COGNITIVE, SOCIAL, AND VOCATIONAL FUNCTIONING OF YOUNG ADULTS AT FAMILIAL RISK FOR PSYCHOSIS (FRP) AND WITH EARLY PSYCHOSIS (EP)

WENG YITING

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Cognitive, Social, and Vocational Functioning of Young Adults at Familial Risk for Psychosis (FRP) and with Early Psychosis (EP)

Weng Yiting

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CERTIFICATE OF ORIGINALITY

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Name of Student: Weng Yiting

ABSTRACT

Background: Social cognition is suggested to be an important mediating variable in the relationship between neurocognition and vocational function in schizophrenia, and family support may also play a positive role in the vocational function of schizophrenia. However, similar studies in Chinese communities are scarce, especially among individuals at familial risk for psychosis (FRP). This study conducts preliminary work in Hong Kong to understand better the relationships among these important variables and the impact on their social and occupational functions in individuals with early psychosis (EP) and at FRP; and meanwhile a pilot randomised controlled trial (RCT) to evaluate if Chinese Social Cognition and Interaction Training (CSCIT) could improve social and vocational functions among FRP individuals.

Methods: First, we conducted a pilot cross-sectional study among 203 participants, including 77 individuals with EP, 49 individuals at FRP, and 77 healthy controls (HC), to compare and explore the relationships between neurocognition, social cognition, social skills, family support, and vocational functions. Second, a pilot RCT was conducted to test the effectiveness of a 9-session CSCIT on those with individuals at FRP in improving social skills and four social cognitive domains as the primary outcomes; and vocational function, mental state, and quality of life as the secondary outcomes at post-treatment and 3 months follow-up.

Results: Analyses indicated that visual learning performance dropped in the order from HC, then FRP, to the EP group. Vocational function, social skills, processing speed, verbal learning, and neurocognition (measured by the composite score) were impaired in EP group compared to FRP and HC groups. Reasoning and problem-solving, and working memory were impaired in the EP group compared to the HC group. Meanwhile, neurocognition had a significant positive relationship to social cognition in the EP and FRP groups. Family support

had an indirect relationship to the vocational performance mediated by social skills in the EP group. Neurocognition was significantly associated with family support in the FRP group. In addition, CSCIT + TAU group showed promising evidence over the TAU group in both primary and secondary outcomes.

Discussion and Implications: This study provides partial support to the hypothetical theoretical model in individuals with EP and individuals at FRP. People with poorer neurocognitive function likely have more problems with social cognition, leading to difficulties in competitive employment; and good family support facilitates their social skills on the job. Additionally, CSCIT shows potential to help FRP individuals to improve their clinical and psychosocial functions.

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Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

ANCOVA	Analysis of covariance
BACS SC	Brief Assessment of Cognition in Schizophrenia
BOKSS	Baptist Oi Kwan Social Service
BVMT-R	Brief Visuospatial Memory Test-Revised
C-FEIT	Chinese Facial Emotion Identification Test
CHR-P	Clinical high-risk psychosis
CONSORT	Consolidated Standards of Reporting Trials
CPT-IP	Continuous Performance Test: Identical Pairs
CPH	Castle Peak Hospital
CSCIT	Chinese Social Cognition and Interaction Training
C-SCSQ	Chinese Social Cognition and Screening Questionnaire
Df	Degree(s) of freedom
EASY	Early Assessment Service for Young People with Early Psychosis
EP	Early psychosis
EOC	Employment Outcome Checklist
FEP	First-episode psychosis
FES	First-episode schizophrenia
FRP	Familial risk for psychosis
HC	Healthy Controls
HVLT-R	Hopkins Verbal Learning Test-Revised

JACFEE	Japanese and Caucasian Neutral Faces Of Emotion
JACNeuF	Japanese and Caucasian Facial Expression
JCT	Jump to Conclusion
LMM	Linear Mixed Model
MATRICS	Measurement and Treatment Research to Improve Cognition in Schizophrenia
MCCB	MATRICS Consensus Cognitive Battery
MSPSS-C	Chinese version of the Multidimensional Scale of Perceived Social Support
NAB	Neuropsychological Assessment Battery
PANSS	Positive and Negative Syndrome Scale
PAB	Paranoid attributional bias
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RCT	Randomized controlled trial
RMSEA	Root mean square error of approximation
SCIT	Social cognition and interaction training
SD	Standard deviation
SIPS	Structured Interview for Psychosis Risk Syndromes
SOPS	Scale of prodromal symptoms
SQLS-R4	Schizophrenia Quality of Life Scale Revision 4
TAU	Treatment-AS-Usual
TMT-A	Trail Making Test: Part A

ToM	Theory of Mind
UCHPC	United Christian Hospital Psychiatric Centre
VSSS	Vocational Social Skills Assessment Scale
WMS III SS	Wechsler Memory Scale-III: Spatial Span

CHAPTER ONE

Introduction

This chapter provides an overall view of neurocognitive function, social cognition, social skills, family support and vocational function in individuals with psychosis and their at-risk first-degree relatives, as well as the effects of social cognition and interaction training (SCIT) on related outcomes. It sets out the background of the study and ends by providing the schematic structure of this thesis.

1.1 Background

Psychosis is characterised by delusions, hallucinations, and formal thought disorders. Psychosis is a term that describes a collection of symptoms. According to the Fifth Edition of the *Diagnostic and Statistical Manual of Mental Health Disorders* (DSM-5), people with psychosis typically experience hallucinations (seeing or hearing things that others do not) and delusions (false beliefs). Other symptoms can include disorganised speech, grossly disorganised or catatonic behaviour that is inappropriate for the situation, and negative symptoms (American Psychiatric Association, 2013).

Psychosis may result from a primary psychiatric disorder, stress, substance use, or another neurological or medical condition. However, people can experience psychosis and never be diagnosed with schizophrenia or any other disorder. Genetic risk factors are treated as significant evidence in the pathogenesis of psychotic disorders (Cardno et al., 1999).

The prevalence of psychosis is well known. James et al. (2018) reported that psychosis conditions affect more than 20 million people worldwide. Furthermore, it has been shown to affect 15 to 100 out of every 100,000 people each year. The incidence of a first episode of psychosis is about 50 in 100,000 people, while the incidence of schizophrenia is approximately 15 in 100,000 people (McGrath et al., 2004). Although Van Os et al. (2001) found that approximately 1.5 to 3.5% of people will be diagnosed with a psychotic disorder, a larger and highly variable number will experience at least one psychotic symptom in their lifetime. In the US, research shows that approximately 3% of people experience psychosis at least once during their lives and each year, more than 100,000 adolescents experience their first psychotic episode (Perälä et al., 2007). The lifetime prevalence of mental disorders in adulthood in Mainland China is 16.6% (Huang et al., 2019), and in Hong Kong is approximately 2.5%, which represents a significant public health concern (Chang et al., 2017).

Psychosis often first appears in a person's late adolescence or early adulthood, typically

when a person is in their late teens to mid-20s (McClellan, 2018; McGorry, 1992). For males, the peak age of onset is teens to mid-20s, while for females, the onset tends to be in the teens to late 20s (Calabrese et al., 2024). However, people can experience psychotic episodes at different ages, both younger and older ages and as a part of many disorders and illnesses.

Psychosis is associated with considerable disability, and psychosis in young adulthood has a destructive impact on individuals' life roles, educational and vocational goals, social relationships, and contributions to the community (Bassett et al., 2001; McGorry & Edwards, 1997; Yung & McGorry, 1996). People with psychosis frequently exhibit impairments in social functioning, which restricts their capacity to use the available social supports. It can be very stressful for them to certain types of social interaction (Buchanan, 1995), like working, communicating with family members, and interacting with the broader social environment (Bellack, 1997). In people with psychosis, deficits in neurocognition (including memory, attention, and executive functioning) and social cognition (including emotion perception, theory-of-mind, and attributional style; Green et al., 2008) have detrimental effects on functioning, including on role, social, community and independent living skills (Fett et al., 2011; Horan et al., 2012). It found that social cognition plays a mediating role in the relationship between neurocognitive and social functioning (Addington et al., 2006a, 2006b; Schmidt et al., 2011). Earlier onset correlates with poorer outcomes, although early intervention correlates with better results (Calabrese et al., 2024). Researchers found that improved social cognition is associated with increased overall functional outcomes in schizophrenia (Halverson et al., 2019; Vaskinn & Horan, 2020).

One of the most common methods of treating psychosis is with antipsychotic medication. However, many side effects may result from the use of medication, including drowsiness, feeling tiredness, loss of motivation, slowed thoughts, and emotional numbing (Read & Williams, 2019). Side effects become the most common reasons for people to stop taking the drugs. At the same time, patients still experience problems at work, problems

living independently, and difficulty developing social connections. In the past couple of decades, clinicians and researchers have started to realise that the available medications, which are effective for treating psychotic symptoms, do not address other symptoms, such as cognitive impairment (Miyamoto et al., 2012). Therefore, other treatments are also often provided to work with medication, such as medication management (Gray et al., 2002), individual or group psychotherapy (Ivezić et al., 2017), family support and education programmes (Chien et al., 2018; Zentner et al., 2023), supported employment and education (Humensky et al., 2019), and case management (Wong et al., 2019). Therefore, psychosis can be treated together with medicine, psychotherapy, and support from community.

SCIT is a group psychotherapy program that emphasizes the social aspects of cognitive remediation to improve social functioning and social cognition (Roberts et al., 2006). It has become more and more popular around the world as not only is it beneficial for inpatients (Dennis R Combs et al., 2007; Penn et al., 2005) and outpatients with chronic psychoses (Roberts & Penn, 2009), but it also improves functional outcome for people with First-episode psychosis (FEP; Bartholomeusz et al., 2013; Lo et al., 2023; Rocha et al., 2021). Therefore, in vocational rehabilitation, addressing social cognition is considered a crucial target of assessment and treatment to help patients with psychosis either return to work or maintain employment.

1.2 Organisation of Chapters

This study is organised into six chapters. Chapter One provides a general introduction to the study. Chapter Two presents the literature review of the study, including the concept of social cognition and related factors (neurocognition, social skills, family support, and vocational functions) of people with schizophrenia and people with psychosis, as well as reports details review of the theoretical model of early deteriorations in cognition and the impact on social and vocational functions in schizophrenia. Interventions of social cognition and interaction

training will also be discussed. It also includes a detailed review of individuals at familial risk for psychosis (FRP). Chapter Three provides an overall design of the study, including the problem statement, aim and objectives, overall design and innovation and significance of the study. Chapter Four presents a detailed report of Study One (a pilot cross-sectional study to explore theoretical models for individuals with EP and at FRP), including research aims and hypotheses related, methodology, results, and discussion. Chapter Five presents a detailed report of Study Two (a pilot randomised controlled trial study), including research aims and hypotheses, methodology, results, and discussion. Chapter Six provides a summary of all important findings, implications and recommendation of this PhD study. Finally, Chapter Seven presents the conclusions of the overall study based on the results of Study One and Study Two.

CHAPTER TWO

Literature Review

This chapter provides a review of social cognition and related factors (neurocognition, social skills, family support, and vocational functions) of people with schizophrenia and people with psychosis, followed by a description of the theoretical model of early deterioration in cognition and the impact on social and vocational functions in schizophrenia, and operational definitions of SCIT. Then, it ends with the description of individuals at FRP, including the definition, social cognition, and related factors (neurocognition, social skills, family support, and vocational function) of individuals at FRP and current interventions work on them.

2.1 Social cognition and related factors of people with schizophrenia and people with psychosis

2.1.1 Social cognition

Social cognition belongs to the cognitive domain that includes the perception, processing and interpretation of social information (Smith & Semin, 2007). SC has five aspects: 1) emotion perception, 2) theory of mind (ToM), 3) attributional bias, 4) social perception, involves the capacity to understand and interpret social roles, rules, and contexts, and 5) social knowledge: refers to representational templates of social situations or awareness of the social roles, rules, expectations, and goals that govern social situations (Bellack et al., 2007; Green et al., 2008; Pinkham et al., 2018; Pinkham et al., 2014). In addition, schizophrenia patients and people with psychosis have a common issue in the social perception as the tendency to jump-to-conclusions (JTC; Dudley et al., 2013; Dudley et al., 2016; Falcone et al., 2015; Moritz & Woodward, 2005), and many social cognitive training programmes for persons with schizophrenia (Dennis R Combs et al., 2007; Roberts & Penn, 2009) and FEP are aimed at addressing and modifying JTC bias (Lo et al., 2023). Phrased another way, it is 'the struggle to understand the interdependence between cognition and social behaviour', or to put it simply, it is how people think about themselves and others (Adolphs, 2001; Marcopulos & Kurtz, 2012).

2.1.1.1 Emotion perception

Emotion perception is defined as the ability to understand emotions, distinguish between different emotions, and manage emotions and emotional reactions (Bellack et al., 2007; Pinkham et al., 2014).

Increasing numbers of studies suggested that people with schizophrenia have impaired in facial emotion perception (Addington & Addington, 1998; Addington et al., 2006a; Baudouin et al., 2002; Gold et al., 2012; Kohler et al., 2000; Kosmidis et al., 2007; Li et al., 2010; Sağdıç et al., 2024; Sergi et al., 2006). Meanwhile, a meta-analysis reported that

schizophrenia patients had significant deficits in facial emotion perception (Kohler et al., 2010). Other studies also indicated a stable impairment in emotion perception in schizophrenia patients. It found that people with schizophrenia had worse performance in emotion perception than healthy controls after two weeks (Lewis & Garver, 1995) and over four weeks (Gaebel & Wölwer, 1992).

Previous studies that have assessed emotion perception have looked at all or some of the basic emotions of sadness, happiness, disgust, fear, surprise, and anger (Kohler et al., 2010; Lo et al., 2023; Lo & Siu, 2018; Yildirim et al., 2018). It seems that schizophrenia patients would have more difficulty when discriminating against negative emotions (e.g. anger or fear) compared to positive emotions, such as happiness (Gao et al., 2021; Goghari & Sponheim, 2013; Kohler et al., 2003; Mandal et al., 1999). Research has revealed a connection between the severity of negative and disorganized symptoms in schizophrenia patients and the experience of negative emotions (fear, anger, etc; Yildirim et al., 2018).

2.1.1.2 Theory of mind (ToM)

Theory of mind (ToM) is referred to as mentalising, cognitive empathy, or mental state attribution (Bora et al., 2009a). It is the capacity to deduce both oneself and others' mental states, understand that others would hold different mental perspectives compared to oneself, and correctly infer the content of those mental states (e.g. others' beliefs, intentions, or dispositions). This allows an individual to explain, manipulate and predict behaviour (Bellack et al., 2007; Horan et al., 2009; Pinkham et al., 2014; Sprong et al., 2007; Windsor, 2017).

ToM contains various sub-abilities and is usually evaluated through a series of tasks. These tasks include a false belief task, mental state judgement, a self-other task, an ironic sentence task, a social decision-making game, an empathy scenario, cognitive empathy, an affective ToM task, irony comprehension, mental state attribution, mental inference, perspective-taking, rational actions, social intention, social animations, strategic games, trait judgement, and the reading the mind in the eyes task (Bora et al., 2009b; Sprong et al., 2007;

Weng et al., 2022).

Many previous studies showed that people with schizophrenia perform more poorly on ToM tests compared to healthy individuals (Brüne, 2005b; Frith & Corcoran, 1996; Harrington et al., 2005; Janssen et al., 2003; Mazza et al., 2001). A few meta-analysis studies reported significant and stable deficits in mentalising in people with schizophrenia (Bora et al., 2009b; Sprong et al., 2007). It has been found that patients who are suffering from schizophrenia and are in remission also experience impairments in their mentalising. This supports the idea that deficits in the ToM may be a characteristic associated with schizophrenia (Bora et al., 2009b; Sprong et al., 2007). Social cognition impairments, particularly those relating to ToM, have been observed in individuals experiencing their FEP (Bora & Pantelis, 2013; Catalan et al., 2018; Kettle et al., 2008; Koelkebeck et al., 2010; Langdon et al., 2014).

Significantly, patients with schizophrenia have deficits in both cognitive (the capacity to comprehend mental states without relying on emotional information) and affective (the ability to recognise affective mental states) ToM. A neurobiological model of ToM was created that showed cognitive and affective mental states within cortical and subcortical regions organised functionally (Abu-Akel & Shamay-Tsoory, 2011). In a study by Arioli et al. (2021), brain activation during cognitive and affective mentalising was compared between schizophrenia patients and healthy individuals. The findings revealed altered activity related to ToM involved distinct areas of the posterior lateral temporal cortex in schizophrenia patients. Moreover, the latest systematic review and meta-analysis reported neural activations during ToM tasks in both people with schizophrenia and healthy people (Weng et al., 2022). The study identified brain regions associated with general, affective, and cognitive ToM tasks. In schizophrenia patients, the frontal gyrus exhibited the highest activation and played a role in processing general, affective, and cognitive aspects of ToM tasks (Weng et al., 2022). The cognitive ToM network primarily involves the dorsal anterior cingulate cortex,

dorsomedial prefrontal cortex, and dorsal striatum. However, the affective ToM network primarily involves the ventral anterior cingulate cortex, ventromedial and orbitofrontal cortices, amygdala, and ventral striatum (Weng et al., 2022). People with schizophrenia exhibited increased activity in the left superior longitudinal fasciculus II (SLF II) and reduced activity in the left cuneus (BA 18), left precuneus (BA 7), left superior frontal gyrus (medial, BA 10), and right precentral gyrus (BA 4) during the ToM tasks compared with healthy controls.

However, despite significant advancements in neuroimaging research related to schizophrenia, many studies have primarily focused on individual brain regions associated with social cognition and ToM tasks, Weng et al. (2022) explored the hypothesised neuropathways underlying different types of ToM processing (including general, affective, and cognitive tasks) in both individuals with schizophrenia and healthy controls for the first time. The primary brain regions engaged in the potential neuropathways for people with schizophrenia were the inferior and superior frontal gyrus, middle temporal gyrus, and supplementary motor areas. Based on the results, it hypothesised that the potential neuropathway for ToM tasks in schizophrenia is thought to initiate from the calcarine fissure and occipital cortex, where signals are initially received and perceived in the brain. The received signals are transferred simultaneously through the ventral stream to the temporal gyrus and the dorsal stream to the left precuneus (Weng et al., 2022). Subsequent processing occurs in the right parahippocampus and frontal gyrus. In comparation to healthy people, schizophrenia patients showed activation in fewer brain regions during ToM tasks, with particular differences in activation in the inferior parietal gyrus, precentral gyrus, cingulate cortex, thalamus, and cerebellum.

2.1.1.3 Attributional bias

Attributional bias refers to the capacity to interpret the reasons or understand social interactions and events internal (personal) and external (other person or situational factors;

Bellack et al., 2007; Pinkham et al., 2014). External attribution contains other-blaming (external–personal) and circumstance-specific (external–situational; Kinderman & Bentall, 1996).

Several studies have discovered schizophrenia patients exhibit certain patterns in their attributional styles when compared to healthy individuals (Aakre et al., 2009; An et al., 2010; Kaney & Bentall, 1992; Kinderman & Bentall, 1997). It suggested that most people tend to attribute positive events to themselves (internal attribution; So et al., 2015) and blame others or situations for negative events (external attribution; Aakre et al., 2009; An et al., 2010; Jolley et al., 2006; Kinderman & Bentall, 1997; Lincoln et al., 2010); these processes are thought to defend from diminishing self-esteem (Campbell & Sedikides, 1999; Kaney & Bentall, 1992; Mezulis et al., 2004).

Differently, the second domain refers to "attributional bias". It is called hostile attributional bias (HAB), which is a tendency to interpret the behavior of others as having hostile intention rather than accidental or friendly intention, especially when the social cues are ambiguous or unpredictable and difficult to interpret (Dennis R. Combs et al., 2007; Milich & Dodge, 1984). A recent review paper found that HAB is elevated in schizophrenia, particularly among patients with paranoia or persecutory delusions, and is associated with symptoms like anxiety, depression, and functioning (Buck et al., 2023).

2.1.1.4 Social perception

Social perception is known as the ability to identify and utilize social cues in the world with others (Cavieres & López-Silva, 2022). One study reported that schizophrenia/schizoaffective patients were deficient in all social perceptual tasks compared to the healthy group and showed some evidence of impairments in utilizing available contextual information (Penn et al., 2002). Another study reported that schizophrenia patients had reduced performance in interpretation and awareness of social conventions after using an integrated social perception and knowledge task (Kitoko et al., 2020). Meanwhile, a meta-analysis study also showed the

results of deficits in different domains of social cognition, including social perception, finding large effects on it compared to controls (Savla et al., 2013).

2.1.1.5 Jumping to conclusions (JTC)

'Jumping to conclusions' (JTC) refers to a tendency to make hasty decisions and judgments about an event based on minimal data gathering. This results in the lack of consideration of more flexible alternative explanations and consequently, incorrect reasoning (Dudley et al., 2011; McKay et al., 2005; Rodriguez et al., 2019).

JTC can be found in both deluded and non-deluded people with schizophrenia compared with healthy people (Evans et al., 2015; Fine et al., 2007; Freeman, 2007; Moritz & Woodward, 2005). Schizophrenia patients tend to make early decisions on the paradigmatic task which is called 'urn' or 'beads' task. Compared to healthy people, schizophrenia patients often decide after just one draw (Fear & Healy, 1997; Moritz & Woodward, 2005). However, healthy controls tend to make a decision after at least five or six draws have been completed (Garety et al., 1991). A study reported that individuals with FEP had a higher level of JTC compared to age-matched healthy controls (Falcone et al., 2015).

2.1.2 Neurocognition

Neurocognitive functions are cognitive functions, which includes speed of processing, attention/vigilance, verbal learning, visual learning, working memory, and reasoning and problem-solving which is described in the 'Measurement and Treatment Research to Improve Cognition in Schizophrenia' (MATRICS) Consensus Cognitive Battery (MCCB; Nuechterlein et al., 2008).

Cognitive impairment in schizophrenia can be regarded as a fundamental future because it is relatively stable across the lifespan, even as patients go in and out of psychotic episodes (Finkelstein et al., 1997). Patients with schizophrenia often experience persistent difficulties with their cognitive functioning (Heinrichs & Zakzanis, 1998; McCutcheon et al., 2023; Mesholam-Gately et al., 2009). The deficit in mild cognition starts prior to the emergence of

psychotic symptoms (Meier et al., 2014; Sheffield et al., 2018), followed by a sharp decline in cognitive functioning at or near the FEP (Hou et al., 2016), that remains stable into the chronic stages (Mesholam-Gately et al., 2009).

Since the late 19th century, neurocognitive dysfunction in schizophrenia has been described (Bleuler, 1950; Kraepelin, 1919), which is prevalent (Dickinson et al., 2004; Lystad et al., 2014). Neurocognitive impairments in schizophrenia are considered a core feature (Barder et al., 2013; Bora et al., 2010; Green, 2006; Nuechterlein et al., 2010). Research has yielded important insights corroborating neurocognitive impairments in individuals during the first episode (Hou et al., 2016; Mesholam-Gately et al., 2009) and chronic (Heinrichs & Zakzanis, 1998) phases of schizophrenia. With regard to neurocognition, schizophrenia and FEP are associated with poor attention, working memory, processing speed, visual learning, verbal learning, reasoning and problem-solving (Bozikas & Andreou, 2011; Green, 2006; Mesholam-Gately et al., 2009), especially with deficits in verbal memory consistently reported as one of the most impaired cognitive domains (Heinrichs & Zakzanis, 1998; Lepage et al., 2014; Mesholam-Gately et al., 2009; Toulopoulouand & Murray, 2004).

Studies have demonstrated that individuals with schizophrenia exhibit notably lower scores on neurocognitive assessments when compared to healthy individuals (Hoff et al., 1999; Mesholam-Gately et al., 2010). Furthermore, research indicates that performance on some neurocognitive aspects in people with schizophrenia remains impaired whether the symptoms are active or under control, and even when the patients are in remission (Kurtz, 2005). Censits et al. (1997) found no change in neurocognitive test performance, despite patients taking less antipsychotic medication and having reduced symptoms. Therefore, neurocognitive deficits appear to be independent features rather than merely a byproduct of other symptoms or psychopharmacological treatment (Hansen & Thomassen, 2010).

2.1.3 Social skills

Social skills are specific behaviours, within specific situations, that bring about judgments

from others as to whether the individual performing these behaviours is competent or incompetent in accomplishing a given social task. Although important throughout an individual's lifespan, proficient social skills are paramount to various aspects of childhood development (Gresham, 2016). Social skills facilitate the learning of new information and the formation of peer and adult relationships. An individual's social skills, or lack thereof, can influence numerous short- and long-term outcomes for children as they transition into adolescence and ultimately adulthood (Wilson et al., 2018). Specifically, social skills involve specific learned behaviours, are comprised of both initiation and response behaviours, and demand interactions with others. These skills are also socially reinforced and denote context-specific skills. In simple terms, when individuals have suitable social skills that enable to function competently at social tasks (Cook et al., 2008).

Impaired social skills are another chronic and relatively stable feature of schizophrenia and related disorders (Brekke et al., 2007; Velthorst et al., 2017; Velthorst et al., 2016). Up to as two-thirds of individuals with schizophrenia have impairments in social skills (Smith et al., 1996). Good social skills and supportive social networks contribute to success in employment (Bond et al., 1998), many studies also have suggested that good social skills on the job are an important factor for the successful employment of people with mental disorders (Charisiou et al., 1989; Lysaker et al., 1995). In other words, individuals with schizophrenia lack in essential social skills and social competence in the workplace, which can result in problems at work (Rudrud, 1984). According to Tsang and Pearson (2000), general work-related skills contain job-securing social skills and job-retraining social skills. The work-related social skills training for individuals with schizophrenia in Hong Kong were statistically much more successful at gaining and keeping a job than participants in either of the comparison groups (Tsang & Pearson, 2001).

Negative symptoms refer to passive or apathetic social withdrawal, difficulty in communication, blunting of affect, and rigid or stereotypical thinking that presents the

impairment of social skills are commonly observed deficits in psychosis (Kay et al., 1987). These individuals with FEP also show difficulties in managing social activities (Sullivan et al., 2014). A meta-analysis of social skills training found that social skills training demonstrated a magnitude of effect for negative symptoms to develop or improve social interaction, social performance, or interpersonal skills for people with psychosis (Turner et al., 2017).

2.1.4 Family support

Family is one of the three primary sources of social support that have been endorsed by many investigators (Caplan, 1975; Kaufmann & Beehr, 1986). A large majority of patients with schizophrenia live with and/or keep close connections with family (McDonell et al., 2003; Onwumere et al., 2010). However, in terms of perceived social support, people with psychosis reported receiving less support than people either without mental illness or with other non-psychotic disorders (Neeleman & Power, 1994). As a consequence, social isolation and loneliness are common among people with psychosis (Brown, 1996; Davidson & Stayner, 1997). An influential study in 1972 showed that in families that were highly critical, hostile, or over-involved, people with schizophrenia had more frequent relapses than did patients with schizophrenia from families that tend to be less expressive of their emotions (Brown et al., 1972). Muela and Godoy (2001) also indicated that the family environment possibly causes a relapse of the patient and influences the course of the disease instead of being the origin of the same. This emphasises the importance of involving families in treatments (Harvey & O'Hanlon, 2013; Wallcraft et al., 2011). Wallcraft et al. (2011) also addressed that family involvement is likely to enhance the capacity of mental health practitioners and services to effectively support the person with schizophrenia if families have a great deal of knowledge and experience of their family member's illness and the nature of their relapses, likely stressors, and coping capacity. Lack of family support is one of the predictors of relapse in schizophrenia patients (Christiawati, 2012; Pratama & Syahrial,

2015). Therefore, it makes sense that family support is a critical factor affecting people with psychosis to access the service and benefit from treatment programmes (Bird et al., 2010; Jewell et al., 2009).

