters who administer the instrument to the same group of participants. It is based on the premise that the observation made by one rater is likely to capture participants' true score and hence the test results can be interpreted with a greater confidence. This phase aimed at estimating inter-rater reliability of the translated OEI-R. Evidence obtained from the original OEI-R showed good inter-rater reliability ($\underline{p} = 0.96$). Therefore, it was crucial to maintain a high inter-rater reliability on the Chinese OEI-R.

Sampling

Inter-rater reliability exercise

One welfare worker and 2 workshop instructors were recruited by snowball sampling method from Hong Chi Association among the raters who participated in the main study. The raters had a minimum of Form Five educational level and a minimum of one-year frontline experience in MR rehabilitation.

Instrumentation

Preparation of participants' video for rating

Twenty-three participants with MH were invited to the video taking process. Their emotional-coping related behaviors were taped for which the inter-rater reliability was established. They were recruited by convenience sampling from all sheltered workshops or day activity centers of a local service provider organization for people with MH. All participants were asked to sign a consent form (Appendix VII). The inclusion criteria of the participants were:

1. mild, moderate or severe grade of MR;
2. age between 16 and 45;
3. presented with observable challenging behaviors at the work settings; and
4. obtained voluntary consent either by the participant or relatives for participating in the video taping.

The recruitment aimed to select clients with varied level of social and emotional ability in order to maximize the variability on their work performance.

The researcher and rehabilitation staff of Hong Chi Association was responsible for taping the challenging behaviors of the 23 participants. The video taping were taken during participants' working time, activity time and lunch time in either sheltered workshop or day activity centers of Hong Chi Association, where the participants were working or receiving service. After the video-taping, a working group was formed to evaluate the captured behaviors in the tapes. A total of three occupational therapists, with at least ten years of clinical experience in mental rehabilitation, were recruited by convenience sampling from Hong Chi Association.

The working group members were contacted by telephone. A three-hour review meeting held in occupational therapist room of Pinehill in Hong Chi Association. Before the review, all working group members had received the COEI-R and the definition of the emotional coping behaviors of the original OEI-R. They are required to watch all the video tapes and marked the COEI-R record form of each participant before the meeting separately. During video watching, they were informed not to communicate or discuss among each other to ensure the independence of ratings and opinions. Afterwards, the working group members discussed the rating results and made decision on the behaviors that could best represent and cover a majority of the aspects of COEI-R items.

Among the 23 participant videos, six video clips were used for training purpose for teaching the raters in this part and the main study. Seventeen video clips were used for inter-rater reliability exercise. Seven training videos were 2 hours 20 minutes with the video clips of each participant ranged from 10 to 30 minutes. The duration of the inter-rater reliability video clip was around 6 hours, with each participant's clip ranged from 15 to 45 minutes. The COEI-R record form was used by the raters to mark the observed behavior (Appendix VIII).

Data Collection

The researcher conducted an 8-hour training workshop for standardizing the rating procedures (Appendix IX). One week before the practical workshop, the raters were required to conduct self-practice by using the translated OEI-R for raters on at least two persons with MH in their own setting. This was to familiarize the raters with the actual rating procedure. After the training workshop, the raters were

requested to use the translated OEI-R to rate on another two persons with MH. This was aimed to enable the raters to consolidate their skills acquired in the training workshop. The researcher then telephoned the raters to ensure that they understand the use of COEI-R.

After an inter-rater reliability exercise was conducted in one and a half days. The three rater participants were recruited randomly from a group of 60 raters who completed the training workshop held for staff of Hong Chi Association. Among them, one participant came from each of supported employment, sheltered workshop and day activity center settings of the Association. The inter-rater reliability test was held in the conference room of Pinehill of Hong Chi Association. First, the researcher explained the record form to the raters. The raters sat in parallel position while facing the television. The raters kept a distance from each other to prevent exchanging or discussing answers. They viewed the tapes together in silence. No discussion was allowed when watching the video or during rest session. The raters were asked to rate 17 participants' behaviors via videotapes. One record form was used for each participant. While watching each video clip, the raters could either jot down the key-point of the behaviors on a piece of paper or mark on the record form directly. After watching each video clip, the raters were asked to fill in the record form separately. The record form was handed to the researcher immediately when they finished recording each participant. The researcher collected all the data and marked the scoring according to the model answers that were discussed and compromised previously in the working group review meeting.

Data Analysis

Intra-class correlation coefficient (ICC) was used to estimate the inter-rater reliability coefficient at the subscale score level. It produced consistency or agreement of values within cases. An ICC Two-way mixed model was used on the assumption that the rater participants were randomly selected from a definite rater group, and the item effects were fixed. This model was based on a repeated measures analysis of variance, with raters as the independent variable (Portney & Watkins, 2000; Bolton, 2001). As a result, the findings were expected to be generalized to raters with similar characteristics. The ICC ranged between 0.00 and 1.00, with values closer to 1.00 representing stronger reliability. For clinical measurement, reliability that exceeded 0.90 indicated good reliability and reasonable validity.

Study Three

Psychometric Properties of the Abbreviated Chinese Version McCarron-Dial System

Objective

Study Three was conducted to gather the psychometric properties which indicated the outcomes of the AC-MDS could be used as a substitute measure for an established gold standard criterion test. Disciminant analysis was carried out in this study to establish the accuracy of using the abbreviated Chinese McCarron-Dial System (CMDS) to classify group memberships among people with mental handicap who worked in supported employment, sheltered workshop, and day activity centre. This study used a retrospective study design by capturing the McCarron-Dial System

profile of participants who had already been placed or worked in one of the three placements, namely supported employment, sheltered workshop and day activity centre. In order to help vocational clinicians making successful decisions on placing MH clients to suitable vocational placement, disciminant function of AC-MDS had to be investigated. The evaluation of the Chinese MDS by using the abbreviated version of instruments made reference to different vocational placements and reflected vocational profiles of people with MH. This heterogeneity enhanced the degree of variation of the Chinese abbreviated MDS scores and thus increased the covariance and reliability of this neuropsychological vocational evaluation system.

Sampling

The participants of this part of the study were people with MH. People with mental retardation required different vocational competency, such as verbal-spatial-cognitive, sensori-motor and emotional-coping abilities, in order to be placed in supported employment, sheltered workshops and day activity centres. A total of 140 participants were recruited from supported employment settings, sheltered workshops and day activity centres of Hong Chi Association by convenience sampling. The characteristics of the participants recruited from different vocational placements were summarized below.

Group A: Supported Employment Settings (SE)

Thirty-nine people with MH working in the two job training centres of Hong Chi Association were recruited by means of convenience sampling. The recruitment process was done with the help of job training service managers of Hong Chi Association who were responsible for the SE settings. They were selected after

written consents were obtained from them or their relatives. The inclusion criteria were:

1) mild grade intellectual disabilities (IQ score from 50-70);
2) age between 16 and 45;
3) received formal special education and pre-vocational, or vocational training by recognized institutions in Hong Kong and with identifiable record of schooling and training;
4) had tenure record in engaging in supported employment for at least 3 months but less than 5 years;
5) reached a productivity and performance indicator of the setting; and
6) obtained voluntary consent.

The exclusion criteria were:

1) stayed in hospital or idled at home for more than 2 years; and
2) unable to understand verbal instructions.

Group B: Sheltered Workshops (SWS)

A total of 46 participants were recruited by means of convenience sampling from the three sheltered workshops of Hong Chi Association. The recruitment process was done with the help of occupational therapist of Hong Chi Association who was responsible for the SWS settings. They were selected after written consents were obtained from them or their relatives. The inclusion and exclusive criteria were the same as those for Group A, except that the participants in Group B should have low mild and high moderate grade MH (IQ score from 45-55).

Group C: Day Activity Centres (DAC)

Fifty-one participants were recruited by means of convenience sampling from four day activity centres of Hong Chi Association. The recruitment process was done by the help of occupational therapist of Hong Chi Association who was responsible to the DAC settings. They were selected after written consents were obtained from their relatives. The inclusion and exclusion criteria were the same as those for Groups A and B, except that the participants had moderate grade MH (IQ score between 35 to 50).

All the potential participants who fulfilled the selection criteria of this study were first contacted either by the occupational therapists or job train service managers of Hong Chi Association via face-to-face contact. After obtaining their written consent (Appendix X), the researcher and occupational therapists arranged the assessment dates for the participants.

Instrumentation

The English MDS was translated to Chinese, whereas content-related evidence and inter-rater reliability was established in previous stages of this study. The following instruments were included in the MDS test package of all the participants recruited from the three vocational placement levels. Their descriptions on the psychometric properties and clinical utilities are categorized according to the ability factor under which they were assessed.

Visual-Spatial-Cognitive Factor (VSC)

1) Test of Non-Verbal Intelligence-Third edition (TONI-3) (Brown et al., 1997)

The TONI-Version 3 was developed by Brown et al. in 1997. It is a standardized assessment for ages 6 through 85 (N=3000). It is a brief language-free, largely motor-free and culture reduced measure of intellectual functioning. No oral response, reading, writing, or object manipulation is required. It is designed to assess abstract, figural problem solving and non-verbal reasoning with progressively increase in complexity and difficulty. The participants were required to identify the relationships among the abstract figures presented in the test item. They indicate their answers by pointing to alternative choices. There are a total of 50 test items. The administration time is about 10 to 15 minutes. Standard scores are mean of 100 with a standard deviation of 15 (Zimmerman & Woo-Sam, 2001). The test-retest reliability of the test was reported as good ($r = 0.86$) (Brown et al., 1997).

As TONI-3 does not require reading, writing, speaking or listening, it is especially suitable for people with mental retardation.

Sensori-Motor Factor

2) Bender Visual Motor Gestalt Test (BVMGT) (Koppitz, 1975)

The Koppitz system (1975) was used as part of the MDS. The BVMGT is designed to assess perceptual-motor integration function of individuals. The participants are required to copy a series of nine figures with the use of a pencil and paper. Analysis of the errors made in the copy give distortions of the figures, failure to integrate various elements into a unified whole, rotation of the figure or its parts, and or perseveration of the figure or its part. The number of errors on the Koppitz

scoring system ranges from 0 to 30. The accuracy of the reproductions is influenced by developmental age as well as pathological conditions of the central nervous system or severe emotional problems. The test-retest reliability of the BVMGT was reported as high ($\underline{r}$ = 0.89). The predictive validity of the test on vocational competency was $\underline{r}$ = 0.70 and work productivity was $\underline{r}$ = 0.47 in adults with neuropsychological deficits (McCarron & Dial, 1976).

3) Haptic Visual Discrimination Test (HVDT) (McCarron & Dial, 1979)

The HVDT is designed for assessing tactile discrimination, as a measure of integrated tactual and visual information. It involves the participants to manipulate objects with the hand so as to discriminate shape, size, texture and spatial arrangements, and conceptually integrate these sensations to form an accurate mental representation of the object. The score ranges from 0 to 48 correct responses. The reliability was reported high ($\underline{r}$ = 0.90) and the predictive validity with work potential was significant. ($\underline{r}$ = 0.53 to 0.86) (Packard, Henke & McCollum, 1976).

4) McCarron Assessment of Neuromuscular Development (MAND) (McCarron & Dial, 1982)

The MAND is a comprehensive assessment for neuromuscular functioning. It consists of ten subtests, five fine and five gross motor tests, which combine to form a total motor score. The four-factor neuromuscular functions are persistent control (Rod Slide and Finger-Nose-Finger subtest), muscle power (Hand Strength and Jumping subtest), kinesthetic integration (Heel-Toe Walk and Standing On One Foot subtest) and bimanual dexterity (Beads On Rod and Nut and Bolt subtest). In addition to the four-factor subscale scores, other subscale score given by the MAND

are speed, strength and fine coordination presented in terms of the hand preference index for both the right and left hands. The test-retest correlation was high ($\underline{r}$ = 0.99) for the mentally disabled group. The predictive validity between the MAND and work performance was high. ($\underline{r}$ = 0.70) (McCarron & Dial, 1976).

Emotional-Coping Factor

5) Observational Emotional Inventory – Revised (OEI-R) (McCarron & Dial, 1976, 1986)

The OEI-R provides a structure for observing and rating overt emotional behaviors which intervenes with educational or vocational potential (McCarron & Dial, 1976; McCarron & Dial, 1986). It is a situational assessment that requires a daily two-hour observation of the subjects' behaviors for five consecutive days. The total number of observed problem behaviors are clustered into seven factors: frustration-impulsivity, anxiety, depression-withdrawal, socialization, self-concept, aggression and reality orientation. The OEI-R had high reliability ($\underline{r}$ = 0.96) (McCarron & Dial, 1986, 1986). The inter-rater reliability as estimated for the translated OEI-R in this study ranged from 0.52 to 0.94 (ICC) (Cheung & Chan, 2001).

In this study, the administration of the OEI-R to participants coming from the DAC and SWS settings followed a timetable generated randomly by the researcher. However, due to the potential problems associated with scheduling and limited resources, the administration of OEI-R to the SE participants was limited to the time available to the staff and job training.

6) Street Survival Skill Questionnaire (SSSQ) (Linkenhoker & McCarron, 1980)

The SSSQ is a measure of adaptive behavior in the areas of basic concepts, functional signs, tool identification and use, domestic management, health, first aid and safety, public services, time, money, and measurement. Its reliability was reported as good (r = 0.98) (Linkenhoker & McCarron, 1980). The SSSQ was translated and validated as a Chinese version in a study conducted by Lee (1999). The 107 items were revised to accommodate the cultural specificity of the local community. The alpha, which is a reflection of the internal consistency of the items, was ranged from 0.52 to 0.85.

Data Collection

To recruit the participants who worked in supported employment service, sheltered workshops and day activity centers, invitation letters attached with the research proposal were sent to the adult service of Hong Chi Association. After confirming their participation in this study, the researcher contacted the in-charge of the adult service and arranged two training workshops for occupational therapists and other frontline staff, including managers, welfare workers, training assistants and workshop instructors who would be responsible for the subsequent data collection respectively. The training workshop for 3 occupational therapists of the Association was held in Room GH012 at the Hong Kong Polytechnic University. The researcher and two occupational Therapists who were experienced in using the MDS instruments were invited to conduct this training workshop. Another training workshop was held at the Hall of Tai Po Commercial and Exhibition Centre for 50 frontline staff of the Association. The chief supervisor, the researcher and three occupational Therapists of the Association were responsible for conducting this

training workshop. The training workshops were aimed at introducing the purpose, administrative procedures and usage of the instruments so as to facilitate their data collection. Both workshops took 4 hours to complete respectively. After obtaining the lists of all participants in this study and their formal consent, the demographic data of the participants prepared by the frontline staff of Hong Chi Association was double checked by the researcher to ensure that they met the selection criteria. The assessments were carried out by the researcher, occupational therapists and also the frontline staff of the Association. The researcher was mainly responsible for assessing the participants recruited from the SE settings, whilst three occupational therapists working in the Hong Chi Association were responsible for assessing all other participants recruited from the SWS and DAC settings. The researcher and the occupational therapists were responsible for assessing all the sub-tests of the AC-MDS, except COEI-R, which was assessed by the other frontline staff as mentioned before.

The researcher spent four hours for assessing each of the SE participants. The assessment was carried out either in the job train centers or the research lab (Room FJ502) in the Hong Kong Polytechnic University, depended on the participants' preference of convenient location. For the occupational therapists, their assessment was taken in the SWS or DAC. A total of 5 hours were arranged for each of the SWS or DAC participants. For the COEI-R, the frontline staff spent a total of 10 hours (2 hours per day for five consecutive working days) observing the emotional coping behaviors of the SE, SWS and DAC participants during their working hours (from 10am to 4pm excluding the lunch hours).

Data Analysis

Demographic Characteristics

Descriptive statistics on the demographic characteristics of the 136 participants were reported. One-way ANOVA was used to test whether the demographic characteristics were different in the participants among the DAC, SW and SE settings. The accuracy of predictive memberships was explored. The data analysis was conducted with SPSS for Windows 12.0 version (SPSS, 2003).

Individual Abilities – Data Reduction

Descriptive statistics on the participants' test scores on the test of verbal-spatial-cognitive, sensory-motor and emotional-coping abilities were reported. The participants' scores were compared across the three placement settings. This procedure was conducted with a purpose to identify the test variables which were group dependent. The significant test variables were then entered into the final model of analysis. One-way MANOVA followed by ANOVA was used. Besides, the relationships between and among the subscales of each test, and between different tests were explored with Pearson's product moment correlation. The coefficient of determination, r^2, was used as a measure of the meaningfulness of the r.

Discriminant Validity

Discriminant analysis is a statistical procedure for classifying cases into two or more groups on the basis of various characteristics (Munro, 2005). It requires the statistical assumptions of normally distributed populations and homogeneity of variances as well as covariance (Hinton, 2004). It is appropriate for use when the independent variable is equal-interval and the dependent variable is nominal-

categorial (Schuerman, 1983). The goal of disciminant analysis is to derive the linear combination that best predicted group membership. A disciminant function analysis examines which combination of independent variables is best to predict a dependent variable. With more than one function, each will explain a certain percentage of the variation in the data. The functions can be examined to see how much variation they could explain. The functions are worthy if their eigenvalue is over 1 and the canonical correlation is over 0.6 (Hinton, 2004). In this study, it was used to evaluate the usefulness of the Chinese MDS to discriminate the memberships of the people with mental handicap recruited into the three known groups, i.e. DAC, SW and SE settings. The classification was obtained by fitting the Chinese MDS score into the discriminant function for each subject and assigned subjects to the three groups based on their value of discriminant scores. In this study, it was hypothesized that the participants in SE group would obtain the highest vocational profile scores in the Chinese MDS. Those in DAC group would obtain the lowest profile scores and those in SW group would obtain the scores in between. The accuracy of the classification was presented. Moreover, the mean abbreviated Chinese MDS scores on each sub-test in each vocational placement group of people with MH would be reported. Hence, the sensitivity and specificity of various cut-off scores of the Chinese MDS was estimated. Rubinsky's study (1991) is one of the examples which employed similar statistical procedure. This study made use of multiple linear regression model and multiple discriminant analysis to determine the significance of the three independent variables, i.e. intellectual, sensori-motor and emotional-coping of differentiating the participants in the three levels of vocational

placement.

Study Four

Work Adjustment Process on Supported Employment

Objective

Study Four aimed at exploring the work adjustment of people with mental handicap who worked in supported employment service. In this study, it would focus more on qualitative research approach in order to understand the various life experiences mean to people with mental handicap, especially on work adjustment aspect. In doing this, interview and observation would be a significant part of data collection (Darlington & Scott, 2002).

Sampling

The researcher first approached The Down Syndrome's Association, a NGO providing vocational service for people with MH, by telephone. When the organization agreed to offer assistance, written consent forms were sent to the organization for potential participants to sign in (Appendix X). After that, the researcher contacted the potential participants via telephone and arranged assessment dates.

Two people with MH were recruited by convenience sampling. The inclusion criteria were: 1) diagnosed as having mild grade mental retardation (IQ 50-69) either by government or non-government organizations (NGO) before the age of 16 (Hong Kong Government, 1995), 2) age between 15 to 45, 3) both gender, 4) have started a new job (from SE or OE) not more than 1 month, and 5) have attended supported employment service at the time of the assessment. The exclusion criteria of this

study were: 1) those people with MH who had communication problems. It was due to the fact that adequate receptive and expressive skill was the basic requirement in interview. 2) the presence of other diagnoses, such as mental illness, Down Syndrome or autism. The reason was that individuals with dual diagnosis of mental handicap and mental illness would have very different needs and experiences in terms of work process. People who have Down Syndrome had verbal short-term memory deficit as a consequence of poor language skill (Jarrold et al., 2004). People with autism often had problems in communication and interpersonal relationships (Noyes-Grossers et al, 2005).

Instrumentation

The following instruments were used for data collection:

1) The abbreviated Chinese version of the MDS, which were the same 6 sub-tests as mentioned in Study Three, was used to collect the baseline (pre job participation) and on-the-job (post 3 months job participation) abilities of the participants.

2) The Becker Work Adjustment Profile (BWAP) was used to identify participants' work performance and job demand at the 1st month and 3rd month when participating his job. It was developed by Ralph Becker in 1989. It is a 63-item rating scale in the purpose of identifying work behaviour deficits in persons with physical, mental or emotional disabilities (Bolton, 1991). There were four subscales in this instrument: Work habits and Attitudes, Interpersonal relations, Cognitive skills and Work Performance Skills. The rating was modified from the original

version to five-point Likert scale by the researcher in order to explore whether participants' work performance was matched with job demand (Appendix XI). There were a total of sixty items in BWAP. It took 30 minutes for assessors (job supervisors) to fill in the form.

3) The work adjustment questionnaire (Appendix XII) decided by the researcher was used in order to explore the work adjustment process. It was developed by the researcher with reference to work adjustment theory. It would be filled in by the researcher by means of face-to-face interview.

Data Collection

The researcher collected the information based on McCarron-Dial System at the baseline (before the job start) and 3 months after participation of a job. The BWAP was collected by asking the SE instructors to fill in the questionnaire provided at the baseline (before the job start) and 3 months after participation of a job. The work adjustment questionnaire was conducted by the researcher via semi-structured and face-to-face interview with the participants on the 1st month, and 3rd month of their job participation. Each interview approximately lasted for 30 minutes. In addition, there was telephone contact with the SE instructors on the 1st month, and 3rd month of participants' job participation by the researcher. The interview and telephone contact was on a one-to-one basis and conducted in Cantonese. An interview guide in Chinese with lists of questions was developed to facilitate the interview process with the participants of MH (Appendix XIII). It involved two parts: closed and open-ended questions. The closed-ended questions were related to the demographic information. The open-ended questions were related to a list of items such as

participants' active and proactive changes towards his/ her job. All of the participants were encouraged to describe their experience in their own words and verbal probing was used for more in-depth responses. All interviews were conducted in a friendly, informal atmosphere with the use of conversational tone. The interviews were audio tape-recorded with the consent of the participants. While for the telephone contact with the instructors, the questions were mainly based on the work adjustment questionnaire for the employers.

Data Analysis

Descriptive statistics were used for analyzing the work adjustment process of the subjects and the relationship of the process to the MDS profile scores. Interview data were analyzed via a two-step process. The first step was to transcribe three hours of the audio-tapes in Chinese by the researcher. The content analysis was referenced by Patton (1990) and Bernard (1994). Immersion, incubation and interpretation were used in analyzing the transcript coding (Rossman & Rallis, 1998). Moreover, a constant comparative method was adopted (Corbin & Strauss, 1991) so as to compare whether there were any overlapping similarities or differences among participants' experience in adjusting their work process for maintaining the job tenure. This was important to develop categories or themes for work adjustment process. In addition, the negative and positive expressions were useful in denoting the challenges and frustration faced by the participants and also the successful and rewarding experiences met by the participants (Coffrey & Atkinson, 1996; Li, 2000). In this study, data analysis was conducted with the following themes reflecting the work adjustment process of participants in their work:

1) Work motivation;
2) Individual job preference;
3) Matching of work performance and job demand
4) Work adjustment process on 1st and 3rd month of job participation

CHAPTER IV

RESULT

Introduction

This chapter presents the results of the four studies. Study One reports the results of the panel review on the translation equivalence of three of the sub-tests of the original MDS. Study Two presents the results of reliability and validity of Chinese Observational Emotional Inventory- Revised (COEI-R). Study Three is the results of psychometric properties of the abbreviated Chinese MDS. Study Four illustrates the results of the work adjustment processes of people with MH associated with different MDS profiles.