A study described three domains of the family support, which are the compliance with antipsychotic administration, better family understanding of taking care of schizophrenia, and the increasing quality of life of schizophrenia patient so that people with schizophrenia can live better life in the community with increasing family support (Erawati & Keliat, 2015). The attitudes of family members can affect patient comfort both physically and mentally (Habibi et al., 2015) and this support can improve the quality of life of patients (Eack et al., 2007).

Furthermore, it had been found that the presence of family is generally associated with better self-care and employment (Burt & Forsyth, 2001; Evert et al., 2003). Burt and Forsyth (2001) further suggested that discussing work with family members may improve an individual's sense of managing time. Frone et al. (1992) and Gutek et al. (1991) investigated the reciprocal nature of work-family conflict, involving work interference with family and family interference with work. In addition, a psychometric study is undertaken to complement existing research on work-family relationships, the degree of family support employees perceive as directed at their roles as workers may have an appreciable impact on behaviours and attitudes in the workplace (King et al., 1995). Based on the above information, it is evident that family support will play a positive role in the vocational functions of individuals with schizophrenia.

2.1.5 Vocational functions

Open employment is the regular job market where people apply for jobs and set up their own business to earn money. Whether to have a job or not impacts health and well-being (Rueda et al., 2012). This applies to people with and without mental diseases.

Jahoda (1983) was able to show that gainful work not only had the function of earning

money but also provided other benefits. Accordingly, individuals can have social contacts and a disciplined life, get impulses for activity, and social status. Therefore, getting a job in open employment is a primary goal of most people with mental disorders (Jenny et al., 2001; Killackey et al., 2008), and maintain the gainful employment is important in the recovery process, having been shown to increase well-being (Laird & Krown, 1991; Reneflot & Evensen, 2014) by contributing to outcomes such as symptom reduction (Bell & Lysaker, 1997; Kukla et al., 2012; Mueser et al., 1997), self-esteem (Bond et al., 2001; Luciano et al., 2014; Mueser et al., 1997; Pańczak & Pietkiewicz, 2016) and quality of life (Bouwmans et al., 2015; Jäckel et al., 2017; Priebe et al., 1998). Among disability applicants with schizophrenia, most remain impaired in occupational domains despite symptomatic remission (Harvey, Sabbag, et al., 2012).

It is well known that unemployment and receipt of disability compensation are quite common among patients with schizophrenia (Harvey, Heaton, et al., 2012). Unemployment rates in schizophrenia and persons with psychosis are exceptionally high; the reported employment rate ranged from 10.24% in Norway to 34.3% in Germany (Cheung, 2016; Evensen et al., 2016; Gühne et al., 2022; Kiejna et al., 2015; Marwaha & Johnson, 2004; Marwaha et al., 2007; Rosenheck et al., 2006; Salkever et al., 2007; Waghorn et al., 2004; Waghorn et al., 2012), and 28% reported early retirement due to mental illness in Germany (Gühne et al., 2022). However, the employment rate was higher in developing countries, Asia (Srinivasan & Tirupati, 2005; Yang et al., 2013), and in rural areas (Marwaha et al., 2007; Nordström et al., 2009; Yang et al., 2013). The employment rate was 67% in an urban area in India (Srinivasan & Tirupati, 2005) and 77.6% in China, of which 93.9% worked in rural areas and 26.7% in urban areas (Yang et al., 2013). Most people with psychosis had elementary jobs such as labourers, tradespersons, elementary clerical, sales, or service persons, which are simple and routine tasks (Kasim et al., 2014; Marwaha et al., 2007).

Adolescence and early adulthood with psychosis are identified as having an impact on

their ability to gain and maintain work in the open employment market that interferes with an individual's vocational development (Bassett et al., 2001). The estimated rate of unemployment was 40% of young individuals with FEP (Killackey et al., 2006), with fewer than 20% returning to work after the FEP (Mueser et al., 2001; Ramsay et al., 2012; Rinaldi et al., 2004). On returning to the workforce following illness onset, a reduction in status or wages is common (Johnstone et al., 1990).

Vocational function is considered as a critical functional outcome in the rehabilitation of individuals with schizophrenia and people with psychosis. The significant role of occupational therapy in the world, including in Hong Kong, is facilitating schizophrenia patients and people with psychosis to go back to work and achieve optimal job performance. This thesis will study how vocational function is associated with neurocognition, social cognition, social skills, and family support.

2.2 Theoretical model in schizophrenia

Impairments in functioning (such as social function, vocational function, and living situation) among individuals with schizophrenia and psychosis stem from various factors, most prominently deficits in neurocognition, social cognition, and the presence of negative symptoms (Green, 2016; Milev et al., 2005). Cognitive impairment in individuals with schizophrenia is highly associated with social impairment and functional outcomes, including employment, independent living, and everyday functioning (Bowie & Harvey, 2005; Fett et al., 2011). Individuals with schizophrenia have the chronic relapsing nature of the illness, which can be disruptive to work (Ang et al., 2020). Some studies reported that better neurocognitive functioning was associated with a higher likelihood of employment (Bond & Drake, 2008; Marwaha & Johnson, 2004; Slade & Salkever, 2001).

Neurocognitive dysfunction has a substantial impact on different functional outcomes (Bowie et al., 2008; Green et al., 2004; Shamsi et al., 2011), including vocational function

(Christensen, 2007; McGurk & Mueser, 2004). Impairments in executive functioning could be an important contributor to disability in schizophrenia and could limit their ability to activate effective problem-solving approaches when dealing with non-routine work-related challenges (Bell & Bryson, 2001; Green, 1996). Studies have found an association between neurocognition and work status (Hoffmann et al., 2003) and evidence for cognitive functioning is shown to be a predictor for later work success (Mueser et al., 2001). Many studies have proved that both neurocognition and social cognition are related to everyday functioning in schizophrenia (Addington & Addington, 2000; Couture et al., 2006; Dickerson et al., 1996; Green et al., 2008). The relationship between neurocognition with social cognition and functional outcomes has also been demonstrated (Brekke et al., 2005; Fett et al., 2011; Green, 1996). Fett et al. (2011) reported that social cognition had a stronger association with community functioning than neurocognition, with the strongest associations being between ToM and functional outcomes. These results were consistent with those reported in a recent meta-analytical study by Halverson et al. (2019), which found that social cognition accounted for greater unique variance than neurocognition. Previous research has shown that neurocognition may explain 20% to 60% of the variance in functional outcomes (Green et al., 2000), which was consistent with other studies suggesting that neurocognition showed stronger associations with vocational functioning and social cognition with social functioning (Kharawala et al., 2022). Social behaviour in the surroundings showed the strongest associations with visual learning (Fett et al., 2011).

Numerous studies have consistently highlighted the significant association between social cognition and deficits in daily functioning (developing and maintaining relationships, getting jobs, and participating in recreational activities) in schizophrenia patients (Fett et al., 2011; Flashman & Green, 2004; Holthausen et al., 2007). Researchers have consensus that social cognition is an important mediator variable between neurocognition and functional outcomes, such as social skills, social problem-solving, and community functioning

(independent living skills, work performance, and social functioning; Schmidt et al., 2011).

Social cognition deficits is also early in the course of psychosis and tend to remain stable over time (Green et al., 2012; Green et al., 2015, 2019; Horan et al., 2012; Mesholam-Gately et al., 2009; Savla et al., 2013; Thompson et al., 2012). Meanwhile, social cognition predicts social functioning in schizophrenia, independently of neurocognition (Brüne, 2005a; Brüne et al., 2007; Fett et al., 2011; Flashman & Green, 2004; Holthausen et al., 2007; Roncone et al., 2002), and it demonstrated a stronger correlation with community functioning in comparison to neurocognitive functioning, with the strongest associations being between the ToM and functional outcomes in schizophrenia (Fett et al., 2011). This indicates that ToM may be a specific determinant of performance on broad based real-world tasks. It also has been evident in early psychosis (EP) patients (Bora & Pantelis, 2013). It has been found that dysfunction in ToM individuals with schizophrenia is characterised by social deficits (Savla et al., 2013). Deficits in ToM significantly impact social functioning among patients with schizophrenia. Brüne (2005a) highlighted that performance on ToM tasks by individuals with schizophrenia can predict severe abnormalities in social behaviour. Additionally, Bora et al. (2006) demonstrated that the ability to decode mental state may serve as the most effective cognitive mediator of social functioning in schizophrenia.

Using structural equation modelling, recent studies have found that social cognition is important in mediating the relationship between neurocognition and functions in schizophrenia (Addington et al., 2010; Couture et al., 2006; Schmidt et al., 2011; Sergi et al., 2006; Uchino et al., 2023). Both Addington et al. (2010) and Uchino et al. (2023) only tested whether social cognition is an important mediating variable between neurocognition and social functioning. Bell et al. (2009) tested 'Path Analysis Model: Social Cognition and Perceived Social Discomfort as Mediators between Neurocognition and Rehabilitation Outcome' in Figure 2.1 in relation to vocational function and added self-reported social discomfort as a possible mediator. Path analysis showed neurocognition had

direct effects on vocational function and indirect effects mediated by social cognition and social discomfort. Results suggest that neurocognition plays a role in shaping social cognition, and when social cognition is impaired, it leads to job-related social discomfort, ultimately resulting in poorer vocational functioning (Bell et al., 2009).

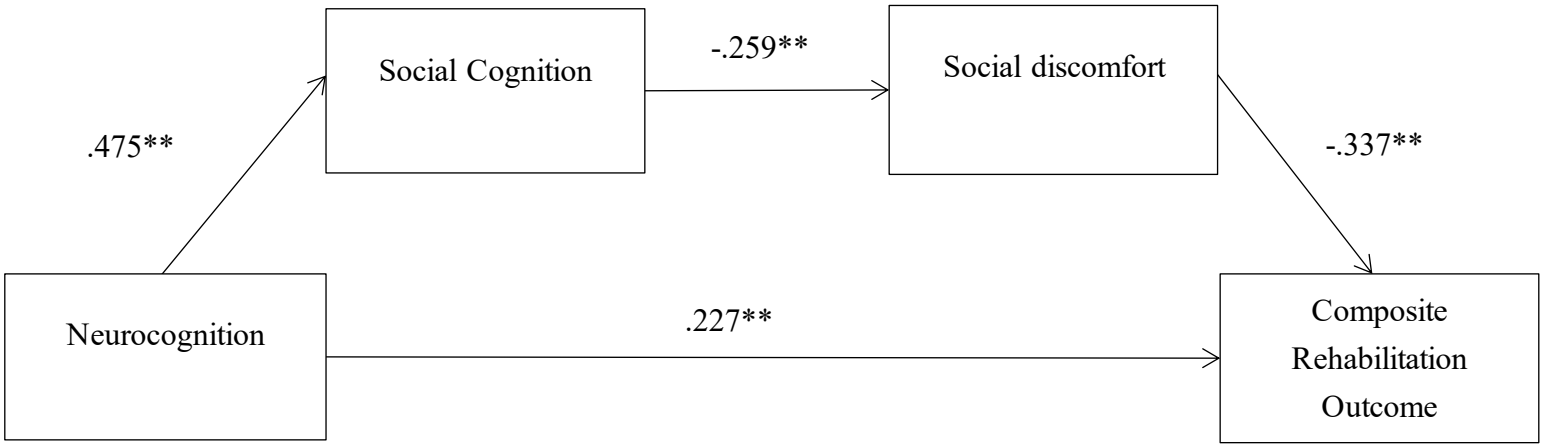

Figure 2.1 Path Analysis Model: Social Cognition and Perceived Social Discomfort as Mediators between Neurocognition and Rehabilitation Outcome

Note: * differences significant at .05; ** differences significant at .01.

2.3 Social cognition and interaction training

2.3.1 The history of SCIT

Roberts et al. (2006) developed social cognition and interaction training (SCIT), which is one of the most widely studied and empirically supported social cognitive interventions. It targets the dysfunctional social cognitive processes that have been observed in schizophrenia and focuses on the social dimension of cognitive remediation, including problems with emotion perception and ToM, hasty judgment making, and biased social attributions.

Since 2003, SCIT has been translated into seven languages and implemented in ten countries. SCIT is a group-based psychosocial intervention that can be easily integrated into standard clinic programming. It consists of weekly, hour-long sessions and can be led by clinicians at all levels of training (Roberts & Penn, 2009; Roberts et al., 2010). SCIT combines principles of cognitive psychotherapy and cognitive remediation training with interactive techniques to help participants increase awareness of their own thinking biases. This clinician guide provides step-by-step instructions to implement SCIT groups within inpatient or outpatient treatment settings and includes access to an array of photographs, videos, PowerPoint presentations, handouts, and homework sheets to enhance learning and treatment engagement among participants.

In Phase One (Penn et al., 2005), social cognition is introduced by asking participants to discuss times when they have gotten social situations 'wrong' (e.g. thinking someone did not show a pleasant mood to them because they did something bad or wrong). The remainder of Phase One is devoted to defining basic emotions (happy, disgusted, fearful, sad, angry, surprise and shy), including suspiciousness, and linking facial expressions to emotions (Silver et al., 2004).

In Phase Two, therapists focus on sharing strategies with participants for avoiding the traps associated with 'jumping to conclusions', a common problem for participants with paranoia. Participants via watching videotaped interactions of actors who arrive at

conclusions without having adequate information to understand this concept. Participants are told that the goal is to make them better social detectives, so as not to 'convict' based on initial evidence. To achieve this goal, participants are taught to brainstorm multiple possible explanations, first for positive events, and then for negative and ambiguous events. Therapists spend most of their time on events with ambiguous causes (e.g. as you stroll past a cluster of people, they suddenly burst into laughter), as they tend to be most vexing. Then, participants are taught the differences between facts and guesses using photographs and videotapes, and therapists emphasise how guesses about social situations can impact feelings. Facts include objective situational variables (e.g. where people are located), statements made by people, facial expressions, and characteristics (e.g. hair colour), while guesses are inferences about intangibles such as individuals' feelings, intentions, and motivations. The conclusion of this phase is teaching strategies with participants to help them make more conservative guesses and tolerate ambiguity better (Penn et al., 2005).

The final phase is integration, where participants apply these social cognitive skills to their daily lives. Participants practice using social cognitive strategies to analyse problematic situations that they have encountered and to plan appropriate steps to resolve them (Penn et al., 2005).

2.3.2 Effects of SCIT on people with psychosis

Preliminary evidence based on pilot trials has demonstrated the efficacy of SCIT in improving social cognition and social functioning for both inpatients (Dennis R Combs et al., 2007; Penn et al., 2005) and outpatients with schizophrenia spectrum disorders (Roberts & Penn, 2009), and further has yielded promising findings among outpatient with schizophrenia spectrum disorder (Kleinlein, 2010).

Stable schizophrenia patients in Chinese community settings in a randomised controlled trial (RCT) reported that the SCIT group showed significant improvements in ToM, emotion perception, attributional style, and social functioning compared to those in a waiting-list

control group (Wang et al., 2013). The longevity of these positive outcomes, which were sustained over a 6 months follow-up period, are consistent with a previous study for schizophrenia (Combs et al., 2009) that suggested that the positive effects of SCIT may be fairly durable. In the first RCT in the United States for outpatients with schizophrenia spectrum disorders, Roberts et al. (2014) proposed that SCIT could enhance social functioning, alleviate negative symptoms, and potentially mitigate hostile attributional bias at 3 months follow-up. Gordon et al. (2018) reported that within-subject analyses of SCIT schizophrenia participants showed significant improvements in emotion recognition, quality of life, social skills, and a trend towards enhanced life skills pre- to post-treatment. These gains persisted even at the 4 months follow-up.

Furthermore, SCIT can also improve functional outcomes following FEP. Bartholomeusz et al. (2013) found that a study of FEP participants improved significantly on emotion recognition and social and vocational functioning at post-intervention. Another preliminary RCT study suggested that SCIT may effectively improve attributional biases and functional outcomes in FES (Rocha et al., 2021). Furthermore, a recent Chinese RCT study reported that the SCIT group exhibited clear benefits compared to the traditional rehabilitation group. Specifically, the SCIT group showed reduced attributional bias and a decrease in the frequency of jumping to conclusions at post-treatment. These findings provide initial support for the use of the Chinese version of SCIT among Chinese people with FEP (Lo et al., 2023). Meanwhile, a recent meta-analysis in the field by Wang et al. (2024) showed that SCIT can alleviate negative symptoms, which provides support for the application of this intervention in both hospitalized and community patients with schizophrenia and can help develop treatment and intervention of schizophrenia patients.

2.4 Individuals at familial risk for psychosis

2.4.1 Definition

Identifying and providing treatment to individuals with EP is already a standard strategy for decreasing the period of no treatment and improving their prognosis. DeLisi (1992) defined individuals were considered at high genetic risk if they originated from families in which at least one individual had a diagnosis of schizophrenia or schizoaffective disorder by DSM-5 criteria, and they were still within the peak age range of risk for developing schizophrenia (12 to 30 years; Li et al., 2007). In this study, we tried to identify individuals at familial risk of psychosis (FRP) who are first-degree relatives of individuals with EP.

People will often show changes in their behaviour before psychosis develops. Behavioural warning signs for psychosis include 1) suspiciousness, paranoid ideas, or uneasiness with others; 2) trouble thinking clearly and logically; 3) withdrawing socially and spending a lot more time alone; 4) strange feelings, or a lack of feelings, unusual or overly intense ideas; 5) decline in self-care or personal hygiene; 6) disruption of sleep, including difficulty falling asleep and reduced sleep time; 7) difficulty telling reality from fantasy; 8) confused speech or trouble communicating; and 9) sudden drop in grades or occupational performance. Alongside these symptoms, people with psychosis may also experience more general changes in behaviour that include emotional disruption, anxiety, lack of motivation, and difficulty functioning overall (American Psychiatric Association, 2013).

2.4.2 Understanding individuals at familial risk for psychosis based on genetics

All types of mental illness, including schizophrenia and related psychoses, tend to run in families, and the risk of developing an illness is related to the degree of biological relatedness to the affected individual (Gottesman et al., 2010; Rasic et al., 2014). This pattern of transmission strongly suggests that genetics and genetic mutations play an important role in the cause of many mental illnesses (Laursen et al., 2005; Li et al., 2009; Rasic et al., 2014). It is based on the well-known evidence that the etiology of schizophrenia substantially

contributed to genetic estimates for operational diagnoses ranging from 70 to 85% (Cardno et al., 1999; Cardno et al., 2002; McGuffin et al., 1984; Salleh, 2004; Sullivan, 2005).

Some people may inherit a greater risk of developing schizophrenia in their lifetime. Based on the literature, the illness occurs in 1% of the general population, but it is seen in 9% of individuals with a sibling who has schizophrenia, 12% with a parent who has schizophrenia, and 14% with a fraternal twin who has schizophrenia. If both biological parents have schizophrenia, there is nearly a 40% chance that their children will have the condition. Moreover, in people who have an identical twin with schizophrenia, the chance of developing schizophrenia rises to nearly 50% (Gottesman, 1991). Meanwhile, individuals at FRP with one affected first-degree relative have a relative risk for schizophrenia between 6.0 and 8.4 (95% CI), and it increases to 14.7 (95% CI) for those with two or more relatives (Chou et al., 2017). Studies indicated that first-degree relatives of patients with schizophrenia are ten times more likely to develop the disorder and are significantly more likely to present abnormalities or milder forms of multidimensional deficits than people without a family history of schizophrenia (Braff et al., 2007; Snitz et al., 2006).

2.4.3 Social cognition and related factors in individuals at familial risk for psychosis

It has been found that individuals at FRP begin to develop abnormalities in their cognitive, social, and vocational functioning by the time they are young adults. Clinical studies have suggested that social cognition is impaired early in the course of psychosis (Bertrand et al., 2007; Thompson et al., 2012). Such impairment has also been demonstrated in individuals at FRP, especially regarding emotion processing and theory of mind (Bora & Pantelis, 2013; De Achával et al., 2010; El Ray et al., 2022; Irani et al., 2006; Janssen et al., 2003; Marjoram et al., 2006; Montag et al., 2012). Meanwhile, Eack et al. (2010) reported that deficits in social cognition in interpreting neutral faces were significantly associated with more significant positive and general prodromal psychopathology among individuals at high familial risk for schizophrenia. A meta-analysis found that using a variety of tasks for emotional processing

tests could help to detect a decrease in emotional processing in first-degree relatives of schizophrenia patients (Lavoie et al., 2013). As in schizophrenia patients, social cognition deficits in individuals at FRP are partly distinct from neurocognition deficits (Eack et al., 2010; Montag et al., 2012).

In FRP individuals, neurocognitive deficits remain consistent across changes in clinical state, are evident prior to the onset of clinical symptoms, and can be used as strong predictors of schizophrenia (Finkelstein et al., 1997; Hou et al., 2016; Pukrop & Klosterkötter, 2010). Several studies, reported deterioration in neurocognitive function in individuals at FRP, affecting their verbal learning, executive function, working memory, and speed of processing (Agnew-Blais & Seidman, 2013; Feng et al., 2020; Harave et al., 2017; Kim et al., 2014; Ma et al., 2007; Niemi et al., 2003; Sponheim et al., 2004; Staal et al., 2000; Toulopoulou et al., 2003). Among them were two studies from China. One, conducted by (Ma et al., 2007), reported that the first-degree relatives of first-episode schizophrenic patients exhibited poorer attention, working memory, speed of processing, verbal learning, and executive function compared to normal controls, especially in attention and executive function. Similarly, another study found neurocognitive deficits in the first-degree unaffected relatives of remitted patients with schizophrenia. Individuals at FRP had poorer performance than controls in speed of processing, verbal learning, reasoning skills, social cognition, and attention (Feng et al., 2020). A few meta-analyses have also found that first-degree relatives of patients with schizophrenia display neurocognitive deficits, including reduced speed of processing, attention, working memory, executive function, verbal learning, and visual learning (Bora, 2017; Sitskoorn et al., 2004; Snitz et al., 2006). Li et al. (2016) also reported that individuals at FRP had significantly decreased brain activity in the left inferior frontal lobe during the verbal-memory task. It also suggested that working memory processing and verbal information processing associated brain pathways are significantly altered in individuals at FRP for developing schizophrenia. Although these studies involved a wide range of

assessment methods and reports of specific neurocognitive impairments have not been completely consistent the findings collectively support the idea that neurocognitive abnormalities are detectable well before the onset of psychosis.

Adolescents at risk also have impairments in academic and social adjustment (Dworkin et al., 1994; Hans et al., 2000; Niemi et al., 2003), peer and romantic relationships (Dworkin et al., 1994; Galderisi et al., 2016; Glatt et al., 2006), and performance-based measures of social and neuromotor behaviour (Gibson et al., 2010; Schiffman, Walker, et al., 2004). One study reported that more than half (52.4%) of first-degree relatives of individuals with EP were experiencing social isolation (Poon et al., 2019). Horton et al. (2014) reported that these subjects had poorer social skills overall and appeared to be driven by specific deficits in 'assertion' and 'empathy' domains. A systematic review suggests that for children and adolescents who have a first-degree relative with schizophrenia and manifest poor social functioning, the odds of developing schizophrenia are seven to eight times greater than for high-risk and typical children and adolescents with intact social functioning (Tarbox & Pogue-Geile, 2008). These findings are consistent with the increasing emphasis on functional decline as a crucial outcome that runs parallel to the onset of psychosis.

Galderisi et al. (2016) reported that work skills were impaired among individuals at FRP. One study indicated that individuals at FRP exhibited decreased family support in individuals of the HC group (He et al., 2021). The findings suggested that individuals at FRP experience impaired family functionality and expanded the understanding of the psychological characteristics of the prodromal phase of schizophrenia.

2.4.4 Current interventions for individuals at familial risk for psychosis

As mentioned in the previous section, individuals at FRP are impaired in neurocognition, social cognition, social skills, vocational function, and family support (Bora & Pantelis, 2013; Feng et al., 2020; Galderisi et al., 2016; He et al., 2021; Poon et al., 2019).

Interventions for individuals at FRP can be classified as either pharmacological or non-

pharmacological. Tsuang et al. (1999) found that among four subjects who were first-degree relatives of patients with schizophrenia, three subjects showed substantial reductions in negative symptoms after taking risperidone for six weeks, and the other subject showed modest reductions. All four subjects showed substantial improvements on some tests of attention and working memory. The side effects of risperidone were temporary and mainly mild. When selecting any of these intervention options, it should be considered that only a small proportion of high-risk individuals will transition to clinical psychosis. Therefore, it is necessary to avoid aggressive treatments. Pharmacotherapies, particularly antipsychotics, are generally not treated as a treatment of choice for individuals at FRP due to their potential side-effect profiles; family interventions like psychoeducational interventions (Sin, 2013; Sin et al., 2013) are the leading alternatives as they have virtually no side effects. The innovative multi-component online psychoeducational interventions aim to help siblings of individuals with FEP to enhance their knowledge about psychosis and coping capacity, thus potentially improving their own mental well-being and promoting their contribution to service users' recovery (Sin et al., 2013).

Many other existing studies included not only first-degree relatives of individuals with EP but also other family members, whether biologically (e.g. parents, siblings) or non-biologically (e.g. spouses, close friends) related to the patients (Chien et al., 2018; Chien et al., 2020; Napa et al., 2017; Sin et al., 2017; Sin et al., 2020; Szmukler et al., 2003). The systematic review and meta-analysis conducted by Sin et al. (2017) reported that after psychoeducational intervention, psychoeducation was superior in reducing carers' global morbidities, negative caregiving experiences, perceived burden, and expressed emotion. However, another systematic review showed there were no statistically significant family interventions (referred to any education, including psychoeducation, cognitive behavioural therapy, coping and problem-solving skills training and communication) that address expressed emotion and psychological distress in family members of persons with FEP (Napa

et al., 2017). There is still uncertainty about the most effective interventions for family members.

Based on the above literature, existing interventions on individuals at FRP are sparse, and limitations can be identified. First, all research on individuals at FRP has been conducted in other countries. As a result, it may not provide culturally relevant evidence for the current situation in Hong Kong. Second, current interventions for either individuals at FRP or other family members are based on the stress appraisal and coping theory (Lazarus, 1966) that is commonly used in traditional psychoeducational interventions targeting family members and relatives. It focuses on promoting their mental well-being, caregiving experiences, and problem-solving ability. However, it is equally critical to equip individuals at FRP with better social skills to communicate with others based on the ability to infer another person's mental state, as it is well-known that they are impaired in social cognitive function and social skills.

2.5 Hypothetical theoretical model in individuals with early psychosis and individuals at familial risk for psychosis

More importantly, emerging evidence has pointed out that early deterioration in cognitive function has an adverse impact on social and occupational functions in individuals with EP (Allott et al., 2013; Dickerson et al., 2008; Nuechterlein et al., 2011; Tandberg et al., 2011). Nuechterlein et al. (2011) discovered that neurocognitive impairments are associated with acute impairments in work at FEP, and these impairments (working memory, attention/early perceptual processing, and verbal memory/processing speed) account for up to 52% of the variance in vocational outcomes 6 to 9 months after treatment initiation for FEP. For example, impairments in executive functioning and working memory have been shown to significantly limit the ability to gain, retain, or relearn skills necessary for real-world functioning, such as building relationships and undertaking employment (Lasser et al., 2007). In another study with large sample, Horan et al. (2012) found that poorer baseline social

cognition strongly predicts diminished vocational functioning at 12 months follow-up for FEP, even after accounting for symptomatology. Allott et al. (2013) reported that social cognition did not contribute to predicting vocational outcomes, however, specific domains of neurocognition—visual organisation and memory—predicted the duration of employment. However, many studies found no relationship between neurocognition and vocational function (Holthausen et al., 2007; Johnstone et al., 1990; Verdoux et al., 2002). There are few relevant studies on individuals with EP have proved that both neurocognition and social cognition are related to everyday functioning.

Based on the above literature review, we intend to understand better the empirical relationship of how deterioration in neurocognition will lead to deterioration in social and vocational functioning in individuals with EP and at FRP. To facilitate the investigation, the 'Path Analysis Model: Social Cognition and Perceived Social Discomfort as Mediators between Neurocognition and Rehabilitation Outcome', which was proposed by Bell et al. (2009) on a sample of patients with chronic schizophrenia, will be adopted in this study. This study will test if this model applies to individuals with EP and at FRP.

A hypothetical theoretical model has been created based on the literature review (Figure 2.2). In our model, we replaced self-reported social skills with social discomfort as a possible mediator. Meanwhile, we also added self-reported family support as a possible mediator to vocational function. Therefore, social cognition and social skills are regarded as important mediating variables both in individuals with EP and at FRP, and family support is regarded as a direct variable both in individuals with EP and at FRP.

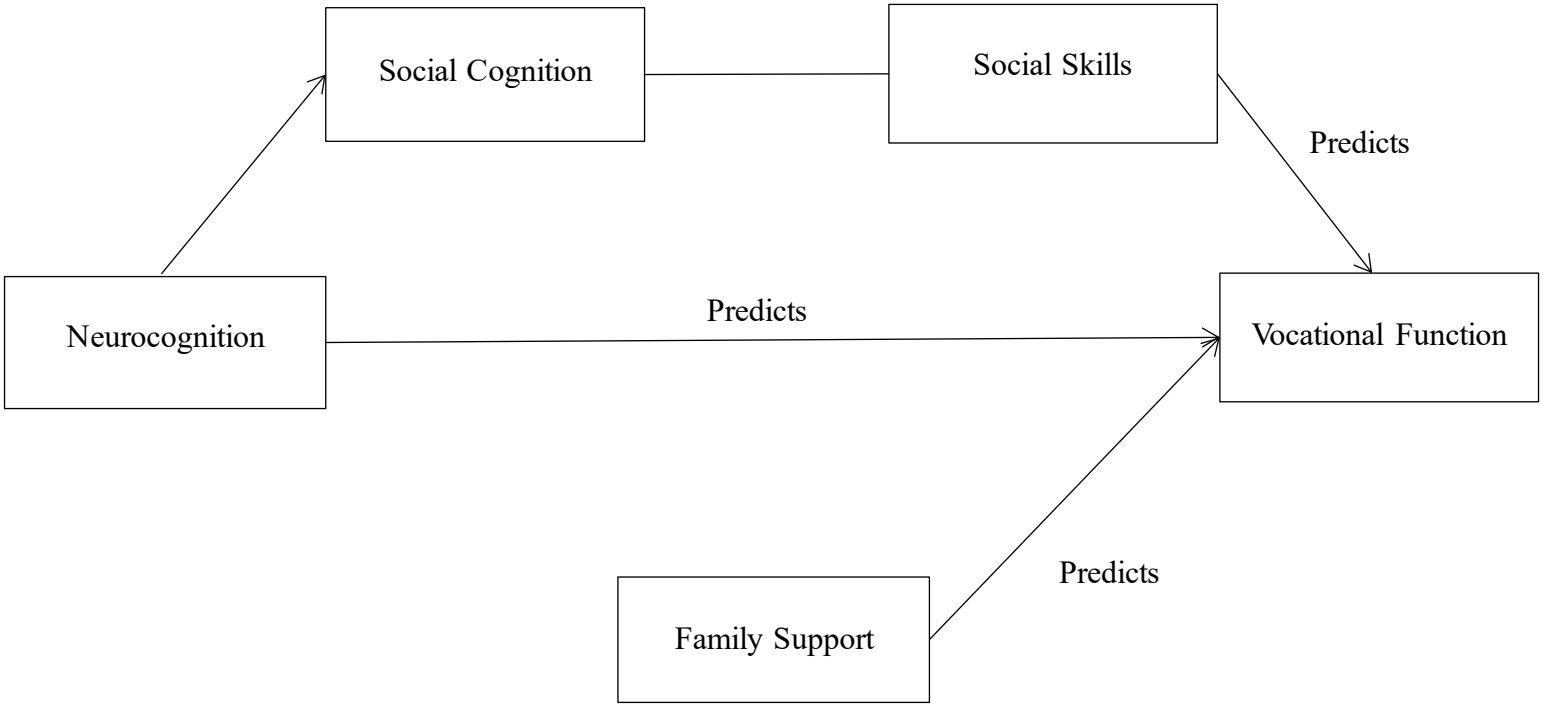

Figure 2.2 Theoretical framework on Neurocognition, Social Cognition, Social Skills, Family Support and Vocational Function of EP and FRP.

CHAPTER THREE

Overall Design of the Study

This chapter provides an overall design of the study by stating the problem, the overarching aim and research objectives, and the overall design. It ends by providing the innovation and significance of the study.

3.1 Problem statement

Based on the literature review in Chapter Two, there are few relevant studies to explore the relationship between neurocognitive, social cognitive, and vocational functions in individuals with EP. Meanwhile, similar studies in Chinese communities are rare. No study has ever reported the relative contribution of neurocognition or social cognition to vocational outcomes in individuals at FRP. As studies using SCIT among individuals at FRP are limited, it remains to be seen if SCIT will contribute positively to the social skills and vocational functioning of those at FRP.

3.2 Aim and objectives of the study

3.2.1 Aim of the Study

The overarching aim of the study is to conduct preliminary work in Hong Kong to understand better their early deteriorations in cognition and the impact on their social and occupational functions in individuals with EP and at FRP and to evaluate if Chinese Social Cognition and Interaction Training (CSCIT) could improve social and vocational functions among FRP individuals by conducting a pilot RCT.

3.2.2 Objectives of the study

The specific objectives of the study include the following:

1) To compare and explore the relationships between neurocognition, social cognition, social skills, family support, and vocational function in individuals with EP, at the FRP, and at the HC; and test the theoretical model illustrated in Fig.2.2 on EP and FRP based on the findings of those variables;
2) To explore the efficacy of CSCIT in improving clinical, psychosocial, and vocational outcomes in individuals at FRP to reduce their risk of developing mental illness.

3.3 Overall design

This study consists of two parts. The first part, presented in Chapter Four, is a pilot cross-sectional quantitative hypothesis-driven study to test the theoretical model of EP and FRP groups illustrated in Figure 2.2. The dependent (predicted) variable is vocational function, with social cognition and social skills as the mediating variables, and neurocognitive and family support as the independent (predictor) variables.

Chapter Five describes the second part of the study, which is a pilot RCT design to develop and test the clinical efficacy of the CSCIT on those with individuals at FRP to reduce their risk of developing mental disorders and improve their social and vocational functioning. The primary outcomes of this experiment are social cognition and social skills. Secondary outcomes include vocational function, mental state, and quality of life.

3.4 Innovation and significance of the study

This pioneering scientific study compares and explores the relationship between neurocognition, social cognition, social skills, family support, and vocational function of individuals with EP and at FRP in Hong Kong. It contributes to the evidence that neurocognition has a significant positive relationship with social cognition in both EP and FRP groups, which suggests that people with poorer neurocognitive function are likely to have more problems with social cognition, leading to greater difficulties in developing good relationships with co-workers, and poorer competence in handling work-related social situations in the workplace. These issues will directly affect their ability to get and keep employment and thus lead a meaningful and productive life. Meanwhile, family support affects vocational performance through the mediating effect of social skills in individuals with EP. It gives a better understanding that family support plays an important role in the vocational outcomes of individuals with EP, so good family support will facilitate their social skills on the job. Furthermore, it offers insight into the delivery of evidence-based practice by

CSCIT clinical professionals to work on those with FRP to improve their clinical symptoms, social cognition, and social skills to maintain their vocational function in the community, which will also be able to protect them from developing into psychosis despite their familial risk.

CHAPTER FOUR

Study One: Relationships between neurocognition, social cognition, social skills, family support, and vocational function in those with early psychosis and familial risk for psychosis: A pilot cross-sectional study

As described in earlier chapters, early psychosis is a common mental condition characterised by delusions, hallucinations, and disorganised speech that is prevalent among adolescents and young adults. First-degree relatives of those with psychosis are at an increased risk for developing psychotic disorders. Early deteriorations in cognitive, social, and occupational functions are evident in individuals with EP and those at FRP. Many studies involving path analysis have shown relationships among neurocognition, social cognition, social function, and vocational functions in schizophrenia.

This chapter reports the first study in this PhD thesis, which uses path analysis to compare and explore the relationships between neurocognition, social cognition, social skills, family support, and vocational function in individuals with EP and those at FRP. The findings of this chapter have received preliminary evidence in partial support of the proposed theoretical path analysis model that neurocognition had a significant positive relationship to social cognition in the EP and FRP groups, family support had an indirect relationship to the vocational performance mediated by social skills in the EP group, and neurocognition was significantly associated with family support in the FRP group.

4.1 Introduction

4.1.1 Background

Numerous studies have demonstrated significant relationships between neurocognition and community functioning, including between social competence and vocational functioning in schizophrenia (Abi-Saab et al., 2005; Evans et al., 2004; Green, 1996), and between social cognition and community functioning (Couture et al., 2006; Fett et al., 2011). Social cognition has also been identified as a mediator between neurocognition and social functioning in schizophrenia (Addington et al., 2010; Kharawala et al., 2022; Schmidt et al., 2011; Uchino et al., 2023). Another study showed direct effects of neurocognition on vocational outcomes as well as indirect effects mediated by social cognition and social discomfort (Bell et al., 2009).

Work plays an important function in a person's life. Impairments in vocational abilities, which includes choosing, getting, and keeping a job, are considered to be a central feature of mental disorders (Massel et al., 1990; Paul & Moser, 2009). Gaining a job is a primary rehabilitation goal of most people with mental illnesses (Jenny et al., 2001; Killackey et al., 2008). Young people with FEP begin to lose jobs when they experience the first symptoms of psychosis (Rinaldi et al., 2010). The estimated rate of unemployment among young people with FEP was exceptionally high at 40% (Killackey et al., 2006), with fewer than 20% returning to work (Mueser et al., 2001; Ramsay et al., 2012; Rinaldi et al., 2004). Therefore, unemployment is common in young people recovering from EP, and they have poorer employment performance (Ramsay et al., 2012).

Neurocognitive dysfunction is one of the core features of schizophrenia (Green, 2006; Nuechterlein et al., 2010). Many studies found that schizophrenia and FEP are associated with poor working memory, processing speed, attention, verbal learning, reasoning and problem-solving, and visual learning (Bozikas & Andreou, 2011; Green, 2006), and the association is especially strong deficits in verbal learning (Heinrichs & Zakzanis, 1998;

Lepage et al., 2014; Toulopoulouand & Murray, 2004). Social cognition refers to an individual's ability to create a mental representation of the relationship with themselves and others and to use that representation to flexibly guide their social behaviours (Adolphs, 2001). It has five aspects: 1) emotion perception, 2) ToM, 3) attributional bias, 4) social perception, and 5) social knowledge (Bellack et al., 2007; Green et al., 2008; Pinkham et al., 2018; Pinkham et al., 2014). In addition, schizophrenia patients and people with psychosis have a common issue in the social perception as the tendency to JTC (Dudley et al., 2013; Falcone et al., 2015). Impaired social cognition, especially ToM, has been demonstrated in EP patients (Bora & Pantelis, 2013). One study demonstrated that neurocognitive and social-cognitive deficits were common among subjects with schizophrenia in Hong Kong, and the three worst-performing cognitive domains were verbal learning, processing speed, and social cognition (Chan et al., 2018). Furthermore, the deterioration of cognitive functions is a core symptom of psychosis and knowing how it progresses throughout the different stages of psychosis is important (Sponheim et al., 2010; Wu et al., 2016).

Deficits in social functioning (e.g. social skills, community functioning) are another core feature of schizophrenia (Brekke et al., 2007; Velthorst et al., 2017). Many studies have suggested that significance of social behaviour in the workplace as an important determinant of successful employment for people with mental disorders (Charisiou et al., 1989; Lysaker et al., 1995). Good social skills and supportive social networks contribute to success in employment (Bond et al., 1998). Unfortunately, the employment problems of people with schizophrenia can result from lack in social skills and social competence necessary at work (Rudrud, 1984). Individuals with FEP also show difficulties in initiating and sustaining social activities (Sullivan et al., 2014).

Family is the most basic social element and the relationship between family members determines predisposition to illness and health. It is one of the psychosocial factors that affect the clinical course and outcome of schizophrenia as well as the likelihood of relapses (Otsuka

et al., 1994). Social isolation and loneliness are common among people with psychosis (Brown, 1996; Davidson & Stayner, 1997). Good family support may exert positive effects on psychotic symptoms and social adjustment (Hamada et al., 2003). One study reported that family support helped to reduce the stigma in the schizophrenia community (Erawati & Keliat, 2015). Another study found that family support is relevant to persistence with work tasks and performance at work (Burt & Forsyth, 2001). Therefore, family support may have direct effects on vocational performance.

Based on the above literature, impairments in neurocognition, social cognition, social skills, family support, and vocational function among patients with schizophrenia and psychosis most prominently. It is well known that symptoms of schizophrenia or EP usually first appear between the ages of 16 and 30. Schizophrenia and related psychoses have a strong familial link. Genetics plays an important role in the cause of many mental illnesses (Rasic et al., 2014). In this study, individuals with FRP are taken to be the first-degree relatives of individuals with EP; this was based on the definition in DeLisi (1992), which considered individuals at high genetic risk to be those coming from families in which at least one individual had a diagnosis of schizoaffective disorder or schizophrenia according to DSM-5 criteria (Li et al., 2007).

Clinical studies have suggested that neurocognitive deficits, especially in verbal and spatial working memory, exist before the presentation of positive and negative symptoms and can be used as strong predictors of schizophrenia in individuals at FRP (Hou et al., 2016; Pukrop & Klosterkötter, 2010). Several meta-analyses also found that neurocognitive deficits in processing speed, attention, executive function, working memory, visual learning, and verbal learning are present in individuals at FRP (Bora, 2017; Sitskoorn et al., 2004; Snitz et al., 2006). Social cognition deficits have also been demonstrated in individuals at FRP, particularly in emotion processing and ToM (Bora & Pantelis, 2013; De Achával et al., 2010; El Ray et al., 2022; Janssen et al., 2003; Marjoram et al., 2006; Montag et al., 2012).

Moreover, a recent large-scale systematic review by Tucci et al. (2023) indicated that individuals at FRP have difficulty recognising negative emotions and performing complex ToM tasks.

Individuals at FRP also have impairments in social adjustment, relationships (Dworkin et al., 1994; Galderisi et al., 2016; Glatt et al., 2006; Hans et al., 2000), and performance-based measures of social and neuromotor behaviour (Gibson et al., 2010; Schiffman, Walker, et al., 2004). Horton et al. (2014) also reported that these subjects had poorer social skills overall. Impaired work skills (Galderisi et al., 2016) and decreased family support were also found in individuals at FRP (He et al., 2021).

Many studies have demonstrated that both neurocognition and social cognition are related to everyday functioning in schizophrenia (Addington & Addington, 2000; Couture et al., 2006; Dickerson et al., 1996; Green et al., 2008; Holthausen et al., 2007). However, there are few relevant studies on individuals with EP. Previous studies have reported that FEP patients' struggles with maintaining relationships are related to impairments in their social cognition (Bertrand et al., 2007), Horan et al. (2012) discovered that the FEP sample had impaired baseline social cognition associated strongly with poorer work functioning, and Nuechterlein et al. (2011) found that impaired neurocognitive functions are associated with acute impairments in work at FEP. Recent studies using structural equation modelling have found that social cognition mediates the effects of neurocognition on function in schizophrenia (Addington et al., 2010; Couture et al., 2006; Sergi et al., 2006; Uchino et al., 2023) and Bell et al. (2009) focused on the mediation effects of social cognition and social discomfort on the relationship between neurocognition and vocational outcomes.

However, similar studies in Chinese communities are scarce, and no study has ever reported, at least in China and Hong Kong, the relative contribution of neurocognition or social cognition to vocational outcomes in individuals at FRP. We therefore want to conduct some pioneering and preliminary work in this area in Hong Kong Special Administrative

Region to better understand the early deteriorations in cognition in individuals with EP and at FRP and the impact on their social and occupational functions. To facilitate this investigation, the 'Path Analysis Model: Social Cognition and Perceived Social Discomfort as Mediators between Neurocognition and Rehabilitation Outcome' (Bell et al., 2009), reported on a sample of patients with chronic schizophrenia, was adopted in this study.

4.1.2 Objectives and hypotheses

We targeted individuals with EP and at FRP based on the framework illustrated in Figure 2.2, which shows that social discomfort is replaced by self-reported social skills as a possible mediator and self-reported family support is also added as a possible mediator to vocational function. In this study, social cognition and social skills were regarded as important mediating variables both in individuals with EP and at FRP, and family support was regarded as a direct variable both in individuals with EP and at FRP. But comparison with a HC group was also made. The specific objectives of this study were to: 1) compare neurocognition, social cognition, social skills, family support, and vocational function between individuals in the EP, FRP, and HC groups; 2) explore the relationships between neurocognition, social cognition, social skills, and vocational function in individuals with EP, those with FRP, and HCs; 3) explore whether social cognition and social skills are significant mediating variables between neurocognition and vocational function in individuals in the EP, FRP, and HC groups; and finally, 4) explore whether family support predicts vocational function in individuals with EP, those with FRP, and HCs. The specific hypotheses were:

Hypothesis 1 (Referring to objective 1)

1. The HC group would show the best performance in neurocognition, social cognition, social skills, family support, and vocational function, and the FRP group would perform better in these aspects than the EP group.

Hypotheses 2 (Referring to objective 2)

2a. Neurocognition would have a direct relationship to vocational function in individuals in the EP and FRP groups but not in the HC group.

2b. Neurocognition would have indirect relationships to vocational function mediated by social cognition and social skills in individuals with EP and those with FRP but not in the HC group.

Hypothesis 3 (Referring to objective 3)

3. Social cognition would have an indirect relationship to vocational function mediated by social skills in individuals with EP and those with FRP but not in the HC group.

Hypothesis 4 (Referring to objective 4)

4. Family support would have a direct predictive relationship to vocational function in individuals with EP and those with FRP but not in the HC group.

4.2 Methods

4.2.1 Research design

This pilot cross-sectional study was carried out between March 2021 and June 2023. It was approved by the Research Ethics Committee of the Hospital Authority (Reference Number: KC/KE-19-0141/FR-1) and subsequently by the Research Ethics Committee of The Hong Kong Polytechnic University (Reference Number: HSEARS20210113004).

4.2.2 Setting and participants

Data was gathered from 203 study participants, including 77 individuals with EP recruited from the Early Assessment Service for Young People with Early Psychosis (EASY) programme at the United Christian Hospital Psychiatric Centre (UCHPC) and the Youth and Family Service at the Baptist Oi Kwan Social Service (BOKSS), 49 individuals at FRP who were the first-degree relatives of participants with EP, and 77 gender-matched HCs who were recruited via advertisements in the community. Gender differences in the symptoms and social impairments of individuals with schizophrenia have been identified; women perform

better than men in verbal episodic memory, set-shifting, and processing speed, whereas men perform better than women in visual working memory (Torniainen et al., 2011). We therefore adopted the strategy of gender-matching when we recruited subjects for each condition (i.e. the EP, FRP, and HC groups) to mitigate the potential effects of gender bias.

The inclusion criteria for individuals with EP limited participation to those who: (a) were Hong Kong Chinese residents aged between 18–55 years; (b) had received a primary diagnosis of psychosis from a psychiatrist within the last five years and whose diagnosis has been confirmed by the DSM-5 (American Psychiatric Association, 2013); (c) had completed primary six or higher education; (d) were mentally competent enough to follow the instructions and training and give informed written consent, as suggested by the attending psychiatrist; (e) were able to communicate in Cantonese; and (f) were currently employed or had a history of employment. All of the inclusion criteria for the participating individuals at FRP were the same as those for the individuals with EP except for (b), which instead required that they: (b) were first-degree relatives of participants of individuals with EP. Likewise, the inclusion criteria for the participants in the HC group were the same as those for the individuals with EP except for (b), which instead required that they: (b) were volunteers without any psychiatric disorders and had no family history of any psychotic disorder, psychiatric hospitalisation, or suicide in first or second-degree relatives.

Individuals with EP or FRP and HCs were excluded if they had: (a) a learning disability, neurological disorder (e.g. epilepsy) and organic brain disease, or clinically significant medical disease; (b) recently participated or were participating in other structured psychosocial interventions (e.g. social skills training, vocational rehabilitation); (c) had visual, language, or communication difficulties; and/or (d) were drug abusers or had a history of drug abuse.

4.2.3 Materials

Demographics information (e.g. age, years of education, gender, marital status, income, and

current employment status) for all three groups (EP, FRP, and HC) was collected through a general demographic questionnaire. Information on illness duration and dosages of antipsychotic medication taken were additionally collected for the EP group.

4.2.3.1 Vocational functioning

The Employment Outcome Checklist (EOC) was used to assess individuals' employment outcomes, including the number of job interviews attended, the number of jobs obtained, the number of hours worked per week, and the salary received from each job over the past three months. We only used one item, days of the open employment experience in the past three months (Tsang & Pearson, 2001).

4.2.3.2 Social skills

The Vocational Social Skills Assessment Scale (VSSS) was used to assess social skills and included two simple measures of work-related social competence. We only used the first part, which is a self-administered checklist that measures participants' subjective perception of their competence in handling work-related social situations. The checklist consists of ten items derived from the results of a survey questionnaire concerning situations that people with mental illness may encounter in the workplace. The self-administered checklist demonstrated good internal consistency (Cronbach alpha coefficient = 0.80) and an acceptable test–retest reliability (0.35 to 0.78; Tsang & Pearson, 2000).

4.2.3.3 Family support

The Chinese version of the Multidimensional Scale of Perceived Social Support instrument (MSPSS-C) was adopted to measure the participants' family support (Chou, 2000). The MSPSS (Zimet et al., 1988) comprised 12 items scored on a 7-point scale (from 1 = *Strongly disagree* to 7 = *Strongly agree*) assessing perceived social support from three sources, namely friends, family, and significant other. Zimet et al. (1988) reported excellent psychometric properties, particularly considering the number of items in the scale. The total scale demonstrated good internal consistency, with an alpha coefficient of 0.88. Subscale reliability

estimates are quite high, with reported alphas of 0.81, 0.85, and 0.91 for the family, friends, and significant other subscales, respectively. Additionally, a test–retest reliability of 0.85 was obtained. Finally, construct validity was established by an inverse correlation with depression scores ($r = .25$, $p < .01$).

The researcher translated the 12-item version of the MSPSS into Chinese from the English version developed by Zimet et al. (1988), and this was back-translated by a bilingual professional translator. The first back-translation of the MSPSS items indicated the need for minor revisions, so some items were modified further. Another professional translator then translated all the items back. The translation and backtranslation process was repeated until the final form was established.

The family subscales were only used to assess family support in this study. The Chinese version demonstrated good internal consistency (Cronbach's alpha = 0.89) for the total scale and test–retest reliability. The Cronbach's coefficient alpha obtained for the family subscales was 0.86 (Chou, 2000).

4.2.3.4 Social cognition

4.2.3.4.1 Emotion perception

The Chinese Facial Emotion Identification Test (C-FEIT; Lo & Siu, 2018) which was validated in a previous study in the Hong Kong (Lo & Siu, 2015), was used for emotion perception. Participants viewed 21 facial emotion photos via PowerPoint, including twelve facial photographs depicting six basic emotions (happiness, sadness, anger, disgust, fear, and surprise) and nine depicting neutral emotions. The 12 basic-emotion photographs were selected from the Japanese and Caucasian Facial Expression of Emotion (JACFEE) photo set (Matsumoto, 1988), and the nine neutral-emotion photographs were selected from the Japanese and Caucasian Neutral Faces (JACNeuF) collection (Marsh et al., 2003; Matsumoto, 1988). Participants were required to determine the emotion being conveyed in each photograph and write their answer on the provided answer sheet. The time of exposure

and time of rest between the two photos were each fixed at 10 seconds. The C-FEIT score can range from 0 to 21, where a higher score signifies improved ability in identifying facial emotions. The Chinese version demonstrated good internal consistency (Cronbach's alpha = 0.776) and test–retest reliability (ICC = 0.85 for total score at a 1-week interval between tests).

4.2.3.4.2 Theory of mind, jump-to-conclusion, and paranoid attributional bias

The Chinese Social Cognition and Screening Questionnaire (C-SCSQ; Lo & Siu, 2018), which was used to screen patients for neurocognitive deficits and determine their need for social cognitive intervention (Roberts et al., 2012). Ten storiette, each describing an ambiguous interpersonal situation from the second-person perspective, were presented verbally to the participant. For each storiette, the participant was asked to answer three yes or no questions, two of which test the participant's ability to recall details in the storiette. The total number of correct answers was the neurocognitive score, which can range from 0 to 20. Additionally, participants answered another yes-or-no question related to intention inference. This question evaluated the participant's ability to infer a character's intentions based on information provided in the storiette. The total number of correct answers was the perspective-taking score or ToM score. The possible score range was 0–10, with a higher score indicating better performance. In addition, one confidence judgment question was asked to assess the participant's tendency to make overconfident judgments. Their response determined the JTC score, which ranged from 0 to 4, with a lower score indicating less JTC bias. Last, the paranoid attributional bias score was calculated by summing the incorrectly answered perspective-taking questions from storiette 2, 3, 5, 6, and 9; incorrect responses on these storiette could reflect negative self-directed thoughts or feelings. The score range was 0–5, with a lower score indicating less hostile attributional bias. The C-SCSQ was validated in the Chinese setting, and subscales of C-SCSQ were found to have satisfactory test-retest reliability (ICC ranged from 0.76 to 0.85). Additionally, the C-SCSQ showed known-group

validity (*d* ranges from 1.26 to 3.27), and low to medium correlations with neurocognitive measures (*r* ranges from 0.25 to 0.34; Lo & Siu, 2018).

4.2.3.5 Neurocognition

The neurocognitive assessment employed was the Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) Consensus Cognitive Battery (MCCB; Nuechterlein et al., 2008), which included tests on processing speed, attention/vigilance, working memory, verbal learning, visual learning, and reasoning and problem-solving.