Study One

Translation of Test Instructions

Panel Member Characteristics

The instructions of 3 sub-tests, namely the Bender Visual Motor Gestalt Test (BVMGT), the Haptic Visual Discrimination Test (HVDT) and the McCarron Assessment of Neuromuscular Development (MAND), of MDS were translated into Chinese by a qualified translator who had a bachelor degree in Chinese bilingual studies. An expert panel review was then held to evaluate the degree of test equivalence of the Chinese version upon completion of the translation process. A total of 6 panel members consisting of two male (33.3%) and four female (66.7%) occupational therapists were recruited. They were working in six settings, namely Duchess of Kent Children's Hospital, Kwai Chung Hospital, Tuen Mun Hospital, Ruttonjee Hospital, Caritas Lok Yee Special School and Hong Kong Jockey Club

Elaine Field School. They had an average of 1.6 years (SD = 0.3) working experience in neuropsychological rehabilitation services. The panel was required to review the fluency and correctness between the translated and the original versions. There were altogether 29 instructions for review. There were a total 10 items with 13 instructions related to MAND, 2 instructions related to BVMGT, and 6 items with 14 instructions related to HVDT.

Results

In this section, results of the expert panel review are presented in three parts related to three sub-tests of the MDS. Mode index and percentage of agreement were used in statistical analysis.

Evaluation of MAND

The panel members opined that the translation was fluent in 10 out of the 13 instructions. The average agreement among the panel members was 78.5% (ranging from 65 to 85%) (Table 4.1). The results reflected that the panel members generally agreed that most of the translated Chinese instructions of MAND were as fluent as the original version. However, three instructions (instruction no. 7, 10 and 11) related to the hand strength and heel-toe walk test items were rated as “disagree” (2) (Percentage of agreement was 60 to 70%). For the instruction of the hand strength item (instruction no. 7), 60% of the panel members rated “disagree” (2) and “strongly disagree” (1). The mode rating was 2. The two instructions of the heel-toe walk item (instruction no. 10 and 11) had a low mode rating. The mode rating for the first instruction of the heel-toe walk item (instruction no. 10) was “disagree” (2) (Percentage of agreement was 60%. The mode rating for the second instruction of

the same item (instruction no. 11), 40% of the raters rated “disagree” (2). In terms of this, modification had been made to the above three instructions after panel members’ consensus (Table 4.2).

In terms of “correctness”, the panel members rated “agree” (3) or “strongly agree” (4) to all the test instructions. The average agreement among the raters was 80% (ranged between 65 to 90%). As indicated by the results, the panel members generally agreed that all translated Chinese instructions of MAND were correctly translated and carried identical meaning as that of the original version.

Evaluation of BVMGT

The “fluency” of the second instructions (instruction no. 14 and 15) was not regarded as satisfactory. The mode rating was “disagree” (2) (Percentage of agreement was 60%). The mode rating on the “correctness” of the first instruction (instruction no. 14) was “disagree” (2) (Percentage of agreement was 65%). Therefore, revision had been made to modify the translated version in accordance with the panel members’ opinion (Table 4.2).

Evaluation of HVDT

The “fluency” ratings on 13 out of 14 instructions were either “agree” (3) or “strongly agree” (4). The percentage of agreement was general high (average agreement was 80.8% ranging from 75 to 85%). One instruction of the familiarization item (instruction no. 20) was rated as both “disagree” (2) and “agree” (3) (Percentage of agreement was 70%).

Table 4.1 presents the ratings of the experts on reviewing the fluency and correctness of the instructions of the three MDS tests. As a result, modifications

were made to the instructions no. 7, 10, 11 of MAND; 14, 15 of BVMGT and 20 of HVDT by making reference to the comments made by the expert panel. Consensual decisions had been reached for modifications to the instructions no. 7, 10, 11, 15 and 20 to improve their fluency, and instruction no. 14 to improve the correctness of its meaning (Table 4.2).

Table 4.1

Evaluation on the equivalence between the translated and original version of MAND, BVMGT and HVDT

Tests / Items	Evaluation of Fluency		Evaluation of Correctness	
	Mode	% of agreement	Mode	% of agreement
MAND				
1. Beads in box	3	65	3, 4*	80
2. Beads on rod	3	65	3	80
3. Finger tapping	3	85	4	90
4. Finger tapping	3	85	3	80
5. Nut and bolt	3	80	3, 4*	80
6. Rod slide	3	85	3, 4*	80
7. Hand Strength	**2**	**60**	3, 4*	85
8. Finger-Nose-Finger	3	80	3	85
9. Jumping	3	80	3	75
10. Heel-Toe Walk	**2**	**65**	3	80
11. Heel-Toe Walk	**2, 3 ***	**70**	3	75
12. Standing on one foot	3	80	3	85
13. Standing on one foot	3	80	3	65
BVMGT				
14.	3	75	**2**	**65**
15.	**2**	**60**	3	60
HVDT				
16. Set up	3	75	3, 4*	85
17. Familiarization	3	85	3, 4*	80
18. Familiarization	3	85	3	85
19. Familiarization	3	75	3	75
20. Familiarization	**2, 3 ***	**70**	3	75
21. Familiarization	3	70	3	80
22. Familiarization	3	80	3	85
23. Familiarization	3	80	4	90

24. Familiarization	3	85	3	85
25. Familiarization	3	85	3	85
26. Testing of sizes	3	85	3	85
27. Testing of textures	3	80	3	85
28. Testing of textures	3	85	3, 4*	80
29. Testing of configuration	3	75	4	75

Note. Rating Scale: Strongly disagree (1); Disagree (2); Agree (3); Strongly agree (4).

Bolded items indicate the modification was made to the instructions.

* indicates bimodal distribution.

Table 4.2

Modifications made to the translated instructions of the MAND, BVMGT and HVDT after the expert panel review

MAND

Instructions	Original English version	First translated version	Modified translated version
7. Hand Strength	**Squeeze** the handle as hard as you can.	盡你嘅能力，**揸**住個扶手，**揸**得愈大力愈好	盡你嘅能力，**握**住個扶手，**握**得愈大力愈好
10. Heel-Toe Walk	Relax and do this task as carefully as you can. **Put both your hands on your hips** and walk on the line **placing your heel directly in front of your toes**, touching heel to toe on each step. Start here (one end of tape) and walk forward all the way to the other end.	放鬆啲，做呢個習作時，盡你嘅能力，做得愈小心愈好。**將你雙手放喺後面**，同時喺呢條線上面行。行嘅時候，**將你嘅腳踭直接放喺你腳趾前面**，每一步都要腳踭「掂」住腳趾行路。由呢度開始(線嘅末端)，一直向前行到尾。	放鬆啲，做呢個習作時，盡你嘅能力，做得愈小心愈好。**將你雙手放喺「pat pat」後面**，同時喺呢條線上面行。行嘅時候，**將你嘅腳踭直接放喺你另一隻腳嘅腳趾前面**，每一步都要腳踭「掂」住腳趾行路。由呢度開始 (線嘅末端) ，一直向前行到尾。
11. Heel-Toe	This time, **walk backwards.** Keep	今次，**倒轉行**。雙手繼續放喺後面，同時	今次，**倒後行**。雙手繼續放喺「pat pat」

Walk	your hands on your hips and walk on the line, **placing your toe directly behind the heel** and touching toe to heel on each step.	喺呢條線上面行，**將你嘅腳趾直接放喺腳踭後面**， 每一步都要腳趾「掂」住腳踭。	後面 ，同時喺呢條線上面行，**將你嘅腳趾直接放喺你另一隻腳嘅腳踭後面**，每一步都要腳趾「掂」住腳踭。

BVMGT

Instructions	Original English version	Original translated version	Modified translated version
14.	Here are some figures (or designs) for you **to copy**; just copy them the way you see them.	呢度有一啲圖(或設計) 俾你**去抄寫**；照住你見到嘅畫**底**佢	呢度有一啲圖(或設計) 俾你**照住畫**；照住你見到嘅畫**低**佢。
15.	It is not necessary but do as you like.	你唔需要咁樣做，你想點做就點做。	你唔需要咁樣做，你想點做就點做。**(當學員想數有幾多點時可說這句話)**

HVDT

Instructions	Original English version	Original translated version	Modified translated version
20. Familiarization	Feel and move the object around in your hand, **but don't remove your hand from behind the screen.**	感覺吓同摸吓你手上嘅物件，**但係你唔可以將隻手縮過屏障外。**	感覺吓同摸吓你手上嘅物件，**但係你隻手唔可以縮過屏障之外。**

Note. Bolded items indicate the modification was made to the instructions.

Study Two

Translation, Content Validation and Reliability study of OEI-R

Panel Member Characteristics

A translator holding a bachelor degree in Chinese bilingual studies translated the original OEI-R into Chinese. Seven occupational therapists comprised the expert panel for content validity evaluation. They all had an average work experience of 11.3 years (SD = 0.6) in neuropsychological rehabilitation.

Results

For the items under the Frustration-Impulsivity factor, the average agreement among the panel members' evaluation on the relevance and representativeness were between 75% and 92%. For items under the Anxiety factor, the average agreement among the raters' evaluation on the item relevance and representativeness were between 83% and 100%. For the items under the Depression factor, the average agreement among the raters' evaluation on the item relevance and representativeness were between 79% and 100%. For the items under the Socialization factor, the average agreement among the raters' evaluation on the item relevance was between 75% and 98%, and item representativeness was between 79% and 92%. For the items under the Self Concept factor, the average agreement for the item relevance was between 75% and 92%, and representativeness was between 71% and 88%. For the items under the Aggressiveness factor, the average agreement for relevance and representativeness ratings were between 79% and 96%. For the items under the Reality Disorientation factors, the average agreement for relevance was between 67% and 88%, and for representativeness was between 62% and 83%. In general, for

all the first six factors, the mode ratings were mostly on good (3) and excellent (4). Except for the Factor 7 items, one item (item 63) was rated as fair (2) and good (3). Modifications had been made to the item no. 63 with reference to the comments made by the expert panel members. The summary on the results of the evaluation of content validity of the COEI-R was shown in Appendix XIV.

Inter-rater reliability of COEI-R

The purpose of estimating the inter-rater reliability of the Chinese Observational Emotional Inventory-Revised was to compute errors and variations among different raters when using this instrument. A high inter-rater reliability result implied that the Chinese OEI-R was a reliable test.

Demographic Characteristics of respondents

One welfare worker and 2 workshop instructors in Hong Chi Association were recruited as raters. Their mean working experience in MR rehabilitation was 1.2 years (SD = 0.3).

Results

The intra-class correlation (ICC) computed for the OEI-R total score using a two-way mixed effect model was 0.78 ($p \leq 0.01$). The ICC values estimated for the subscale scores were high for the Factors 1, 3, 4 and 6 (Table 4.3). The ICC values were moderate for the factors 2, 5 and 7.

Table 4.3

Inter-rater reliability (ICC) of subscales of COEI-R

Factors / Subscales	ICC	95% Confidence Interval	
		Lower bound	Upper bound
1. Frustration-Impulsivity	0.85 *	0.66	0.94
2. Anxiety	0.55	0.02	0.83
3. Depression-Withdrawal	0.82 *	0.63	0.93
4. Socialization	0.81 *	0.61	0.94
5. Self Concept	0.52	-0.02	0.82
6. Aggressiveness	0.94 *	0.84	0.97
7. Reality Disorientation	0.71 *	0.34	0.88
Total score	0.78 *	0.55	0.91

Note: All coefficients were significance at $\underline{p} \leq 0.05$ level.

* denotes significance at $\underline{p} \leq 0.01$ level.

Study Three

Psychometric Properties of Chinese Abbreviated Version McCarron-Dial System

Purpose

The purpose of the main study was to gather further evidence on discriminative validity of the abbreviated Chinese MDS. Results obtained would provide psychometric properties for assessing MH clients' vocational abilities.

Demographic Characteristics

A total of 136 people with mental handicap participated in this study. Fifty-

one (37.5%) were recruited from the day activity centre (Group A), 46 (33.8%) were from the sheltered workshop (Group B), and 39 (28.7%) were from the supported employment (Group C) (Table 4.4). Among them, 84 were male (61.8%) and 52 were female (38.2%). *Chi-square* test revealed significant differences in the gender composition (x^2 = 7.53, df = 1, p = 0.01). In Group A, the composition of male (70.6%) was more than that of female (29.4%). In Group B, the composition of male and female was 50% to 50%. In Group C, the composition of male (64.1%) was more than that of female (35.9%).

The mean age of all the participants was 24.02 (SD = 7.51). The mean ages of the participants in the DAC, SWS and SE groups were 19.53 (SD = 3.06), 25.50 (SD = 7.99) and 28.15 (SD = 8.08) respectively. The mean of stay in the present vocational placements of all the participants was 18.39 months ranging from 4 months to 3 years and 4 months. The results of one-way ANOVA showed significant differences in the age of the participants among the three groups (F (2, 133) = 20.53, p < 0.01). The mean age of SE group was significantly higher than those in the other two groups. All of the participants were diagnosed as mental retardation, either mild or moderate grade. Most of them (78.3%) did not have other medical complication. However, there were 13 participants (9.6%) with a diagnosis of autism.

Table 4.4

Demographic characteristics of DAC, SW and SE participants

Characteristics	DAC group (n = 51)		SWS group (n = 46)		SE group (n = 39)		Total subjects (n = 136)		Comparisons
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Age	19.53	3.06	25.50	7.99	28.15	8.08	23.67	7.56	F (2, 133) = 20.53 *
	N	%	N	%	N	%	N	%	
Gender									Chi-square = 7.53
Male	36	70.60	23	50	25	64.10	84	61.80	df = 1*
Female	15	29.40	23	50	14	35.90	52	38.20	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Duration of placement	18.39	11.20	28.02	7.69	14.31	11.23	20.48	12.33	F (2, 133) = 17.74*
	n	%	n	%	n	%	n	%	
Other Diagnosis									
Autism	8	15.70	3	6.5	2	5.10	13	9.60	Chi-square = 362.35
Mental illness	0	0.00	0	0.00	1	2.60	1	0.70	df = 5*
Autistic features	4	7.80	0	0.00	0	0.00	4	2.90	
Epilepsy	5	9.80	0	0.00	1	2.60	6	4.40	
Other	2	3.90	2	4.30	3	7.70	7	5.10	
Nil	32	62.70	41	89.10	32	82.10	105	77.20	

Note. * indicates Chi-square or F values was significant at 0.05 level. (2-tailed)

Results

Differences in Test Variables

Verbal-Spatial-Cognitive Factor

The results of one-way ANOVA indicated that there were significantly differences in the TONI-III scores among the three vocational placement groups (F (2, 133) = 36.25, $p \leq 0.01$) especially the DAC group. The participants in the DAC group showed significantly lower scores than those in the other two groups (Tables 4.5 and 4.6). However, the post-hoc multiple comparison tests (Tukey HSD) indicated insignificant differences in the scores between SWS and SE group (p = 0.23). Nevertheless, the TONI test score was selected to enter into the next level of analysis.

Sensori-Motor Factor

There were three tests in the sensori-motor factor: BVMGT, HVDT and MAND. The BVMGT scores revealed significant differences in the participants among the three placement groups (F (2, 133) = 15.08, p = 0.01). The SE group participants had the lowest mean score indicating that they had the best visual-motor function among the three groups. Although the post-hoc multiple comparison tests (Tukey HSD) indicated insignificant differences in the scores between SWS and DAC group (p = 0.16), the result showed that SE group had significant differences when compared with both SWS and DAC groups (p = 0.01). In view of this, the BVMGT test was selected for entering into the next level of analysis.

For the HVDT, significant differences were revealed in all the subscales scores: “right” (F (2, 133) = 68.57, $p \leq 0.01$), “left” (F (2, 133) = 46.98, $p \leq 0.01$),

"shape" (F (2, 133) = 32.42, $p \leq 0.01$), "size" (F (2, 133) = 34.17, p ≤ 0.01), "texture" (F (2, 133) = 27.86, p ≤ 0.01) and "configuration" (F (2, 133) = 61.13, p ≤ 0.01). Post-hoc multiple comparison tests (Tukey HSD) further indicated significant differences in the scores between each of the pairwise comparison in the "right", "left", "size", "texture" and "configuration" subscales (p ≤ 0.01). Only in the "shape" subscale, there showed insignificant difference between SWS and SE groups (p = 0.62). As a consequence, the five significant subscales were selected to enter into the next level of analysis.

For the MAND, significant differences were revealed in two subscale scores between the three placement groups: "gross motor" (F (2, 133) = 90.47, p ≤ 0.01) and "fine motor" (F (2, 133) = 77.27, p ≤ 0.01). The results of post-hoc multiple comparison tests (Tukey HSD) indicated that both "gross motor" and "fine motor" had significant differences among participants in the DAC, SWS and SE groups (p ≤ 0.01). Therefore, both motor subscale score was selected to enter into the next level of analysis.

Emotional-Coping Factor

The OEI-R and SSSQ were administered to the participants. In general, the participants scored relatively low on all the subscales of the OEI-R. One-way ANOVA revealed insignificant differences in three of the seven subscale scores of the participants among the three placement groups (p > 0.05). They were "anxiety" subscale (p = 0.07), "depression" subscale (p = 0.45) and "self concept" subscale (p = 0.29). Significant differences, however, were revealed in the "impulsivity-frustration" (p = 0.01), "socialization" (p = 0.05), "aggressiveness" (p = 0.04) and

"reality disorientation" (p = 0.01) subscale scores. Post hoc tests (Tukey HSD) revealed one significant difference in the impulsivity-frustration subscale scores between the DAC and SE groups (p = 0.01). However, insignificant differences showed in the placement between SWS and SE (p = 0.06) as well as SWS and DAC (p = 0.67). While in the "socialization" subscale, post hoc tests (Tukey HSD) revealed one significant difference between the DAC and SE groups (p = 0.04). However, insignificant differences showed in the placement between SWS and SE (p = 0.25) as well as SWS and DAC (p = 0.69). In the "aggressiveness" subscale, post hoc tests (Tukey HSD) revealed one significant difference between the SWS and SE groups (p = 0.03). However, insignificant differences showed in the placement between DAC and SE (p = 0.32) as well as SWS and DAC (p = 0.44). Post hoc tests (Tukey HSD) revealed significant differences in the "reality disorientation" subscale scores between the SWS and SE groups (p = 0.01) as well as SE and DAC groups (p = 0.01). However, insignificant differences showed in the placement between SWS and DAC (p = 1.00). As a result, all the four significant subscale scores were selected to enter into the next level of analysis.

For the SSSQ, all the nine subscales showed significant differences in participants' scores among the three placement groups (p = 0.01). Post-hoc multiple comparisons (Tukey HSD) further indicated significant differences in the pairwise comparisons of all the subscales (p = 0.01). As a result, all the subscales were selected to enter into the next stage of analysis.

Summary

The following tests/ subscales were selected to enter into the next level of

data analysis. They were: the TONI, the BVMGT, the "right", "left", "size", "texture" and "configuration" subscales of the HVDT, the 'gross motor" and "fine motor" subscales of the MAND, the "impulsivity-frustration", "self concept", "aggressiveness" and "reality disorientation" subscales of the OEI-R, as well as all the nine subscales of the SSSQ.

Table 4.5

Means and standard deviation of the MDS scores of participants in the DAC, SW and SE groups

MDS subtest / subscore	DAC group (n = 51)		SWS group (n = 46)		SE group (n = 39)	
	Mean	SD	Mean	SD	Mean	SD
Test of Non Verbal Intelligence (TONI) – total score	3.18	2.84	9.72	6.21	11.51	5.51
Bender Visual Motor Gestalt Test (BVMGT) – total score	12.82	4.51	10.80	5.67	6.59	6.04
McCarron Assessment of Neuromuscular Development (MAND) – total score	306.71	112.22	495.00	95.32	605.56	70.15
1. Gross Motor	119.90	43.60	210.54	64.12	272.95	54.70
2. Fine Motor	185.65	77.99	284.46	46.92	332.62	32.42
Haptic Visual Disciminant Test (HVDT) – total score	24.49	9.85	42.26	12.09	53.28	15.53
1. Right hand	11.75	4.86	20.67	5.76	26.69	7.77
2. Left hand	12.76	5.61	21.48	6.68	26.59	8.46
3. Shape	9.55	5.73	16.35	4.58	17.38	4.92
4. Size	5.78	3.25	9.96	4.15	12.46	4.33
5. Texture	4.63	2.14	7.24	3.59	10.08	4.47
6. Configuration	4.37	2.05	8.76	4.11	13.33	5.05
Observational Emotional Inventory Revised (OEI-R) – total score	18.61	16.05	16.33	14.32	8.59	5.42
1. Impulsivity-Frustration	5.31	4.49	4.52	5.74	2.26	2.37
2. Anxiety	2.45	3.91	1.63	2.25	1.08	1.46

3. Depression-Withdrawal	2.06	3.96	1.46	2.25	1.36	1.80
4. Socialization	4.33	4.05	3.72	3.67	2.44	3.08
5. Self Concept	1.57	2.34	1.57	2.48	0.92	1.33
6. Aggression	0.82	1.58	1.30	2.76	0.23	0.87
7. Reality Disorientation	2.04	2.91	2.04	3.71	0.28	0.72
Street Survival Skill Questionnaire (SSSQ) – total score	63.10	16.81	108.09	27.85	138.82	25.58
1. Basic Concept	8.39	3.37	15.35	4.49	18.18	3.53
2. Functional Sign	9.45	4.06	17.20	4.13	20.85	2.92
3. Tool Identification & Use	6.14	2.10	10.43	3.40	13.77	3.75
4. Domestic Management	6.88	2.62	11.61	3.55	13.95	2.86
5. Health & Safety	6.73	2.97	10.74	3.51	14.10	3.00
6. Public Service	7.27	3.10	12.43	3.81	16.95	3.55
7. Time	6.04	2.14	10.43	4.64	13.36	4.46
8. Money	6.39	2.40	12.65	5.30	17.46	3.83
9. Measurement	5.75	2.48	7.65	3.31	10.23	4.23

Table 4.6

Comparison of the participants' scores on different MDS tests/subscale among the three placement groups

MDS test / subscales	Comparisons among the DAC, SWS and SE groups				
	df	F ratios	p value	Multiple comparisons ($p < 0.05$)	Multiple comparisons ($p < 0.01$)
Test of Non Verbal Intelligence (TONI)	2	36.25	<0.01	1,2; 1,3	1,2; 1,3
Bender Visual Motor Gestalt Test (BVMGT)	2	15.08	<0.01	1,3; 2,3	1,3; 2,3
McCarron Assessment of Neuromuscular Development (MAND)					
1. Gross Motor	2	90.47	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
2. Fine Motor	2	77.27	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
Haptic Visual Disciminant Test (HVDT)					
1. Right hand	2	68.57	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
2. Left hand	2	46.98	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
3. Shape	2	32.42	<0.01	1,2; 1,3	1,2; 1,3
4. Size	2	34.17	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3

5. Texture	2	27.86	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
6. Configuration	2	61.13	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
Observational Emotional Inventory Revised (OEI-R)					
1. Impulsivity-Frustration	2	5.29	<0.01	1,3; 2,3	1,3
2. Anxiety	2	2.69	0.07	-	-
3. Depression-Withdrawal	2	0.79	0.45	-	-
4. Socialization	2	1.24	0.29	1,3	-
5. Self Concept	2	3.01	0.05	-	-
6. Aggressiveness	2	3.25	0.04	2,3	-
7. Reality Disorientation	2	5.38	<0.01	1,3; 2,3	1,3; 2,3
Street Survival Skill Questionnaire (SSSQ)					
1. Basic Concept	2	80.00	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
2. Functional Sign	2	107.87	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
3. Tool Identification & Use	2	68.74	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
4. Domestic Management	2	64.63	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
5. Health & Safety	2	60.85	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
6. Public Service	2	86.43	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
7. Time	2	52.70	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
8. Money	2	87.47	<0.01	1,2; 1,3; 2,3	1,2; 1,3; 2,3
9. Measurement	2	19.97	<0.01	1,2; 1,3; 2,3	1,3; 2,3

Note. In the multiple comparisons, 1 = DAC, 2 = SWS, 3 = SE

Correlations Among the Test Variables

The value of the correlation coefficient is a measure of strength of association between two variables. Correlations ranging from 0.00 to 0.25 indicate little or no relationship. Correlations ranging from 0.25 to 0.50 are regarded as having a fair degree of relationship. Correlations ranging from 0.50 to 0.75 suggest

moderate to good relationship. And those values above 0.75 are considered as having good to excellent relationship (Portney & Watkins, 2000).