4.2.3.5.1 Processing speed

Processing speed was assessed by the Trail Making Test: Part A (TMT-A), Brief Assessment of Cognition in Schizophrenia: Symbol coding (BACS SC), and Category Fluency: Animal Naming tasks. The TMT-A consisted of 25 circles numbered 1 to 25 distributed over a piece of paper (Pukrop & Klosterkötter, 2010). Participants followed the instructions to draw a line as fast as possible to connect the numbers in ascending order while still maintaining accuracy (Corrigan & Hinkeldey, 1987). BACS SC consists of 120 symbols that participants are asked to match to the numerals 1–9. Participants wrote the numeral matches on a response sheet as quickly as possible, aiming to get a maximum in 90 seconds (Keefe et al., 2004). The Category Fluency: Animal Naming test asks subjects to generate as many animals as possible in 60 seconds (Rosen, 1980).

4.2.3.5.2 Attention/vigilance

The Continuous Performance Test: Identical Pairs (CPT-IP) was administered by a portable computer system that generated visual stimuli on a standard video monitor and recorded correct responses, commission errors, and reaction times for all responses on a diskette. The participant was asked to respond as fast as possible whenever two identical stimuli were presented in a row. Participants make responses by lifting a finger from the response key held in the dominant hand. Stimuli are flashed on the screen at a constant rate of 1 per set, with a stimulus 'on' time of 50 ms (Cornblatt et al., 1988).

4.2.3.5.3 Working memory

The Wechsler Memory Scale-III: Spatial Span (WMS III SS) had two items, namely Spatial Span Forward and Spatial Span Backward (Wechsler, 1997). WMS III SS used a three-dimensional board with ten blocks on it to create a series of spatial patterns. Spatial Span Forward required participants to immediately attempt to duplicate the same pattern from memory, following the sequence given by the research assistant. Spatial Span Backward required participants to immediately attempt to duplicate the same pattern by reversing the sequence.

4.2.3.5.4 Verbal learning

Hopkins Verbal Learning Test-Revised (HVLT-R) was a list-learning verbal memory test consisting of a 12-word list with a 2-second interstimulus interval (Benedict et al., 1998). Participants had three trials to learn the list of words. They then recalled the list after the research assistant read the final word each time. Participants were asked to recall as many items as possible in any order.

4.2.3.5.5 Visual learning

The Brief Visuospatial Memory Test-Revised (BVMT-R) had only three learning trials (Benedict, 1997). Six simple figures were visually displayed in a 2 × 3 matrix on an 8 × 11 booklet and were shown to participants for three consecutive 10-second trials. After each trial, participants draw as many of the figures as they could, both accurately and in the correct location.

4.2.3.5.6 Reasoning and problem-solving

Neuropsychological Assessment Battery (NAB): Mazes was employed in this study. It measured participants' foresight, planning and organisational skills through maze-tracing tasks (White & Stern, 2003). Participants were expected to complete seven mazes, increasing in difficulty as the test progresses. They tried to finish each maze as quickly as possible. The task was discontinued after three consecutive scores of 0 points.

4.2.4 Procedure

Participants underwent the vocational function, social skills, family support, social cognition, and neurocognitive functioning tests described above. The trained research assistants conducted all tests with participants in a quiet assessment room. The testing lasted about two hours, with intermittent breaks when needed. To encourage study engagement, all participants received coupons for HK$150 after completing the tests as compensation for their time commitment.

4.2.5 Data analyses

Descriptive analyses were used on the demographic data, and frequency analyses were performed on the enumeration data. Continuous variables were described using the mean and standard deviation (*SD*). The Shapiro–Wilk test was used to test data normality for each outcome variable. Group differences in sample characteristics were examined using One-way Analysis of Covariance (ANCOVA) and Non-parametric ANCOVA-Quade's Test with age and education level as covariates. The Pearson correlation coefficients between vocational function, social skills, family support, social cognition, and neurocognitive function were investigated for all participants and for the three individual groups. *Post hoc* comparisons were conducted using Bonferroni correction. Statistical analyses were performed using the SPSS version 28.0 (SPSS Inc., United States).

Figure 2.2 depicts the hypothesised model, which explores both the direct and indirect effects of the deterioration in neurocognition using path analysis. It proposes that neurocognitive decline leads to deterioration in vocational function in individuals with EP and at FRP, and it also explores the direct negative effect of the deterioration in family support on vocational function in individuals with EP and at FRP. The maximum likelihood estimation was used to test the fit of the hypothesised model. Chi-square (χ^2), the root mean square error of approximation (RMSEA), and the comparative fit index (CFI), and the goodness of fit index (GFI) were selected to evaluate the goodness of fit of the model. A

value of 0.08 or below for RMSEA is considered an 'acceptable fit' (MacCallum et al., 1996) and a value of 0.9 or above for both CFI and GFI is regarded as a "reasonable fit" (Hu & Bentler, 1998) or "acceptable fit" (Indexes, 1999). A non-significant likelihood ratio in the χ^2 and the degree of freedom (*df*) tests suggests a good model fit, but it is sensitive to sample size, so an χ^2/df ratio of 3 or less indicates an 'acceptable fit' (Kline, 2023). The path model was applied using the statistical software IBM SPSS AMOS version 28.0. The statistical significance level was set at $p < 0.05$.

4.3 Results

4.3.1 Demographic characteristics of participants

Sample characteristics of all three groups are displayed in Table 4.1. A total of 203 participants were enrolled in this study; there were 77 individuals with EP, 49 individuals at FRP, and 77 individuals with HC respectively. The majority were female, with 58.4% in the EP group, 77.6% in the FRP group and 58.4% in the HC group, respectively. In the FRP group, 53.1% were siblings. The three groups were incomparable in terms of age, educational level, income, and current employment status ($p < .001$), as well as marital status ($p = .001$). Their mean age was 32.68 ± 9.689 years in the EP group, 38.76 ± 10.957 years in the FRP group, and 30.12 ± 8.216 years in the HC group, respectively. Their mean educational years were 13.12 ± 3.009 years in the EP group, 12.84 ± 4.089 years in the FRP group, and 17.14 ± 2.855 years in the HC group, respectively. For the EP group, the mean illness duration was 1.74 ± 1.517 years, 85.7% of patients were taking antipsychotics, and the mean dosage of Chlorpromazine was 184.00 ± 181.678 mg.

Table 4.1 Sociodemographic and Clinical Characteristics of all Participants.

		EP Group (*N* = 77)	FRP Group (*N* = 49)	HC (*N* = 77)	Statistics
Age, year (mean, [*SD*])		32.68 ± 9.689	38.76 ± 10.957	30.12 ± 8.216	EP, H < FRP**
Education level, year (mean, [*SD*])		13.12 ± 3.009	12.84 ± 4.089	17.14 ± 2.855	EP, FRP < H**
Gender (*n*, [%])	Male	32 (41.6)	11 (22.4)	32 (41.6)	*P* = .054
	Female	45 (58.4)	38 (77.6)	45 (58.4)	
Marital status (*n*, [%])	Single	60 (77.9)	25 (51)	60 (77.9)	FRP vs. EEP, H**
	Married	17 (22.1)	24 (49)	17 (22.1)	
Income (*n*, [%])	≤ 10000	50 (64.9)	16 (32.7)	14 (18.2)	EP < FRP, H**
	10001–20000	20 (26)	20 (40.8)	44 (57.1)	
	20001–30000	2 (2.6)	7 (14.3)	12 (15.6)	
	> 30000	5 (6.5)	6 (12.2)	7 (9.1)	
Current employment status (*n*, [%])	Open employment	41 (53.2)	39 (79.6)	71 (92.2)	EP vs. FRP** EP vs. H** FRP vs. H*
	Sheltered employment	1 (1.3)	0	0	
	Unemployed	35 (45.5)	10 (20.4)	6 (7.8)	
Illness duration, year (mean, [*SD*])		1.74 ± 1.517			
Antipsychotics, yes (*n*, [%])		66 (85.7)			
Dosages of Chlorpromazine, mg (mean, [*SD*])		184.00 ± 181. 678			

Note: * differences significant at .05; ** differences significant at .01; EP, Early Psychosis; FRP, Familial Risk for Psychosis; HC, Healthy Controls.

4.3.2 *Group differences in neurocognition, social cognition, social skills, family support, and vocational function*

Some of the variables in this study, namely vocational function, family support, social cognition, and attention/vigilance, which was a subcategory of neurocognitive functions, did not meet the assumption of normal distribution. Therefore, Quade's test was conducted to determine statistically significant differences in these variables between the EP, FRP, and HC groups, controlling for age and education level. There were nonsignificant differences among the groups in family support, social cognition, and attention/vigilance. However, a significant difference was found in vocational function among the groups ($F[2, 200] = 6.537$, $p = .002$) in Tables 4.2, 4.3, and 4.4.

On the other hand, the other variables of social skills, the other neurocognitive domains (processing speed, visual learning, verbal learning, reasoning and problem-solving, and working memory), and the neurocognitive composite scores met the assumption of normal distribution. Therefore, one-way ANCOVA was conducted to determine whether statistically significant differences existed between the groups, controlling for age and education level. Tables 4.2 and 4.4 show the three groups' performance in the different domains. There were significant differences among the groups in all items, social skills ($F[2, 200] = 10.899$, $p < .001$), processing speed, ($F[2, 200] = 16.613$, $p < .001$), verbal learning ($F[2, 200] = 7.101$, $p = .001$), visual learning ($F[2, 200] = 16.199$, $p < .001$), reasoning and problem-solving ($F[2, 200] = 5.834$, $p = .003$), working memory ($F[2, 200] = 4.603$, $p = .011$), and neurocognitive composite scores ($F[2, 200] = 17.559$, $p < .001$).

Post hoc comparisons demonstrated that the performance on visual learning decreased gradually from the HC group to the FRP group to the EP group, indicating that the visual learning functioning in the FRP group was at an intermediate state between the EP and HC groups. It was also observed that the FRP group had poorer cognitive performance than the HC group, while the EP group had the poorest cognitive performance out of the three.

Compared to the HC group, the EP group exhibited significantly worse performance in the domains of vocational function, social skills, processing speed, verbal learning, reasoning and problem-solving, working memory, and neurocognition (measured by the composite score). Meanwhile, patients with EP also had significantly worse vocational function, social skills, processing speed, verbal learning, and neurocognition than the FRP group.

Table 4.2 Overall Comparison of Vocational Function, Social Skills, and Family Support across three Groups (*N* = 203) with Age and Education Level as Covariates.

	EP Group (*N* = 77)	FRP Group (*N* = 49)	HC Group (*N* = 77)	Analysis of covariance			Pairwise comparison	
				F	*P*	Effect size		*P*
Vocational Function (mean, [*SD*])	46.27 ± 40.776	67.45 ± 37.335	78.06 ± 27.274	6.537	.002	0.061	EP < FRP EP < H	.004 .013
Social Skills (mean, [*SD*])	42.38 ± 8.601	49.08 ± 7.815	46.06 ± 7.113	10.899	< .001	0.099	EP < FRP EP < H	< .001 < .001
Family Support (mean, [*SD*])	20.10 ± 4.925	20.45 ± 4.757	20.30 ± 4.428	0.045	.956	0.000	—	—

Note: EP, Early Psychosis; FRP, Familial Risk for Psychosis; HC, Healthy Controls.

Table 4.3 Overall Comparison of Social Cognition Subscores across three Groups (*N* = 203) with Age and Education Level as Covariates.

	EP Group (*N* = 77)	FRP Group (*N* = 49)	HC Group (*N* = 77)	Analysis of covariance			Pairwise comparison	
				F	*P*	Effect size		*P*
NS (mean, [*SD*])	15.21 ± 2.778	14.82 ± 2.781	16.60 ± 1.873	0.590	.555	0.006	—	—
ToM (mean, [*SD*])	6.97 ± 1.597	7.45 ± 1.444	8.18 ± 2.217	1.754	.176	0.017	—	—
JTC (mean, [*SD*])	2.63 ± 0.841	2.69 ± 0.779	2.56 ± 1.395	0.963	.384	0.010	—	—
PAB (mean, [*SD*])	1.16 ± 1.001	1.04 ± 0.912	0.84 ± 0.919	0.469	.626	0.005	—	—
EP (mean, [*SD*])	15.17 ± 2.886	14.82 ± 3.160	16.25 ± 2.843	0.189	.828	0.002	—	—

Note: NS, Neurocognitive Screening; ToM, Theory of Mind; JTC, Jump to Conclusion; PAB, Paranoid Attributional Bias; EP, Emotion Perception; EP, Early Psychosis; FRP, Familial Risk for Psychosis; HC, Healthy Controls.

Table 4.4 Overall Comparison of Neurocognition Subtypes across the three Groups (*N* = 203) with Age and Education Level as Covariates.

	EP Group (*N* = 77)	FRP Group (*N* = 49)	HC Group (*N* = 77)	Analysis of covariance			Pairwise comparison	
				F	*P*	Effect size		*P*
Neurocognitive Composite Scores (mean, [*SD*])	39.81 ± 11.190	48.18 ± 9.105	52.03 ± 6.755	17.559	< .001	0.151	EP < FRP EP < H	< .001 < .001
PS (mean, [*SD*])	46.64 ± 11.516	55.84 ± 9.406	59.62 ± 8.145	16.613	< .001	0.144	EP < FRP EP < H	< .001 < .001
VBL (mean, [*SD*])	38.13 ± 11.043	44.57 ± 10.644	47.17 ± 7.680	7.101	.001	0.067	EP < FRP EP < H	.021 .002
VSL (mean, [*SD*])	33.68 ± 6.756	38.92 ± 7.786	41.58 ± 7.140	16.199	< .001	0.141	EP < FRP EP < H FRP < H	.019 < .001 .038
RPS (mean, [*SD*])	50.03 ± 12.136	55.04 ± 10.716	58.94 ± 8.015	5.834	.003	0.056	EP < H	.004
WM (mean, [*SD*])	41.52 ± 11.392	45.61 ± 10.828	49.49 ± 9.173	4.603	.011	0.044	EP < H	.013
Attention/Vigilance (mean, [*SD*])	45.96 ± 11.402	51.84 ± 8.104	51.81 ± 7.749	2.760	.066	0.027	—	—

Note: PS, Processing Speed; VBL, Verbal Learning; VSL, Visual Learning; RPS, Reasoning and Problem-Solving; WM, Working Memory; EP, Early Psychosis; FRP, Familial Risk for Psychosis; HC, Healthy Controls.

4.3.3 Relationship between vocational function (dependent variable) and other independent variables

Across all three groups (N = 203), the dependent variable of vocational function was significantly associated with social skills (r = .251, p < .001), social cognition (r = .210, p = .003) and neurocognition (r = .291, p < .001). The independent variable of social skills was significantly associated with family support (r = .205, p = .003) and neurocognition (r = .208, p = .003). A positive significant relationship was also found between social cognition and neurocognition (r = .458, p < .001). The correlational relationships between all variables are shown in Table 4.5.

For the EP group (N = 77), the independent variable of social skills was significantly associated with vocational function (r = .281, p = .013) and family support (r = .317, p = .005). A positive significant relationship was also found between social cognition and neurocognition (r = .622, p < .001). The correlational relationships between all variables are shown in Table 4.6.

For the FRP group (N = 49), vocational function was significantly associated with social cognition (r = .331, p = .020) and a positive significant relationship was also found between family support and neurocognition (r = .385, p = .006). The correlational relationships between all variables are shown in Table 4.6.

For the HC group (N = 77), it was only found that family support was significantly associated with social skills (r = .239, p = .036). The correlational relationships between all variables are shown in Table 4.6.

Table 4.5 Correlations between Vocational Function (Dependent Variable) and Independent Variables across the three Groups (*N* = 203).

	Vocational Function	Social Skills	Family Support	Social Cognition	Neurocognition
Vocational Function	1.000	.251**	.112	.210**	.291**
Social Skills	–	1.000	.205**	.035	.208**
Family Support	–	–	1.000	.010	.079
Social Cognition	–	–	–	1.000	.458**
Neurocognition	–	–	–	–	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.6 Correlations between Vocational Function (Dependent Variable) and Independent Variables for the EP, FRP, and HC Groups.

EP Group (*N* = 77)					
	Vocational Function	Social Skills	Family Support	Social Cognition	Neurocognition
Vocational Function	1.000	.281*	.085	.095	.213
Social Skills	–	1.000	.317**	.004	.022
Family Support	–	–	1.000	-.112	-.143
Social Cognition	–	–	–	1.000	.622**
Neurocognition	–	–	–	–	1.000
FRP Group (*N* = 49)					
	Vocational Function	Social Skills	Family Support	Social Cognition	Neurocognition
Vocational Function	1.000	.206	.172	.331*	.214
Social Skills	–	1.000	-.003	-.120	.135
Family Support	–	–	1.000	.235	.385**
Social Cognition	–	–	–	1.000	.272
Neurocognition	–	–	–	–	1.000
HC Group (*N* = 77)					
	Vocational Function	Social Skills	Family Support	Social Cognition	Neurocognition
Vocational Function	1.000	.037	.152	.050	-.073
Social Skills	–	1.000	.239*	.024	.195
Family Support	–	–	1.000	.001	.070
Social Cognition	–	–	–	1.000	.223
Neurocognition	–	–	–	–	1.000

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Note: EP, Early Psychosis; FRP, Familial Risk for Psychosis; HC, Healthy Controls.

4.3.4 Fitness of the hypothetical theoretical models

4.3.4.1 Path analysis of the overall model for three groups

Figure 4.1 presents the results of the path analysis of the overall model of the relationships among these variables in three groups. The goodness of fit of the hypothetical path model was $\chi^2 = 2.666$, $df = 3$, $p = .446$, $\chi^2/df = 0.889$, RMSEA = 0.000, GFI = 0.995, and CFI = 1.000. This model was regarded as an excellent fit because all indices fulfilled the requirements following the implementation of recommendations suggested by the modification index (Zaini et al., 2020), which is the reliability of the path drawn in the Structural equation modelling (SEM) model.

The direct pathway between neurocognition and vocational function was supported; neurocognition had a significant direct relationship to vocational function ($\beta = 0.276$, $t = 4.131$, $p < .001$). However, the indirect pathway between neurocognition and vocational function mediated by social cognition and social skills was not supported. Although neurocognition had a significant positive relationship to social cognition ($\beta = 0.494$, $t = 8.073$, $p < .001$) explaining 24.4% of its variance, and social skills had a significant positive relationship to vocational function ($\beta = 0.176$, $t = 2.580$, $p = .010$), social cognition had a nonsignificant relationship with social skills ($\beta = -0.152$, $t = -1.963$, $p = .05$) with 8.9% of its variance explained. Meanwhile, family support had a nonsignificant direct relationship to vocational functions ($\beta = 0.050$, $t = 0.751$, $p = .452$). In addition, MI suggested neurocognition had an indirect relationship to vocational function mediated by social skills ($\beta = 0.264$, $t = 3.413$, $p < .001$) and family support also had an indirect relationship to vocational function mediated by social skills ($\beta = 0.190$, $t = 2.831$, $p = .005$). The model explained altogether 13.1% of the total variance of the vocational function.

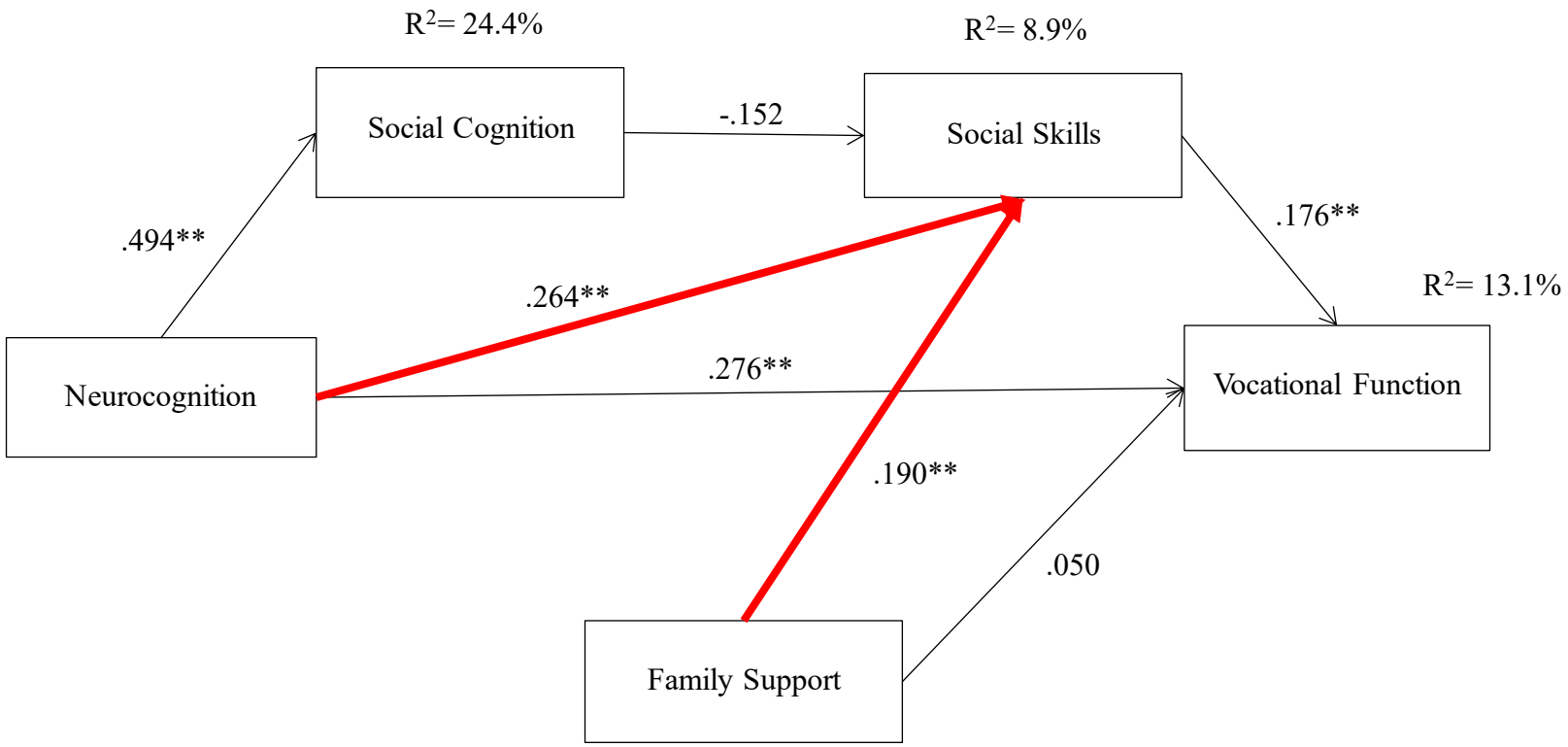

Figure 4.1 Path Analysis Model with Standardised Regression of overall participants (Early Psychosis, Familial Risk for Psychosis and Healthy Control groups) with Modification Index.

Note: * differences significant at .05; ** differences significant at .01.

4.3.4.2 Path analysis model for individuals with early psychosis group

In the individuals with early psychosis group, all of the standardised beta coefficients and the total effect of the variables on vocational function for the model are depicted in Figure 4.2. The goodness of fit of the hypothetical path model was $\chi 2 = 1.464$, df = 4, $p = .833$, $\chi 2/df = 0.366$, RMSEA = 0.000, GFI = 0.992, and CFI = 1.000. This model was regarded as excellent fit because all indices fulfilled the requirements following the implementation of recommendations suggested by the MI (Zaini et al., 2020).

The direct pathway between neurocognition and vocational function was however not supported; neurocognition had a nonsignificant direct relationship to vocational function ($\beta = 0.197$, $t = 1.826$, $p = .068$). Meanwhile, the indirect pathway between neurocognition and vocational function mediated by social cognition and social skills was not supported either. Although neurocognition had a significant positive relationship to social cognition ($\beta = 0.652$, $t = 7.494$, $p < .001$) explaining 42.5% of its variance, and social skills had a significant positive relationship with vocational function ($\beta = 0.267$, $t = 2.333$, $p = .020$), social cognition had a nonsignificant relationship to social skills ($\beta = 0.02$, $t = 0.187$, $p = .852$) with 10.6% of its variance explained. Meanwhile, family support had a nonsignificant direct relationship to vocational functions ($\beta = 0.004$, $t = 0.031$, $p = .975$). In addition, MI suggested family support had an indirect relationship to vocational function mediated by social skills ($\beta = 0.325$, $t = 2.992$, $p = .003$). The model explained altogether 11.2% of the total variance of the vocational function.

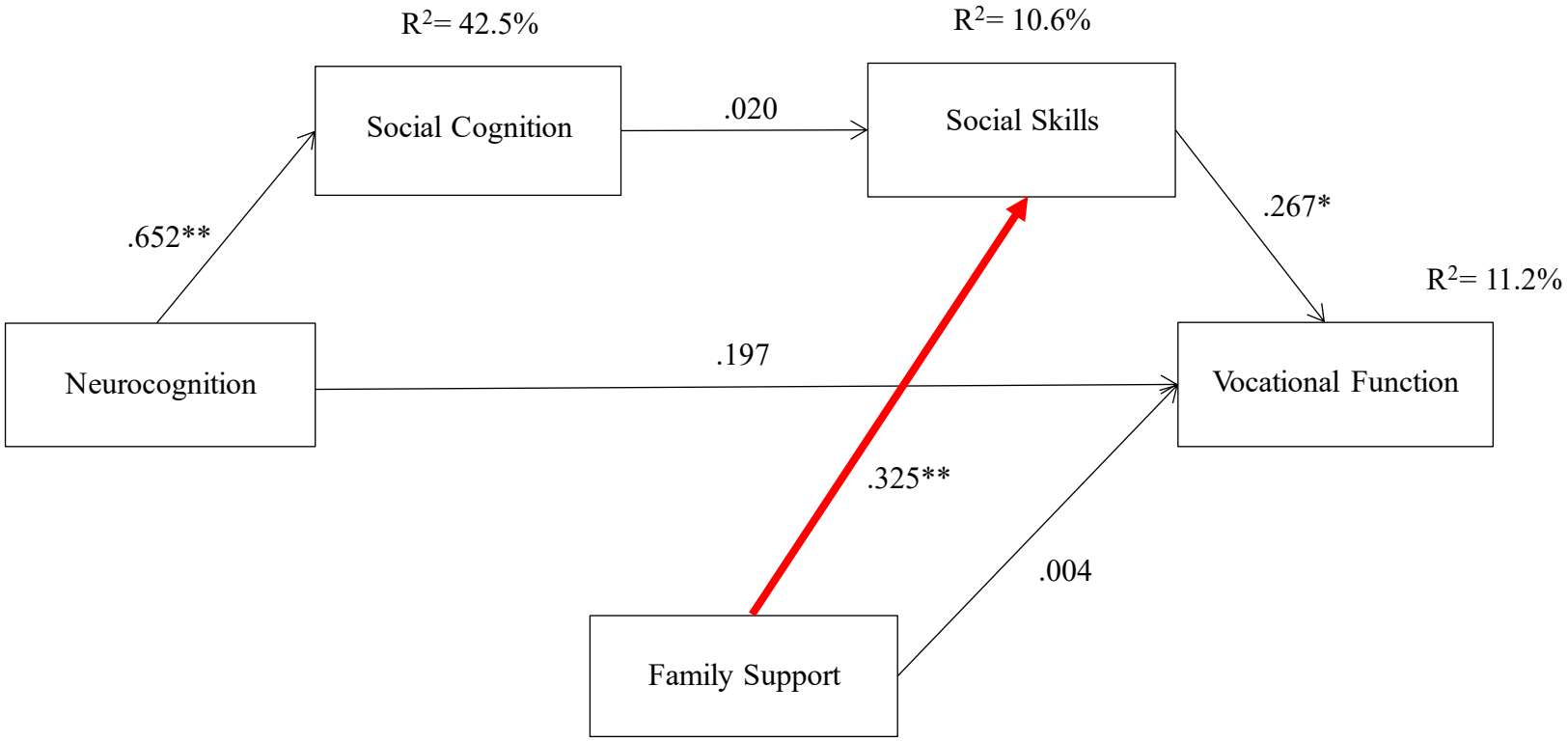

Figure 4.2 Path Analysis Model with Standardised Regression of Early Psychosis group with Modification Index.