Verbal-Spatial-Cognitive Factor

For the TONI, there was moderate to strong correlation (r range from 0.54 to 0.71) with the other MDS tests ($p < 0.01$). Low and insignificant correlations were found with the OEI-R subscale ($p > 0.05$) (Table 4.7). The correlation coefficients between the TONI and BVMGT, HVDT, MAND and SSSQ were around 0.60 indicating moderate to good relationship ($p < 0.01$).

Sensori-Motor Factor

Weak correlations were identified between the BVMGT and OEI-R ($r = 0.22$, $p < 0.05$), and moderate correlation with TONI ($r = -0.60$, $p < 0.05$), fair degree of correlation with MAND ($r = -0.46$, $p < 0.01$), fair to moderate relationships with HVDT ($r = -0.48$ to -0.57, $p < 0.01$), and SSSQ ($r = -0.43$ to -0.51, $p < 0.01$).

For the HVDT right hand subscale, it was moderately correlated with the BVMGT ($r = -0.50$, $p < 0.01$), TONI ($r = 0.63$, $p < 0.01$) and MAND ($r = 0.65$, $p < 0.01$). As the correlation coefficient was high with the SSSQ subscale scores ($r = -0.65$ to -0.71, $p < 0.01$). This observation was made for the left hand subscale score where the TONI and SSSQ public service and money subscales showed high correlation coefficients ($r = 0.71$ and 0.72 respectively, $p < 0.01$).

The MAND showed moderate to good correlation with other MDS tests ($r = -0.46$ to 0.70, $p < 0.01$).

Emotional-Coping Factor

For the OEI-R, only low correlations were revealed with the BVMGT,

HVDT left hand and configuration subscale ($\underline{r}$ = -0.19 to -0.22, $\underline{p} < 0.05$).

In general, the SSSQ showed relatively high correlation coefficients with all other tests or subscales except the OEI-R (Table 4.8). Among the four selected subscales, “health and safety ” and “money” showed comparatively lower correlation with the tests under the VSC and SM factors ($\underline{r}$ = 0.47 to 0.70, $\underline{p} < 0.01$).

Table 4.7

Correlation coefficients among all the selected MDS tests and subscales

	TONI	BVMGT	MAND - GM	HVDT - R	HVDT - L	HVDT -T	HVDT - C
TONI	1.00						
BVMGT	-0.60**	1.00					
MAND-GM	0.54**	-0.46**	1.00				
HVDT- R	0.63**	-0.50**	0.65**	1.00			
HVDT- L	0.71**	-0.57**	0.66**	0.91**	1.00		
HVDT- T	0.65**	-0.48**	0.54**	0.77**	0.79**	1.00	
HVDT- C	0.64**	-0.57**	0.68**	0.82**	0.84**	0.66**	1.00
OEI-R -I-F	-0.11	-0.22*	-0.11	-0.17	-0.20*	-0.07	-0.19*
SSSQ-Tool	0.61**	-0.43**	0.68**	0.71**	0.69**	0.60**	0.67**
SSSQ-Health	0.62**	-0.47**	0.70**	0.65**	0.64**	0.55**	0.60**
SSSQ-PS	0.66**	-0.50**	0.66**	0.71**	0.71**	0.64**	0.70**
SSSQ-Money	0.69**	-0.51**	0.67**	0.70**	0.72**	0.63**	0.72**

	OEI-R I-F	SSSQ - Tool	SSSQ-Health	SSSQ – PS
OEI-R – I-F	1.00			
SSSQ - Tool	-0.11	1.00		
SSSQ-Health	-0.08	0.71**	1.00	
SSSQ - PS	-0.06	0.72**	0.75**	1.00
SSSQ-Money	-0.14	0.73**	0.72**	0.84**

Note. MAND-GM = gross motor, HVDT-R = right hand, HVDT-L = left hand, HVDT-T = texture, HVDT-C = configuration, OEI-R-I-F = impulsivity-frustration, SSSQ-Tool = tool identification & use, SSSQ-Health = health & safety, SSSQ-PS = public service, SSSQ-Money = money

** Correlation is significant at the level of p < 0.01 level (2 tailed Pearson correlation)

* Correlation is significant at the level of p < 0.05 level (2 tailed Pearson correlation)

Discriminant Analysis

Discriminant analysis was conducted with an attempt to predict the classification of participants who originally came from the existing known placement groups. All the variables which were previously identified as statistically significant were entered into the discriminative function. The accuracy of the classification of participants' membership based on the Chinese abbreviated MDS was summarized in Table 4.8. The results revealed a high overall accuracy of 75.7%. Participants in the DAC group (A) were most accurately classified with 90.2%. In the supported employment group, 76.9% of the participants were correctly classified. In contrast, there were only 63.0% of the participants were correctly classified among the sheltered workshop group. The Wilks' lambda was 0.22 with a p-value < 0.01 which indicated highly significant differences among the centroids of the three groups (Figure 4.1). Discriminant analysis performed in a stepwise manner in order to reduce the discriminant function to a minimum of relevant variables. When all the significant variables had been put in the discriminant analysis, seven steps were shown, and finally five variables became significant. They were SSSQ – Functional signs (Wilks Lambda = 0.27), MAND – gross motor (Wilks Lambda = 0.24), HVDT – shape (Wilks Lambda = 0.28), HVDT – right hand (Wilks Lambda = 0.28), and MAND – fine motor (Wilks Lambda = 0.24). The factor 2 of the Street Survival

Skill Questionnaire – Functional signs had the largest canonical discriminant function coefficients of 0.59 in Function 1. Table 4.9 showed the standardized canonical discriminant function coefficients of the selected predictors.

Table 4.8

Results of group classification basing on the MDS tests

Actual Groups		No of cases	Predicted Group Membership		
			1	2	3
Group A	1	51	46	5	0
DAC			90.2%	9.8%	0%
Group B	2	46	6	29	11
SWS			13.1%	63.0%	23.9%
Group C	3	39	0	9	30
SE			0%	23.1%	76.9%

Note: 77.2% of the original group cases were correctly classified

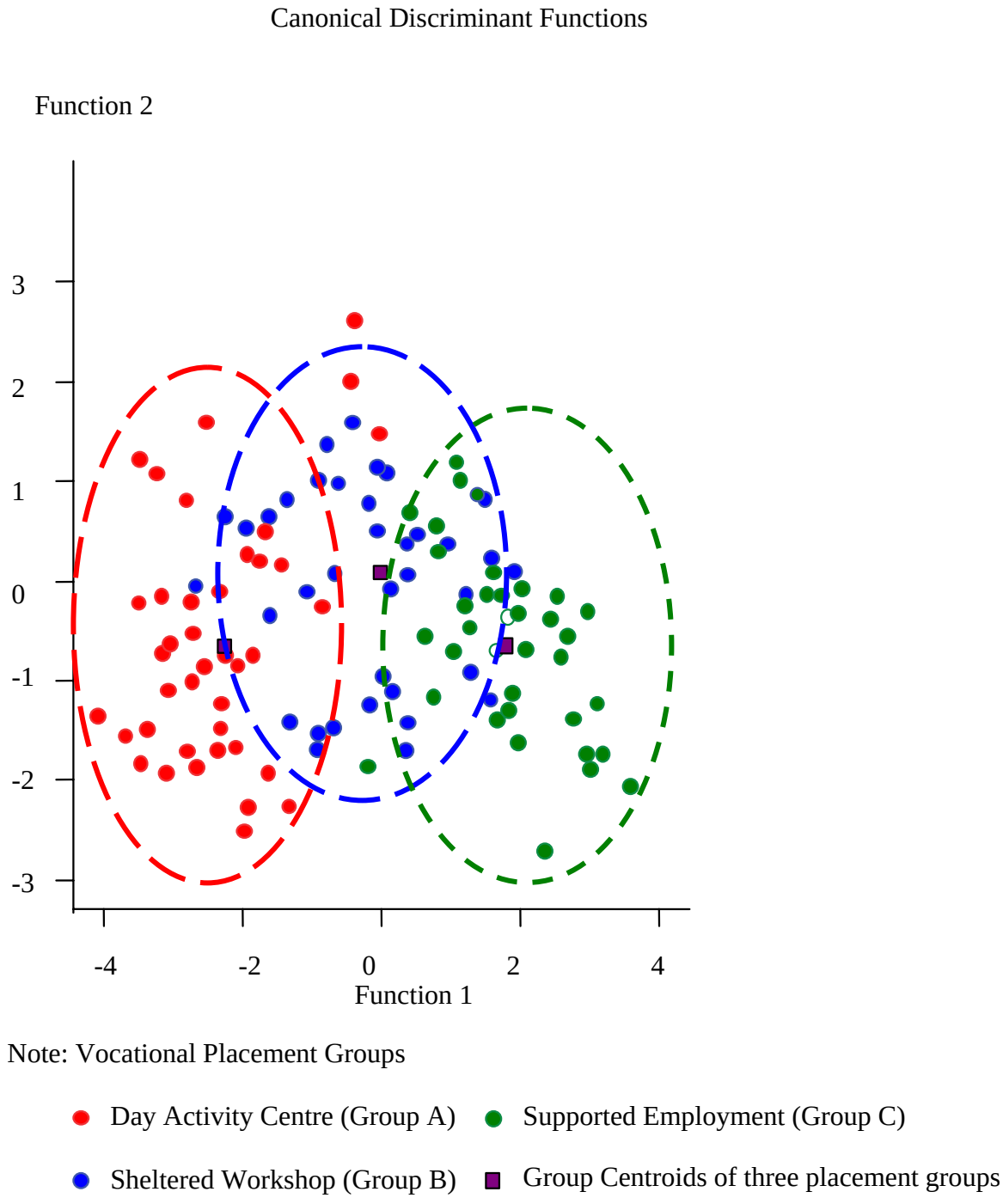
Table 4.9

Standardized Canonical Discriminant Function Coefficients

MDS tests	Function	
	1	2
MAND – Gross Motor	0.34	-0.25
MAND – Fine Motor	0.33	0.21
HVDT – Right hand	0.73	-1.12
HVDT - Shape	-0.73	1.43
SSSQ – Functional Sign	0.59	0.19

Figure 4.1

Scatterplot of the discriminant function of participants in the three vocational placement groups



Study Four

Work Adjustment Process on Supported Employment

Purpose

Despite the impact of ability profile for people with mental handicap in job finding, little is known about the relationship of work adjustment process and work ability in maintaining job tenure. The purpose of this study was to explore the work adjustment profile regarding supported employment of people with mental handicap.

Demographic background

Two male participants with mild mental handicap in supported employment service of the Hong Kong Down's Syndrome Association participated in interviews. The mean age of them was 23.8 years (SD = 0.5). They lived with their families. None of them were married. They had completed special education. Their demographic profile is shown in Appendix XIV. Content analysis was adopted in interpreting the data.

Results

Case Study A

The subject of Case A was a 24 year-old boy, named Po (fictitious Chinese name), who had been diagnosed as mild grade MR. He lived in a public housing estate with his parents and an elder brother who was unemployed. The monthly income of the whole family, including Case A, was roughly about $5, 000. They belonged to the low socio-economical class. Po received his education in a special school for mild grade mental handicap. After graduation, he entered a vocational training centre for further training on packaging and assembling tasks. However, he

quickly quitted the training after a few days' practice because he felt bored and not interested in that scope of training. Afterwards, he idled at home for about 3 years because he couldn't find a job in the open employment. Two years ago, he joined the supported employment service in the Down Syndrome Association. There, he received different types of vocational training, such as cleansing work and distribution of pamphlets. As he had showed steady progress and engaged in cleansing tasks quite well, the Association employed him as a cleansing worker in the car cleansing crew since March 2004.

The initial MDS assessment done in March 2004 showed that Po possessed a relatively lower MDS profile scores (MAND: 435; HVDT: 33; SSSQ: 139; OEI-R: 6).

The BWAP on Po's work performance and job demand was assessed at the end of the 1st month and 3rd month after he had started the car cleansing job. The results showed that the "most important" job demand was work motivation (score 5), other than that, there were altogether 23 items claimed to be "quite important" in car cleansing job requirements (Score 4), such as personal hygiene, punctuality, emotionally stability etc. There were 28 items showing "ordinary important" (Score 3) in the job demands such as cooperativeness with colleagues, memory, reading ability etc. The items "Concern for others" and "need of writing" were comparatively not so important for car cleansing job (Score 2). There was no big change in the job demand at the 1st and 3rd month when Po participated the job, except some minor changes, such as increasing job demand on work posture (change from 3 to 4), working with colleagues (change from 3 to 4) and quality of work

(change from 4 to 5). In the profile, Po could only fulfill some of the job demand generally. There was only one item (taking transportation) that he could fulfill job requirement (Score 5). Besides, most of the time, he could only fulfill 80% of the job demand (Score 4). Some job requirements became more important at the 3rd month, such as work posture, work with colleagues, quality of work, reliability etc. And there was steady progress in his work performance in the 3rd month of the job, including attendance of work, accept correctness, emotional stability, quality of work, reliability and so on (Table 4.10).

Table 4.10

Job demand and work performance scores of Becker Work Adjustment Profile (BWAP) (Case A: Po – the one with "less satisfactory" MDS profile)

Domains/ Items	1st month		3rd month	
	Job Demand	Work Performance	Job Demand	Work Performance
Work Habits/ Attitudes (HA)				
Personal hygiene	3	3	3	3
Appropriate clothing	3	4	3	4
Personal appearance	3	3	3	4
Punctuality	4	4	4	4
Motivation	5	4	5	4
Attendance	4	4	4	5
Dependability	4	4	4	4
Work posture	3	4	4	4
Interpersonal Relations (IR)				
Personal relations	4	3	4	4
Group acceptance	4	3	4	4
Cooperation- supervisors	3	3	3	4
Trustworthy	3	3	3	4
Cooperation- co-workers	3	3	4	4
Concern for others	2	2	2	2
Accepting correction	4	3	4	4
Emotional stability	3	3	3	3

Social participation	3	3	3	4
Helping others	3	4	3	4
Major disruptive behavior	4	4	4	5
Cognitive Skills				
Numbers	NA	NA	NA	NA
Communication mode	3	3	3	3
Memory	3	4	3	4
Reading level	3	3	3	3
Time concept	3	4	3	4
Writing	2	3	2	3
Telling time	3	4	3	4
Telephone	NA	NA	NA	NA
Measuring	NA	NA	NA	NA
Managing money	NA	NA	NA	NA
Discrimination skills	NA	NA	NA	NA
Communicating basic needs	3	2	3	2
Follow verbal instructions	4	4	4	4
Knowledge of work	4	4	4	4
Transfer of skills	3	3	3	3
Solving problems	4	2	4	2
Learning job task	3	3	3	3
Judgment	4	3	4	3
Independent travel	3	5	3	5
Work Performance Skills				
Correcting errors	4	4	4	4
Quality of work	4	4	4	4
Initiating task	4	4	4	4
Quantity of work	4	3	5	4
Asking for materials	3	4	3	4
Dependability	4	4	3	4
Independent functioning	4	3	4	3
Requests help when needed	4	3	4	3
Tool return	3	4	3	4
Attending to task	3	4	3	4
Maintaining work area	3	3	3	3
Time clock	3	3	3	3
Work steadiness	4	4	4	4
Care of equipment	3	3	3	3
Safety practice	3	3	3	3
Communicating problems	4	3	4	3
Physical stamina	4	3	4	3
Fine motor skill	NA	NA	NA	NA
Manual skill	4	3	4	3

Gross motor skill	3	3	3	3
Work station	3	3	3	3
Physical strength	3	3	3	3

Note: Job demand - very important = 5, quite important = 4, ordinary important = 3, least important = 2, not important = 1, NA = not applicable;

Work performance – able to fulfill all the job requirement (100%) = 5,

able to fulfill most of the job requirement (80-99%) = 4,

able to fulfill half of the job requirement (50-79%) = 3,

able to fulfill some of the job requirement (1-49%) = 2,

unable to fulfill the job requirement (0%) = 1, NA = not applicable

Case Study B

The subject of Case B was a 23 year-old boy named Tong (fictitious Chinese name), who had been diagnosed as mild grade MR. He lived in a private housing with his parents and a younger sister. The monthly income of the whole family, including Case B, was roughly about $50, 000. They belonged to the middle socio-economical class. He received his education in a special school for mild grade mental handicap. After graduation, he entered a vocational training centre for 2 years' training. Afterwards, he engaged in part-time job as cleaning worker in a fast food shop. Half a year ago, he joined the supported employment service in Down Syndrome Association. There, he received different types of vocational training, such as distribution of pamphlets. A property company employed him as a worker for pamphlet distribution since April 2004.

The initial MDS assessment done in March 2004 showed that he possessed a relatively higher profile (MAND: 593; HVDT: 36; SSSQ: 152; OEI-R: 1).

The BWAP showing Tong's work performance and job demand was assessed at the end of the 1st month and 3rd month when he had started the pamphlet distribution job. The results showed that the "most important" job demand was reliability to the job, no disruptive behaviors, time record and physical endurance (score 5), other than that, there were altogether 15 items claimed to be "quite important" in the job requirements (Score 4), such as personal hygiene, appropriate dressing, punctuality, emotionally stability, clock reading etc. There were 14 items showing "ordinary important" (Score 3) in the job demands such as attendance, working with supervisors, accept correctness, memory etc. There were several items that seemed to be unimportant in relation to pamphlet distribution job such as work posture, interpersonal relationship (Score 2) and math (Score 1) etc. There was no big change in the job demand at the 1st and 3rd month when Tong participated in the job, except some minor changes, such as increasing job demand on maintaining job duty (change from 3 to 4), following instruction (change from 2 to 3) and problem solving (change from 2 to 3). In the profile, Tong could fulfill some of the job demand. He was punctual, motivated to his work with good attendance and reliable (Score 5). Besides, most of the time, he could fulfill 80% of the job demand (Score 4). Some job requirements became more important in the 3rd month, such as problem solving skill. To a certain extent, Tong showed a good progress in his work performance in the 3rd month of the job as shown in the following table (Table 4.11).

Table 4.11

Job demand and work performance scores of Becker Work Adjustment Profile (BWAP) (Case B: Tong – the one with "better" MDS profile)

Domains/ Items	1st month		3rd month	
	Job Demand	Work Performance	Job Demand	Work Performance
Work Habits/ Attitudes				
Personal hygiene	4	4	4	4
Appropriate clothing	4	4	4	4
Personal appearance	4	4	4	4
Punctuality	4	5	4	5
Motivation	4	5	4	5
Attendance	3	5	4	5
Dependability	5	5	5	5
Work posture	2	4	3	4
Interpersonal Relations (IR)				
Personal relations	4	4	4	4
Group acceptance	2	2	2	3
Cooperation - supervisors	3	2	3	3
Trustworthy	3	3	3	4
Cooperation – co-workers	2	3	3	4
Concern for others	2	3	2	3
Accepting correction	3	3	4	4
Emotional stability	4	4	4	5
Social participation	2	3	2	4
Helping others	2	3	2	3
Major disruptive behavior	5	5	5	5
Cognitive Skills Domain	(CO)			
Numbers	4	3	4	3
Communication	2	2	2	3
Memory	3	2	3	4
Reading level	2	2	2	2
Time concept	3	3	3	3
Writing	1	3	1	3
Telling time	4	4	4	4
Telephone	2	2	2	2
Measuring	2	3	3	3
Managing money	2	3	2	3
Discrimination skills	1	3	1	3
Communicating basic needs	2	4	2	4
Follow verbal instructions	2	4	3	5
Knowledge of work	4	3	4	4
Transfer of skills	1	3	1	3
Solving problems	2	2	2	3

Learning job task	2	4	2	4
Judgement	3	2	3	3
Independent travel	4	4	4	4
Work Performance Skills Domain (WP)				
Correcting errors	3	3	3	3
Quality of work	3	3	3	4
Initiating task	2	4	3	5
Quantity of work	3	3	3	3
Asking for materials	1	3	1	3
Dependability	3	4	4	5
Independent functioning	4	4	4	4
Requests help when needed	4	4	4	5
Tool return	4	4	5	5
Attending to task	4	4	4	5
Maintaining work area	1	2	2	3
Time clock	5	3	5	5
Work steadiness	4	4	4	4
Care of equipment	3	4	3	4
Safety practice	3	4	3	4
Communicating problems	4	4	4	4
Physical stamina	5	5	5	5
Fine motor skill	1	2	1	2
Upper and lower limb control	2	1	2	3
Manual skill	3	2	3	4
Gross motor skill	1	1	1	3
Work station	3	3	3	3
Physical strength	3	3	3	3

Note: Job demand - very important = 5, quite important = 4, ordinary important = 3, least important = 2, not important = 1, NA = not applicable;

Work performance – able to fulfill all the job requirement (100%) = 5,

able to fulfill most of the job requirement (80-99%) = 4,

able to fulfill half of the job requirement (50-79%) = 3,

able to fulfill some of the job requirement (1-49%) = 2,

unable to fulfill the job requirement (0%) = 1, NA = not applicable

Summary

The observations made during the follow-up period suggested that both cases

managed to demonstrate their adjustment to work setting during three months of placement, although they had different MDS profiles. There were positive changes in their values, needs and behaviors which geared towards their job tenure. The two case illustrations showed different attitudes of changes. Case A adopted reactive change pattern whereas Case B adopted a more proactive change pattern.

In Case B (the one with "better MDS profile), there were several positive changes from 1st month (Time 1) to 3rd month (Time 2). These included 1) changing from fewer working hours (3 hours per day in the first month) to more working hours (6 hours per day from the second month onwards), i.e. increased job demand of Tong; 2) changing from lower salary to higher salary because of the increased working hours; 3) changing from one type of task (only distribute pamphlets in flyover) to another type of task in addition to (adding distributing pamphlets to each floor of factory building), i.e. increased job demand of Tong; 4) changing from lower satisfaction with work activity (psychosocial adjustment) to higher satisfaction with work activity (psychosocial adjustment); 5) changing from an employer's lower evaluation of Tong's performance to higher evaluation of his performance.

For Case A (the one with "less satisfactory" MDS profile), fewer work adjustments were shown during the 3 months of work. In the first month when Po started his work, he tried to request for changing the work location from Tuen Wan to Kwai Fong because the latter was much nearer to his home. However, the request was turned down by his employer. Po also had positive change of his work value in the second month of his work. He reported that he was more devoted and engaged to the job than before (previous job) because he hoped to continue his work to earn

money. In the past, he was less engaged to work and would be absent from work whenever he felt boring.

CHAPTER V

DISCUSSION

Introduction

This chapter begins with the discussion related to translation and validation process of the Chinese Abbreviated MDS. The psychometric properties and clinical implications of the Chinese Abbreviated MDS on discriminating the vocational outcomes of people with mental handicap will also be explored. In addition, the work adjustment process and the relationship with MDS profile will be discussed. Finally, the limitations of the present study and suggestions for future research will be covered.

Translation of Standardized Instrument

The McCarron-Dial System (MDS) is designed and developed in United States of which the test content, format and normative data might not be relevant for use for Chinese population. In this study, the original MDS was translated to Chinese and a part of its content was evaluated for its relevance for use in the Chinese culture. The four tests which make up the abbreviated MDS version are: Bender Visual Motor Gestalt Test (BVMGT), Haptic Visual Discrimination Test (HVDT) and McCarron Assessment of Neuromuscular Development (MAND) for the sensori-motor factor and also Observational-Emotional Inventory-Revised (OEI-R) for the emotional-coping factor. To a certain extent, translation of an instrument into a different language requires adaptation and evaluation of the test construct. The BVMGT, HVDT and MAND are used for assessing motor performance and hence would be less susceptible to cultural influences. The instructions of these three tests

were translated by a qualified translator and evaluated by bilingual expert panel members who were competent in both English and Chinese. They were also familiar with the content and use of the tests. Their evaluation involved a review on clarity and translation equivalence of the test instructions used in test administration and description of the test items. In this study, instead of using backward translation method, panel review method and forward translation method were adopted. Although backward translation focused more on the accuracy of wordings, a detailed communication with the translator and also panel members were more important. In order to ensure the quality of the translation, a briefing session for the qualified translator was organized before commencing the translation. This would enable the translator's understanding towards the purpose and utilization of the MDS subtests. A discussion meeting was also held by the research with the translation on clarifying queries in the translation process (Geisinger, 1994). Prior to the meeting, the researcher who was proficient in both Chinese and English proofread the draft translation of the test instructions and items.

In this study, expert panel members' opinions were gathered by a questionnaire. It was designed to evaluate the fluency and correctness of the test instruction of the Chinese subtests in the assessment of sensory-motor and emotional-coping of people with MH.

On the whole, the panel members agreed with the translation scripts. They largely agreed that the Chinese version of BVMGT, HVDT and MAND was equivalent to their original English version. Only a few minor amendments as regards fluency of the wordings were recommended by the panel members. And

they were mainly related to the use of Cantonese dialect which is spoken by the people in Hong Kong. For example, "**揸 (jia)** 住個扶手" was replaced by "**握 (ar)** 住個扶手" in one of the instructions of the MAND. The word replaced in here is less colloquial and therefore can be more readily to be understood by people with different background.

For the translation of the test OEI-R, forward translation method and expert panel review method were used. The content of the OEI-R was evaluated for its relevance for use to assess the emotion-coping behavior of the Chinese people with mental handicap. The panel members' ratings suggested that they agreed that the Chinese OEI-R was fluently and appropriately translated and carried the equivalent meaning of the original version.

Content Validation Process

In this study, the content validity of the Chinese OEI-R was evaluated in terms of its relevance and representativeness in measuring the emotion-coping behavior of people with MH. The Chinese version OEI-R would be regarded as valid if it covers all parts of the universe of content and reflects the relative importance of each part (Portney & Watkins, 2000).

The evidence of content validity is commonly established in a subjective way which involves expert panel review to judge to what extent the content of the items contained in the instrument can satisfy the content domain of the instrument (Portney & Watkins, 2000). In this study, expert panel method was used and panel members were required to rate the extent to which they agreed on the match between the item and the content domain, which was the relevance and representativeness of

the 70 items of the OEI-R. The panel members' rating and comments were used to guide the revision or modification of the instrument, if necessary. Most of the items do not need any modification (54 items). Only a total 16 items under the category of verbalization in different subscales needed further modification. The following example illustrates how the evaluation process was carried out on each of the items. For instance, in item 63, which belongs to the subscale of Reality Disorientation (Chinese version: 古怪的行爲 - 自言自語，扮鬼臉，盯著人); Original version: Peculiar behaviours (talks to self, makes funny faces, prolonged staring at others)), the mean mode rating on relevance ranged from fair (2) to good (3). Some of the panel members commented that odd behaviors of an individual might not be necessarily implied reality disorientation. As a result, it was suggested that a few of the behaviors, such as staring at others or making faces to others, used to illustrate this item to be removed. They further explained that these behaviors should belong to non-verbal and action category rather than the category of verbalization. In contrast, a few members rated item 63 as good (3) to excellent (4) on the relevance of the content. They argued that the content still can represent the construct of reality disorientation because sometimes odd behaviors appeared without any reasons and that this kind of behavior was always presented in people with MH. Owing to the divided opinion, the issues were further discussed and the group finally reached a consensus to retain the item without modification. The points raised during the discussion were noted down by the researchers. These points were presented in an addendum to the Chinese version for reference by the users who administer the Chinese version (Appendix VI). Follow this method, definitions, explanations and

examples of behavior of each item were generated. These are in particularly helpful for improving the clarity of the items related to observing the problems associated with verbalization. These include item 3 (Chinese version: 思想內容急劇轉變，使溝通上出現困難 (學員在談話中會不時轉話題))*; Original version: Impulsive changes in thought content lead to difficulty in communication (shifts from one topic to another during conversation)), item 12 (Chinese version: 重覆表示憂慮；重覆同一個想法 (「我的導師在哪裡？；爲什麼他/ 她不在這裡？」))*; Original version: Repeated expressions of worry; perseverates on one thought ("Where is my instructor; why is she/he not here?") and item 21 (Chinese version: 語調低沉，並且缺乏情感的表達 (喃喃自語，說話緩慢和細聲)) *; Original version: Speaks in a flat monotone voice with limited emotional expression (mumbling, slow speech that is low in volume) .

A few points are made to further improve the implementation of the panel review sessions. First of all, the three-hour panel session was found to be too lengthy and tiring for some of the panel members. In fact, it was observed that, by the end of the session, the panel members were rather tired and became less active in participating in the discussion. There were a total of 70 items under review and the reviewers needed to discuss after completing the questionnaire. It is advised that the session be divided into two with the first one for completing the questionnaire and the second for discussion among the reviewers.

In this study, all panel members were occupational therapists. The comments given in the expert panel review would largely relate to the knowledge and domain of occupational therapy. In view of the fact that multi-disciplinary approach is

preferred in providing services to people with MR, it is recommended that further expert panel members are to be composed of different professionals and experts in the field such as case worker, clinical psychologist, physiotherapist, social worker, teacher, and workshop instructor. With this composition, the review is likely to be holistic and beneficial for further developing instrumentation on emotional coping behavior of people with mental retardation.

Psychometric Properties of the Chinese Abbreviated MDS

The psychometric properties of the abbreviated Chinese MDS are presented and discussed in terms of its standardization, content-related evidence and also inter-rater reliability of the sub-tests.

In the standardization of the Chinese version abbreviated MDS, the verbal instructions and item content of five subtests were translated. They were: HVDT, BVMGT, MAND, OEI-R and SSSQ. The TONI was used as a substitute test of WAIS because non-verbal intelligence was more relevant to the people with MH especially those who had limited verbal ability. Since TONI does not involve verbal instructions in administering the test except the briefing, no Chinese version of TONI was pursued. The guidelines on using the OEI-R were translated into Chinese. The note on further elaborating the behavior associated with the OEI-R items was produced and the text was in Chinese. The SSSQ was translated into a Chinese version and had been previously validated by Lee (1999). The content review of SSSQ involved the participation of a clinical psychologist, three social workers and four occupational therapists. The results indicated that the content of all the subscales were relevant to the assessment of social survival and adaptive skills.

However, there were a number of pictures which carried culturally irrelevant material which made the respondent difficult to give responses. As a result, pictures of the same nature were fabricated and replaced the original pictures in the instrument. A total of 107 items were revised. These include pictures of the all items in the money concept subscale were replaced with coins and bills in Hong Kong currency. All items except two in the functional sign subscale were replaced with pictures of local functional signs. The other major replacement was the pictures on food and daily necessities. Nevertheless, the structure and scoring system of the SSSQ was not changed. For the field test, the revised SSSQ Chinese version was administered on the thirty-three clients with mental illness. The alpha calculated by reliability analysis was 0.94. It showed a high internal consistency as a whole. In the concurrent validity of the Chinese Functional Needs Assessment (CFNA), although the correlation of the self-care sub-scale of the CFNA with the sub-scales of the SSSQ was not significant, the correlation of the community living sub-scale of the CFNA was significant at $p < 0.01$ level for sub-scales of basic skills (volume 1), functional signs (volume 2), health, first aid and safety (volume 5), public services (volume 6), time (volume 7) and measurement (volume 9) of the SSSQ. The correlation of sub-scales of tools (volume 3), domestic management (volume 4) and money (Volume 8) of SSSQ with the community living sub-scale of CFNA was at $\underline{p} < 0.05$ level. The correlation of subscale on basic skills (volume 1) was moderate with $\underline{r} = 0.58$. The correlation of subscale on money (volume 8) was the lowest with $\underline{r} = 0.38$. The Pearson correlation between the total scores of the two instruments was 0.56 ($\underline{p} < 0.01$).

Evidence from the field test showed that the administration time of the abbreviated Chinese version of the MDS was about 14 hours which varied according to the verbal-spatial-cognitive, sensori-motor and emotional-coping abilities of the respondents, their enthusiasm in engaging the tests and also their ability in understanding the instructions. When using the MDS, a core battery of tests was usually given to every individual. This would include the instruments in each 3 factors of the MDS. The TONI test had the basal and ceiling score, it took the shortest time to complete. Usually, it only took 10-15 minutes to complete the test. For BVMGT, the respondent usually took 10-15 minutes to complete 9 figures of drawing. For HVDT, because it needed to assess 4 constructs for each hand, therefore, it took about 1 hour to finish the test. It also depended on respondent's time of haptic reaction or response to the test items. For MAND, it took about 45 minutes to 1 hour in carrying out the test. For OEI-R, it requested to assess respondents' emotional function for 5 consecutive days with each day 2-hour by rater so as to observe their vocational behaviours. This test took the longest time to complete. For SSSQ, it took about 45 minutes to 1 hour to finish the test. In local clinical practice, spending about 1 hour in each test for a comprehensive evaluation on each neuropsychological factor about client's vocational capability is considered as acceptable. However, for the OEI-R, spending a total 10 hours on rating overt emotional behaviours which intervene with vocational potential might be too lengthy in some clinical settings. In this case, another supplementary emotional measure of the MDS, Emotional Behavioral Checklist (EBC) could be used as it was a shorter form of the OEI-R and did not require an extensive observation period.

In establishing the content-related evidence of the abbreviated Chinese MDS, an expert panel review on evaluating OEI-R was recruited. The panel review showed that all the subscales and a majority of the items were relevant and representative to the people with mental retardation. This was also revealed in the content validation of SSSQ (Lee, 1999). In view of this, the abbreviated version of Chinese MDS was concluded as relevant in assessing the vocational outcome of people with MH in Hong Kong.

Intra-class correlation (ICC) was used to estimate the inter-rater reliability of the Chinese OEI-R. The ICC of the total score on OEI-R, using a two-way mixed effect model, was 0.78 (p = 0.01, 95% CI 0.55-0.92). As a general guideline, coefficients < 0.50 = poor, from 0.50 to 0.75 = moderate, and > 0.75 = good reliability (Portney & Watkins, 2000). Therefore, The inter-rater reliability of OEI-R can be regarded as good. It further suggests that its translation and adaptation to the Chinese culture did not seem to significantly alter its original consistency among the raters. The ICC values estimated for the subscale scores were high for frustration-Impulsivity (factor1) (95% CI 0.66-0.94), depression-withdrawal (factor 3) (95% CI 0.63-0.93), socialization (factor 4) (95% CI 0.61-0.94) and aggressiveness (factor 6) (95% CI 0.84-0.97) (ICC ranged from 0.81 to 0.94), indicating that these subscales had good reliability. However, the ICC values were moderate for the anxiety (factors 2) (95% CI 0.02-0.83), self concept (factor 5) (95% CI -0.02-0.82) and reality disorientation subscales (factor 7) (95% CI 0.34-0.88) (ICC ranged from 0.52-0.71). The major reason for explaining the low ICC values of the above 3 subscales was that two of the raters were confused with the meaning of these subscales, especially

for the subscale of anxiety and self concept. For instance, some of the raters commented that item 15 (Chinese version: 肌肉張力緊張；身體的緊張狀態普遍提升，動作的靈活性降低 (上肢及頭部動作僵硬；過度緊握器具或物件)); Original version: Muscular tone tense; general increase in body tension with reduced flexibility of movement (rigid movement of arms and head; excessive, firm grasp of implements or materials)), item 16 (Chinese version: 出現重覆的身體動作 (輕打手指或腳趾，眼睛顫動，神經性肌肉動作 (nervous muscular movements)，搖擺身體，咬手指甲)); Original version: Presence of repetitive physical movements (finger or foot tapping, eye twitching, nervous muscular movements, rocking, biting fingernails)) and item 17 (Chinese version: 當身處有壓力的環境時，會出現過多的身體反應 (呼吸急促/ 呼吸不正常、流汗過多、手震)); Original version: Excessive physical responses to stressful situations (hyperventilation or erratic breathing, excessive perspiration, hand tremors)) were quite similar to each other in terms of their meaning and nature originated from physical and mental stress. In addition, in item 44 (Chinese version: 不良的姿勢 (無精打采的姿態；低頭；寒背；拖著腳走路)); Original version: Poor body posture (slouched posture, lowered head, stooped shoulders, shuffled walk)), some raters could not distinguish the occurrence of the item because of one's physical weakness or low self concept. This also happened in item 45 (Chinese version: 過度溫順及服從 (說話時陰聲細氣；經常要求別人的批准；立場不明確)); Original version: Meek and submissive (speaks in soft whining voice; constantly asks for permission; nonassertive)), some raters also confused about whether this was the personality of the person or poor self

concept. They might even query that people with MH might have no idea of self concept because it was a more abstract and subtle feeling. And therefore, they did not agree with the ratings in these sub-scales. Because the ICC is a reliability coefficient based on an analysis of variance across all raters, non-agreement involve some raters indicating the ICC is only an average correlation across raters but not representing the reliability of any individual rater (Portney & Watkins, 2000). In addition to this, there were several reasons contributing to the high inter-rater reliability to the overall OEI-R and also the four subscales as mentioned above. First, a detailed training session was organized with all the potential raters of the OEI-R and that a snowball sampling method was used to select 3 raters for the inter-rater reliability test. The raters were requested to have self-practice with the translated OEI-R on at least two persons with MH in their own setting before and after the workshop. This was to familiarize the raters with the actual rating procedure prior to the training workshop and to consolidate their skills acquired after the training workshop. Telephone follow-up was provided by the researcher afterwards in order to ensure the raters' understanding the use of OEI-R. Of the selected 3 raters who represent the frontline staff of supported employment, sheltered workshop and day activity centre, they joined another training session on rating five subjects with MH whose behaviors were shown in video-tapes for familiarizing themselves with the method of observing behaviors with the use of videos. With these preparations, it was hoped to enhance the raters' familiarity with the scoring criteria and also the administration of the Chinese OEI-R, thus reducing the error to the minimal. Second, the dichotomous scoring of either 1 or 0 was assigned, which was discrete to show

whether any behavioral problems were observed in the video tapes, regardless the frequency of the behaviors. As compared with the study by McCarron & Dial (1986), the OEI-R indicated high reliability (0.96) and current validity with the standard OEI (0.97), with the reliability score a bit higher than the Chinese OEI-R. In view of this, a further explanation on the OEI-R based on the provided definitions and examples of the original OEI and OEI-R information from the MDS manual (McCarron & Dial, 1986) was translated into Chinese by the researcher to facilitate understanding of the definitions and item meaning of the seven subscales. In order to alleviate lower inter-rater reliability in the future, several recommendations are suggested. First, it is essential for potential raters to read the note of elaboration on the emotional-coping behavior relevant to each item developed for the COEI-R. Second, training workshop should be made available to those who are interested in conducting the test. This can even become a compulsory training for users of COEI-R. The training can involve the rationale and standardization of utilizing the COEI-R especially those subscales with lower inter-rater reliability as revealed in this study. Third, practising the COEI-R on persons with MH before applying on potential clients would help to enhance raters' experience on using the COEI-R and that sharing sessions afterwards can be organized with raters who also use the COEI-R for people with MH. This will be beneficial to the scoring criteria and understanding on the item contents.

MDS Profile for Vocational Placement - Clinical Utility of the Chinese Abbreviated MDS

In this study, the MDS profile score of the participants was used to differentiate their vocational placement. The MDS profile was composed of the participants' performance on the verbal-spatial-cognitive, sensori-motor and emotional-coping subscales. What it assumes is that these are the core abilities the vocational placements require. The MDS profile has become the criterion and the vocational placements are the outcome of such prediction. The discriminant ability of the AC-MDS was tested with logistic regression, discriminant analysis, and multiple cutoff criteria (Bolton, 2001). Musgrave et al. (1990) commented that this approach would give a more thorough and comprehensive assessment than on-site naturalistic assessment. The typical areas to be included in this kind of assessment are learning style preference, motor and dexterity skills, as well as cognitive functioning. McCarron and Dial (1986) further asserted that it is more useful to assess motor skills as well as cognitive functioning when determining sheltered work job performance. Standardized assessment, like MAND, appeared to be the most efficient and accurate means of assessing overall motor skills than on-site assessment. Some studies also recommended that work speed was crucial to job performance (Musgrave, Flowers & Shelton, 1990). The findings of this study are consistent with such an approach.

Rubinsky (1991) used the MDS to explore the abilities of 108 persons with mental retardation who served by eight rehabilitation facilities. It was a prospective study design. The participants were evaluated by the MDS. Multiple discriminant

analysis was used to determine the ability of the three independent variables, namely intellectual, sensori-motor and emotional-coping, to discriminate among the three levels of vocational placement, which were sheltered, group supported and individual supported employment. Significant relationships between intellectual, sensory-motor, and emotional-coping abilities were identified. Rubinsky further used the MDS results to predict the vocational placements of the participants. The accuracy of using MDS for predicting vocational placements was 67.62%. The accuracy for membership prediction was 72% for those in the sheltered placements, 54% for the group supported placement, whilst 71% for the individual supported placements. Both the intellectual factor ($F(2, 104) = 18.44$, $p < 0.01$) and sensory-motor factor ($F(2, 104) = 28.90$, $p < 0.01$) results were found to be significantly contributive to the placement classification.

In this study, the people with MH were recruited from three supported employment services, sheltered workshops and day activity centers. When compared with the results obtained from Rubinsky's study (1991), the accuracy of placement classification using the Chinese version MDS was somewhat higher at 75.7%. The accuracy for the Day Activity Centre, Sheltered Workshop Setting and Supported Employment group were 90.2%, 63% and 76.9% respectively. However, in the SWS group, a total of 37% of the participants were mis-classified to either the DAC or SE groups. From there, 13.1% was mis-classified to the DAC group while 23.9% was mis-classified to the SE group. This might be due to the fact that sheltered workshop usually played the function of a transitional placement for people with MR before they engaged in supported employment work. Supported employment has been

considered as an important part of revolutionary changes in the care of people with MH. It adopted a “place and train” approach that ongoing support was provided once the individual was placed in competitive employment (Reitman et al., 1999). And it was not surprising that SWS seemed to be the potentially “prepared” vocational placement area for supported employment in terms of certain similar job nature, such as car cleansing, ordinary cleansing and making snack food, as well as the kind of support and supervision by professional staff. The difference was that more opportunity for social integration with non-disabled workers occurred in SE settings and that workers in SE had salary. In fact, some of the SWS participants ($\underline{n}$ = 7) had potential to upgrade to SE and were actually awaiting SE placement in the present study. Their vocational functioning and abilities were higher than expected in the mean scores of the SWS group. However, some of the participants might have deterioration in the three neuropsychological factors for different reasons, such as deterioration in mental health and physical health. They might remain in SWS as long as their workshop instructors or social workers satisfied with their vocational abilities in fulfilling the job demand and their behaviours were under control. And in this way, they might still stay in the SWS.

For the participants in supported employment placements, 76.9% of the group were correctly classified. There was still 23.1% of the group member mis-classified to the sheltered workshop group. This phenomenon could be related to the local rehabilitation policy which tended to put less resources in developing supported employment placements. And it might be due to the fact that some participants, who would have adequate vocational potentials and abilities but low

enthusiasm or participation in work, were placed in the sheltered workshops. Previous studies reviewed that emotional-coping abilities was crucial for the people of MH to participate in supported employment placements and maintain job tenure (Reitman, 1999; Stephens et al., 2005). Coping with supervisors and co-workers in supported employment was more important than sheltered workshop. This was because people in supported employment mostly needed to work in competitive settings, although with the guidance and support of the supported employment staff. However, in the sheltered workshop, participants were more often engaged in repetitive and simple work, and under more structured environment. The job task and environment would not challenge them on dealing with socio-emotional conflict or in-depth communication with supervisors or co-workers. And that the staff in sheltered workshop was usually more accommodative to the participants. These could explain why in this study there was still a considerable percentage of the sheltered workshop participants who had higher scores on the MDS, but would not have been placed in the supported employment.

In this study, the variables which contributed to the vocational disciminant model on the three vocational groups of placement were mainly the sensori-motor and emotional-coping subtests, namely MAND, HVDT and SSSQ. In the McCarron & Dial ’s study (1986), individuals who had major deficits in sensori-motor functions were being placed in the day-care or work activities program. They also had emotional and integration-coping deficits as well as verbal-spatial-cognitive deficits, but were less significant than sensori-motor abilities. Under the MDS research studies, people who were placed in the extended levels of vocational

placement, indicating that elementary sorting and assembly tasks were used for prevocational training, their integration-coping deficits were most handicapped, followed by emotional deficits and verbal-spatial-cognitive deficits. In the transitional level of vocational placement, which emphasized on supported work activity, vocational exploration and job training activities, individuals there had integration-coping and emotional deficits as the major priority, followed by verbal-spatial-cognitive deficits and finally sensori-motor problems. At the community level of vocational placement, meaning open and competitive employment, emotional and verbal-spatial-cognitive deficits were most serious, followed by integration-coping and sensori-motor problems.

Previous studies revealed that sensori-motor abilities were one of the critical factors for sheltered workshop placement. McCarron and Dial (1986) found that these abilities included fine and gross motor coordination, and perceptual and motor integration skills. Nevertheless, literature in this area is relatively scarce. More studies are called for to investigate this area.

Previous research literature had not clearly identified what ability levels differentiate individuals' functioning in sheltered, group supported and individual supported employment situations (Rubinsky, 1991). Studies found out that persons with MH who had failed to retain employment in supported work or competitive employment settings concluded that there were diverse deficits in productivity, work competency and social behaviour as the primary reasons for the loss of jobs (Brickey, Campbell & Browning, 1985; Ford & Dineen, 1984; Foss & Peterson, 1981; Salzberg, Agran & Lignugaris, 1986). Trait and factory theory suggested that

different vocational environments in different levels of vocational placement required unique patterns of individual abilities and values (Schmidt & Growick, 1985). Other studies pointed out that persons with disabilities demonstrated strong relationships between individual's ability and level of employment (Malgady, Barcher, Davis & Towner, 1980; McCarron & Dial, 1986). Rubinsky's study (1991) concluded that level of employment was affirmed as a hierarchical construct based on differing job requirements. The job requirements of supported employment settings exceeded those of sheltered workshop. And that individual supported employment positions had more stringent requirements than that of the group supported work positions. Several measures differentiated sheltered workshop from supported employment. First, the lack of acceptability of unusual and inappropriate social-personal behaviours in semi or fully integrated employment was a critical factor for job retention. Employment in sheltered workshop required less social interaction with non-disabled persons than that of supported employment settings. There, people with MR might be required to have conversation with peers and the public. Second, the result also showed that the tendency for more capable individuals to enter individual supported employment settings while persons with more severe disability and lower capability would be left behind and remained in lower level vocational settings. The present study suggested a positive relationship of the intellectual, sensori-motor and emotional-coping ability scores on the MDS instruments. This was supported by the accuracy percentage of the multiple discriminant function. This phenomenon was also supported by Rubinsky's study in 1991. In the study, there were some incorrect classifications indicated in overlapping

among the three groups. This illustrated that a given participant might show abilities in commensuration with one level but functioning satisfactorily on another level of vocational placement.