Note: * differences significant at .05; ** differences significant at .01.

4.3.4.3 Path analysis model for individuals at familial Risk for psychosis group

In the individuals at familial risk for psychosis group, all of the standardised beta coefficients and the total effect of the variables on vocational function for the model are described in Figure 4.3. The goodness of fit of the hypothetical path model was $\chi^2 = 5.818$, $df = 4$, $p = .213$, $\chi^2/df = 1.454$, RMSEA = 0.097, GFI = 0.955, and CFI = 0.884. Although one of the indices (CFI = 0.884) was unsatisfactory and did not fulfil the basic requirement (CFI ≥ 0.90) in the present study, this model could still be regarded as acceptable because the other indices had already fulfilled the requirements following the implementation of recommendations suggested by the MI (Zaini et al., 2020).

The direct pathway between neurocognition and vocational function was not supported (β = 0.180, $t = 1.190$, $p = .234$). Meanwhile, the indirect pathway between neurocognition and vocational functions mediated by social cognition and social skills was not supported either. Although neurocognition had a significant positive relationship to social cognition (β = 0.353, $t = 2.616$, $p = .009$) explaining 12.5% of its variance, social cognition had a nonsignificant relationship with social skills (β = −0.099, $t = -0.691$, $p = .489$) with 1% of its variance explained, and social skills had a nonsignificant relationship to vocational functions (β = 0.180, $t = 1.300$, $p = .194$), Meanwhile, family support had a nonsignificant direct relationship to vocational functions (β = 0.083, $t = 0.548$, $p = .584$). In addition, MI suggested neurocognition and family support had a significant positive association (β = 0.404, $t = 2.593$, $p = .010$). The model explained altogether 8.1% of the total variance of the vocational function.

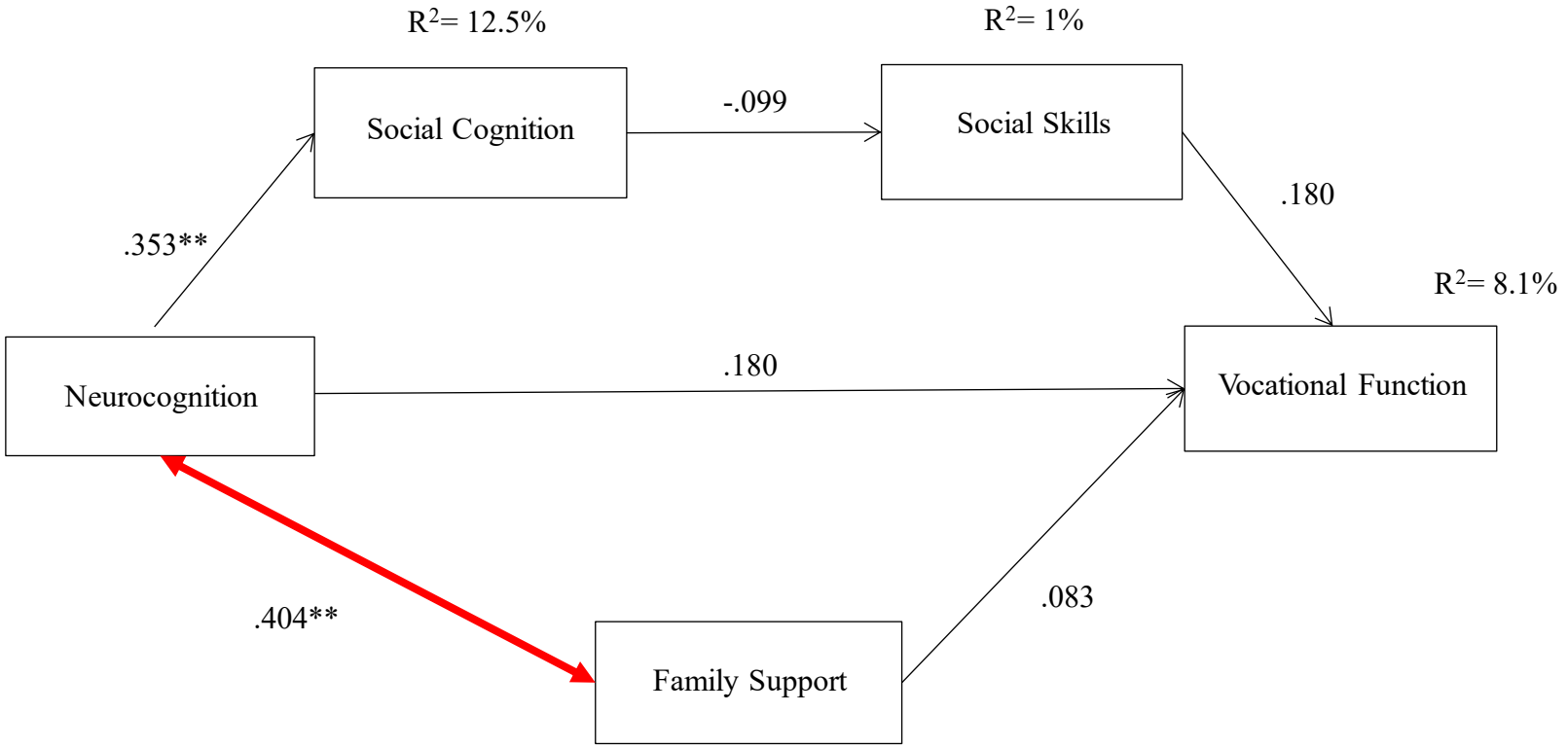

Figure 4.3 Path Analysis Model with Standardised Regression of at Familial Risk for Psychosis group with Modification Index.

Note: * differences significant at .05; ** differences significant at .01.

4.3.4.4 Path analysis model for healthy controls group

In the healthy control group, all of the standardised beta coefficients and the total effect of the variables on vocational function for the model are shown in Figure 4.4. The goodness of fit of the hypothetical path model of the HC group was $\chi^2 = 4.173$, $df = 4$, $p = .383$, $\chi^2/df = 1.043$, RMSEA = 0.024, GFI = 0.979, and CFI = 0.981. This model was regarded as an excellent fit because all indices fulfilled the requirements following the implementation of recommendations suggested by the MI (Zaini et al., 2020).

The direct pathway between neurocognition and vocational function was nevertheless not supported ($\beta = -0.057$, $t = -0.494$, $p = .621$). Meanwhile, the indirect pathway between neurocognition and vocational function mediated by social cognition and social skills was not supported either. Although neurocognition had a significant positive relationship to social cognition ($\beta = 0.304$, $t = 2.779$, $p = .005$) explaining 9.2% of its variance, social cognition had a nonsignificant relationship to social skills ($\beta = -0.191$, $t = -1.652$, $p = .099$) with 7.7% of its variance explained, and social skills had a nonsignificant relationship to vocational function ($\beta = -0.036$, $t = -0.308$, $p = .758$). Meanwhile, family support had a nonsignificant direct relationship to vocational function ($\beta = 0.127$, $t = 1.123$, $p = .262$). In addition, MI suggested that neurocognition had a significant positive relationship to social skills ($\beta = 0.267$, $t = 2.305$, $p = .021$). The model explained altogether 2.2% of the total variance of the vocational function.

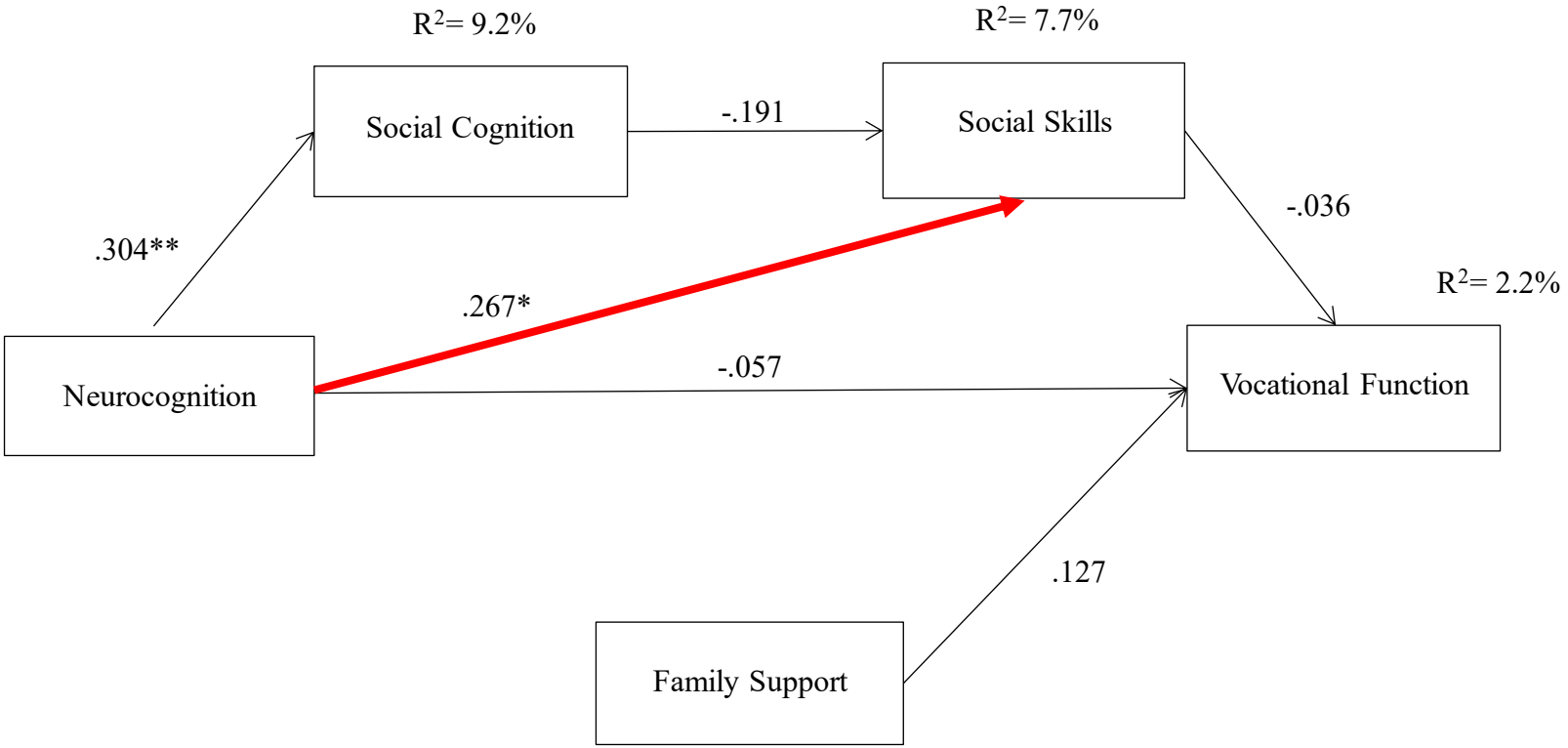

Figure 4.4 Path Analysis Model with Standardised Regression of Healthy Controls group with Modification Index.

Note: * differences significant at .05; ** differences significant at .01.

4.4 Discussion

In this study, we compared patients with early psychosis, individuals at familial risk of psychosis, and healthy controls in terms of cognitive, social, and vocational functions. To the best of our knowledge, the current study is a pioneering attempt to compare and explore the relationships between neurocognition, social cognition, social skills, family support, and vocational function in individuals with EP and at FRP in Hong Kong and other Chinese communities.

First, significant differences were observed between the three groups in the ANCOVA of the vocational function, social skills, five neurocognitive domains (processing speed, verbal learning, visual learning, reasoning and problem-solving, and working memory), and neurocognitive composite scores. No significant differences were found in family support, social cognition, or attention/vigilance between the groups.

Post hoc comparisons indicated that only visual learning performance decreased significantly from the HC group to the FRP group to the EP group. This decrease aligned well with Hypothesis 1 that visual learning functioning in the EP group had the poorest performance compared to the other two groups, and the FRP group had poorer cognitive performance than the HC group. Meanwhile, vocational function, social skills, processing speed, verbal learning, and neurocognition were significantly impaired in individuals with EP compared to the FRP and HC groups. Reasoning and problem-solving and working memory were also significantly impaired in the EP group compared to the HC group.

Second, Hypotheses 2–4 for the EP and FRP groups had mixed results. Some were supported but some were not. There were two findings in support of these hypotheses. First, neurocognition had a significant positive relationship to social cognition, which partially supported the hypothesised theoretical path analysis models for the EP and FRP groups. Second, social skills had a significant positive relationship to vocational function which also supported the hypothesised theoretical path analysis model for the EP group. However, the

hypothetical theoretical path analysis model for the HC group was not supported; this substantiated Hypotheses 2–4 for the HC group, which stated that these relationships would not occur in the HC group.

4.4.1 Group differences in neurocognition, social cognition, social skills, family support, and vocational function

We found that the EP group generally performed significantly much worse on neuropsychological tests (processing speed, visual learning, verbal learning, reasoning and problem-solving, and working memory) than healthy controls, supporting the existing evidence that their impairments in neurocognitive functions extend across multiple domains (Addington et al., 2003; Binder et al., 1998; Dong et al., 2023; Hoff et al., 1992; Ma et al., 2007; Mohamed et al., 1999; Üçok et al., 2013), which is suggestive of a broad range of neurocognitive deficits. In line with these findings, a meta-analysis demonstrated that Chinese patients with first-episode schizophrenia (FES) show neurocognitive deficits across all seven MATRICS Consensus Cognitive Battery (MCCB) cognitive domains and all nine subtests compared to the HC group (Zhang et al., 2019). However, our study found no significant group difference in attention/vigilance between the EP and HC groups, which is inconsistent with previous studies; this may explain that early psychosis has some of the heterogeneity of cognitive function (Barnett et al., 2005).

Several studies have compared neurocognitive impairments among the FES, genetically high-risk of psychosis (GHR), and HC groups (Dong et al., 2023; Hou et al., 2016; Nehra et al., 2016; Üçok et al., 2013). In our study, the EP group only performed significantly worse than the FRP group in three neurocognitive domains: verbal learning, visual learning, and processing speed. We also found the FRP group only performed significantly worse than healthy controls in visual learning, consistent with the findings in previous studies. Our findings therefore partially supported the Hypotheses 1, which stated that the HC group showed the best performance in visual learning functioning, and the FRP group performed

better than the EP group. However, our findings were inconsistent with the findings reported by Üçok et al. (2013), namely that the FRP group had worse performance on working memory and attention/vigilance than healthy controls. Additionally, Hou et al. (2016) reported that individuals at FRP had poorer working memory, processing speed, verbal learning, and attention than healthy controls, and the third study conducted by Dong et al. (2023) indicated that the FRP group had worse processing speed and attention/vigilance than healthy controls. The lack of significant differences in our study between groups in some neurocognitive domains supports the results from previous studies that the cognitive deficits present in individuals at FRP are largely similar to those seen in individuals with FES, except that the FES group had worse sustained attention than the FRP group. The probable reason for this is the small sample size for the FRP group in our study (n = 49). This is similar to previous studies, which have used sample sizes of 40 (Hou et al. (2016), 30 (Üçok et al. (2013), 26 (Dong et al. (2023), and 20 (Nehra et al. (2016); all reported that the sample size limited the reliability of their results due to insufficient power. Another probable reason is that the previous study conducted by Üçok et al. (2013) did not consistently utilise standardised cognitive assessment tools such as the MCCB and only employed four of the seven cognitive domains assessed by the MCCB (Hou et al., 2016). Meanwhile, we did not include unemployment status as a covariate variable, although it was included in a previous study (Dong et al., 2023); which might have affected the neuropsychological test scores (Bell & Bryson, 2001). In addition, in our study, the first-degree relatives (siblings, parents, or offspring) of the EP patients were not evaluated with the Structured Interview for Prodromal Syndromes (SIPS; Miller et al., 2003). Therefore, the sample probably included family members who met the criteria of SIPS, called ultra-high-risk (UHR) patients. Previous studies also found that cognitive functioning in some domains (working memory, processing speed, verbal learning, and attention) in the UHR group is intermediate between the EP and FRP groups (Dong et al., 2023; Hou et al., 2016). The likely mix of participants in the FRP group

thus limits the reliability of these results. However, the significant difference we have obtained in the neurocognitive composite scores of the FRP and EP groups demonstrates that cognitive deficits gradually increase in progressive stages of the disease and supports the staging model of psychosis (Fusar-Poli et al., 2017; McGorry et al., 2006). Neurocognitive impairment is evident in the prodromal stage in patients with FES or clinical high-risk psychosis (CHR-P) and in those with a high familial risk of psychosis, and persists at a relatively stable level over time (Bliksted et al., 2014). Their cognitive functioning reflects an endophenotype that is already present in the prodromal stages of the illness. Our findings support the idea reported by Üçok et al. (2013) that cognitive deficits may arise before the FES. It is possible that specific testing of visual learning could assist in the early identification and prediction of outcomes in those at high risk for developing schizophrenia, even before the onset of symptoms, and may be more indicative than qualitative differences.

Meanwhile, our study did not show significant differences in social cognition between the three groups. Previous research on social cognition in individuals with GHR has been limited and inconsistent. However, previous findings have indicated that social cognitive impairments are significantly associated with psychopathology in young relatives of individuals with schizophrenia (Eack et al., 2010). Building on these insights, we propose that social recognition could potentially be more closely tied to an individual's current state than to their risk of developing psychosis. One of the possible reasons is that not all assessments were done by the same research assistants due to time and other restrains. Therefore, it was impossible for us to do an inter-rater assessment since they did the assessments one after another, which may have caused bias to influence the results. Another reason may be related to the insufficient sample size of the FRP group. Furthermore, the relationship between social cognition with sociodemographic and clinical variables in three groups may also be one of these reasons. Two studies showed that the patients with EP were matched with healthy controls regarding age, gender, level of education, and IQ, as these

variables are known to influence SC (Bliksted et al., 2014; Sutterby et al., 2012). However, in our study, we only included age and level of education as covariates, which may be a bias to influence the results as well.

In addition, the EP group showed significantly worse vocational function compared to the HC group, which was consistent with a previous studies that showed that unemployment is 10 times higher in FEP populations (about 40–50%) than for their same-age peers in the general community (Killackey et al., 2006). The EP group had significantly worse performance in social skills compared with the HC group; this echoes Sullivan et al. (2014), who showed difficulties in managing social activities for EP groups. Our study reveals that the FRP group had significantly higher functioning in social skills and vocational function than patients in the EP group. However, there were no significant differences between the FRP and HC groups. Previous studies have found that individuals at FRP had impairments in social skills (Horton et al., 2014), including social adjustment and peer and romantic relationships (Dworkin et al., 1994; Galderisi et al., 2016; Glatt et al., 2006), and had worse work skills performance than the HC group. The probable reason for this is that the measurement tool used for assessing the social skills in our study was related to vocational social skills, and the high employment rate of 79.6% for the FRP group indicated good vocational performance and social skills.

No significant differences in family support were found between the groups. The previous studies may explain these findings that 70% of the ten participating families provided care. This includes supervising the patient when taking medications, making the patient available for treatment, and engaging the patient with activities. Specifically, family members provide emotional, informational, instrumental, and research assistance to sustain individuals with therapeutic conditions (Kurowska & Kaczmarek, 2013; Velligan et al., 2019). However, prior findings have demonstrated that family support was lower in the EP group than in the FRP and HC groups (He et al., 2021). As mentioned in other studies, the

difference between He et al. (2021) and our study may be that different family members may perceive family functions differently, even in the same family (Anvar Abnavi et al., 2013; Gutkevich et al., 2013).

4.4.2 Findings of the hypothetical theoretical models

For the hypothetical theoretical path analysis model of the EP group, the results showed that neurocognition had a significant positive relationship to social cognition and social skills had a significant positive relationship to vocational function, which partially supported the Hypotheses 2–3 for the proposed theoretical path analysis model for the EP group. These findings were supported by the significant correlations between social skills and vocational function, neurocognition and social cognition found in our study for EP group. The finding echoes the result reported in the previous study, which showed that neurocognition tests (processing speech, visual memory, executive function) were strongly related to the social cognitive domain, especially in ToM (Catalan et al., 2018), which suggests cognitive underpinnings to the ToM.

In addition, family support did not have a direct relationship to vocational performance which did not support the Hypothesis 4 for the hypothesised theoretical path analysis model for the EP group. This result can be explained by the finding that family support had a nonsignificant relationship with vocational function in our study. However, MI suggested that family support had an indirect relationship to vocational performance that was mediated by social skills, which was supported by the significant relationship between family support and social skills. As we know, family members play a critical role in caring with their family members who are EP patients (Del Vecchio et al., 2015; Lucksted et al., 2018; Wainwright et al., 2015). They provide emotional and financial support (Addington et al., 2005; Norman et al., 2005; Tennakoon et al., 2000) and also support individuals with EP engagement in treatment services concretely (Addington & Burnett, 2004; Addington et al., 2005; Ribé et al., 2018; Selick et al., 2017). It is not surprising to observe highly expressed emotion (high

levels of critical comments, hostility, and/or emotional over-involvement) being prevalent in nearly half of the families of people with early psychosis (Bachmann et al., 2002; González-Blanch et al., 2010; Koutra et al., 2014; McNab et al., 2007; Ng et al., 2024), associated with poorer patient outcomes including more frequent relapse, and hospital admissions (Domínguez-Martínez et al., 2014; Ma et al., 2021). People experiencing psychosis tend to have small social networks that more heavily rely on family members (Palumbo et al., 2015). A recent systematic review and meta-analysis study found that living at home was linked to a lower proportion of employment for FEP patients. It may be that living at home with the family may reflect increased premorbid dependence in individuals with psychosis, or a more severe illness presentation, which in turn is related to a decreased probability of future employment (Ajnakina et al., 2021). Therefore, good family support is very necessary, which bolsters client outcomes, including improved functioning, reduced rates of relapse and boosted general well-being (Boden-Stuart et al., 2021; Lal et al., 2014; Lee et al., 2014; Norman et al., 2005), it may predict that good family support can facilitate their social skills on the job, plays an important role in the vocational outcomes of individuals with EP.

Admittedly, we found no significant correlations between neurocognition and vocational function and social cognition and social skills in the EP group, which did not support the Hypotheses 2-3 for the proposed theoretical path analysis model for the EP group. However, several studies found that neurocognitive deficits are predictive of poorer vocational outcomes (Allott et al., 2013; Dickerson et al., 2008; Nuechterlein et al., 2011; Tandberg et al., 2011). One of the possible reasons is the different designs of studies. Our study is a cross-sectional study, but others are longitudinal studies examined at different time points. These longitudinal studies span a wide range of follow-up periods, from six months (Allott et al., 2013; Dickerson et al., 2008) to nine months (Nuechterlein et al., 2011) to two years (Tandberg et al., 2011). Longitudinal data provide a more robust basis for inferring causality, allowing us to better understand the impact of cognition on vocational function.

Consequently, including additional studies with longitudinal data will enhance our understanding in this area. Therefore, more studies with longitudinal data will be necessary to be included. Another reason is the selection of cognitive measures (predictors), as we selected the neurocognitive composite as the predictor in our study, which is quite different from others. Although it was consistent with previous research that no association between ToM deficits and social functioning in the EP group (Catalan et al., 2018), a few EP studies also examined the cross-sectional relationship between social cognition and social functioning (Addington et al., 2006a, 2006b; Williams et al., 2008; Woolverton et al., 2018). One of the possible reasons is that we used C-SCSQ to measure social cognitive domains, but Ludwig et al. (2017) showed that only the Hinting task, which is used to measure ToM, demonstrated good properties to be administrated in EP. On the other hand, maybe not enough number of participants in our EP group could influence this result. Previous studies recruited 921 schizophrenia patients to test relationships between psychopathological dimensions, social cognition, neurocognition, resilience, perceived stigma and functional capacity with real-life functioning domains (Galderisi et al., 2016), 151 participants with schizophrenia or schizoaffective disorder to test the relationships among neurocognition, social cognition, perceived social discomfort, and vocational outcomes (Bell et al., 2009) and Sergi et al. (2006) tested whether the social perception of social cognition mediates relations between basic visual perception and functional status in 75 outpatients with schizophrenia. Meanwhile, the measurement tools may not be able to identify potential relationships. For instance, we used VSSS, a self-report measure, to assess social skills, which may have caused the bias, because it was more of a self-administered checklist, rather than a behavioural measure.

For the hypothetical path model of the FRP group, the results showed that neurocognition had a significant positive relationship to social cognition, which partially supported the Hypotheses 2 for the proposed theoretical path analysis model for the FRP

group. It was consistent with the finding reported by Galderisi et al. (2016) that better neurocognitive functioning has better social cognition. However, we found a nonsignificant correlation between social cognition and neurocognition for the FRP group in this study, which could be caused by the small sample size.

MI suggested that neurocognition was significantly associated with family support which was echo the significant relationship between neurocognition and family support found in this study for FRP group. There is a supporting statement that higher levels of social support like family support have been associated with better cognitive functioning (Kelly et al., 2017). A recent study also found that the individual gets higher satisfaction with their family relationship, empathy, affection, support and interaction, the better their cognitive performance (Souza-Talarico et al., 2021). However, it was not found in the EP group but in the FRP group. A previous study reported that higher family support was associated with better neurocognitive functioning, particularly in verbal memory. This association was stronger in women (Soler-Andrés et al., 2023). The reason for the difference may have been the percentage of women in the FRP group 77.6% was significantly higher compared to the EP group with 58.4% and the FRP group had significantly better performance in verbal learning compared to the EP group. Therefore, the correlation in the FRP group could be stronger than in the EP group.

Meanwhile, we did not find any significant correlations between neurocognition and vocational function, social cognition and social skills, social skills and vocational function, and family support and vocational function in the FRP group. Therefore, our results did not support Hypotheses 2–4 for the FRP group; variation in findings with previous studies may be attributed to several reasons. The first issue is mixed kinship. In this study, 53.1% were siblings, but siblings are less likely to have poorer real-life functioning (interpersonal relationships and work skills) compared with parents, as previously reported (Awadalla et al., 2005; Galderisi et al., 2016; Margetic et al., 2013). Second is the insufficient sample size.

Recruitment in this study was affected by the COVID-19 pandemic, and the sample size for the individuals at FRP was smaller ($N = 49$) than that of a similar study for path analysis using AMOS software. For example, 379 individuals at FRP participated in the study conducted by Galderisi et al. (2016) to test the relationships among neurocognition, social cognition, and work skills. Although a nonsignificant relationship was found between social cognition and social skills for the FRP group, it cannot reveal the true analysis as significant effect. This is because a small sample size cannot detect the possible underlying significant effect for the direct impact of social cognition leading to increased social skills. Therefore, in the future, more studies with a larger sample size will be necessary to examine the relationship between the previous variables. In addition, heterogeneity in the assessment of social and vocational functions (e.g. the utilization of either subjective or objective measures and instruments that capture different aspects of social and vocational functions; Galderisi et al., 2016).