Work Adjustment and McCarron-Dial System

The goal of vocational assessment is to match an individual to a job placement which best fits one's potential. As job demands and requirements change over time, an individual is expected to change so as to sustain an employment. The process of undergoing changes with reference to the job and environment requirements is called work adjustment. Such adjustments demand one's abilities to observe, learn and acquire new skills and knowledge so as to adapt to the changing environment (Power, 2000). McCarron-Dial System is a comprehensive vocational evaluation measuring individual's vocational capabilities in terms of verbal-spatial-cognitive, sensory-motor and emotional-coping abilities. Its design is based on the thesis that mental retardation is a disability of neuropsychological origin. Thus, the abilities of people with MR are lower than their normal counterparts. Besides, the dysfunctions are relatively stable involving one or more higher cortical systems of the brain such as in perception, memory, learning, cognition, language, affect, or complex voluntary motor movement. Since all these abilities are important for vocational placement and employment, these would enable MDS to produce a profile which is capable of predicting vocational outcome among people with MR.

The development of work adjustment for individuals with MR involves sequential and interactive development of three subsystems of the subject person. The three subsystems are work personality, work competencies and work goals. A

person with a better MDS profile, i.e. satisfactory scores on all factors, can be more readily to go through the work adjustment process. For instance, higher scores on the sensory-motor and verbal-spatial-cognitive factors would enable a person to easily take up more difficult and novel work tasks. A better score on the emotional-coping factor would enable the individual to detect the requests posed against him and react appropriately to those requests. This proposition was tested with two case studies on two persons with MR: one with a "better" and the other with a "less satisfactory" MDS profiles. The "better" and "less satisfactory" MDS profiles were compared among the group means of the main study. The "better" MDS profile indicated that the profile scores on all three factors were above the group means, while the "less satisfactory" profile meant the profile scores on all three factors were below the group means. Their work adjustment processes were compared with reference to their respective MDS profiles.

Each subsystem is inter-related and mutually affected. For example, in the study, PO's (last name of the "less satisfactory" MDS profile case) basic work personality was fairly well established before the development of his work competencies. His basic work personality included his self-concept and interest as a car cleansing worker, his personal motivation for the car cleansing work, and also his work-related needs, values to earn more money and make more friends. If he failed to develop his work habits and skills such as physical tolerance in car cleansing as well as his interpersonal relationship with supervisor and co-workers during car cleansing tasks, the configuration of his individual's self-concept as a capable car cleansing worker and motivational system would be affected (Bolton,

2001). In this way, MDS served a major role in assessing the work competency level of PO so as to contribute to the understanding of his work adjustment process. The verbal-spatial-cognitive, sensory-motor and emotional-coping abilities were crucial in being a car cleansing worker. Among the three factors, sensory-motor functioned as the most significant factor of being a successful car cleansing worker. Although PO did not have a satisfactory MDS profile, his work performance was generally competent enough to fulfil the job demand of car cleansing. During the interview, he also expressed his satisfaction towards the reinforcements provided by the car cleansing job. The correspondence occurred in PO's satisfaction and work satisfactoriness contributed to the job tenure. This major subsystem (i.e. work competencies) has an impact to the other two subsystems (i.e. work personality as well as work goals) as mentioned above. The work adjustment model posits that as long as an individual lives and grows, all three subsystems will continue to develop gradually. As time went by, in the third month of PO engagement of his job, he had much improvement on his work-related interpersonal relationship with both his supervisors and co-workers. He was more trustworthy and being accepted by his colleagues. His advances in work competencies related to emotional-coping with others had contributed to work satisfactoriness that the car cleansing job requirement of cooperating with each other in a team was met by PO. Thus, the three subsystems establish a dynamic balance that any change in one will necessitate changes in the other two so as to restore and maintain a balance (Bolton, 2001).

In TONG's case study (last name of the "better" MDS case), he had engaged in a pamphlet distribution job. Everyday he came across different people in the street

and factory building where he distributed pamphlets. The job demand and work performance scores of Becker Work Adjustment Profile showed that TONG's work performance was the major driver of his successful job placement as a pamphlet distribution worker. He could fulfil most of the job demands and contributed to work satisfactoriness. In addition to his relatively better MDS profile, he proactively upgraded himself on academic knowledge (i.e. English, computer and mathematics) by attending evening school so as to equip himself as a full-time worker.

Employability is a psychosocial construct. It embodies individual's characteristics that foster adaptive cognition, behaviours and affect, in order to enhance the individual-work interface. It is a form of work specific active adaptability that consists of three dimensions, namely career identity, personal adaptability as well as social and human capital (Fugate et al., 2004). In this study, PO and TONG, both demonstrated their potential of employability in different job nature, although originated from service businesses. On one hand, PO was a car cleansing worker in a rehabilitation centre. His employer was a rehabilitation professional that would have better tolerance and flexibility for people with mental handicap. In addition to PO's "less satisfactory" MDS profile, he could fulfil his job requirements as showed in the job demand and work performance record. PO always did reactively in work adjustment process. For instance, the employer of PO had warned him about the poor attendance and punctuality in the first month of his job. PO had showed some improvement in the third month of his job by acting reactively to reduce his absence of work and being late in his job. PO revealed in the interview that he did not want to lose this job although sometimes he was not satisfied in doing

other work-related tasks, such as distributing pamphlets in rainy days. During rainy days, workers would not clean cars in the open public areas. Therefore, they need to do other work tasks. He had adjusted his work values that it was acceptable to engage in other work tasks that were unrelated to car cleansing in some occasions.

On the other hand, TONG was a pamphlet distribution worker of a property company. His employer and colleagues were non-disabled workers. They treated people with mental handicap in a very nice manner. TONG always proactively improved himself in terms of academic knowledge and enthusiasm as a full time worker.

Career identity refers to how PO and TONG define themselves in a particular work context. It provides cognitive schema that direct, regulate and sustain behaviour as they enact behaviours consistent with their desired self (Ashforth, 2001). In the case illustrations, they both altered their work situations to suit their own needs and their occupational interests. For instance, during the interview, PO mentioned that he had suggested changing the location of work site near to his home at the very beginning of his job so that he could reduce the travelling time. Although this suggestion was being turned down by his employer, PO still remained in his employment because, according to him, he knew that it was a good opportunity to be a car cleanser and that long distance from home to work site was not a crucial reason of quitting the job. Therefore, he continued to work hard and maintained his job tenure there. It seems that PO managed to adjust his own thinking by reasoning and behaviours to optimize the work situations. The outcomes of the adjustment process

were likely to lead to job satisfaction and employment opportunities (Fugate et al., 2004).

Personal adaptability refers to the ability to adapt to changing situations which is primarily depends on individual differences (Chan, 2000), such as optimism, propensity to learn, openness, internal locus of control and generalized self-efficacy. In this study, both PO and TONG were found to demonstrate adaptations to their work situations. TONG was rather optimistic of which he seemed to possess positive expectation about the future events and show confidence in his ability to handle challenges (Peterson, 2000). According to his employer and case worker, he was also a diligent worker and a continuous learner. He always proactively improved himself. These, according to London and Smith (1999), were the keys to a career success. TONG was a student of an evening school at the time when he was under the study. He explained that his goal of attending school was to upgrade his knowledge in English, Computer and Mathematics. He thought that this would enable career development. PO, on the other hand, had attended some short courses organized by the rehabilitation centre in order to enhance his knowledge on work safety and interpersonal skills, although he was attended the courses reactively and being persuaded by his employer. TONG was observed to open to face changes. He possessed more flexibility in working than PO. For example, when the researcher observed TONG in the first month of his work, he distributed pamphlets to a factory building that was actually not welcomed by the security there. When the security found him distributing the pamphlets in the building, TONG was being scolded and advised not to come to this factory building again. At that moment, he was calm and

stopped distributing the pamphlets until the security left. He went to another floor and distributed the pamphlets again. TONG's ability to change, his flexibility in work tasks and problem solving skill made him successful to fulfil in his job. Willing to change supports continuous learning and associates positively with comfort in unfamiliar situations. Acceptance of change associates positively with job satisfaction (Wanberg & Banas, 2000). On the other hand, PO was rather stick to rules. When the researcher observed PO in the first month of his work, he was going to clean cars in the open area of a public housing estate with a crew of colleagues who were also people with mental retardation or physical handicap. Usually he would prepare a set of equipment (i.e. towels, bucket of water and trolley) while others prepared another set of equipment. During the cleansing, suddenly PO scolded to his colleagues loudly because one of his colleagues had prepared the wrong equipment and that the cleansing car procedures were done wrongly by that colleague. Instead of helping the colleague, he would adopt a rather unacceptable method. His inability to make changes and accepting other inexperienced workers made him difficult to cooperate with co-workers.

Human and social capitals greatly influence one's ability to identify and realize career opportunities. Social capitals, or social networks, contribute social and interpersonal element to employability. Both PO and TONG appeared to have good social networks. This included family support, peer support and professional support from The Down Syndrome's Association, as well as the support of their employers and colleagues. Human capitals, such as age and education, work experience and training, job performance and organization tenure, emotional intelligence, as well as

cognitive ability, represents an individual's ability to meet the performance expectations of a given occupation (Adler & Kwon, 2002). In both case studies, they had similar human capitals and are both able to fulfil the job demand.

In summary, employability enhances a person's likelihood of gaining employment. Individual's employability subsumes a host of person-centered construct, such as proactive behaviours (Crant, 2000), personal initiative (Frese & Fay, 2001), proactive personality (Bateman & Crant, 1993) and proactive socialization (Saks & Ashforth, 1997). These constructs show that employees nowadays take active role to initiate improvement in their work situations, rather than a passive and reactive employee adaptation as a response to environmental change historically (Fugate et al., 2004). A person's ability and willingness to adapt is essential to career success (Hall, 2002; Pulakos et al., 2000). In the present two case studies, both PO and TONG were able to maintain their job tenure in the first three months of their jobs. Throughout the work adjustment process, PO (the one with "less satisfactory" MDS profile) adopted a reactive role and TONG (the one with "better" MDS profile) adopted a proactive role in changes towards their work situations.

Assessment is a crucial component in the process of vocational rehabilitation. It involves a systematic way to gather information from different sources (Berven, 2004). The MDS is regarded as one of the ways which information can be gathered. It adopts a systematic, quantitative and standardized method of gathering information on the work-related abilities of individuals. Zunker (1994) commented that occupational success and job proficiency are complicated matters and therefore

would be influenced by many factors in addition to individual's abilities. It is therefore important for any assessment to incorporate additional information from the person with MR, professionals working with the person, and significant others who know or work with the individual such as family members and employers. Although vocational assessment usually is conducted at the beginning of the vocational rehabilitation process, Berven (2004) recommended the assessment process to be carried on throughout the entire vocational rehabilitation process. What it means is that the MDS is preferably to be repeated in different time and stage across the entire rehabilitation process: before and after the vocational placement.

Contribution of this study

In this study, the original MDS was translated from English into Chinese so that the subtests instructions and content items could be standardized and applicable to local utilization. This study explored the content validity and inter-rater reliability of one of the subtests of the emotional-coping factor, the Chinese OEI-R. The content domain of the Chinese OEI-R was found to be relevant and representative to the evaluation of vocational emotional behaviors of people with mental handicap in Hong Kong. In the inter-rater reliability test, it was suggested that a further explanation on the test items and training workshop beforehand would further improve the understanding on the usage and content of the instrument items. A range from high to moderate inter-rater reliability of the 7 subscales of the Chinese OEI-R suggested that this instrument was reliable and can be used locally with confidence.

In the discriminative validity study of the abbreviated Chinese version of the MDS, the three vocational levels of placement were examined on people with MH.

The abbreviated Chinese MDS with the use of three neuropsychological factors was able to identify and classify the group memberships of the three different respondent groups, namely day activity centre, sheltered workshop and supported employment, with moderate accuracy. This further proved that the abbreviated version of MDS was a reliable and valid vocational evaluation system for dicriminating vocational placements of people with MH. This abbreviated version will further shorten the time of vocational assessment.

One of the major strength of the McCarron-Dial System is the reliable and valid data that can be drawn from quantitative research method. The quantitative study design of calibrating a profile of persons and placements by generating concrete cut-off scores is easy for administration and benchmarking.

In the final part of the study was the work adjustment process of two case studies on people with mental handicap who received supported employment service. This tried to further demonstrate the importance of MDS in the role of assessing the vocational capabilities and work competency in exploring one of the major subsystems of the work adjustment and its role in the whole work adjustment process.

Limitations of the Study and Suggestions for Further Study

Due to limited time and resources, only people with mild and moderate mental handicap were recruited in this study. People with severe mental disabilities were not included in this study. Thus, generalization of the results was limited to mild and moderate grade people with MH, rather than other disabled group. Therefore, further study on the abbreviated Chinese MDS for the group with severe

disability or other diagnosis under neuropsychological disabilities could be considered in order to enhance the clinical utility of this vocational evaluation system.

Another limitation was the homogenous recruitment of the sampling population from Hong Chi Association. Although it was one of the largest organizations providing vocational rehabilitation services for people with mental handicap in Hong Kong, the characteristics of the participants might be biased and limited because of the recruitment policies of the association. Despite of some general admission criteria set by the Social Welfare Department in applying to all SWS, DAC and SE, the levels of functioning and vocational competencies could be very different from other organizations. Thus, the psychometric properties and predictive model of the abbreviated Chinese version of MDS might be different when applying to other people in other organizations.

In the translation process, only forward translation method was applied in this study. This method used to translate the instructions in the sensori-motor sub-tests from English to Chinese. We did not proceed with a backward translation. We understand that a backward translation would further safeguard the equivalence of the translation and hence minimized the threat to the content validity due to the translation process. As the instructions are straight forward such as “squeexe the handle as hard as you can”, “feel and move the object around in your hand, but don’t remove your hand from behind the screen”, the potential errors associated with not using backward translation should be minimized.

In the expert panel review, all panel members for translation equivalence and content validity were occupational therapists. Although they were very expertise and had relevant clinical experience in mental health service and vocational rehabilitation, the content-related evidence collected might be limited to the perspective of occupational therapist. Broadened opinions and suggestions can be collected if different professionals involved in vocational rehabilitation are to be recruited in future study, such as clinical psychologists, social workers, workshop instructors welfare workers and employers of people with MH.

In exploring the verbal-spatial-cognitive abilities of people with MH, only Test of Non-Verbal Intelligence was used. People with moderate to severe grade mental handicap are common to have limited verbal abilit. It was decided to use a non-verbal intelligence test for estimating the participants' cognitive abilities. However, intelligence tests with a verbal component are more appropriate for people with borderline or mild grade MH. This suggests that the use of Test of Non-Verbal Intelligence could have under-estimate the intelligence of those with borderline of mild grade MH. This is a limitation of this study. As the number of participants who were with borderline or mild grade MH is small (n=39), the biases introduced due to this element should be comparatively small.

In the part of work adjustment process, the sample size was too small so that it was very difficult in analyzing the data with more scientific approach. And it was difficult to generate a comprehensive trend of work adjustment process for people of MH with different MDS profile. The follow-up period was only three months such that it was not detailed enough to see the trend of work adjustment process of the

two participants. The two participants were also limited to the supported employment group. It was suggested that more participants involved in this part of the study would have a better illustration on how the MDS contributed the work competency domain in the work adjustment model and how the interaction between the correspondence on satisfaction and satisfactoriness would better shed light on the role of the MDS. More participants in the SWS and DAC groups might be useful in exploring different work adjustment processes in different vocational levels of placements.

The MDS mainly assisted in measuring developed abilities and that it helped to identify whether an individual had the potential to develop skills if appropriate opportunities through training are given. However, in assessing the maximum performance of an individual so as to predict his/ her behavior when performing his/ her best in employment, both indicators of ability or aptitude and current skills or achievement were important. In determining current mastery of skills, which meant that an individual already possessed that skill required for a particular level of vocational placement, was also an impact in vocational assessment. Indicators of typical performance were also essential in determining how an individual might typically behave in various work situations. Assessment areas such as interests would facilitate the predictions about one's satisfaction in different work situations and vocational levels of placement (Berven, 2004). Despite such kinds of information was not included in the assessment of the present study, the accuracy of the MDS prediction model still remained at a very satisfactory level. In order to

prove how good the vocational outcome predictive model would be by incorporating more sources of useful information will require further studies to explore and justify.

This study adopted a cross-sectional and retrospective research design. The participants have already been placed and stabilized in three levels of vocational placement, namely supported employment, sheltered workshop and day activity centre, before the beginning of this study. By going back to the placement record, the research can determine how the ability profiles correlate with the prediction of vocational placement of an individual with MH. Retrospective study design indicates that the researcher does not have direct control over the variables under the study because the data have occurred in the past. Therefore, the inferences from retrospective study are weaker and more biased than prospective study that the assessments were done before the participants are placed and then follow up. It is due to the fact that the variables can be controlled by the researcher in a prospective way. In view of this, further study on predicting the vocational outcomes for people with MH in prospective study design is recommended. The data obtained in this design is more reliable because of the potential for greater control of data collection methods (Portney & Watkins, 2000).

Another drawback of the study is a lack of situational assessment in ecological valid prediction that was argued by more recent literature in vocational rehabilitation and placement for people with neuropsychological disabilities (Johnston et al., 1991; LeBlanc et al., 2000). They further pointed out that usually standardized assessments were in a lack of ecological validity. What it means is that the inferences made from the test scores would be difficult to reflect the person's

performance under a real work situation. Thus, it may underestimate the scope of difficulty that people with neuropsychological disabilities, such as people with closed head injury, would be likely to experience in a less structured workplace. As standardized tests are often conducted under a controlled setting rather than a naturalistic environment, the participants' performance would have been biased against unforeseeable changes such as interruptions, distractions, and uncertainty etc (Lezak, 1995). However, all these unpredictable circumstances are commonly experienced by workers at the worksite. Although some of the MDS factors (i.e. verbal-spatial-cognitive and sensori-motor factors) were measured under structured environment, such as in an assessment room, the COEI-R under the emotional-coping factor was assessed in ecological basis and preferably in vocational settings. The purpose of the COEI-R was to obtain observable data on emotional behaviors occurred in work settings. Other than those commercially available standardized vocational evaluation batteries, the MDS had integrated some ecological validity element into its evaluation system to a certain extent. In order to shed light on future studies, some researchers such as Stuss et al. (1994) suggested some ways to improve the ecological validity of standardized assessments by incorporating observable data into the testing process. For people with mental handicap, methods such as situational vocational evaluation can be used to observe their behavior and performance on vocational tasks carried out in simulated, and preferably actual work settings. This would give the benefits of obtaining results from reliable tests and at the same time, getting complimentary information on the actual performance of the person at the work setting (Depoy, 1992). In view of this, it is recommended that

future studies can be focused on a comparison of neuropsychological and situational assessment for predicting vocational placements for people with mental retardation so as to explore their relationships and accuracy of the prediction models with the use of different vocational assessment methods.

CHAPTER VI

CONCLUSION

The result of Study One indicated the translation of the abbreviated version of MDS. In order to increase the applicability to the Chinese society, which has a different cultural background and geographic regions from the origin, translation of the test instructions and content into Chinese language is an impact to both the practitioners and clients. An expert panel review was held to evaluate the degree of test equivalence of the Chinese version upon completion of the translation process. A questionnaire was used to facilitate the panel members to review and give comments on the test items. Afterwards, a discussion was launched so that panel members could discuss on items which had discrepant opinions and finally reached consensual decisions.

The result of Study Two helped to develop the content validity and inter-rater reliability of Observational-Emotional Inventory-Revised. The overall relevance and representativeness among all the test items of OEI-R was ranged from 62% to 100%. The intra-class correlation (ICC) computed for the OEI-R total score using a two-way random effect model was 0.78 ($\underline{p} \leq 0.01$). Both findings indicated OEI-R was a valid and reliable instrument for measuring emotional-coping ability of people with mental retardation.

Based on the results of Studies One and Two, an abbreviated Chinese version of the McCarron-Dial System was developed. This contributed to the development of discriminant validity of the AC-MDS. In the discriminant analysis, the finding

revealed a high overall accuracy of 75.7%. Participants in the DAC group (A) were most accurately classified with 90.2%. In the supported employment group, 76.9% of the participants were correctly classified. In contrast, there were only 63.0% of the participants were correctly classified among the sheltered workshop group. The Wilks' lambda was 0.22 with a p-value <0.01 which indicated highly significant differences among the centroids of the three groups. When all the significant variables from verbal-spatial-cognitive, sensori-motor and emotional-coping factors had been put in the discriminant analysis, seven steps were shown, and finally five variables became significant. They were SSSQ – Functional signs (Wilks Lambda = 0.273), MAND – gross motor (Wilks Lambda = 0.239), HVDT – shape (Wilks Lambda = 0.275), HVDT – right hand (Wilks Lambda = 0.277), and MAND – fine motor (Wilks Lambda = 0.238). The factor 2 of the Street Survival Skill Questionnaire – Functional signs had the largest canonical discriminant function coefficients of 0.59 in Function 1.

In view of this, sensori-motor and emotional-coping factors were the major contributors to the discriminant model on the vocational outcome of people with MH in this study. Our findings supported the results of previous study (Rubinsky, 1991) that sensori-motor ability proved to be a powerful discriminator of individual supported employment, group supported employment and also sheltered workshop placement levels ($F(2, 104) = 28.90$, $p < 0.01$), whereas emotional-coping abilities also differentiated supported employment settings from sheltered employment ($F(2, 102) = 25.24$, $p < 0.01$).

Study Four was related to work adjustment process on supported

employment with application of MDS profiles. Two cases, one with “better” MDS profile and the other with “less satisfactory” MDS profile, were then illustrated to explore the differences among work adjustment process. The observations made during the follow-up period suggested that both cases managed to demonstrate their adjustment to work setting during three months of placement, although they had different MDS profiles. There were positive changes in their values, needs and behaviors which geared towards their job tenure. The two case illustrations showed different attitudes of changes. Case A adopted reactive change pattern whereas Case B adopted a more proactive change pattern.

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http://www.jobs.gov.hk (Labour Department, 2005)

APPENDICES

Appendix I

Invitation letter to panel members for the evaluation of the quality of translation

Dear _____,

Thank you for joining the expert panel review on the Validation of Chinese version of McCarron-Dial System for people with mental retardation. You are cordially invited to attend the meeting on _____ at Room _____, the Hong Kong Polytechnic University.

The expert panel review will last for about three hours. You are requested to fill in a questionnaire to comment on the translation quality of the Chinese version of the abbreviated version of the McCarron-Dial System. The three sub-tests are namely Bender Visual Motor Gestalt Test (BVMGT), Haptic Visual Discrimination Test (HVDT) and McCarron Assessment of Neuromuscular Development (MAND). Suggestions on the modification to the translated version are welcomed.

If you have any enquiry, please contact me at 9xxx xxxx. I am looking forward to seeing you soon.