4.4.3 Limitations

Several limitations in our study must be considered. First, a sample bias existed because we enrolled EP and FRP participants from only two specific sites, which may limit the generalisability of our results. The participants, particularly those at FRP, may have been people who are more likely to seek help and who would like to have more professional knowledge about psychosis to help their family members. Second, the sample size may not have been large enough in this study, especially for the FRP group ($n = 49$). The minimum sample size for path analysis using AMOS software is 200 recommended by some researchers (Matthes et al., 2017). Therefore, the generalisability of the results is limited. Third, the gender proportions in this study were imbalanced. Most participants in the FRP group were female (77.6%), which may have produced a gender bias. It has been found that there are gender differences in the symptoms and social impairments of schizophrenia, namely that women perform better than men in verbal episodic memory, set-shifting, and

processing speed, whereas men perform better than women in visual working memory (Torniainen et al., 2011). Thus, the results of this study should be cautiously interpreted. Fourth, 85.7% of patients in the EP group in our study were taking medication, but the use of psychotropic medications in the EP group was not controlled for (Torniainen et al., 2011). In addition, similar to previous studies (Mesholam-Gately et al., 2009) antipsychotics were used in the FES group, but not in any other group, which may have resulted in a potentially confounding effect on neurocognitive performance. However, a recent study suggested that medicated FES patients had better cognitive test performance than unmedicated FES patients (Lesh et al., 2015). Therefore, the bias would have been conservative, potentially lowering and not increasing the cognitive deficit in the EP group compared to the other controls. In general, medication partially improves cognitive performance, particularly on measures of attention (Spohn et al., 1977). Fifth, not all assessments were done by the same research assistants for practical individual reasons. Therefore, it was impossible for us to do an inter-rater assessment, since they did the assessments one after another. Lastly, the study involved only a cross-sectional data analysis—that is, the causal relationship between all independent variables and vocational function could not be established based on the data from this study. Future studies using a longitudinal design are highly recommended to analyse the causal relationship of variables.

4.5 Conclusions

The current study is a pioneering attempt in Hong Kong including other Chinese communities to compare and explore the relationships between neurocognition, social cognition, social skills, family support, and vocational function in individuals with EP and at FRP. Our findings suggest that deficits in neurocognition, social skills, and vocational function in psychosis may start before the first episode, since those functions were impaired in both the FRP and EP groups compared with healthy controls. Notably, visual learning

emerged as a domain that exhibited progressive impairment across all three groups, indicating the potential utility of this factor as a biomarker for EP. The models for the EP and FRP groups that were proposed by this study were not supported. However, we found that neurocognition had a significant positive relationship to social cognition in both the EP and FRP groups, indicating that individuals with poorer neurocognition likely have more problems with social cognition. This would lead to more difficulties in getting and maintaining jobs and developing good relationships with co-workers, and these individuals likely also have poorer competence in handling work-related social situations in the workplace. Furthermore, family support would affect vocational function through the mediating effect of social skills in individuals with EP, so good family support appears to facilitate social skills on the job. Last, neurocognition also had a significant positive association with family support in the FRP group. Our next step is to detect cognitive predictors of transition to psychosis in the FRP group in a study with a longitudinal design and a larger sample size. Meanwhile, this study also supports the clinical practice of early intervention among those with FRP to improve their neurocognition, social cognition, and social skills to enhance their vocational function in the community. This is in fact the main aim of Study Two, which tries to evaluate if CSCIT could improve social and vocational functions among FRP individuals by conducting a pilot RCT.

CHAPTER FIVE

Study Two: The effect of the Chinese Social Cognition and Interaction Training (CSCIT) programme for individuals at familial risk for psychosis: A pilot randomized controlled trial

To summarise from the previous chapters, individuals at familial risk for psychosis (FRP) have already begun to develop abnormalities in their cognitive, social, and vocational functions. If left untreated, they may develop psychotic disorders (Hormozpour et al., 2016). Previous studies have suggested that early detection and treatment offer better outcomes.

This chapter presents the second study in this PhD thesis, which provided preliminary evidence to support the application of a 9-session Chinese Social Cognition and Interaction Training (CSCIT) programme on those with individuals at FRP by conducting a pilot randomized controlled trial (RCT) to improve their social cognition and social skills. In general, the results of this study suggest that CSCIT can be considered a safe and efficient intervention for individuals at FRP to improve their clinical symptoms, social cognition, and social skills. The study also provides preliminary support to the goal of conducting more experimental studies to investigate the relationship between social cognition and social skills for individuals at FRP.

5.1 Introduction

5.1.1 Background

Genetics plays an important role in the cause of many mental illnesses (Rasic et al., 2014). All types of mental illness, including schizophrenia and related psychoses, tend to run in families, and the risk of developing a disease for the affected individual is associated with the degree of biological relatedness (Faleye, 2017; Gottesman et al., 2010; Rasic et al., 2014). Individuals who have a first-degree relative (i.e. children, siblings, parents) with the illness share between 9% and 50% of their genes. Consequently, they are at an elevated risk of developing schizophrenia themselves (Gottesman, 1991; Phillips & Seidman, 2008). A recent trend in research and clinical practice aims to take this identification process a step further by pinpointing individuals at FRP. In this study, individuals at FRP are the first-degree relatives of individuals with EP who are at increased risk of developing psychosis.

Many studies report that adolescents at risk have impairments in social function (Dworkin et al., 1994; Gibson et al., 2010; Glatt et al., 2006; Hans et al., 2000; Niemi et al., 2003; Schiffman, Walker, et al., 2004) and work skills (Galderisi et al., 2016). Horton et al. (2014) have also reported that these subjects had poorer social skills overall, the poorer the social functioning and the more severe the subsyndromal symptoms at detection, the closer the risk subject is to the onset of psychosis.

It is already a standard strategy to identify and provide treatment to those individuals with EP to decrease the period of no treatment and meanwhile improve their prognosis. The literature also suggests that the identification and provision of interventions (pharmacological and non-pharmacological) for those at familial risk for psychosis may delay or prevent their development into psychosis (Sin, 2013; Sin et al., 2013; Tsuang et al., 1999). The rationale for providing interventions to these at-risk adolescents and youths is that they usually experience high levels of psychosocial stress. Interventions targeted at reducing their stress

and increasing their resilience will thus improve their mental well-being. Such interventions are mostly psychoeducation (Sin, 2013; Sin et al., 2013).

Social cognition relates closely to how individuals perceive and process information about themselves, others, social situations, and social interactions (Penn et al., 1997; Penn et al., 2008). It encompasses several sub-domains including emotion perception, social perception, social knowledge, ToM, and attributional bias (Bellack et al., 2007; Green et al., 2008; Pinkham et al., 2014). People with schizophrenia demonstrate social cognitive impairments that are relatively stable (Green & Horan, 2010; Torio et al., 2014). Research shows stable impairments across patients in prodromal, first-episode, and chronic phases of illness when using the same measures (Horan et al., 2012). Importantly, these findings suggest that these impairments may represent trait-like characteristics rather than transient state-related fluctuations. Furthermore, emerging evidence points to a genetic vulnerability underlying these cognitive deficits, as highlighted by research such as that conducted by Lavoie et al. (2013). Notably, these social cognitive impairments are important determinants of functional outcome. Eack et al. (2010) also reported that social cognitive impairments in emotional perception are significantly associated with greater general and positive prodromal psychopathology among individuals at FRP. Meanwhile, a previous study provides initial evidence supporting the role of ToM as a vulnerability marker in individuals at FRP for developing a schizophrenia-spectrum disorder (Schiffman, Lam, et al., 2004).

Other studies report that social cognition impairments in schizophrenia are mainly independent of clinical symptoms, present before the onset of illness, and tend to persist over time. Social cognitive impairments may serve as helpful vulnerability indicators and early clinical intervention targets (Fett et al., 2011; Halverson et al., 2019). They also report that improved social cognition is associated with increased overall functional outcomes in schizophrenia (Halverson et al., 2019; Vaskinn & Horan, 2020) and FEP participants (Bartholomeusz et al., 2013; Rocha et al., 2021). Horan et al. (2012) and González-Ortega et

al. (2020) have reported that poor functional outcomes, such as the inability to live, work or socialize independently, have a close connection with impaired social cognition in people with FEP; this indicates that enhancing social cognition may have the potential to improve daily functioning.

Social Cognition and Interaction Training (SCIT) is a manualised, group-based, and comprehensive training that targets dysfunctional social cognitive processes observed in schizophrenia (Roberts et al., 2006). Rocha et al. (2021) have suggested that SCIT may be an effective tool to improve functional outcomes and attributional biases in people with FES. A recent first RCT study of SCIT for patients with FEP was conducted by Lo et al. (2023) in Hong Kong. This study found that people with FEP in the treatment group demonstrated a clear advantage over the conventional group in reduced attributional bias and jumping-to-conclusions after 10-weeks treatment period. However, no study has ever reported the relative contribution of social cognition to vocational outcomes in individuals with FRP.

5.1.2 Objectives and Hypotheses

In our study, the individuals at FRP were the first-degree relatives of individuals with EP. The aim of this study was to evaluate if CSCIT could improve social and vocational functions among FRP individuals by conducting a pilot RCT. The specific objectives were to develop and test the clinical feasibility and initial effectiveness of CSCIT on individuals at FRP in improving their clinical, psychosocial, and vocational outcomes, and to reduce their risk of developing mental illness. The specific hypotheses we formulated were as follows:

Hypothesis 1

1. Individuals at FRP in the CSCIT + Treatment-As-Usual (TAU) group would show significant improvements in primary outcomes (social cognition and social skills) compared with the TAU control group.

Hypothesis 2

2. Individuals at FRP in the CSCIT + TAU group would show significant improvements

in secondary outcomes (vocational function, mental state, and quality of life) compared with the TAU control group.

5.2 Methods

5.2.1 Research design

This clinical trial was designed as a pilot randomized, single-blind, two-arm parallel assignment. The primary outcomes variables were social cognition and social skills, measured by the Chinese Social Cognition and Screening Questionnaire (C-SCSQ), Chinese Facial Emotion Identification Test (C-FEIT), and Vocational Social Skills Scale (VSSS), respectively. The secondary outcomes variables were vocational function, mental state, and quality of life measured by the Employment Outcome Checklist (EOC), Positive and Negative Syndrome Scale (PANSS), and Schizophrenia Quality of Life Scale Revision 4 (SQLS-R4), respectively. This study was carried out between March 2021 and October 2023, and it was approved by the Research Ethics Committee of the Hospital Authority (Reference Number: KC/KE-19-0141/FR-1) and subsequently by the Research Ethics Committee of The Hong Kong Polytechnic University (Reference Number: HSEARS20210113004).

5.2.2 Setting and Participants

Participants were recruited from the EASY programme at the UCHPC and Youth and Family Service at BOKSS in Hong Kong. They were recruited if they: (a) were Hong Kong Chinese residents aged between 18–55 years; (b) were first-degree relatives of participants of individuals with early psychosis; (c) had completed primary six or higher education; (d) were mentally competent enough to follow the instructions and training and give informed written consent, as suggested by the attending psychiatrist; (e) were able to communicate in Cantonese; and finally (f) were currently employed or had employment history. The participants were excluded if they: (a) has a learning disability, neurological disorder (e.g. epilepsy) and organic brain disease, or clinically significant medical disease; (b) recently

participated or were participating in other structured psychosocial interventions (e.g. social skills training, vocational rehabilitation); (c) had visual, language, or communication difficulty; and/or (d) were drug abusers or had a history of drug abuse.

The required sample size was calculated with using G*Power 3.1 in this study (Faul et al., 2007). According to previous literature on this topic, the estimated effect size was 0.7 for patients with stable schizophrenia in Chinese community settings (Wang et al., 2013). In order to detect this effect size in our sample size calculation, at $\alpha = .05$ and power = .80, the suggested number of participants was 22 for each group. Following this estimation, 44 participants should be recruited from individuals at FRP who were the same as participants recruited for Study One. Assuming a 20% attrition rate, a total number of 55 participants needed to be recruited. This pilot study was conducted to explore the possible effectiveness of the intervention. The final sample size was calculated at around one-third of the total sample size. Therefore, a minimum of 18 participants was needed for the two groups.

5.2.3 Intervention programmes

5.2.3.1 Chinese Social cognition and interaction training

SCI is a manualised group-based intervention lasting 20-24 weeks. It targets dysfunctional social cognitive processes, which encompass challenges related to emotion perception, ToM, hasty judgment making, and biased social attributions (Roberts et al., 2006). The treatment consisted of the following three phases: Phase I: Understanding emotions, which addresses emotion perception dysfunction; Phase II: Figuring out situations, which addresses ToM and attributional biases dysfunction; and Phase III: Integration, in which participants practice applying learned skills from Phase I and Phase II to interpersonal problems in their own lives (Penn et al., 2005; Roberts et al., 2006).

The original SCIT was translated into Chinese and modified by the Cognitive Working Group of Occupational Therapy Department in Castle Peak Hospital (CPH) for use in Hong Kong (verbal consent was provided by the working group in CPH before the commencement

of this study). In one study conducted for Chinese samples with schizotypal personality features, the researchers made minimal adaptation to SCIT to explore potential cultural differences (Chan et al., 2010). Cross-cultural research aims to understand factors that influence the development, sustenance, and configuration of psychiatric disorders. Concerning patients with schizophrenia, culture seems to influence symptomatology, onset, and course of the disease on the behavioral as well as the biological aspect. Recent research has shown that patients with schizophrenia or with a risk of developing schizophrenia will be influenced by their culture or the culture that surrounds them (Koelkebeck & Wilhelm, 2014). One study found that Chinese participants (collectivistic culture) were more focused on the perspectives of others compared to Americans (individualistic culture) when doing spontaneous perspective-taking tasks, which showed that Chinese have more effective use of this ability to infer other people's behaviours (Wu & Keysar, 2007). There is much evidence that cultural factors have an influence on social cognitive performance, such as in emotion recognition (Biehl et al., 1997) and in the theory of mind (ZHU et al., 2007). The impact of culture is also related to the effectiveness of treatment of social cognitive interventions because those include training exercises that use social stimuli to teach important skills. The effectiveness may be influenced if these stimuli are not properly designed for multicultural use (Hajdúk et al., 2020). Preliminary evidence suggested variations in social cognitive processing among healthy individuals across cultures. Consequently, a culturally adapted version of SCIT was essential (Hajdúk et al., 2020) to investigate its impact on social cognition in the Chinese setting.

Considering the subjects were family members of individual of EP, most of them had jobs, we condensed the protocol from the SCIT for application in Hong Kong (Lo et al., 2018), which comprised 19 sessions, delivered in 10 weeks (two sessions per week) to a 5-week programme consisting of nine sessions (two sessions per week during the first 4 weeks and one session in the final week), which is an innovative revision. The core components of

the intervention were ensured to remain in our modified version with the help of two experts, one with a background in psychiatric rehabilitation and one with a background in clinical psychiatry. Each group consisted of 3-5 participants, led by one experienced occupational therapist (Y.W), who had a master's degree with more than two years of clinical experience in psychiatric rehabilitation. The group facilitator was trained by those two experts closely. One expert with a background in psychiatric rehabilitation was trained as an occupational therapist in Hong Kong and has had over 37 years of clinical experience in psychiatric rehabilitation. His research focuses on neuropsychiatric rehabilitation for people with severe mental illness (SMI) and integrative medicine over the past two decades. He has a lot of experience developing training skills like Work-Related Social Skills Training Module (Tsang & Pearson, 2001), Basic Conversation Skills Module (Lak & Tsang, 2004), Job-specific Social Skills Training in Workplace (Cheung, 2005), etc. Another expert with a background in clinical psychiatry was trained as a psychiatrist in China and had experience in doing research on cognitive deficits and pharmacological treatment for schizophrenia. The group facilitator ran the whole intervention with a group of 9 OT students and got their feedback after each lesson before the formal interventions. At the same time, all sessions were recorded, and an associate Professor of Practice with a background in OT supervised her closely. Each phase comprised three sessions, each lasting 60-90 minutes, for a total of nine sessions. We made this revision based on the previous study (Chan et al., 2010) to render CSCIT more suitable for individuals at FRP who are a non-clinical group too in this study. In that study, it had three phases comprising the adapted SCIT: (1) understanding emotions (3 sessions); (2) social cognitive biases (3 sessions); and (3) integration (3 sessions). In view of the situation of the Coronavirus 2019 (COVID-19) epidemic, interventions had to be conducted online via zoom meeting. Apart from these modifications, the adapted CSCIT followed the original programme's procedures and key features in capturing social cognition and interpersonal relationships through video watching and discussion. Like the practice of other routine

programmes, the occupational therapist called participants via phone to remind them to attend on the day before each scheduled session. Unfortunately, no formal measure of treatment fidelity was administered because of the limited time under the stressed condition of COVID-19, and it is only a pilot study with a small sample size.

5.2.3.2 Treatment-as-usual

The TAU control group was recorded on their normal pattern of life, which included their daily routine of work, study, and social activities.

5.2.4 Materials

5.2.4.1 Demographics

Participants' age, educational level, gender, marital status, income, and current employment status were collected.

5.2.4.2 Feasibility of the CSCIT

We investigated the feasibility of CSCIT by examining the persistence rate at the end of treatment and the attendance rate of the experimental group (Lo et al., 2023). Cognitive Social Cognition and Interaction Training (CSCIT)." 'Treatment completers' were individuals who attended at least 65% of the sessions in each of the three phases of CSCIT (Roberts et al., 2014).

5.2.4.3 Social cognition

The Chinese Facial Emotion Identification Test (C-FEIT; Lo & Siu, 2018) was used to assess emotion perception. The Chinese Social Cognition and Screening Questionnaire (C-SCSQ; Lo & Siu, 2018) was used to screen patients for neurocognitive deficits and determine their need for social cognitive intervention (Roberts et al., 2012). The details are described in Section *4.2.3.4* of Study One.

5.2.4.4 Social skills

The VSSS was used to assess social skills. We only used the first part, which was a self-administered checklist that measured participants' subjective perception of their competence

in handling work-related social situations (Tsang & Pearson, 2000). The details are stated in Section *4.2.3.2* of Study One.

5.2.4.5 Vocational functioning

The EOC was used to assess each individuals' employment outcomes. We only used one item: days of open employment experienced in the past three months (Tsang & Pearson, 2001). The details are stated in Section *4.2.3.1* of Study One.

5.2.4.6 Mental state

The PANSS was used to assess the mental state, which was a 30-item inventory assessing the absence or severity of positive, negative, and global psychopathology symptoms. It included three subscales (Bell et al., 1992): positive symptoms (items P1–P7, including hallucinatory behaviour, delusions, and conceptual disorganization), negative symptoms (items N1–N7, including blunted affect, social and emotional withdrawal, and lack of spontaneity), and general psychopathology symptoms (items G1–G16, including mannerisms and posturing, unusual thought content, and lack of insight). Each item scored a 7-point scale from 1 (absent) to 7 (extreme), with item ratings incorporating the behavioural effect of symptoms and their severity. It has demonstrated good to excellent inter-rater reliability and good internal consistency (Cronbach's alphas of 0.88-0.91), test-retest reliability in Chinese populations (Chien et al., 2015).

5.2.4.7 Quality of life

The SQLS-R4 was used to assess quality of life (Kuo et al., 2007), which contained 33 items in two domains: psychosocial (20 items) and vitality (13 items). It was validated and has a Chinese version. It has demonstrated good internal consistency reliability for both the psychosocial and vitality domains (Cronbach's alpha = 0.92, 0.84), and test-retest reliability was also high (psychosocial: ICC = 0.84, vitality: ICC = 0.84; Kuo et al., 2007).

5.2.5 Procedure

The participants who consented to participate in this study were the same participants from

Study One and were recruited and randomly assigned to either the control or the experimental group at a 1:1 ratio using computer-generated numbers. Each participant signed the individual informed consent before the start of data collection. The treatment group received the 9-session CSCIT + TAU, twice per week. The comparison group only received TAU. The attendance of the CSCIT was recorded. The qualified occupational therapist, the group facilitator, carried out case management and implementation of the CSCIT, but was blinded in the group assessment. Participants were assessed on their primary outcomes variables (social cognition and social skills) and secondary outcomes variables (vocational function, mental state, and quality of life) at baseline, post-treatment, and 3 months after the completion of the interventions by research assistants who were trained on the assessment procedures and blinded to the group/intervention assignment. To encourage study engagement, all participants received coupons of HK$ 200 as compensation for their time commitment after completing the whole study.

5.2.6 Data analyses

Independent t-test or Mann–Whitney U test and chi-square were used to compare the demographics and baseline clinical characteristics of the two groups. The Linear Mixed Model (LMM) was conducted to compare the CSCIT + TAU and TAU control groups over time on the primary outcomes variables (social cognition and social skills) and secondary outcomes variables (vocational function, mental state, and quality of life). The purpose of using this approach was to maximise power in the context of possible missing data and to facilitate estimation of the optimal covariance structure. The mixed model included Treatment Group (CSCIT + TAU vs. TAU), Time (post-treatment and 3 months follow-up), Treatment Group X Time interaction.

The Treatment Group X Time interaction term was included to assess whether the magnitude of treatment group differences differed across post-treatment and 3 months follow-up periods. In such case, these effects were probed using simple main effects (i.e. within time

point comparisons of CSCIT + TAU vs. TAU).

Intervention effect sizes for interaction effect were computed. All data were analysed by SPSS version 28.0 (SPSS Inc., United States), and $p < .05$ was used to denote statistical significance. Effect sizes are reported below to supplement statistical tests that have achieved statistical significance or show trends.

5.3 Results

5.3.1 Demographic characteristics of participants

A total of 37 participants from Study One were enrolled in this study and were randomized into either the CSCIT + TAU group (n= 17) or the TAU control group (n= 20). The mean age of the participants was 36.70 (SD = 10.934) years old, and the mean educational level (years) of the participants was 13.63 (SD = 4.058) years. The majority were female, with 88.2% in the CSCIT + TAU group and 70% in the TAU control group, respectively. The CSCIT + TAU and TAU control groups did not differ significantly in any demographic variables, in terms of age, educational level (years), gender, marital status, income, current employment status as well as outcomes variables at baseline ($p > .05$; Tables 5.1, 5.2 and 5.7).

Those 17 participants who were randomised to the CSCIT + TAU group all completed post-treatment and 3 months follow-up assessments. Among 20 participants randomised to the TAU control group, 17 completed post-treatment assessments, and 17 completed 3 months follow-up assessments. We reported the study procedures and results using the Consolidated Standards of Reporting Trials (CONSORT) statement (Moher et al., 2012), which is shown in Figure 5.1. No adverse events occurred during the 5-week intervention period.

Table 5.1 Demographic characteristics at Baseline (*N* = 37).

Variable		CSCIT+TAU Group (*N* = 17)	TAU Control Group (*N* = 20)	*P*
Age, year (mean, [SD])		34.82 ± 10.876	38.30 ± 11.003	.352
Education level, year (mean, [SD])		13.76 ± 3.308	13.50 ± 4.685	.846
Gender, *n* (%)	Male	2 (11.8)	6 (30)	.246
	Female	15 (88.2)	14 (70)	
Marital status, *n* (%)	Single	9 (52.9)	12 (60)	.666
	Married	8 (47.1)	8 (40)	
Income, *n* (%)	≤10000	5 (29.4)	5 (25)	.054
	10001-20000	10 (58.8)	6 (30)	
	20001-30000	2 (11.8)	5 (25)	
	>30000	0	4 (20)	
Current employment status, *n* (%)	Open employment	16 (94.1)	16 (80)	.348
	Unemployed	1 (5.9)	4 (20)	

Notes: CSCIT: Chinese Social Cognition and Interaction Training; TAU: Treatment-As-Usual.

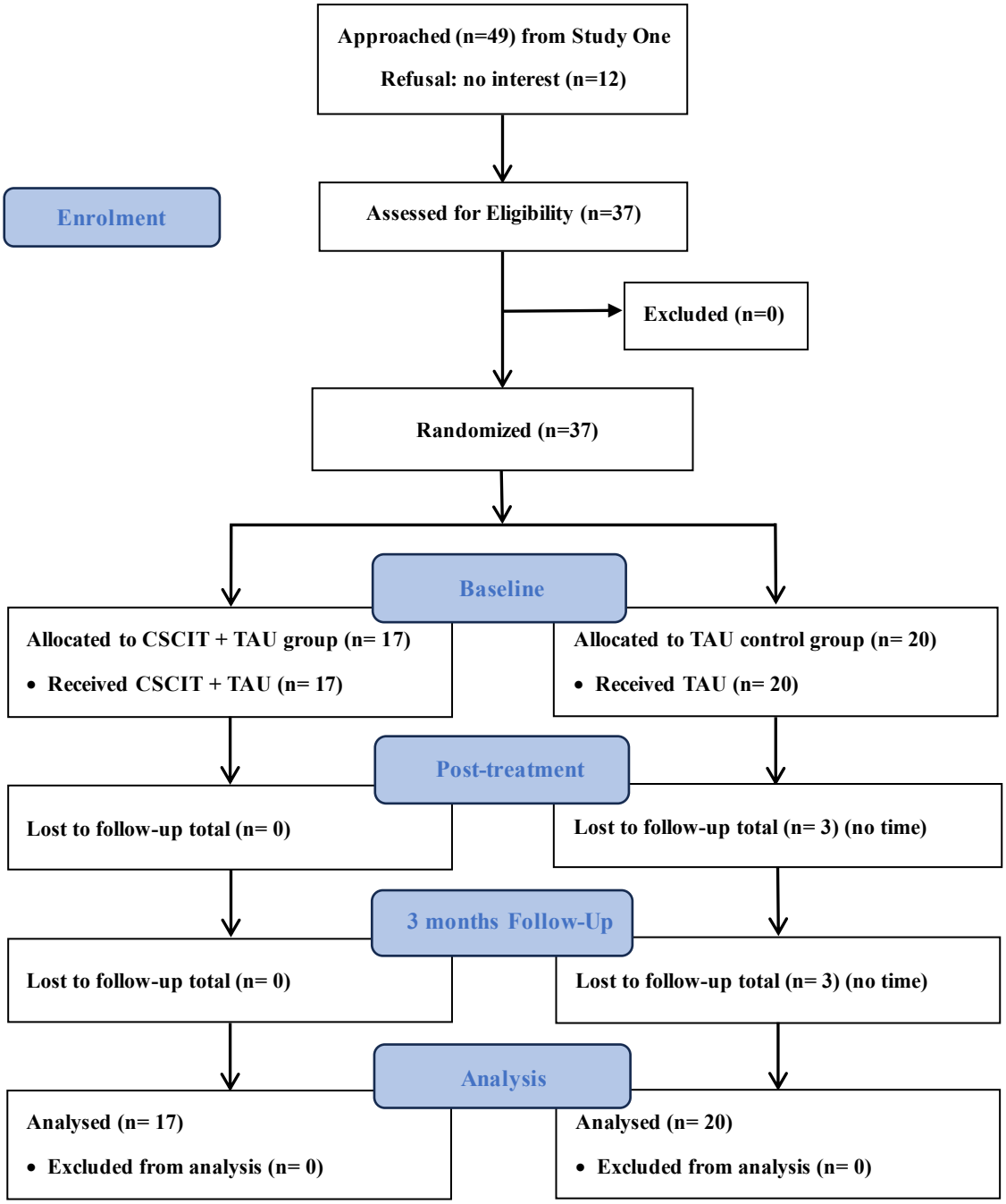

Figure 5.1 The CONSORT diagram of the Controlled Trial.

5.3.2 Feasibility of CSCIT

To determine the feasibility of CSCIT, we estimated both the persistence rate upon completion of CSCIT (i.e. T2) and the average attendance rate. Among the 17 participants randomly assigned to the CSCIT+TAU group, 0 dropped out during the study (Figure 5.1). The persistence rate was 100% (17/17). Over 82 % (82.4%: 14/17) of participants were considered 'treatment completers'. The average attendance rate was 91%, however, the average attendance rate among treatment completers was 96%, surpassing the 69% reported in a feasibility study of SCIT conducted by Bartholomeusz et al. (2013) for people with FEP, 75% reported in a RCT of the CSCIT for persons with FEP in Hong Kong (Lo et al., 2023).

5.3.3 Primary outcomes

The primary outcomes variables were social cognition and social skills. Participants' primary outcomes at baseline, post-treatment, and 3 months follow-up are summarised in Table 5.2.

Table 5.2 Primary outcomes - Social Cognition subscores and Social Skills between two groups (*N* = 37).

	Time point Mean ± SD				F	Group Effect *P*	F	Time Effect *P*	F	Group x time effect *P*	The intervention effect size for interaction effect Hedges' *g*
	Baseline	*P*	Post-treatment	3 months follow-up							
Chinese Facial Emotion Identification Test: Emotion Perception											
CSCIT + TAU Group (*n* = 17)	15.41 ± 2.980	.991	18.18 ± 2.564	18.47 ± 2.566	7.163	.011	11.105	< .001	9.753	< .001	1.07
TAU Control Group (*n* = 20)	15.40 ± 3.283		15.06 ± 2.700	15.83 ± 2.697							
Chinese Social Cognition and Screening Questionnaire Neurocognitive Screening											
CSCIT + TAU Group (*n* = 17)	15.47 ± 2.294	.977	16.71 ± 1.990	17.29 ± 1.988	2.093	.157	7.004	.002	1.579	.214	.58
TAU Control Group (*n* = 20)	15.45 ± 1.932		15.49 ± 2.127	16.31 ± 2.127							
Theory of Mind											
CSCIT + TAU Group (*n* = 17)	8.00 ± 1.000	.237	8.41 ± 1.149	8.47 ± 1.151	10.201	.003	1.428	.247	2.556	.086	.89
TAU Control Group (*n* = 20)	7.60 ± 1.188		6.98 ± 1.239	7.68 ± 1.239							
Jump-to-Conclusion											
CSCIT + TAU Group (*n* = 17)	2.48 ± 0.690	.568	2.43 ± 0.938	2.07 ± 0.938	3.287	.080	0.469	.628	1.005	.372	.23
TAU Control Group (*n* = 20)	2.62 ± 0.859		2.77 ± 1.013	2.76 ± 1.013							
Paranoid Attributional Bias											
CSCIT + TAU Group (*n* = 17)	0.82 ± 0.529	.641	0.47 ± 1.003	0.71 ± 1.003	3.227	.081	0.043	.958	1.888	.159	.67
TAU Control Group (*n* = 20)	1.05 ± 0.999		1.32 ± 1.066	1.08 ± 1.063							

	Time point Mean ± SD				F	Group Effect	F	Time Effect	F	Group x time	The intervention effect size
	Baseline	***P***	**Post-treatment**	**3 months follow-up**		***P***		***P***		**effect *P***	**for the interaction effect Hedges' *g***
Vocational Social Skills Scale: Social Skills											
CSCIT + TAU Group (*n* = 17)	47.06 ± 7.909	.195	48.77 ± 5.669	50.59 ± 5.667	0.146	.703	4.577	.013	3.979	.023	.59
TAU Control Group (*n* = 20)	50.10 ± 6.866		47.96 ± 5.914	50.26 ± 5.914							

Notes: CSCIT: Chinese Social Cognition and Interaction Training; TAU: Treatment-As-Usual.

5.3.3.1 Social cognition outcomes

Akaike's Information Criterion (AIC) of emotion perception was 456.287. The information criteria are displayed in smaller-is-better form (Anderson & Burnham, 2004). The Group × Time interaction effect was statistically significant only for emotion perception ($F = 9.753$, $p < .001$). Emotion perception effects were statistically significant at both the post-treatment ($t = 4.088$, $p < .001$) and 3 months follow-up time points ($t = 3.468$, $p < .001$), which are shown in Table 5.3 and Figure 5.2. The intervention effect size for interaction effect suggested a large advantage for CSCIT + TAU over TAU control group at post-treatment (Hedges' $g = 1.07$).

Table 5.3 Estimates of Fixed Effects for Emotion Perception.

Estimates of Fixed Effects[a]							
						95% Confidence Interval	
Parameter	**Estimate**	**Std. Error**	**df**	**t**	**Sig.**	**Lower Bound**	**Upper Bound**
Intercept	15.400000	.561639	57.109	27.420	< .001	14.275384	16.524616
CSCIT + TAU	.011765	.828578	57.107	.014	.989	-1.647367	1.670896
TAU	0[b]	0	.	.	.	.	.
3 months follow-up	.425451	.532868	66.031	.798	.427	-.638444	1.489347
Post-treatment	-.339254	.532868	66.048	-.637	.527	-1.403145	.724636
Baseline	0[b]	0	.	.	.	.	.
[3 months follow-up] * [CSCIT + TAU]	2.633372	.759307	64.472	3.468	< .001	1.116696	4.150048
[Post-treatment] * [CSCIT + TAU]	3.103960	.759307	64.488	4.088	< .001	1.587291	4.620629
[Baseline] * [CSCIT + TAU]	0[b]	0	.	.	.	.	.
[3 months follow-up] * [TAU]	0[b]	0	.	.	.	.	.
[Post-treatment] * [TAU]	0[b]	0	.	.	.	.	.
[Baseline] * [TAU]	0[b]	0	.	.	.	.	.

Notes: a. Dependent Variable: Emotion Perception; b. This parameter is set to zero because it is redundant; CSCIT: Chinese Social Cognition and Interaction Training; TAU: Treatment-As-Usual.

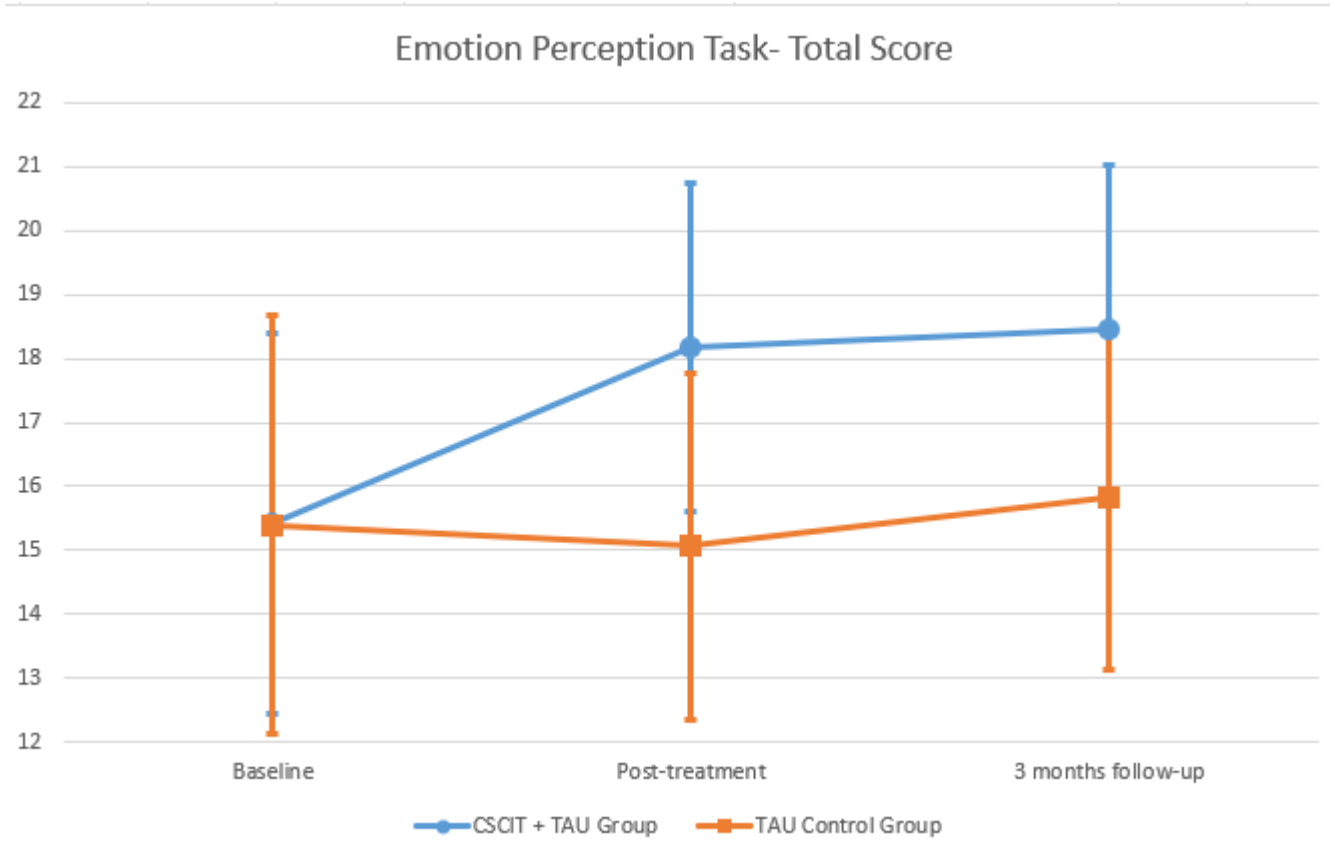

Figure 5.2 Results of Emotion Perception task total score over time in both groups.

The AIC of ToM was 326.212. The Group effect was also statistically significant for ToM (F = 10.201, p = .003). It revealed that CSCIT + TAU group participants had better ability of ToM at post-treatment compared to those in the TAU control group (t = 2.243, p = .028), as shown in Table 5.4 and Figure 5.3. The intervention effect size for the interaction effect suggested a large advantage for CSCIT over the TAU control group at post-treatment (Hedges' g = 0.89).

Table 5.4 Estimates of Fixed Effects for Theory of Mind.

Estimates of Fixed Effects[a]							
						95% Confidence Interval	
Parameter	**Estimate**	**Std. Error**	**df**	**t**	**Sig.**	**Lower Bound**	**Upper Bound**
Intercept	7.600000	.253252	84.894	30.010	< .001	7.096458	8.103542
CSCIT + TAU	.400000	.373619	84.894	1.071	.287	-.342869	1.142869
TAU	0b	0	.	.	.	.	.
3 months follow-up	.082628	.321683	65.868	.257	.798	-.559656	.724913
Post-treatment	-.623254	.321683	65.868	-1.937	.057	-1.265538	.019030
Baseline	0b	0	.	.	.	.	.
[3 months follow-up] * [CSCIT + TAU]	.387960	.461423	63.710	.841	.404	-.533919	1.309839
[Post-treatment] * [CSCIT + TAU]	1.035019	.461423	63.710	2.243	.028	.113140	1.956897
[Baseline] * [CSCIT + TAU]	0b	0	.	.	.	.	.
[3 months follow-up] * [TAU]	0b	0	.	.	.	.	.
[Post-treatment] * [TAU]	0b	0	.	.	.	.	.
[Baseline] * [TAU]	0b	0	.	.	.	.	.

Notes: a. Dependent Variable: Theory of Mind; b. This parameter is set to zero because it is redundant; CSCIT: Chinese Social Cognition and Interaction Training; TAU: Treatment-As-Usual.

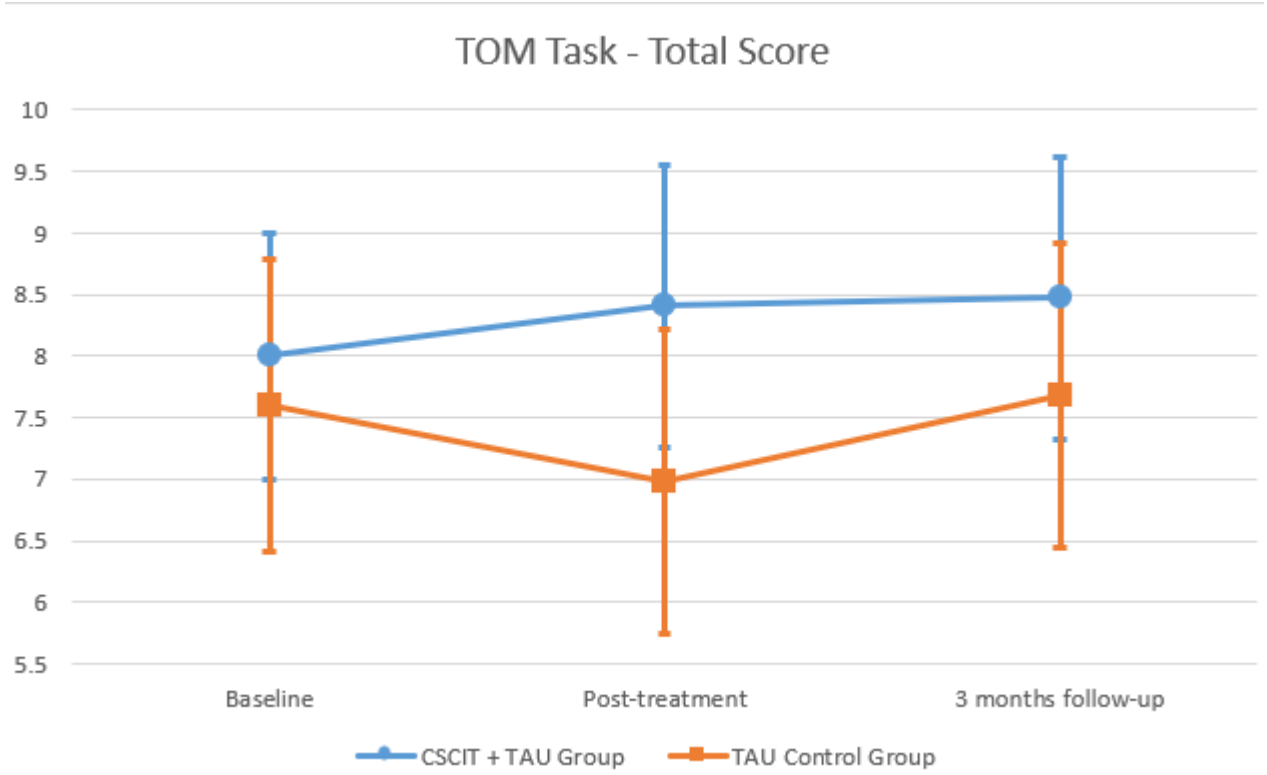

Figure 5.3 Results of Theory of Mind task total score over time in both groups.

Regarding all other social cognitive variables, the Group × Time interaction effect analyses were not statistically significant for any variables. There was an observable trend for a significant treatment group effect (t = -1.869, p = .066), on the paranoid attributional bias item at post-treatment, which is shown in Table 5.5 and Figure 5.4. The AIC of paranoid attributional bias was 282.282. Consistent with these findings, effect sizes suggested a moderate to large advantage for CSCIT + TAU over the TAU control group at post-treatment (Hedges' g = 0.67).

Table 5.5 Estimates of Fixed Effects for Paranoid Attributional Bias.

Estimates of Fixed Effects[a]							
						95% Confidence Interval	
Parameter	**Estimate**	**Std. Error**	**df**	**t**	**Sig.**	**Lower Bound**	**Upper Bound**
Intercept	1.050000	.220135	67.282	4.770	< .001	.610642	1.489358
CSCIT + TAU	-.226471	.324763	67.282	-.697	.488	-.874650	.421709
TAU	0[b]	0	.	.	.	.	.
3 months follow-up	.033437	.232960	68.491	.144	.886	-.431367	.498242
Post-treatment	.268731	.232960	68.491	1.154	.253	-.196073	.733536
Baseline	0[b]	0	.	.	.	.	.
[3 months follow-up] * [CSCIT + TAU]	-.151084	.332611	66.754	-.454	.651	-.815024	.512856
[Post-treatment] * [CSCIT + TAU]	-.621672	.332611	66.754	-1.869	.066	-1.285612	.042268
[Baseline] * [CSCIT + TAU]	0[b]	0	.	.	.	.	.
[3 months follow-up] * [TAU]	0[b]	0	.	.	.	.	.
[Post-treatment] * [TAU]	0[b]	0	.	.	.	.	.
[Baseline] * [TAU]	0[b]	0	.	.	.	.	.

Notes: a. Dependent Variable: Paranoid Attributional Bias; b. This parameter is set to zero because it is redundant; CSCIT: Chinese Social Cognition and Interaction Training; TAU: Treatment-As-Usual.

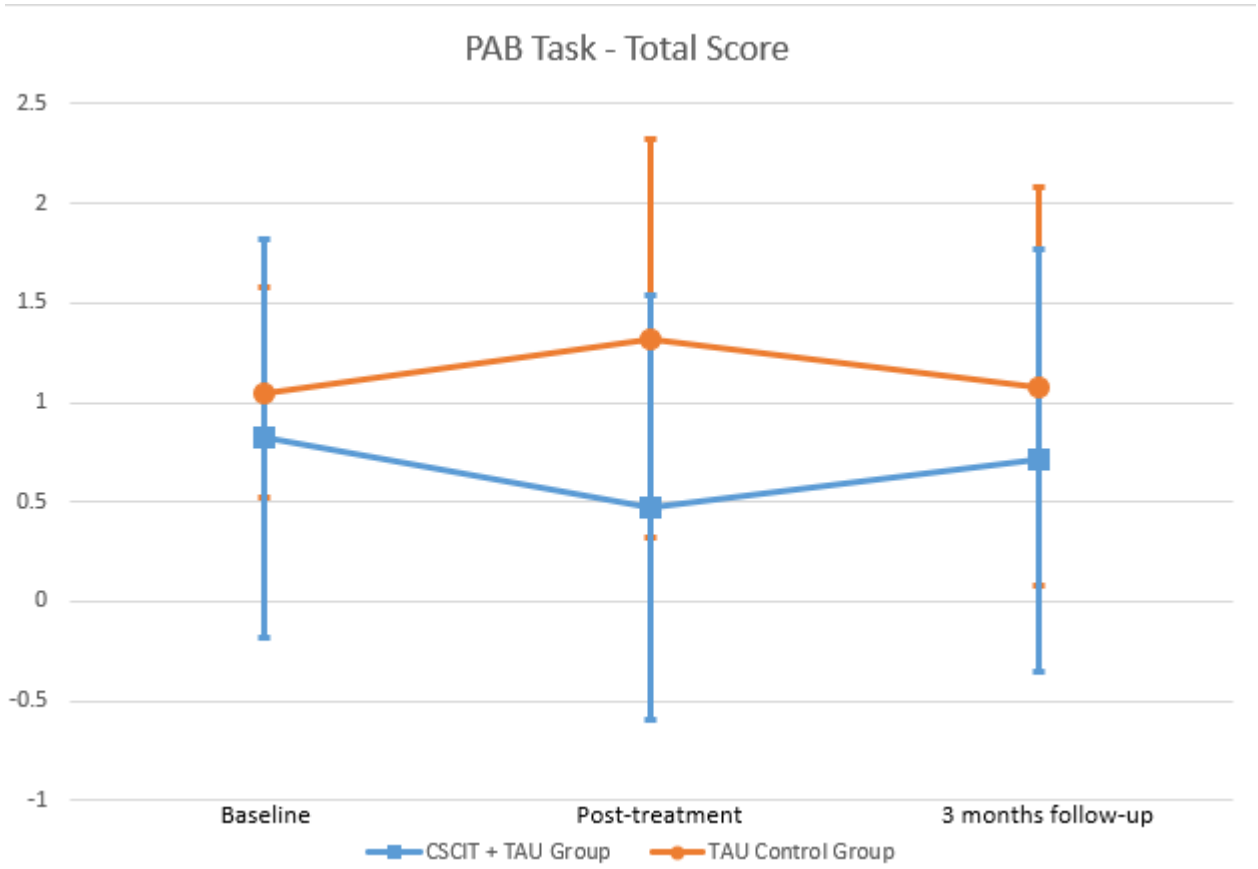

Figure 5.4 Results of Paranoid Attributional Bias task total score over time in both groups.

5.3.3.2 Social skills outcome

The AIC of social skills was 620.271. The Group × Time interaction effect was statistically significant for VSSS ($F = 3.979$, $p = .023$). Social skills effects were statistically significant at both post-treatment ($t = 2.581$, $p = .012$) and 3 months follow-up time points ($t = 2.265$, $p = .026$), as shown in Table 5.6 and Figure 5.5. The intervention effect size for the interaction effect suggested a moderate to large advantage for CSCIT + TAU over the TAU control group at post-treatment (Hedges' $g = 0.59$).

Table 5.6 Estimates of Fixed Effects for Social Skills.

Estimates of Fixed Effects[a]							
						95% Confidence Interval	
Parameter	**Estimate**	**Std. Error**	**df**	**t**	**Sig.**	**Lower Bound**	**Upper Bound**
Intercept	50.100000	1.250644	90.639	40.059	< .001	47.615616	52.584384
CSCIT + TAU	-3.041176	1.845058	90.639	-1.648	.103	-6.706354	.624001
TAU	0[b]	0	.	.	.	.	.
3 months follow-up	.156070	1.046917	78.798	.149	.882	-1.927849	2.239988
Post-treatment	-2.138048	1.046917	78.798	-2.042	.044	-4.221966	-.054130
Baseline	0[b]	0	.	.	.	.	.
[3 months follow-up] * [CSCIT + TAU]	3.373342	1.489197	77.310	2.265	.026	.408161	6.338523
[Post-treatment] * [CSCIT + TAU]	3.843930	1.489197	77.310	2.581	.012	.878749	6.809112
[Baseline] * [CSCIT + TAU]	0[b]	0	.	.	.	.	.
[3 months follow-up] * [TAU]	0[b]	0	.	.	.	.	.
[Post-treatment] * [TAU]	0[b]	0	.	.	.	.	.
[Baseline] * [TAU]	0[b]	0	.	.	.	.	.

Notes: a. Dependent Variable: Social Skills; b. This parameter is set to zero because it is redundant; CSCIT: Chinese Social Cognition and Interaction Training; TAU: Treatment-As-Usual.

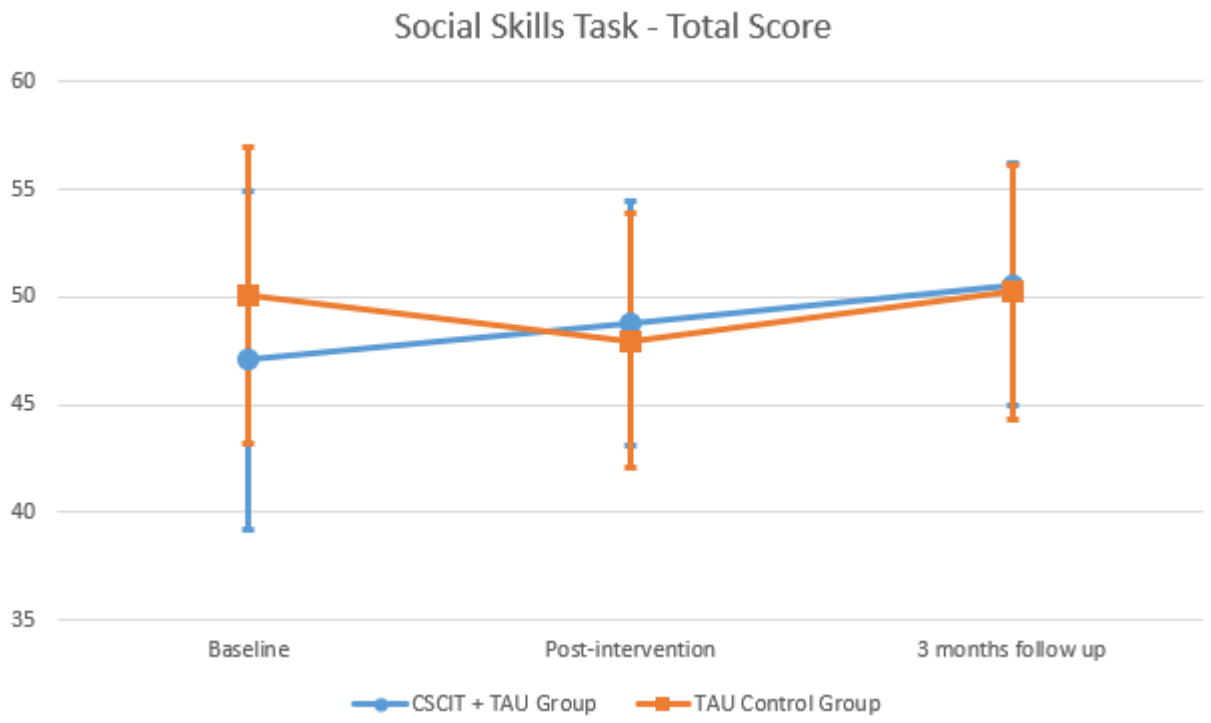

Figure 5.5 Results of Social Skills task total score over time in both groups.

5.3.4 Secondary outcomes

The secondary outcomes variables were vocational function, mental state, and quality of life. Participants' s secondary outcomes at baseline, post-treatment, and 3 months follow-up are summarised in Table 5.7. For all secondary outcomes variables, the Group × Time interaction effect analyses were only statistically significant for mental state total symptoms.

Table 5.7 Secondary outcomes - Vocational Function, Mental State subdomains and Quality of Life subdomains between two groups (*N* = 37).

	Time point (Mean ± SD)				F	Group Effect *P*	F	Time Effect *P*	F	Group x time effect *P*	The intervention effect size for interaction effect Hedges' *g*
	Baseline	***P***	**Post-treatment**	**3 months follow-up**							
Positive and Negative Syndrome Scale (PANSS): Mental state											
Total symptoms											
CSCIT + TAU Group (*n* = 17)	46.35 ± 6.973	.067	39.77 ± 6.517	36.53 ± 6.517	0.415	.523	42.788	< .001	3.292	.042	.27
TAU Control Group (*n* = 20)	43.05 ± 7.089		38.32 ± 6.797	37.61 ± 6.797							
Positive symptoms											
CSCIT + TAU Group (*n* = 17)	11.47 ± 2.896	.159	8.88 ± 2.041	8.35 ± 2.043	1.087	.305	24.484	< .001	1.056	.354	.38
TAU Control Group (*n* = 20)	10.30 ± 2.029		8.57 ± 2.195	8.27 ± 2.195							
Negative symptoms											
CSCIT + TAU Group (*n* = 17)	10.71 ± 4.356	.938	10.29 ± 2.892	9.82 ± 2.892	0.179	.675	1.895	.159	1.740	.184	.29
TAU Control Group (*n* = 20)	9.75 ± 1.713		10.21 ± 2.959	9.74 ± 2.959							
General psychopathology symptoms											
CSCIT + TAU Group (*n* = 17)	24.18 ± 3.941	.298	20.59 ± 4.504	18.35 ± 4.504	0.107	.745	24.43	< .001	1.771	.178	.002
TAU Control Group (*n* = 20)	23.00 ± 5.390		19.42 ± 4.755	19.48 ± 4.757							

	Time point (Mean ± SD)				F	Group Effect *P*	F	Time Effect *P*	F	Group x time effect *P*	The intervention effect size for interaction effect Hedges' *g*
	Baseline	***p***	**Post-treatment**	**3 months follow-up**							
Employment Outcome Checklist: Vocational function											
CSCIT + TAU Group (*n* = 17)	76.18 ± 27.473	.670	78.88 ± 27.844	78.41 ± 27.846	0.578	.450	1.413	.250	1.149	.323	.14
TAU Control Group (*n* = 20)	69.00 ± 37.822		67.38 ± 29.222	78.85 ± 29.219							
Schizophrenia Quality of Life Scale Revision 4: Quality of life Psychosocial item											
CSCIT + TAU Group (*n* = 17)	23.94 ± 12.993	.784	19.24 ± 10.089	16.88 ± 10.089	0.145	.705	10.77	< .001	0.864	.425	.01
TAU Control Group (*n* = 20)	21.90 ± 10.568		17.04 ± 10.512	17.75 ± 10.512							
Vitality item											
CSCIT + TAU Group (*n* = 17)	18.24 ± 9.004	.495	14.59 ± 6.277	13.77 ± 6.277	0.013	.910	6.340	.003	2.834	.065	.13
TAU Control Group (*n* = 20)	16.30 ± 8.053		13.63 ± 6.603	16.05 ± 6.603							

Notes: CSCIT: Chinese Social Cognition and Interaction Training; TAU: Treatment-As-Usual.