Yours sincerely,

_____

Winsome CHEUNG

Occupational Therapist

Appendix II

Questionnaire for the evaluation of the quality of translation

Expert panel

Name of the Expert Panel Member: _____

Work Setting: _____

Year of Working Experience in Rehabilitation Field: _____

Date of Review: _____

Instructions to all panel members

1. Please read the information sheet that describes the purpose of this panel review.
2. Please sign the consent form to participate in this expert panel.
3. Please read the original English version and the translated Chinese version of the MDS.
4. After that, fill in the questionnaire that consists of questions guiding you to evaluate the fluency and semantic meaning of the translated version of the MDS instructions.
5. A four-point Likert scale is used. It ranged from (4) strongly agree to (1) strongly disagree. Circle the number that you think is the most appropriate to your evaluation.
6. Please also provide your comments, justifications or suggestions especially when you have rated (2) disagree and (1) strongly disagree on the Chinese version of the MDS directly.
7. This questionnaire should not be taken more than 1 hour to complete.
8. If you have any quires before or during the reviewing process, please do not hesitate to ask for investigator for clarification.
9. Thank you for your participation.

Information sheet of expert panel review

This study proposes to translate the instructions of three of the sub-tests, Bender Visual Motor Gestalt Test (BVMGT), Haptic Visual Discrimination Test (HVDT), and McCarron Assessment of Neuromuscular Development (MAND), in the McCarron-Dial System (MDS) from English to Chinese, in order to apply it to people with mental handicap in Hong Kong.

MDS is a vocational evaluation system. As MDS is newly introduced from US to Hong Kong's rehabilitation field, therefore, it is necessary to translate MDS into Chinese version so that it can widely apply to Hong Kong setting.

In this expert panel, panel members are required to evaluate the instructions of BVMGT, HVDT and MAND. A questionnaire is designed to guide the panel members through the evaluation. Panel members are reminded to work independently. Panel members are encouraged to provide comments, justifications and suggestions on the Chinese version of the MDS.

Informed consent form to expert panel members

Project Title: Validation of the MDS (Chinese version) for people with mental handicap

Investigators: WinsomeW. P. Cheung, Dr. Chetwyn C. H. Chan, Dr. David W. K. Man

This research project will collect evidence on the content validity and utility of the abbreviated version of the McCarron-Dial System (Chinese version) (CMDS) in Hong Kong

I agree to participate in Expert Panel which requires me to fill in a questionnaire that evaluates the fluency and correctness of the translated CMDS test items.

This study carries no risks to me. There will be no direct influence/ benefits for me. My name will not be appeared in any documents or reports. I can refuse to answer any items to the questionnaire. All the information collected in this study will be kept confidential.

I am free to withdraw my consent and stop participating at any time. I have been given chance to ask questions. I understand that my participation in this research study is strictly voluntary. If I have any questions concerning the study, I can contact Ms. Winsome Cheung at 2xxx xxxx or 9xxx xxxx.

I, _____, understand the explanation of this research study and agree to participate in the expert panel meeting.

Name of Participant: _____

Signature of Participant: _____

Signature of Witness: _____

Date: _____

Questionnaire for the evaluation of the quality of translation

Instructions for McCarron Assessment of Neuromuscular Development (MAND)

1. Beads In Box

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

*** Please justify your rating and give suggestions on the translated version ***

2. Beads On Rod

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

*** Please justify your rating and give suggestions on the translated version ***

3. Finger Tapping

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

4. Finger Tapping

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

5. Nut and Bolt

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

6. Rod Slide

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

7. Hand Strength

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

8. Finger-Nose-Finger

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

9. Jumping

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

10. Heel-Toe Walk

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

11. Heel-Toe-walk

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

12. Standing On One Foot

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

13. Standing On One Foot

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

<u>Instructions for the Bender Gestalt Test for Young Children (BVMGT)</u>

14.

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

15.

i) Are the words used in the translated version presented fluently as in the original version?

1 2 3 4

strongly disagree disagree agree strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1 2 3 4

strongly disagree disagree agree strongly agree

** *Please justify your rating and give suggestions on the translated version* **

Instructions for the Haptic Visual Discrimination Test (HVDT**)**

16. Set Up

i) Are the words used in the translated version presented fluently as in the original version?

1 2 3 4

strongly disagree disagree agree strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1 2 3 4

strongly disagree disagree agree strongly agree

** *Please justify your rating and give suggestions on the translated version* **

17. Familiaration

i) Are the words used in the translated version presented fluently as in the original version?

1 2 3 4

strongly disagree disagree agree strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1 2 3 4

strongly disagree disagree agree strongly agree

** *Please justify your rating and give suggestions on the translated version* **

18.

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

19.

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

20.

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

21.

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

22.

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

23.

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

24. Testing of Shapes

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

25.

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

26. Testing of Sizes

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

27. Testing of Textures

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

28.

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

29. Testing of Configuration

i) Are the words used in the translated version presented fluently as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

ii) Are the words used in the translated version presented correctly as in the original version?

1	2	3	4
strongly disagree	disagree	agree	strongly agree

** *Please justify your rating and give suggestions on the translated version* **

Appendix III

Chinese version of the instructions of MAND, BVMGT & HVDT

(Group consensus from the expert panel review)

Instructions for McCarron Assessment of Neuromuscular Development (MAND)

將珠仔放入盒

1. 「用你嘅右手，喺呢個載滿珠仔嘅盒裡面攞起一粒珠仔，然後將佢放入個空盒裡面。盡快做直至我叫你停爲止。記住，每次只可攞一粒珠仔。如果你跌咗粒珠仔，唔需要理會，請繼續將其他珠仔放到盒中。」

將珠仔穿入柱

2. 「攞起一粒珠仔，將佢穿入條柱，好似咁。每次只可攞一粒珠仔。盡快做直至我叫你停爲止。記住，你要攞起條柱，咁樣你隻手就會同個身保持距離。」

「 的」 手指

3. 「做一個拳頭 ，但係要將你嘅手指公同食指伸出。」
4. 「而家將你嘅食指上下移動，令到佢「掂」到塊木板同埋條橡根。盡你嘅能力，做得愈快愈好。 做嘅時候只准移動你隻食指。」

「擰」螺絲

5. 「將螺絲帽放喺呢隻手 (非主用手)，將螺絲 (主用手)「擰」入螺絲帽入面。將螺絲「擰」哂落去 ，盡你嘅能力，做得愈快愈好。」

滑柱

6. 「之前嘅習作都係要你做得愈快愈好。今次，我哋將會做一啲唔同嘅嘢。 我想你今次做呢個習作嘅時候，盡你能力做到最慢。記住，愈慢愈好。盡你能力將枝棒仔慢慢咁移，好似咁，中途唔好停。」

手力

7. 「盡你嘅能力，握住個扶手，握得愈大力愈好。」

手指「掂」鼻哥

8. 「呢個唔係考速度嘅測試。放鬆啲，盡你能力做到最好。將左手伸直，放喺前面，平膊頭嘅高度 。同時「豎 」起隻食指。用右手嘅食指，「掂」下個鼻尖，然後再「掂」下伸咗出嚟嘅手指尖，好似咁。」

跳遠

9. 「我想你盡你嘅能力，兩隻腳一齊跳，跳得愈遠愈好。」

腳「掂 」腳行路

10. 「放鬆啲，做呢個習作時，盡你嘅能力，做得愈小心愈好。將你雙手放喺 「pat pat」後面，同時喺呢條線上面行。行嘅時候，將你嘅腳踭直接放喺你另一隻腳嘅腳趾前面，每一步都要腳「掂 」住腳趾行路。由呢度開始 (線嘅末端)，一直向前行到尾。」

11. 「今次，倒後行。雙手繼續放喺「pat pat」後面，同時喺呢條線上面行，將你嘅腳趾直接放喺你另一隻腳嘅腳踭後面，每一步都要腳趾「掂」住腳踭。」

單腳企

12. 「盡你嘅能力，單腳企，企得愈耐愈好，或者直至我叫你停爲止。」

13. 「今次，合埋眼，單腳企。 記住，你一定要保持雙眼緊閉。」

<u>Instructions for the Bender Visual Motor Gestalt Test for Young Children (BVMGT)</u>

14. 「呢度有一啲圖 (或設計) 俾你照住畫；照住你見到嘅嘢畫低佢。」

15. 「你唔需要咁樣做，你想點做就點做。」(當學員想數有幾多點時可說這句話)

<u>Instructions for the Haptic Visual Discrimination Test (HVDT)</u>

準備工作

16. 「睇下呢啲圖 …… 佢哋係有唔同嘅形狀。」

熟習階段

17. 「將你嘅右手放喺個開口度。」(屏障嘅開口)

18. 「睇吓呢度每一個圖形。」(研究員指住第一版的圖片)

19. 「我而家會放一個形狀喺你嘅手，就好似呢度其中一個 (研究員「掂」或指住伸咗出開口嘅手)；但係你唔可以睇住佢。」

20. 「感覺吓同摸吓喺你手上嘅物件，但係你隻手唔可以縮過屏障之外。」

21. 「而家再睇下啲圖片 (指住個圖形) 同埋用呢隻手 (「掂」住被訪者嘅另一隻手，通常係左手) 指住圖冊上你感覺到嗰個圖形嘅圖片。」

22. 「啱。」

23. 「我而家會再俾多一啲物件你去感覺。你要指俾我睇邊張圖片係你感覺到嘅物件。但係，喺之後嘅習作，我唔會話你知究竟你係啱定係錯。你有冇問題？(停一陣) 時間不限，盡你能力做到最好。」

形狀測試

24. 「感覺吓同摸吓喺你手上嘅物件。」

25. 「指出圖冊上其中一張圖片，呢張圖片嘅形狀同你手上嘅物件相同 (或相似)。」

大細測試

26. 「呢個測試有小小唔同。每一個物件嘅形狀相同，但係大細就唔同。指出圖冊上其中一張圖片，呢張圖片嘅大細同你手上嘅物件相同 (或相似)。你可以慢慢做 ，時間不限，盡你能力做到最好。」

質地測試

27. 「呢個測試有小小唔同。今次你會感覺到唔同嘅質料 ……指出圖冊上其中一張圖片, 呢張圖片嘅質地同你手上嘅物件相同 (或相似)。你可以慢慢做 ， 時間不限，盡你能力做到最好。」

28. 「呢度有啲物件係粗 (「鞋 」) ，有一啲係比較滑。喺呢度 (指住圖冊) 搵張同你感覺到一樣嘅圖片。」

結構測試

29.「呢個測試有小小唔同。佢哋都有相同部分，但係編排上面有分別。你感覺吓呢啲物件，然後指俾我睇邊張圖片係你手上面嘅物件。 小心啲做。你可以慢慢做，時間不限，盡你能力做到最好。」

Appendix IV

Invitation letter to panel members for the content validity of COEI-R

Dear _____,

Thank you for joining the expert panel review on the Validation of Chinese version of Observational Emotional Inventory - Revised (COEI-R) for people with mental handicap. You are cordially invited to attend the meeting on _____ at Room _____, the Hong Kong Polytechnic University.

The expert panel review will last for about four hours. You are requested to fill in a questionnaire to comment on the relevance and representativeness of the Chinese version of Observational Emotional Inventory – Revised, one of the sub-test of the McCarron-Dial System. Suggestions on the modification to the draft version are welcomed.

If you have any enquiry, please contact me at 9xxx xxxx. I am looking forward to seeing you soon.

Yours sincerely,

_____

Winsome CHEUNG

Occupational Therapist

Appendix V

Questionnaire for the evaluation of the content validity of COEI-R

Expert panel

Name of the Expert Panel Member: _____

Work Setting: _____ Date of Review: _____

Year of Working Experience in Rehabilitation Field: _____

Instructions to all panel members

1. Please read the information sheet that describes the purpose of this panel review.
2. Please sign the consent form to participate in this expert panel.
3. Please read the original English version and the translated Chinese version of the OEI-R.
4. After that, fill in the questionnaire that consists of questions guiding you to evaluate the relevance and representativeness of the translated version of the OEI-R.
5. A four-point Likert scale is used. It ranged from (4) excellent to (1) poor. Circle the number that you think is the most appropriate to your evaluation.
6. Please also provide your comments, justifications or suggestions especially when you have rated (2) fair and (1) poor on the questionnaire.
7. This questionnaire should not be taken more than 2 hour to complete.
8. If you have any quires before or during the reviewing process, please do not hesitate to ask for investigator for clarification.
9. Thank you for your participation.

Information sheet of expert panel review

This study proposes to translate and validate one of the sub-tests, Observational Emotional Inventory (OEI), in the McCarron-Dial System (MDS) from English to Chinese, in order to apply it to people with mental handicap in Hong Kong.

MDS is a vocational evaluation system. As MDS is newly introduced from US to Hong Kong's rehabilitation field, therefore, it is necessary to translate MDS into Chinese version so that it can widely apply to Hong Kong setting.

In this expert panel, panel members are required to evaluate the relevance and representativeness of the OEI-R. A questionnaire is designed to guide the panel members through the evaluation. Panel members are reminded to work independently. Panel members are encouraged to provide comments, justifications and suggestions on the Chinese version of the OEI-R.

Informed consent form to expert panel members

Project Title: Validation of the OEI-R (Chinese version) for people with mental handicap

Investigators: WinsomeW. P. Cheung, Dr. Chetwyn C. H. Chan, Dr. David W. K. Man

This research project will collect evidence on the content validity and utility of the abbreviated version of the McCarron-Dial System (Chinese version) (CMDS) in Hong Kong

I agree to participate in Expert Panel which requires me to fill in a questionnaire that evaluates the relevance and representativeness of the translated OEI-R test items.

This study carries no risks to me. There will be no direct influence/ benefits for me. My name will not be appeared in any documents or reports. I can refuse to answer any items to the questionnaire. All the information collected in this study will be kept confidential.

I am free to withdraw my consent and stop participating at any time. I have been given chance to ask questions. I understand that my participation in this research study is strictly voluntary. If I have any questions concerning the study, I can contact Ms. Winsome Cheung at 2xxx xxxx or 9xxx xxxx.

- -

I, _____, understand the explanation of this research study and agree to participate in the expert panel meeting.

Name of Participant: _____

Signature of Participant: _____

Signature of Witness: _____

Date: _____

Questionnaire for the evaluation of the content validity of the COEI-R

1. Impulsivity-Frustration

i) How is the content of this item relevant to the assessment of emotional coping ability for people with mental handicap when working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

ii) How well is the content of this item representing the entire domain of "Impulsivity-Frustration" when assessing the people with mental handicap working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

2. Anxiety

i) How is the content of this item relevant to the assessment of emotional coping ability for people with mental handicap when working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

ii) How well is the content of this item representing the entire domain of "Anxiety" when assessing the people with mental handicap working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

3. Depression-Withdrawal

i) How is the content of this item relevant to the assessment of emotional coping ability for people with mental handicap when working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

ii) How well is the content of this item representing the entire domain of "Depression-Withdrawal" when assessing the people with mental handicap working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

4. Socialization

i) How is the content of this item relevant to the assessment of emotional coping ability for people with mental handicap when working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

ii) How well is the content of this item representing the entire domain of "Socialization" when assessing the people with mental handicap working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

5. Self Concept

i) How is the content of this item relevant to the assessment of emotional coping ability for people with mental handicap when working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

ii) How well is the content of this item representing the entire domain of "Self Concept" when assessing the people with mental handicap working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

6. Aggressiveness

i) How is the content of this item relevant to the assessment of emotional coping ability for people with mental handicap when working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

ii) How well is the content of this item representing the entire domain of "Aggressiveness" when assessing the people with mental handicap working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

7. Reality Disorientation

i) How is the content of this item relevant to the assessment of emotional coping ability for people with mental handicap when working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

ii) How well is the content of this item representing the entire domain of "Reality Disorientation" when assessing the people with mental handicap working in supported employment, sheltered workshop and day activity centre?

1	2	3	4
poor	fair	good	excellent

Please justify your rating and give suggestions:

_____

Appendix VI

Chinese version of the OEI-R
(Group consensus from expert panel review)

學員姓名：	年齡：
所屬機構 / 單位：	性別：
記錄員：	智障程度： 輕度 / 中度 / 嚴重
記錄日期：	其他疹斷：

可觀察的情緒記錄表 -計分表

項目	基本分數 (raw score)
全表總分	
1. 衝動和挫敗	
2. 焦慮	
3. 憂鬱和退縮	
4. 社交	
5. 自我觀念	
6. 暴力	
7. 對現實感到迷惑	

日數/日期	時間	活動
1.		
2.		
3.		
4.		
5.		

備註

_____

_____

_____

結構	➢ 主要由**七個因素**所組成，包括**衝動和挫敗、焦慮、憂鬱和退縮、社交、自我觀念、暴力、對現實感到迷惑**。 ➢ 每一個因素有十條項目，分爲三類，包括**言語、身體行爲、交互影響**的行爲。 ➢ 填寫時請考慮學員的情緒行爲問題是以什麼形式表達，例如：是用說話、動作 / 身體反應、或與他人接觸時所發生。
目的	➢ 記錄學員的情緒行爲問題有沒有在**五天觀察期**內出現。 ➢ 這表不是記錄該情緒行爲問題在一天內出現多少次數。 如有需要，記錄員可在記錄表備註上列明該情緒行爲問題的頻密次數、程度和原因。
計分標準	➢ 根據一星期內 (最好連續五天) 出現在記錄表上的行爲而計分。 ➢ 記錄員需要每天用兩小時觀察學員進行常規活動的情況，如上堂、職前訓練或工作訓練。觀察的地點可在學員的課室、職前訓練或工作訓練室內。 ➢ 記錄員在該天觀察到學員的情緒行爲問題便有 1 分。例如：當記錄員觀察不到該情緒行爲問題的出現，便沒有分；該情緒行爲問題出現了兩天，便有 2 分；如出現了五天，該項目便有 5 分。 ➢ 於大部分的情況下，那行爲影響學員在社交、情緒、工作上的表現才被記錄。
計分方法	➢ 將五天觀察期內，將每一個分數相加。 ➢ 每一個因素最高分是 50 分 (五天 x 十條項目) 。 ➢ 將七個因素的分數相加便是記錄表分數的總和 (50 x 7 = 350)。
建議	➢ 爲增強評估的可靠性，建議兩個或以上的記錄員同時填寫這份記錄表。
備註	➢ **“ * ”代表學員需要說出說話內容，才作記錄。** ➢ 若學員有該行爲出現，請在該日的格內 “√”。

一. 衝動和挫敗		日數				
<u>以言語表達</u>		1	2	3	4	5
1	要求別人注意 (當未能立即取得別人注意時，學員會感到難過和失落)					
2	打斷別人的話題 (喋喋不休或嘲弄別人，以擾亂別人)					
3	思想內容急劇轉變，使溝通上出現困難 (學員在談話中會不時轉話題) *					
<u>以身體表達</u>						
4	工作 / 活動時表現出混亂和沒有系統 (物料凌亂或散亂地放置，缺乏計劃)					
5	難以集中注意力；容易分心；外來和不重要的刺激物會吸引學員的注意 (學員的注意力會從一項活動轉移到另一項活動)					
6	突然做出一些不能預計/意料之外的動作 (突然站立，漫無目的地抓緊器具或物件)					
7	對日常生活程序的轉變作出不適當的反應 (學員會因爲活動或環境的改變而產生挫敗感，以致表現出憤怒、哭泣、悶悶不樂、繃臉等等)					
<u>以交互影響表達</u>						
8	容易因爲別人而感到不高興；情緒變化不定，容易產生過敏反應 (學員會因爲別人無意弄跌物件而有顯著的情緒失控)					
9	容忍受挫的能力偏低 (學員會容易受到別人的行爲、說話或環境影響而感到憤怒和苦惱)					
10	沒有耐性，很難去等候別人 (學員不會輪候而拿走物件)					

衝動和挫敗總分：_____

*“ * ”代表學員需要說出說話內容，才作記錄*
若學員有該行爲出現，請在該日的格內 “√”

二. 焦慮		日數				
<u>以言語表達</u>		1	2	3	4	5
11	感到莫名的恐懼； 擔心將會有意外發生 / 生病 (「我將會遇到一些不好的事情」)					
12	重覆表示憂慮；重覆同一個想法 (「我的導師在哪裡？；爲什麼他/ 她不在這裡？」) *					
13	提出患有一些沒有因由或不能證實的疾病 (如頭痛、胃痛、胸部痛等) 。真正的疾病不計算在內。					
<u>以身體表達</u>						
14	容易暴躁、激動；表現局促不自在 (坐臥不安、不能開始工作、生產力降低)					
15	肌肉張力緊張；身體的緊張狀態普遍提升，動作的靈活性降低 (上肢及頭部動作僵硬；過度緊握器具或物件)					
16	出現重覆的身體動作 (輕打手指或腳趾，眼睛顫動，神經性肌肉動作 (nervous muscular movements) ，搖擺身體， 咬手指甲)					
17	當身處有壓力的環境時，會出現過多的身體反應 (呼吸急促/ 呼吸不正常、流汗過多、手震)					
<u>以交互影響表達</u>						
18	不專心；不時沉迷於自己的思想中 (學員對訓練沒有反應，專注力很低，感到困惑混亂及沒有系統)					
19	不斷尋求別人的認同；非常依賴別人 (需要不斷的肯定、保証：「這樣做對嗎？我做得好嗎？」)					
20	很難適應新的環境；減少與別人接觸以避免壓力 (害怕接觸一些不熟識或新相識的人)					

焦慮總分：_____

“ * ” *代表學員需要說出說話內容，才作記錄*
若學員有該行爲出現，請在該日的格內 “√”

三. 憂鬱 -- 退縮		日數				
<u>以言語表達</u>		1	2	3	4	5
21	語調低沉，並且缺乏情感的表達 (喃喃自語，說話緩慢和細聲) *					
22	以言語表達失望及絕望 (「我感到很失落；沒有人關心我」) *					
23	自我批判 (常以這些語句表達，例如：「我做不到；我沒有用；沒有人喜歡我」) *					
<u>以身體表達</u>						
24	表現不開心 (悲哀的面容；沒有笑容)					
25	表現昏昏欲睡 (黑眼圈、打呵欠)					
26	喪失食欲或過分進食 (當進餐或小休時，學員會對食物提不起興趣或強迫自己進食)					
27	以一些重覆的動作習慣及姿勢來顯示身體疲勞，尤其是在早上 (寒背；無精打采的姿態；動作遲緩)					
<u>以交互影響表達</u>						
28	離群；退縮；情感疏離 (很少參與社交活動)					
29	待人冷淡和缺乏精力 (不參與任何活動；只坐而沒有生產力；對獎賞及鼓勵沒有反應)					
30	時常投訴；與別人有負面的交往 (當與別人接觸時，學員會對週遭事物和自己充滿悲觀的想法；例如：「每件事都糟透了」)					

憂鬱和退縮總分：_____

*“ * ”代表學員需要說出說話內容，才作記錄*
若學員有該行爲出現，請在該日的格內 “√”

四. 社交		日數				
<u>以言語表達</u>		1	2	3	4	5
31	不能以言語表達感受 (不會傳達感受，例如：「我很憂愁 / 開心 / 不開心 / 憤怒」) *					
32	對別人的需要及感受不敏銳或不知情 (用不適當的言詞和不自覺地傷害他人的感受；不會有同情、悲憫之心) *					
33	重覆說粗言穢語 *					
<u>以身體表達</u>						
34	不察覺自己的個人儀容 (草率及不整潔的衣著；體臭；不注重儀容)					
35	不適當地進行與性有關的行爲 (在公眾場所愛撫、自瀆)					
36	與別人有過份的身體接觸 (擁抱、拖手、輕拍、接吻)					
37	不理解非言語之表達 (對一些面部表情沒有反應，例如皺眉頭、繃臉、微笑、驚訝等)					
<u>以交互影響表達</u>						
38	似乎不明白自己的行爲對別人有多大的影響 (在人群中間走過，忘卻社會禮儀及私人空間)					
39	不適當地吸引別人的注意及獲取別人的認同 (做出一些破壞性的行爲，如插嘴、造成支擾、打嗝、大笑等)					
40	不適當和不懷好意地利用他人 (講人是非 /散播謠言：「某人在說你這些…這些」)					

社交總分：_____

*“ * ”代表學員需要說出說話內容，才作記錄*
若學員有該行爲出現，請在該日的格內 “√”

五. 自我觀念		日數				
<u>以言語表達</u>		1	2	3	4	5
41	自我批判 (常以這些語句表達，例如：「我做不到」；「我一定有問題」；「沒有人喜歡我」)*					
42	不斷尋求忠告和指導 (「我現在應該做些什麼？」；「我應該怎樣做？」；「我需要援助」)*					
43	不斷尋求保証去確立自我形象 (「你喜歡我嗎？」；「你喜歡我今天所著的衣服嗎？」)*					
<u>以身體表達</u>						
44	不良的姿勢 (無精打采的姿態；低頭；寒背；拖著腳走路)					
45	過度溫順及服從 (說話時陰聲細氣；經常要求別人的批准；立場不明確)					
46	缺乏性取向 (衣著，行爲，對異性之表現)					
47	當有別人支持時，學員可能表現得有信心，但獨處時卻缺乏信心					
<u>以交互影響表達</u>						
48	自我形象建基於他人强烈的認同 (模仿別人的說話，表情，行路姿勢，習慣)					
49	在學業、生活和/ 或工作上有不切實際及過高的目標 (在現實生活中，學員感到了解自己是件困難的事：「我希望成爲一位醫生、老師、太空船駕駛員」)					
50	在受過分保護的環境下引致學員的自我形象及期望偏低 (如：不成熟，過份依賴他人的行爲；意料到自己將會失敗；不嘗試新事物)					

自我觀念總分：_____

“ * ” *代表學員需要說出說話內容，才作記錄*
若學員有該行爲出現，請在該日的格內 “√”

六．暴力		日數				
<u>以言語表達</u>		1	2	3	4	5
51	以言語表達憤怒的情緒 (「我憎恨你」) *					
52	以言語辱罵或敵對別人 (「你又肥又醜樣」) *					
53	公開提及別人感到爲難或侮辱的個人事件 (「他昨晚尿床」) *					
<u>以身體表達</u>						
54	在攻擊別人之前可能做出一些特別行爲 (身體機能處於緊張狀態，脾氣暴躁，粗魯無禮地回應別人，以懷疑、不信任的眼神掃視別人)					
55	攻擊別人 (打架、推撞、毆打、抓傷及捏別人)					
56	以行動表示憤怒的感覺 (重擊桌子；砰然關上門；踢或跺腳；唾吐；破壞物件；弄破、剪斷或撕碎物件)					
57	自我虐待的跡像 (被咬過的痕跡；瘀傷；手掌、手背、手臂、頭或其他身體部位被抓傷的痕跡)					
<u>以交互影響表達</u>						
58	恐嚇和欺負別人 (威脅他人，如：「如果你不拿這個給我，我便會打斷你的腿」)					
59	抗拒、拒絕妥協 (轉身背向著給指示的人，同時說：「我是不會做的」)					
60	以嘲笑和辱罵的態度從別人手中取去東西 (取去別人的飯盒、私人財物、用具：「我拿了你的飯盒，過來取回吧。」)					

暴力總分：_____

*“ * ”代表學員需要說出說話內容，才作記錄*
若學員有該行爲出現，請在該日的格內 “√”

七．對現實感到迷惑		日數				
<u>以言語表達</u>		1	2	3	4	5
61	說話零碎，紊亂且沒有系統 (思想不連貫；說話漫無目的及沒有方向) *					
62	說話重覆 (背誦 / 朗讀自我守則：「現在做好這個」；重覆又重覆地做同樣的程序或動作)*					
63	古怪的行爲(自言自語，扮鬼臉，盯著人)					
<u>以身體表達</u>						
64	自我刺激的行爲 (不時沉迷於重覆的身體動作，例如搖動身體、急速擺動頭部、拍打手掌等)					
65	恐懼 (不理智的害怕；害怕某些特別的情況，如人群、樓梯、黑暗、高處、飛機的噪音、不在家或獨自留在家中)					
66	覺察周圍的環境及事物的能力有顯著的波動 (有一段時間不知道周遭發生的事物；迷失專注力。注意：可能癲間病發作後發生)					
67	功能衰退 (專注力、記憶力、社交能力、控制衝動的能力與之前所觀察或紀錄有明顯的改變)					
<u>以交互影響表達</u>						
68	缺乏反應；除非中斷學員，否則他會持續數分鐘或以上盯著某處也沒有任何行動 (學員會停止活動及沉迷在自己的思想中；需要別人行動上的鼓勵和緊密的接觸才能令他重投活動中)					
69	過度懷疑別人 (不信任和責備他人；常感到被別人蔑視、嘲弄：「別人偷了我的飯盒」，但事實上學員忘記自己的飯盒是放在別處)					
70	易受騙和過分服從；很容易被遊說進行性活動、借錢給別人、被佔便宜。					

對現實感到迷惑總分：_____

“ * ”代表學員需要說出說話內容，才作記錄

若學員有該行爲出現，請在該日的格內 “√”

Appendix VII

Consent form for video taking (Chinese version)

參與拍攝研究之同意書

本人_____（家長姓名），*同意／不同意*小兒／小女_____（子女姓名）參與是項拍攝活動。*小兒／小女現於匡智會_____（服務單位）接受訓練。本人明白研究員將會前往*小兒／小女的服務單位爲他／她拍攝有關資料。

本人明白是次參與純屬自願性質，參與後並不會對現時及將來的治療造成任何影響。在整個拍攝過程中所得資料， 抽取部分重要內容，製成錄影帶，以協助同工學習填寫「可觀察的情緒記錄表 -- 修訂本」。所有拍攝資料，只作分析用途，絕對保密。若學員在拍攝過程中，不願意繼續參與，可隨時退出。

家長簽署：_____

家長姓名：_____ 日期：_____

見證人簽署：_____

見證人姓名：_____ 日期：_____

研究員簽署：_____

研究員姓名：_____ 日期：_____

*請刪去不適用者

Appendix VIII

COEI-R record form

“可觀察情緒的評估詳細目錄 -- 修訂版” 記錄表

因素	形式表達	項目		因素	形式表達	項目	
1. 衝動和挫敗	以言語表達	1		5. 自我觀念	以言語表達	41	
		2				42	
		3				43	
	以身體表達	4			以身體表達	44	
		5				45	
		6				46	
		7				47	
	以交互影響表達	8			以交互影響表達	48	
		9				49	
		10				50	
2. 焦慮	以言語表達	11		6. 暴力	以言語表達	51	
		12				52	
		13				53	
	以身體表達	14			以身體表達	54	
		15				55	
		16				56	
		17				57	
	以交互影響表達	18			以交互影響表達	58	
		19				59	
		20				60	
3.憂鬱 -- 退縮	以言語表達	21		7. 對現實感到迷惑	以言語表達	61	
		22				62	
		23				63	
	以身體表達	24			以身體表達	64	
		25				65	
		26				66	
		27				67	
	以交互影響表達	28			以交互影響表達	68	
		29				69	
		30				70	
4. 社交	以言語表達	31		日期: _____ 職員姓名: _____ 學員姓名:_____			
		32					
		33					
	以身體表達	34					
		35					
		36					
		37					
	以交互影響表達	38		若學員有該行爲出現，請在格內“ √ ”			
		39					
		40					

Appendix IX

Training workshop inter-rater reliability of COEI-R

可觀察的情緒記錄表-- 修訂本 (Observational Emotional Inventory-Revised)

訓練工作坊指引

目的：讓職員詳盡了解可觀察的情緒記錄的用法和實際應用

時間：8 小時

45 分鐘	提出和講解個別填寫 OEI-R 的疑難
15 分鐘	簡介 OEI-R 中文譯本註解
30 分鐘	錄影帶個案一 (忠)
10 分鐘	填寫記錄表
20 分鐘	個案一討論
30 分鐘	錄影帶個案二 (律)
10 分鐘	填寫記錄表
20 分鐘	個案二討論
10 分鐘	小休
20 分鐘	錄影帶個案三 (玉)
10 分鐘	填寫記錄表
30 分鐘	個案三討論
20 分鐘	錄影帶個案四 (恒)
10 分鐘	填寫記錄表
30 分鐘	個案四討論
20 分鐘	錄影帶個案五 (華)
10 分鐘	填寫記錄表
30 分鐘	個案五討論
20 分鐘	錄影帶個案六 (圓)
10 分鐘	填寫記錄表
30 分鐘	個案六討論
30 分鐘	答問時間
20 分鐘	將來用 OEI-R 注意事項 (main study)

工作坊前準備：

1. 工作坊前一星期向有關職員 (輔助就業，工場和日間中心的導師、福利員和社工) 派發：1) 可觀察的情緒記錄表 -- 修訂本 (COEI-R) 2) 中文譯本註解 3) 填寫表 。
2. 職員需在自己工作的地方選出兩位較爲熟悉及有情緒行爲問題的學員，練習填寫 COEI-R。職員需要用兩小時觀察一個學員的情緒表現。每個職員需在該星期用四小時來觀察和記錄兩位學員的情緒狀況。
3. 完成後於工作坊當天將填寫表交回負責同事。

工作坊：

1. 詢問職員之前填寫上述兩份可觀察的情緒記錄表有沒有困難。如有，請記錄困難的地方，並引用中文譯本註解解答。
2. 講解中文譯本註解的作用是解釋記錄表不清楚的項目和舉些實際的例子加以說明。需特別講解有 "✔" 的項目，因 "✔" 代表 expert panel review percentage of agreement < 70%。注意第 63 條項目，古怪的行爲包括自言自言， 古怪內容、表情及聲音。如：自言自語，扮鬼臉，吐口水，大笑大叫等。
3. 播放錄影帶個案四至六個，視乎時間和職員表現。看錄影帶前需填 Confidentiality form 。看完錄影帶後需填寫記錄表，講解答案時可參考錄影帶個案分享。
4. 正式用 OEI-R 做 main study 時需注意之事項：
    - DAC & SWS 連續五日填寫
    - SE (job train) 連續五次訓練日期填寫
    - 需填寫可觀察的情緒記錄表 -- 修訂本第一頁
    - 填寫完整份記錄表交回負責同事
    - 填寫 Evaluation form for the downstream training

工作坊後練習：

工作坊後一星期內在自己工作的地方再選出兩位較爲熟悉及有情緒行爲問題的學員填寫記錄表交回負責同事。以電話方式/到工場、中心聯絡並解答疑難

可觀察的情緒記錄表-- 修訂本 (Observational Emotional Inventory-Revised) 中文譯本註解

<u>普遍的情緒行爲</u>

一. 衝動和挫敗

- 短暫專注力
- 容易發怒
- 接受挫折能力低
- 過度活躍
- 認知能力低
- 魯莽行事
- 記憶力衰弱
- 肌肉不協調

二. 焦慮

- 莫名、不理智的恐懼
- 脾氣暴躁、容易激動
- 不專注
- 過分憂心、擔心
- 不懂處理壓力
- 強迫性思想行爲 (OC)
- 投訴身體不適

三. 憂鬱 -- 退縮

- 過分傷心、抑鬱、不開心
- 難以入睡、失眠或渴睡，但卻沒精神，疲倦
- 沒面部表情，語氣單調
- 投訴身體不適

四. 社交

- 社交技巧不足，難與別人溝通
- 不適當、不成熟的行爲，使別人抗拒交往
- 暴力、破壞性行爲，與別人交惡

五. 自我觀念

- 缺乏自信、認爲自己無用、無價值
- 悲觀
- 依賴
- 需要不斷支持、鼓勵

六. 暴力

- 負面的說話
- 憤怒、虐待性的行爲
- 拒絕合作
- 挫敗感
- 不適當地引人注意
- 自我虐待

七. 對現實感到迷惑

- 零碎的說話
- 自我刺激
- 不理週遭環境

一. 衝動和挫敗 (✔ represent poor reliability result -- percentage of agreement < 70%)

因素		項目	註解
以言語表達		1. 要求別人注意	• 衝動：如大叫，重覆叫「姑娘/ 阿 sir」，或說些重覆/不同的說話來引別人注意，內容多數是無關重要，想講就講，多數會在有人注意時偷笑或高興。 • 挫敗：如未能取得別人的注意，會感到挫敗，不開心或失落。
		2. 打斷別人的話題	• 不適當地插嘴，可能是喋喋不休，亦可能是嘲笑，目的是擾亂別人。 • 有其他人在交談時不停說話或諷刺別人，不理會別人感受，影響工作或社交。
		3. 思想內容急劇轉變，使溝通上出現困難	• 想法混亂，思維不清析。對話時時常轉話題，想到便說，不理會別人的問題或談話的內容。 • 說話沒有系統和組織，上文不接下理，沒有連貫性。
以身體表達		4. 工作 / 活動時表現出混亂和沒有系統	• 用具、物質隨處放或散佈在檯面，工作時沒有組織、系統。 • 工序混亂，缺乏計劃。
	✔	5. 難以集中注意力；容易分心；外來和不重要的刺激物會吸引學員/ 舍友的注意	• 東張西望，不專心，很易被外來的刺激/滋擾吸引著而停止手上工作或進行中的活動。只顧傾談或玩耍，影響工作速度和質數。 • 未完成手頭的工作或正在參與的活動便已做另一樣工作或活動，但不久又轉其他工作，表現衝動。
	✔	6. 突然做出一些不能預計/意料之外的動作	• 突然的舉動/作爲，令別人無所適從/在別人意料之外 • 如坐在椅上參加小組活動時突然站立、離位、跳起，漫無目的地握緊工具或無端端地稼擺一些無用的物件。
		7. 對日常生活程序的轉變作出不適當的反應	• 由於不熟識及未能掌握新事物，學員不能承受或不願嘗試接受此種改變，產生挫敗感，表現和以往不同，例如會悶悶不樂、哭泣、不願參與、發脾氣、撅口撅面等。 • 轉變可包括：時間表轉變、新工作環境、新工種、新職員/學員參與。
以交互影響表達		8. 容易因爲別人而感到不高興；情緒變化不定，容易產生過敏反應	• 容易受別人影響，對別人的一舉一動反應過敏，情緒易受外間牽連， • 如會因爲別人無心弄跌東西而破口大罵、別人不小心碰倒他卻以爲專登撞他。當旁邊的學員被導師指證，事情未必與他有關，但他可能很不同意，甚至發脾氣。
	✔	9. 容忍受挫的能力偏低	• 不能容忍別人善意的指導、批評，會因此而嬲、發脾氣、不開心。 • 遇到挫折可能會容易氣餒，垂頭喪氣。 • 如排隊時想排第一，被導師要求排較後位置，便即時大發脾氣。被指工作需改善時，便會忸憎、發脾氣.。
		10. 沒有耐性，很難去等候別人	• 不肯排隊、不肯輪候、不能等待，儘管霸尖也要立即達到目的。社交上是不守規矩、沒禮貌的表現。 • 如不輪候拿工具、不排隊打咭、應該先問准才可食，卻忍不住自己取食(偷食)、未聽完指示便搶住做。

二. 焦慮

因素		項目	註解
以言語表達		11. 學員/ 舍友感到莫名的恐懼； 擔心將會有意外發生 / 生病	• 無原無故的恐懼，擔心不幸將會發生,想法多數是負面，很易會過分憂心、擔心。 • 如說：「我會行衰運」、「我好快會死」、「我就快生癌」、「我好驚」。
	✔	12. 重覆表示憂慮；重覆同一個想法	• 重覆又重覆的想著某一件事，重覆又重覆的說出這種擔憂，弄致不能集中精神工作。 • 如重覆想著阿 Sir，不斷問：「阿 Sir 去邊度？」、「我想見阿 Sir」、「阿 Sir 今日係唔係放假，點解見唔到佢？」、「唔知聽日會唔會落雨？」
		13. 提出患有一些沒有因由或不能證實的疾病。真正的疾病不計算在內。	• 時常投訴有病、不舒服，但發現不是生理上的問題及沒有其病， 如：頭痛、胃痛、胸口痛等。休息或食藥後都沒什麼改變 ; 或無需食藥、休息，很快便回復正常。 • 如常說：「我個頭好暈、好痛」、「個胃好唔舒服」、「我條氣唔順，我透唔到氣。」、「成個人好累，唔想做嘢」
以身體表達		14. 容易暴躁、激動；表現局促不自在	• 難以控制情緒，情緒易高漲、 易發脾氣、易忮憎、暴躁、不自在。 • 如坐臥不安、不能安心工作、憂心仲仲，生產力降低。
	✔	15. 肌肉張力緊張；身體的緊張狀態普遍提升，動作的靈活性降低	• 因精神緊張而引致生理反應，如肌肉緊張、關節僵硬，以致動作不靈活。 • 如整個人動作僵硬、過度緊握用具
	✔	16. 出現重覆的身體動作	• 由於焦慮，潛意識做出一些不由自主的動作，明顯影響工作、社交表現。 • 如手指或腳趾不斷在檯面、地面彈著，眼睛顫動，神經性肌肉動作(抽搐)，搖擺身體， 咬手指甲。
		17. 當身處有壓力的環境時，學員/ 舍友會出現過多的身體反應	• 當身處壓力時，例如發生意料之外的事情或被要求做不想做的事時，由於焦慮，過分緊張，生理上出現不自主的反應，影響工作表現。 • 如呼吸急促/ 呼吸不正常、流汗過多、手震、心跳加速、口乾、尿頻、肚瀉。
以交互影響表達	✔	18. 不專心；不時沉迷於自己的思想中	• 時常重覆想著同一件事，因不專心而對訓練反應低或不主動工作。 • 因只顧想著自己的事，感到焦慮困惑，不能集中工作，使工作停頓，混亂，甚至錯誤頻生。
	✔	19. 不斷尋求別人的認同；非常依賴別人	• 由於焦慮自己做得不好，不斷問別人，希望得到認同和肯定做得正確。 • 如問：「我做成點？」、「咁做得叻唔叻？」、「我做得好唔好？」
		20. 很難適應新的環境；減少與別人接觸以避免壓力	• 當環境轉變時，因對一切都很陌生，怕做不好， 怕與人相處遇到問題不知所措，無所適從，很難去適應新環境， 故此會與以往表現不同。 • 如減少與人接觸，避開陌生人，但從前可能是很活躍及會主動與人接觸。

三. 憂鬱 -- 退縮

因素		項目	註解
以言語表達		21. 語調低沉，並且缺乏情感的表達	• 語音單調，沒有高低音調，說話時沒有面部表情。憂鬱，提不起勁。 • 如喃喃自語，說話緩慢和細聲，沒神沒氣。
		22. 以言語表達失望及絕望	• 凡事感到灰暗和無助，說話內容偏向負面， 用語言表達出沒有希望， 失望或絕望。 • 如：「我覺得好失落」，「沒有人關心我」。
		23. 自我批判	• 不欣賞自己，常挑剔自己。低估自己能力。 • 如說：「我做不到；我無用；無人喜歡我」。
以身體表達	✔	24. 表現不開心	• 經常愁眉苦臉, 很少笑容, 常皺眉頭, 甚至有悲哀痛苦表情，明顯表示憂鬱。
		25. 表現昏昏欲睡	• 不是藥物而引起的疲倦，坐著企著都表現出昏昏欲睡，頻頻打呵欠，有明顯黑眼圈。 • 如常伏在枱上睡覺，眼睛半開半合。
		26. 喪失食欲或過分進食	• 對食物提不起興趣，喪失食欲，不想食野。 • 強迫自己進食，不斷食而不理份量太多，可能會食到嘔。
		27. 以一些重覆的動作習慣及姿勢來顯示身體疲勞，尤其是在早上	• 不斷轉換姿勢來顯示身體疲勞，無精打采。 • 如寒背；無精打采的姿態；動作遲緩；提不起勁。
以交互影響表達	✔	28. 離群；退縮；情感疏離	• 很少參與小組活動， 就算入組表現亦很被動。 • 如果任他選擇， 多數不參與團體活動和集體遊戲。 • 一般都抗拒群體生活，很少與人接觸， 影響社交和合作性工作。
		29. 待人冷淡和缺乏精力	• 不想與人傾談，不理會別人，坐在一旁沒有精力參與任何活動，社交活動更覺明顯。 • 如不參與活動；不工作；對獎賞及鼓勵亦沒有反應，甚麼活動也不願做。
		30. 時常投訴；與別人有負面的交往	• 不斷投訴不同的事件或人，怪責別人，容易不滿，較多負面及悲觀的想法。 • 如當與別人接觸時，學員會對週遭事物和自己充滿悲觀的想法，例如：「弊傢伙！每件事都好唔妥！」。「都係佢唔好, 攪成咁!」;「佢都係唔會批准我咁做。」

四. 社交

因素		項目	註解
以言語表達		31. 不能以言語表達感受	• 不善於表達自己的感受，無論在開心，不開心或憤怒時，亦不會說出現時的心情或感受。 • 如說：「我很憂愁 / 開心 / 不開心 / 憤怒」
		32. 對別人的需要及感受不敏銳或不知情	• 用不適當的言詞和不自覺地傷害他人的感受；不會有同情、悲憫之心。 • 如在別人憂傷之時，言詞仍然不收檢，導致別人受到傷害；或者被別人拒絕時，仍然不知情地繼續發表己見。如說：「低你死呀」。
		33. 重覆說粗言穢語	• 說粗言穢語去辱罵別人；談話間不時帶有粗言穢語。
以身體表達	✔	34. 不察覺自己的個人儀容	• 儀容包括個人衛生、衣著、形象、整潔儀表。 • 不注重儀容如：穿著不整潔的衣服、配搭極度不宜 (甚爲怪旦)，不處理體臭，彼頭散髮，挖鼻、將手放在下體處抓癢 (但不是自瀆行爲) 等。
		35. 不適當地進行與性有關的行爲	• 在公眾場所愛撫、自瀆、進行性行爲。
		36. 與別人有過份的身體接觸	• 對普通朋友有不適當、甚至過份的身體接觸。 • 如：過分擁抱，拖手，觸摸，強吻。
	✔	37. 不理解非言語之表達	• 非言語包括：面部表情、身體動作 • 如對別人的面部表情(皺眉頭、微笑、驚訝、不悅、高興)沒有反應，不懂作出相應的配合。別人皺眉表現不悅，但學員卻不理解，繼續做他想做的事。
以交互影響表達	✔	38. 似乎不明白自己的行爲對別人有多大的影響	• 做出些自己不以爲意，卻會令別人側目、不悅的行爲。 • 如會撞開擋著去路的人，會在二人中間行過，做出些沒有禮貌的行爲，如「督」人、錫人。
	✔	39. 不適當地吸引別人的注意及獲取別人的認同	• 透過些負面、破壞性行爲來吸引別人的注意。 • 如插嘴、騷擾別人、大叫大笑。更嚴重的會在不受理後，行爲變本加勵， 甚至講粗口等。
		40. 不適當和不懷好意地利用他人	• 講人是非 /散播謠言：「某人在說你這些…這些」。

五. 自我觀念

因素		項目	註解
以言語表達		41. 自我批判	• 不欣賞自己，常挑剔自己。低估自己能力。自我觀念低。 • 如說：「我做唔到」佢真係叻啦! 樣樣做得咁好! 我就唔得! 」「佢就好啦! 咁多人鍾意佢! 我就無用， 無樣叻， 一定無人鍾意我!」
	✔	42. 不斷尋求忠告和指導	• 自我觀念低，不相信自己，需要別人給予意見、指引、協助。 • 如時常問：「我而家要做乜？要點做？我需要幫手/ 你幫下我得唔得。」
		43. 不斷尋求保証去確立自我形象	• 經常、甚至不停的問別人對自己的感覺 / 評價，來肯定自我價值、形象, 從而去確定有良好自我形象。 • 如：「你喜歡我嗎？」；「我今天著的衫靚嗎？」；「我新熨的衫好睇嗎？ 」
以身體表達		44. 不良的姿勢	• 自我觀念低，無精打采的姿態；低頭；寒背；拖著腳走路
		45. 過度溫順及服從	• 沒有自己的立場，盲目地服從別人的要求及指示。 • 如經常要求別人的批准，說話時過分陰聲細氣。
		46. 缺乏性取向	• 從衣著，行爲，對異性之表現、態度、相處，表現出對自己的性別不了解, 不接受, 固此把自己裝扮成與真正的性別不相稱；或對同性及異性有不恰宜的相處態度。
	✔	47. 當有別人支持時，學員/ 舍友可能表現得有信心，但獨處時卻缺乏信心	• 需要別人不停的鼓勵，以建立自信。 • 當沒有時會欠缺信心，不敢做，擔心做錯。
以交互影響表達		48. 自我形象建基於他人強烈的認同	• 盲目地模仿別人的說話，表情，行路姿勢，習慣，希望得到別人的認同。 • 例如扮公眾人物，如歌星 / 明星、師長、其他出色的學員等。 扮完後，多數會沾沾自喜，或樣子表現出很得意。
		49. 在學業、生活和/ 或工作上有不切實際及過高的目標	• 訂立一個幾乎無可能實踐的目標，按現有情況或條件，根本無可能達到此目標，而自己卻看不到這個事實。 • 如一個弱智/弱能人士， 希望成爲個醫生、 律師、大歌星， 甚至太空人。
		50. 在受過分保護的環境下引致學員/ 舍友的自我形象及期望偏低	• 很多事情都要別人強烈支持，鼓勵才敢 / 才肯做，尤以新事物更覺明顯。可能在太多協助及保護環境下形成依賴.、無自信及自我形象。 • 如不成熟，過份依賴他人的行爲；意料到自己將會失敗；不嘗試新事物。

六．暴力

因素		項目	註解
以言語表達		51. 以言語表達憤怒的情緒	• 粗暴地說出嬲別人的感覺。 • 如說：「我好憎你！」「你令我好嬲！」。「激死我，我好嬲！」
		52. 以言語辱罵或敵對別人	• 粗暴地罵別人，針對別人， • 如說：「你又肥又醜樣！」「你好衰格！」
		53. 公開提及別人感到爲難或侮辱的個人事件	• 刻意在言語上恥辱別人，令人感到難爲情、難堪。 • 如說：「他昨晚賴尿！」
以身體表達	✔	54. 在攻擊別人之前可能做出一些特別行爲	• 在攻擊前的先兆行爲。 • 如忸憎，情緒、肌肉變得緊張，跳來跳去，極不自在的表現，脾氣暴躁，粗魯無禮地回應別人，以懷疑、不信任的眼神掃視別人
		55. 攻擊別人	• 實際攻擊人的行爲。 • 如打架、推撞、毆打、抓傷及捏別人。
		56. 以行動表示憤怒的感覺	• 通常把情緒發洩於物件的行爲。 • 如重擊桌子；砰然關上門；踢或踩腳；唾吐；破壞物件；弄破、剪斷或撕碎物件。
		57. 自我虐待的跡像	• 發現有傷口、舊傷痕及進行自虐的行爲，必須是最近自己刻意弄傷或被觀察當天弄傷。 • 被咬過的痕跡；瘀傷；手掌、手背、手臂、頭或其他身體部位被抓傷的痕跡。 • 如搣手搣腳，大力打自己至瘀紅、甚至流血，咬傷，撞頭等。 • 不包括自我刺激而不致受傷的行爲。
以交互影響表達		58. 恐嚇和欺負別人	• 恐嚇和威脅他人，粗暴無禮。 • 如說：「如果你唔俾我，我就打斷你隻腳！」
	✔	59. 抗拒、拒絕妥協	• 抗拒合作，不守規矩。經多番勸告亦不聽，仍舊做不准做的行爲，我唔聽！我唔做，不肯合作，不依指示，甚至反抗。 • 如轉身背向著給指示的人，同時說：「我係唔會做的！」；推開職員，一點也不肯嘗試；又或別人不准他做，他專登去做。
		60. 以嘲笑和辱罵的態度從別人手中取去東西	• 如取去別人的飯盒、私人財物、用具，然後說挑戰性的說話 • 如說：「我攞咗你個飯盒，過來堅番啦，笨！」「想堅番，就要過來呢度！」「有本事就過來攞番！」

七．對現實感到迷惑

因素		項目	註解
以言語表達	✔	61. 說話零碎，紊亂且沒有系統	• 由於不知現在的時間、地點、人物，與現實脫節，仍然沉醉在自己的世界中，說話時只說自己沉迷的事。因此思想不連貫；說話漫無目的及沒有方向
	✔	62. 說話重覆	• 不斷重覆又重覆的講某些說話，可能是一路做一路講出正在做的事情或動作，又或者只是重覆說出記憶中的說話；無意義和不重要。 • 如背誦 / 朗讀自我守則：「而家做好呢樣！」；邊說話邊重覆又重覆地做同樣的程序或動作。不論什麼時間都重覆說早晨等。
		63. 古怪的行爲	• 自言自言， 古怪內容、表情及聲音， 未必聽到內容。 • 如：自言自語，扮鬼臉，吐口水，大笑大叫等。
以身體表達	✔	64. 自我刺激的行爲	• 不時沉迷於重覆的身體動作，自我沉醉、自我刺激，很多時候週遭發生的事情亦會不知不理。 • 如：搖擺身體、急速擺動頭部、衝來衝去、跳來跳去、自轉、拍打手掌、插眼/督眼等。
		65. 恐懼	• 迷糊，不知週圍發生什麼事，有不理智的害怕；一般人在正常情況下, 對這種處境不會產生恐懼。害怕某些特別的情況。當有這種恐懼後，反應是極不理智。害怕的情度是不可理喻。 • 如：人群、樓梯、黑暗、高處、飛機的噪音、不在家或獨自留在家中。會尖叫，在人堆中極度緊張想盡辦法推走或避開。
		66. 學員/ 舍友覺察周圍的環境及事物的能力有顯著的波動	• 有一段時間不知道周遭發生的事物；專注力散漫。注意：可能癲間病(抽筋)發作後發生。 • 如：突然發呆，盯著某處不動。叫他也未必有反應，就算有反應，很快便精神恍惚。之前或平時是正常，沒有特別明顯的專注力問題。
		67. 功能衰退	• 專注力、記憶力、社交能力、控制衝動的能力與之前所觀察或紀錄有明顯變差的跡象。
以交互影響表達		68. 缺乏反應；除非中斷學員/ 舍友，否則他會持續數分鐘或以上盯著某處也沒有任何行動(學員/ 舍友會停止活動及沉迷在自己的思想	• 迷失了自己，不知在做什麼。 • 如：學員會停止活動及沉迷在自己的思想中；需要別人行動上的鼓勵和緊密的接觸才能令他重投活動中。
		69. 過度懷疑別人	• 不信任和責備他人；常感到被別人蔑視、嘲弄。 • 如投訴：「佢偷了我個飯盒」，但事實上學員/ 舍友忘記自己的飯盒是放在別處。
		70. 易受騙和過分服從；很容易被遊說進行性活動、借錢給別人、被佔便宜。	• 過分服從，欠缺自我判斷力，服從些無理的要求。 • 迷失於現實，很容易相信別人，甚至被人欺騙也不知道。 • 如：被騙進行性活動；被騙取便宜也不知道；自己不夠錢用卻借錢給別人。

Appendix X

Consent form for Study Three and Four (Chinese version)

參與研究之同意書

本人_____（家長姓名），*同意／不同意*小兒／小女_____（子女姓名）參與是項研究。*小兒／小女現於_____（服務單位）接受訓練。本人明白研究員將會前往*小兒／小女的服務單位/ 香港理工大學爲他／她進行一些大肌肉、小肌肉、感知、認知、情緒及工作等測試。

本人明白是次參與純屬自願性質，參與後並不會對現時及將來的治療造成任何影響。若*小兒／小女在測試過程中，不願意繼續參與，可隨時退出。

本人已閱讀及明白此同意書，及對是項研究之內容、目的有充分了解。

在研究過程中所得全部資料，只作分析用途，絕對保密。

家長簽署：_____

家長姓名：_____ 日期：_____

見證人簽署：_____

見證人姓名：_____ 日期：_____

研究員簽署：_____

研究員姓名：_____ 日期：_____

*請刪去不適用者

Appendix XI

Becker Work Adjustment Profile- Revised by the researcher

工作要求及員工能力問卷

學員姓名：_____ 職員姓名：_____ 日期：_____ 學員職位：_____

請在每個項目圈出你認爲 1) 學員現時工作的要求 和 2) 學員能夠達到這些工作要求的能力

評分準則

工作要求		工作能力	
5	非常重要	5	能完全達到工作要求
4	頗重要	4	能達到大部分工作要求
3	普通重要	3	能達到一半的工作要求
2	不太重要	2	只能達到小部分工作要求
1	極不重要	1	完全不能達到工作要求
		NA	不適用 (若該項目的工作要求是**極不重要)**

工作習慣/ 態度方面												
項目		工作要求					工作能力					
1	個人衛生：洗澡、清潔、使用除臭用品，保持身體清潔	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
2	適當服飾：工作時穿著適當服裝	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
3	個人儀容：保持個人儀容整潔	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
4	守時：於早上、午飯後和休息時間後即時報到	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
5	工作動力：自發及有興趣地做指定的工作	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
6	出勤率：出勤有規率，不可缺席	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
7	可靠程度：可靠、穩定地完成工作任務	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
8	工作的姿勢：工作時保持良好的姿勢	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**

人際關係方面												
項目		**工作要求**					**工作能力**					
9	人際關係：對同事和上司尊重有禮	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
10	獲群體接受：得到同事們稱許和接受	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
11	與上司合作 ：對上司作爲權威人物的態度表現合作和尊重	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
12	值得信任：與人相處，誠實可靠且信任別人	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
13	與同事合作：與他人相處和睦	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
14	關心他人：主動關心同事的福祉	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
15	接受改正：接受上司的批評和改正	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
16	情緒穩定：工作上要處理問題或遇到挫折的反應	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
17	參與社交活動：在社交活動中與同事溝通	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
18	幫助別人：不必經人吩咐，主動幫助同事	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
19	沒有嚴重的搗亂行爲	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
思考方面												
20	數字：準確地作加減乘除運算	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
21	溝通模式：善用表情、動作或言語溝通	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
22	記憶力：能記住口述的資料或工作指示	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
23	閱讀能力：能閱讀並理解/ 明白內容	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
24	時間概念：明白以下概念的意思- 昨天、明天、後天及星期一至日	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
25	書寫：寫正楷或草體字溝通的能力	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
26	看鐘：準確地從普通鐘面或錶面讀出時間	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
27	用電話：接聽和打出電話，及使用黃頁、白頁電話簿	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
28	量度：能準確地量度不同長度的物件	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
29	理財：使用銀行服務、控制開支及日常處理金錢	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**

項目		工作要求					工作能力					
30	判別能力：根據物件的大小，配對和分類	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
31	把基本需要告知他人：覺得渴、餓、需要上廁所、身體不適或有其他基本需要時，告訴上司	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
32	按口頭指示工作：執行工作指令的能力	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
33	對工作的認識：了解目前的工作、完成工作的方法和所需物料	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
34	技能轉移：能把工作中獲得的技能運用於另一項新的工作上	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
35	解決問題：自行解決工作上及與同事間發生的問題	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
36	工作的學習：在他人協助下學會執行任務	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
37	判斷能力：作出與工作有關的決定	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
38	獨自乘車：能獨自使用公共或私人交通工具上班	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
執行工作能力方面												
39	糾正錯誤：控制自己工作質素	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
40	工作質素：確保工作過程安排有序，能準確無誤地完成工作或保持製成品的水準	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
41	工作自發性：自行開始工作日程	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
42	工作量：完成而又合標準的工作，數量維持高水平	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
43	索取物料：懂得索取完成任務所需的材料或物品	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
44	可靠程度：可靠、穩定地執行工作	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
45	獨立工作：於最初的指導期後不需要任何的監督和協助	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
46	在需要的時候尋求協助：於工作範圍內向主管尋求所需的協助	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
47	歸還工具：在使用後把工具及物料放回適當的位置	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
48	對工作的重視，可靠勤力地完成任務	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
49	保持工作範圍清潔：於工作進行期間及工作完畢後把工作範圍打掃乾淨	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**

項目		工作要求					工作能力					
50	時間記錄：準確記錄早上到達及完工下班的時間	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
51	穩定地工作的能力：穩定地或有效率地工作	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
52	工具的保養：工作期間小心適當地使用工具及設備	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
53	安全措施：遵守安全守則和規章以免發生意外	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
54	提出問題：向主管報告工作範圍內遇到的問題	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
55	耐力：身體能支持於正常工作天內維持平穩的工作步伐，持久地工作	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
56	做細微動作的能力：用手指操控細小的零件或裝配細小的組件	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
57	手部活動能力：利用單手或雙手進行釘裝、整理或機器操作及其他以手完成的工作	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
58	整體運動神經：四肢協調以應付須舉重、搬運、推、拉的工作	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
59	留守工作崗位：留在直屬的工作範圍，不會四處走動	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
60	體能：能舉起、搬運、推動或拉動不同重量的物件	**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**

有沒有一些項目你認爲很重要，但上述卻沒有提及：有 / 沒有

項目		工作要求					工作能力					
1		**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
2		**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
3		**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
4		**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**
5		**5**	**4**	**3**	**2**	**1**	**5**	**4**	**3**	**2**	**1**	**NA**

其他意見：

問卷完　多謝參與

Appendix XII

Work adjustment questionnaire

輔助就業：工作適應問卷 (僱員用) -- (如僱員在工作期間作出以下轉變，請在 ☐ 內 "√")

項目	第 1 個月		第 3 個月	
	√	請說明	√	請說明
1. 你有沒有嘗試去進修/ 接受訓練而令自己更能達到工作上的要求？				
2. 你有沒有嘗試改變自己的工作方式而令自己更能達到工作上的要求？				
3. 你有沒有嘗試改變自己的工作價值觀/ 需求令自己更能適應現時的工作？				
4. 你有沒有嘗試就住自己的工作能力而要求僱主加人工？				
5. 你有沒有嘗試就住自己的工作能力而要求僱主增加福利？				
6. 你有沒有嘗試提議改善公司某些政策而令自己更能達到工作上的要求？				
7. 你有沒有嘗試拒絕做一些你需要做的工作而表達你對現時工作的不滿？				
8. 你有沒有嘗試很不願意地做一些你需要做的工作而表達你對現時工作的不滿？				
9. 你有沒有嘗試向僱主要求轉換工作環境而令自己更能適應現時的工作？				
10. 你有沒有嘗試向僱主要求轉換工作類型/ 岡位而令自己更能適應現時的工作？				
11. 你有沒有嘗試向僱主降低他對你的工作要求而令自己更能適應現時的工作？				
12. 你有沒有嘗試作出其他轉變而令自己更能適應現時的工作？				
13. 你有沒有嘗試要求僱主作出其他轉變而令自己更能適應現時的工作？				

輔助就業：工作適應問卷 (僱主用) -- (如僱主在工作期間作出以下轉變：請在 ☐ 內 “ √ ”)

項目	第 1 個月		第 3 個月	
	√	請說明	√	請說明
1. 你有沒有嘗試提供進修/訓練機會而令僱員更能達到工作上的要求？				
2. 你有沒有嘗試改變公司的政策而令僱員更能達到工作上的要求？				
3. 你有沒有嘗試改變公司的福利制度而滿足僱員的工作需要？				
4. 你有沒有嘗試就住僱員的工作能力而加/ 減僱員的人工？				
5. 你有沒有嘗試就住僱員的工作能力而加/ 減僱員的福利？				
6. 你有沒有嘗試提議僱員改善某些工作方式而令僱員更能達到工作上的要求？				
7. 你有沒有嘗試拒絕給僱員做一些他需要做的工作而表達你對他現時工作的不滿？				
8. 你有沒有嘗試很不願意地給僱員做一些他需要做的工作而表達你對他現時工作的不滿？				
9. 你有沒有因應僱員的要求嘗試給他轉換工作環境而令僱員更能適應現時的工作？				
10. 你有沒有因應僱員的要求嘗試給他轉換工作類型/岡位而令僱員更能適應現時的工作？				
11. 你有沒有嘗試因應僱員的需要而降低對他的工作要求，令僱員更能適應現時的工作？				
12. 你有沒有嘗試爲僱員作出其他轉變令僱員更能適應現時的工作？				
13. 你有沒有嘗試要求僱員作出其他轉變令僱員更能達到工作上的要求？				

Appendix XIII

Interview guide for work adjustment process (Chinese version)

被訪者 ☐ 同意 / ☐ 不同意錄音

研究員：呢次傾偈俾你講吓你嘅生活情況，同埋你做嘢嘅工作情況。依家講嘅嘢係唔會俾其他人知道嘅，你可以放心講你嘅諗法。有乜嘢唔明白，可以隨時問我，我會幫你寫低你講嘅嘢。

第一部分

1. 你叫咩名呀？ (姓名: _____)
2. 幾多歲呀？(年齡: _____)
3. 性別： ☐ 男 ☐ 女
4. 你結咗婚未？ ☐ 未婚 ☐ 已婚 ☐ 離婚/ 分居
5. 有無仔女呢？ ☐ 無 ☐ 1 – 2 個 ☐ 3 – 4 個 ☐ ≥ 5 個
6. 你讀書讀到幾多年班？

   ☐ 從未正式接受教育 ☐ 特殊教育 ☐ 小學程度
   ☐ 中一至中三 ☐ 中四至中五 ☐ 唔知道

7. 你有無接受過職業訓練呢？ 如果有，係乜嘢訓練同幾耐呢？

   ☐ 未曾接受過職業訓練 ☐ ≤ 6 個月 (訓練項目：_____)
   ☐ 7 – 12 個月 (訓練項目：_____)
   ☐ 13 – 24 個月 (訓練項目：_____)
   ☐ 25 – 36 個月 (訓練項目：_____)
   ☐ >37 個月 (訓練項目：_____)

8. 你以前有無做過工？如果有，係乜嘢工同幾耐呢？ ☐ 從未做過工

   ☐ 公開就業 (職位：_____ 年份：_____ 年期：_____)
   ☐ 輔助就業 (職位：_____ 年份：_____ 年期：_____)
   ☐ 庇護工場 (職位：_____ 年份：_____ 年期：_____)
   ☐ 展能訓練中心 (職位：_____ 年份：_____ 年期：_____)
   ☐ 其他 (職位：_____ 年份：_____ 年期：_____)

9. 你依家同邊啲人一齊住呀？

☐ 與家人同住 ☐ 與親戚同住 ☐ 一個人住

☐ 在宿舍和舍友住 ☐ 其他：_____

10. 你嘅家庭總收入係：

: ☐ <$5000/月 ☐ $5000-$10000/月

☐ $10000-$20000/月 ☐ $20000-$30000/月

☐ $30000-$50000/月 ☐ >$50000/月

第二部分

1. 你想唔想出嚟做嘢呢？如果想，係乜嘢原因？如果唔想，又係乜嘢原因？
2. 你依家嘅工作係乜嘢呢？喺邊度返工同做啲乜嘢嘅呢？
3. 你鍾唔鍾意依家份工作呢？如果鍾意，係乜嘢原因？如果唔鍾意，又係乜嘢原因？
4. 你以前有無做過工？如果有，點解唔繼續做？
5. 你滿唔滿意依家嘅工作類型? 點解？
6. 你滿唔滿意依家嘅工作環境? 點解？
7. 你滿唔滿意依家嘅人工/ 薪金? 點解？
8. 你滿唔滿意依份工嘅福利? 例如：強積金、醫療津貼、假期等，點解？
9. 你係唔係需要依家嘅工作?
10. 其他：參考 <<輔助就業：工作適應問卷 (僱員用)>>

Appendix XIV

Summary on the results of content validity of the COEI-R

(Result from the Expert Panel Review)

OEI-R Factors/ Items	Relevance		Representativeness	
1. Frustration-Impulsivity	**Mode**	**% of agreement**	**Mode**	**% of agreement**
1.	3	79	3	79
2.	3	75	3	79
3.	3	83	3	79
4.	3	79	3	79
5.	3	75	3	75
6.	4	92	4	92
7.	3, 4*	88	4	92
8.	3	79	3	79
9.	4	92	3, 4*	88
10.	3	83	3	83

OEI-R Factors/ Items	Relevance		Representativeness	
2. Anxiety	**Mode**	**% of agreement**	**Mode**	**% of agreement**
11.	4	92	3, 4*	88
12.	3, 4*	88	4	92
13.	3	83	3, 4*	88
14.	3, 4*	88	3, 4*	88
15.	4	96	4	92
16.	4	96	4	100
17.	4	100	4	96
18.	3, 4*	88	3, 4*	88

19.	4	83	4	83
20.	4	83	4	83

OEI-R Factors/ Items	Relevance		Representativeness	
3. Depression	**Mode**	**% of agreement**	**Mode**	**% of agreement**
21.	3, 4*	88	3, 4*	88
22.	4	92	4	92
23.	3, 4*	88	4	92
24.	3, 4*	88	3, 4*	88
25.	4	94	3, 4*	88
26.	4	92	4	92
27.	3	79	3	79
28.	4	96	4	96
29.	4	96	4	96
30.	4	100	4	100

OEI-R Factors/ Items	Relevance		Representativeness	
4. Socialization	**Mode**	**% of agreement**	**Mode**	**% of agreement**
31.	3	83	3, 4*	88
32.	3	83	3	83
33.	3	83	3	83
34.	3, 4*	88	4	92
35.	4	94	3, 4*	88
36.	4	87	4	92
37.	4	92	4	92
38.	4	98	4	92
39.	4	92	4	92
40.	3	75	3	79

OEI-R Factors/ Items	Relevance		Representativeness	
5. Self Concept	**Mode**	**% of agreement**	**Mode**	**% of agreement**
41.	3, 4*	88	3, 4*	88
42.	3, 4*	88	3, 4*	88
43.	3	83	3	83
44.	3	79	3	79
45.	3	75	3	75
46.	3	79	3	79
47.	3	75	3	75
48.	4	92	3	83
49.	3	75	3	71
50.	3	79	3	79
OEI-R Factors/ Items	**Relevance**		**Representativeness**	
6. Aggressiveness	**Mode**	**% of agreement**	**Mode**	**% of agreement**
51.	3	79	3	79
52.	4	92	4	92
53.	4	83	4	83
54.	4	83	4	83
55.	4	96	4	96
56.	4	96	4	96
57.	3	83	3	83
58.	4	96	4	96
59.	3, 4*	83	3, 4*	83
60.	3	75	3	92

OEI-R Factors/ Items	Relevance		Representativeness	
7. Reality Disorientation	**Mode**	**% of agreement**	**Mode**	**% of agreement**
61.	3	83	3	75
62.	3	79	3	71
63.	3	67	**2, 3 ***	**62**
64.	3	75	3	71
65.	3	75	3	71
66.	3	79	3	81
67.	3	83	3	83
68.	3, 4*	88	3	83
69.	3	79	3	75
70.	3	75	3	71

Note. Rating Scale: Poor (1); Fair (2); Good (3); Excellent (4).

Bolded items indicate the modification was made to the instructions.

* indicates bimodal distribution.