5.3.4.1 Mental state

The AIC of the mental state total symptoms was 645.524. The Group × Time interaction effect was statistically significant for mental state ($F = 3.292$, $p = .042$). But the effect of the mental state was only statistically significant at the 3 months follow-up time point ($t = -2.558$, $p = .012$), shown in Table 5.8 and Figure 5.6. The intervention effect size for the interaction effect suggested a minimal to small advantage for CSCIT + TAU over the TAU control group at post-treatment (Hedges' $g = 0.27$).

Table 5.8 Estimates of Fixed Effects for Mental State Total Symptoms.

Estimates of Fixed Effects[a]							
						95% Confidence Interval	
Parameter	**Estimate**	**Std. Error**	**df**	**t**	**Sig.**	**Lower Bound**	**Upper Bound**
Intercept	43.050000	1.430967	67.018	30.085	<.001	40.193792	45.906208
CSCIT + TAU	3.302941	2.111086	67.018	1.565	.122	-.910784	7.516667
TAU	0[b]	0	.	.	.	.	.
3 months follow-up	-5.436750	1.205715	91.579	-4.509	<.001	-7.831551	-3.041950
Post-treatment	-4.730868	1.205715	91.579	-3.924	<.001	-7.125669	-2.336067
Baseline	0[b]	0	.	.	.	.	.
[3 months follow-up] * [CSCIT + TAU]	-4.386779	1.715218	89.852	-2.558	.012	-7.794436	-.979122
[Post-treatment] * [CSCIT + TAU]	-1.857367	1.715218	89.837	-1.083	.282	-5.265032	1.550298
[Baseline] * [CSCIT + TAU]	0[b]	0	.	.	.	.	.
[3 months follow-up] * [TAU]	0[b]	0	.	.	.	.	.
[Post-treatment] * [TAU]	0[b]	0	.	.	.	.	.
[Baseline] * [TAU]	0[b]	0	.	.	.	.	.

Notes: a. Dependent Variable: Mental State Total Symptoms; b. This parameter is set to zero because it is redundant; CSCIT: Chinese Social Cognition and Interaction Training; TAU: Treatment-As-Usual.

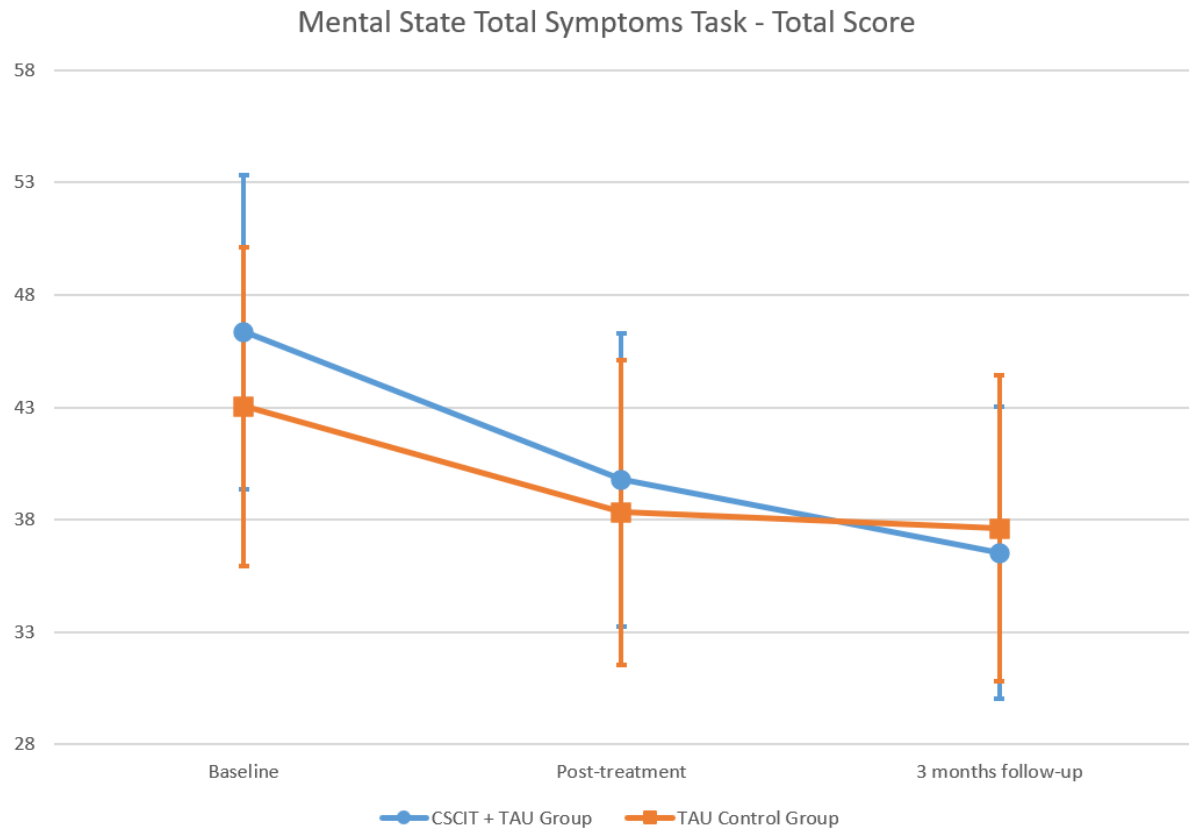

Figure 5.6 Results of Mental State Total Symptoms Task total score over time in both groups.

5.3.4.2 Quality of life

The AIC of the quality of life on vitality item was 651.417. There was a trend for the Group × Time interaction effect ($F = 2.834$, $p = .065$). The effect of the vitality item was statistically significant at the 3 months follow-up time point ($t = -2.281$, $p = .025$), shown in Table 5.9 and Figure 5.7. Consistent with these findings, effect sizes suggested a minimal to small advantage for CSCIT + TAU over TAU control group at post-treatment (Hedges' $g = 0.13$).

Table 5.9 Estimates of Fixed Effects for Vitality item of Quality of Life.

Estimates of Fixed Effects[a]							
						95% Confidence Interval	
Parameter	**Estimate**	**Std. Error**	**df**	**t**	**Sig.**	**Lower Bound**	**Upper Bound**
Intercept	16.300000	1.387053	102.421	11.752	<.001	13.548923	19.051077
CSCIT + TAU	1.935294	2.046301	102.421	.946	.347	-2.123334	5.993922
TAU	0[b]	0	.	.	.	.	.
3 months follow-up	-.254970	1.297198	73.995	-.197	.845	-2.839697	2.329756
Post-treatment	-2.666735	1.297198	73.995	-2.056	.043	-5.251462	-.082008
Baseline	0[b]	0	.	.	.	.	.
[3 months follow-up] * [CSCIT + TAU]	-4.215618	1.848018	72.349	-2.281	.025	-7.899272	-.531964
[Post-treatment] * [CSCIT + TAU]	-.980324	1.848018	72.349	-.530	.597	-4.663978	2.703330
[Baseline] * [CSCIT + TAU]	0[b]	0	.	.	.	.	.
[3 months follow-up] * [TAU]	0[b]	0	.	.	.	.	.
[Post-treatment] * [TAU]	0[b]	0	.	.	.	.	.
[Baseline] * [TAU]	0[b]	0	.	.	.	.	.

Notes: a. Dependent Variable: Vitality Item of Quality of Life; b. This parameter is set to zero because it is redundant; CSCIT: Chinese Social Cognition and Interaction Training; TAU: Treatment-As-Usual.

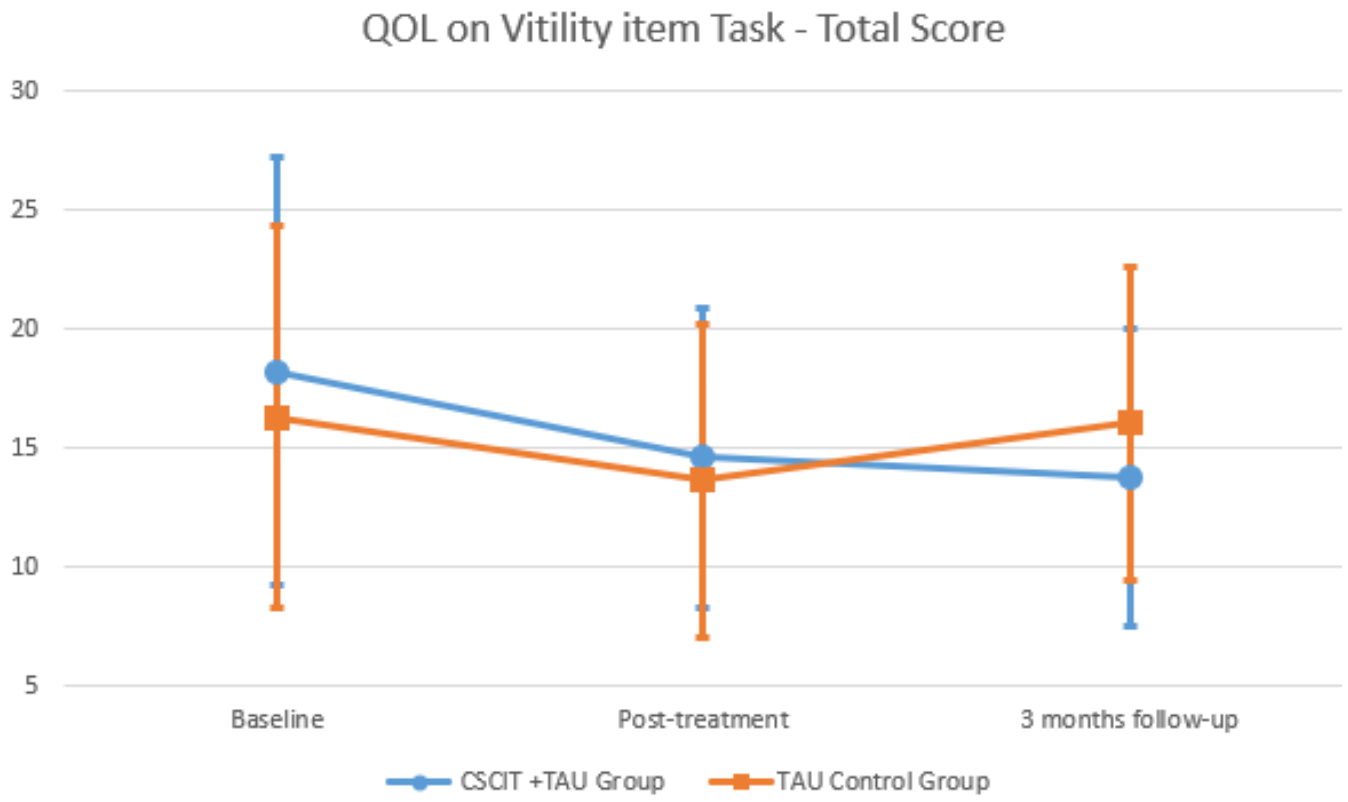

Figure 5.7 Results of Quality of Life task on Vitality item total score over time in both groups.

5.4 Discussions

This study evaluated the feasibility and the initial effectiveness of the CSCIT in enhancing social cognitive performance among a group of individuals at familial risk for psychosis in Hong Kong. To our knowledge, this study was a pioneering pilot RCT of CSCIT for individuals at FRP worldwide. Previous studies investigating the effects of SCIT have mainly been conducted on subjects in psychosis, and the effects of other interventions (e.g. pharmacological and psychoeducation) were conducted on subjects who were individuals at FRP. This study has expanded the existing literature using individuals at FRP as the research population.

The condensed and abridged CSCIT programme adopted in the current study seems to be suitable and effective for first-degree relatives of those with early psychosis. These findings, therefore, further support extending the clinical feasibility and utility of the SCIT to nonclinical individuals who demonstrate problems in everyday life with social cognition and social skills, which was conducted before for college students with schizotypal personality features (Chan et al., 2010). The fact in this study that the CSCIT + TAU group showed continued improvement in emotion perception and social skills from post-treatment to follow-up when they no longer received CSCIT training during this period may suggest they continued practicing and using the learned skills after training.

Although we did not do the formal assessment of the acceptability of the training after completing the treatment, participants were asked to give feedback verbally after the training as to whether they thought it was highly relevant in enhancing their social understandings and functioning, especially in the improvement of emotion perception. This feedback was consistent with the findings of significant gains at both post-treatment and 3 months follow-up time points.

The CSCIT + TAU group also showed an advantage over the TAU control group in improving ToM at post-treatment, but this effect did not persist at follow-up. There was a

trend for a significant CSCIT + TAU group effect on the paranoid attributional bias item at post-treatment. Meanwhile, the effect of social skills was statistically significant at both post-treatment and 3 months follow-up time points as well among the CSCIT + TAU group. The effect of mental state total symptoms was also statistically significant at 3 months follow-up time points among CSCIT + TAU group. There was a trend for a significant CSCIT + TAU group effect on the quality of life on vitality item at 3 months follow-up.

In short, our findings support the feasibility of the CSCIT among individuals at FRP in the Chinese setting and suggest that emotion perception, ToM, and social skills may improve, as well as paranoid attributional bias, mental state total symptoms, and quality of life on vitality item may reduce after the 9-session CSCIT programme.

5.4.1 Feasibility of CSCIT

The persistence and attendance rates of the participants support the feasibility of CSCIT for individuals at FRP in Hong Kong. Those participated in the intervention were motivated. Firstly, they were told the content of this intervention and the relationship between it and the benefits they would get after training in advance. For instance, this intervention is useful to help them enhance their social understanding and functioning (enhance their communication skills in getting along with others), especially in improving emotion perception, which begins to develop abnormalities in their cognitive, social, and vocational functioning by the time they are young adults. Secondly, they were told to get professional knowledge to understand better their family members diagnosed with Early psychosis. Thirdly, they were told to get incentives after finishing all sessions. Last but not least, they were told this intervention would help them prevent them from developing into psychosis despite their familial risk. The participants gave feedback that they thought highly of the usefulness of CSCIT, particularly in enhancing their understanding of other people's emotion and thoughts and enhancing their communication skills in getting along with others.

Previous studies of SCIT with psychosis patients have demonstrated that both the full

programmes with 20–24 weekly, one-hour sessions or two sessions per week over a 10-week period (Fiszdon et al., 2023; Gordon et al., 2018; Lo et al., 2023; Penn et al., 2007; Roberts et al., 2014; Rocha et al., 2021; Wang et al., 2013), and condensed programmes with 18 weekly, one-hour sessions (Penn et al., 2005), were effective in improving the social cognition and social skills deficits. A study on an SCIT programme with a 9-week, one-hour session per week for individuals with schizotypal personality features (Chan et al., 2010) was also found to be effective.

However, all of these versions are too long to be carried out for this nonclinical group of individuals with FRP. The condensed and abridged CSCIT programme adopted in the current study seems to be suitable and effective for the FRP group. These findings, therefore, further support extending the clinical feasibility and utility of the CSCIT to nonclinical individuals, not only including college students with schizotypal personality features conducted by Chan et al. (2010). These support that CSCIT is well-accepted and is valued in our FRP samples.

5.4.2 Primary outcomes

5.4.2.1 Social cognition outcomes

Our pilot programme had good treatment compliance and perceived usefulness among our participants, therefore, moderate to large-sized effect of CSCIT on social cognitive improvements was assessed using social cognitive measures. Among the studied of social cognitive domains, the large effect of the CSCIT + TAU group on enhancing emotion perception and ToM were expected, and these results were consistent with previous evidences showing substantial improvements in emotion perception and ToM in patients with established schizophrenia (Dennis R Combs et al., 2007; Kurtz et al., 2016; Penn et al., 2007; Wang et al., 2013) and FEP participants (Bartholomeusz et al., 2013) after social cognitive intervention.

As we know, deficits in emotional perception and ToM appear to be present early during first-episode schizophrenia (Edwards et al., 2001; Pinkham et al., 2007; Thompson et al.,

2012), are stable over time, and are even evident in the first-degree relatives of schizophrenia patients (Bora & Pantelis, 2013; De Achával et al., 2010; El Ray et al., 2022; Irani et al., 2006; Lavoie et al., 2013; Rukiye et al., 2016) and in individuals at clinical high-risk psychosis (CHR-P; Addington et al., 2008; Thompson et al., 2012). This supports the point that emotion perception could be indicative of a vulnerability trait for psychosis (Healey et al., 2016). However, our results were contrary to recent evidence showing the lack of effect of SCIT on enhancing emotion perception and ToM in patients with FEP at both post treatment and 3 months follow-up in Hong Kong (Lo et al., 2023).

One possible reason is consistent with research which suggested that the deficits of emotional perception and ToM in FEP individuals were consistent with healthy controls but were significant when compared to individuals with chronic schizophrenia (Healey et al., 2016), despite some research suggesting a consistent emotion perception deficit in FEP or early psychosis. Another possible explanation may be related to the design of treatment. In this study, the CSCIT comprised 9 sessions, delivered in 5 weeks (two sessions per week during the first 4 weeks and one session in the final week), the schedule of treatment was less intensive than a programme comprised of 19 sessions delivered in 10 weeks (two sessions per week) by Lo et al. (2023). In other words, the time point for post-assessment was much closer than that chosen by Lo et al. (2023), which may preserve a better treatment effect. It would be interesting to examine the impact of the duration of treatment in the future studies (Dennis R Combs et al., 2007; Gordon et al., 2018; Lo et al., 2023; Roberts et al., 2014). Further longitudinal research is necessary to ascertain whether these impairments represent a marker of risk for the development of illness in first-degree relatives of individuals with EP.

This study observed a moderate to large effect of reduction in paranoid attributional bias tendency among the CSCIT + TAU group, compared with those receiving TAU only. Therefore, the findings lend initial support that paranoid attributional bias among people with FRP may be amendable through the CSCIT, which was consistent with a previous study that

showed a reduced tendency to attribute hostile intent to others, with effect sizes being in the moderate to large range for patients with schizophrenia spectrum disorders (Penn et al., 2007). Individuals at FRP in our study had a lower mean score in paranoid attributional bias than that of the schizophrenia samples with a longer duration of illness using the same measure in previous studies (Kanie et al., 2014; Lo & Siu, 2018) and persons with FEP (Lo et al., 2023). These findings imply that there may be an increasing bias associated with impairments across individuals at FRP, patients in prodromal, first-episode, and chronic phases of illness when using the same assessment measures (Lo et al., 2023). It also supports the importance of identifying effective interventions to reduce attributional bias among individuals at FEP to protect them from developing into psychosis.

There was a trend for a significant treatment group effect on the paranoid attributional bias at post-treatment. It is encouraging to find that CSCIT could reduce attributional bias among individuals at FRP, even though the change is not sustained at follow-up in our study. Attributional bias can be treated as a particularly important treatment target among FEP (Lo et al., 2023) and UHR groups because of its links with the development of paranoia (An et al., 2010), recurrent relapses, and difficulties in vocational functioning. According to our findings, future research can consider longer training and in-person sessions like the original training schedule (Horan & Green, 2019; Roberts et al., 2014).

Although there was no significant age difference, inconsistent findings in these studies may be explained by the specific type of first-degree relatives included. 37.8% were parents in this study. Although children, siblings, and parents all share the same genetic makeup with their relatives who have schizophrenia, they may differ in other aspects that could impact social cognition (Tucci et al., 2023). For instance, one study revealed that parents of individuals with schizophrenia had significantly worse performance than the healthy people on tests of emotion perception abilities. However, no significant differences were observed for siblings (Li et al., 2010). Similarly, a meta-analysis reported by Lavoie et al. (2013)

compared the effect size related to overall social cognition between parents and siblings of people with schizophrenia, and even though no significant difference was found between them, parents exhibited a larger effect size (r = 0.31) compared to siblings (r = 0.18). These findings suggest that the social-cognitive impairments observed in parents of patients with schizophrenia may be influenced by factors such as age or familial role.

5.4.2.2 Social skills

This study observed the moderate to large effect of the CSCIT + TAU group on improving social skills that was expected, and this result was consistent with previous evidence showing that SCIT was associated with improvements in social skills in patients with schizophrenia (Dennis R Combs et al., 2007; Roberts et al., 2014; Roberts & Penn, 2009; Wang et al., 2013) and college students with schizotypal personality features in China (Chan et al., 2010). It was also supported by previous evidence showing the FRP participants had social skills impairments (Galderisi et al., 2016; Gibson et al., 2010; Glatt et al., 2006; Horan et al., 2012).

One of the possible reasons for this result is that this intervention was conducted in a way that included a social communication element, as it was a group-based intervention. It involved an intervention delivered to small groups of people by one group leader rather than to individuals; this intervention included activity, support, and problem-solving/educational and psychodynamic groups (Biggs et al., 2020; Montgomery, 2002; Yalom & Leszcz, 2020). It helped its members to understand their problems as well as interpersonal problems. In our study, group discussion was focused on problems that the participants were experiencing. Therefore, it helped participants to improve their social functioning through goal-directed group experiences and to solve their personal, group, or community problems more effectively (Ezhumalai et al., 2018). This finding is quite encouraging, which is consistent with the primary goal of CSCIT, which is to improve social functioning by way of improved social cognition (Roberts & Penn, 2009).

Although, a nonsignificant correlation between social cognition and social skills was

found in Study One, due to the pandemic, we could not recruit enough participants for individuals at FRP for Study One. Therefore, mediation analysis cannot reflect the significant relationship between social cognition and social skills. However, this study found that improving social cognitive function led to better social skills after CSCIT training. Although, the correlation between social cognition and social skills after training in this study was still nonsignificant, it may reflect the underlying possibility of a significant effect for the direct impact of social cognition leading to increased social skills, which may provide preliminary support for SCIT's ability to generalise from social cognition to social behaviour in individuals at FRP. Further full-scale RCTs with sufficient-intensity intervention programmes are highly recommended to investigate the relationship between social cognition and social skills for individuals at FRP to understand better their early deterioration in cognition and the impact on their social functions for individuals at FRP.

Our findings therefore partially supported Hypothesis 1 on the primary outcomes, that individuals at FRP in the CSCIT + TAU group showed significant improvements in social skills and emotion perception from post-treatment to follow-up and ToM at post-treatment compared with the TAU control group.

5.4.3 Secondary outcomes

This study only observed a minimal to small effects of the CSCIT + TAU group on reducing mental state total symptoms at 3 months follow-up. As we know, the relatives of people with psychosis may also be affected by psychosis, and this will have an effect on their overall well-being. The result presented here is consistent with the finding from previous studies that 7.7% of siblings of patients with schizophrenia already had psychotic symptoms at the time of assessment (Arajärvi et al., 2006), and 54.67% of first-degree relatives of patients with schizophrenia were measured to have significant psychopathology (Verma et al., 2019). This echoed those individuals at FRP in our study who had the space to improve their mental state after CSCIT. However, it was inconsistent with another study that showed no significant

interaction effect for total symptoms, but it did reveal a trend indicating that the SCIT group exhibited lower negative symptoms at 3 months follow-up compared to the TAU group (Roberts et al., 2014). This trend may be attributed to reduced statistical power for recent-onset schizophrenia (Rocha et al., 2021) and FEP participants (Bartholomeusz et al., 2013).

Meanwhile, we only found a negative significant relationship between general psychopathology symptoms and social skills at post-treatment; negative significant relationships between jump-to-conclusions and general psychopathology symptoms, and between jump-to-conclusions and negative symptoms for CSCIT + TAU group at 3 months follow up in this study. The fact that the CSCIT + TAU group showed continued improvement in total symptoms from post-treatment to follow-up when they were no longer receiving CSCIT training may suggest they continued to practice and use the learned skills after training.

Although the baseline differences of total symptoms between the two groups were non-significant, the magnitude of the observed differences was greater than those of the differences between the two groups immediately after training. Hence, the significant Group x Time interaction favouring the CSCIT intervention group appeared to be mediated to some degree by the differences at baseline. That is, the training effects might reflect the fact that the group with poorer baseline performance has shown an expected tendency to increase their scores relative to the mean of the overall sample (Chan et al., 2010). Furthermore, the findings of this study should be cross validated in other samples in the near future.

A minimal to small effect of reduction in quality of life on vitality item tendency was observed among the CSCIT + TAU group at 3 months follow-up time point. The findings are consistent with previous research that families of people with psychotic illnesses experience higher rates of depression and anxiety, decreased quality of life, and greater social isolation compared with the rest of the community (Harvey & O'Hanlon, 2013; Hayes et al., 2015). However, it is inconsistent with the finding by Roberts et al. (2014) for outpatients with

schizophrenia and Lo et al. (2023) for persons with FEP that failed to reach statistical significance in quality of life at both post-treatment and 3 months follow-up.

One possible explanation may consider the results found in another study that similar quality of life scores for non-affected siblings and healthy controls suggest that having siblings with schizophrenia did not necessarily negatively affect siblings' quality of life (Kurs et al., 2005). Meanwhile, another possible reason is that compared with FES, CHR-P individuals are more dissatisfied with their quality of life (Mao et al., 2023). In that case, it makes sense that the average functioning level of those FRP individuals may be less severe than CHR-P individuals. In our study, the definition of individuals at FRP is the first-degree relatives of individuals with EP. We did not screen individuals at FRP through the scale of prodromal symptoms (SOPS) in Structured Interview for Psychosis Risk Syndromes (SIPS) to make sure they had to meet at least one of the three syndromes of CHR-P individuals, which was used by Mao et al. (2023) in China, therefore, the level of quality of life in this study is generally better than CHR-P individuals. In addition, the fact that the people in this study had a generally good vocational function with a high rate of employment compared to most who are at FRP echoed the finding reported by Mao et al. (2023) that the quality of life of CHR individuals was influenced most significantly by unemployment. Being employed was also associated with a better quality of life in patients with schizophrenia (Bouwmans et al., 2015; Priebe et al., 1998). Therefore, participants with higher rate of employment could get a better quality of life.

We failed to find any significant effects of CSCIT on the measurement of vocational function. The main reason is that the intervention mainly targeted social cognition and social skills, so no significant finding in vocational function is reasonable, which was consistent with some previous studies for patients with schizophrenia (Dennis R Combs et al., 2007; Fiszdon et al., 2023; Gordon et al., 2018; Roberts et al., 2014; Roberts & Penn, 2009) and recent-onset psychosis (Rocha et al., 2021). Another possibility to explain the nonsignificant

results of the vocational function in this study is that it was found to be a non-affected vocational function in the FRP group compared to the HC group in Study One, so the average vocational functioning level for individuals at FRP was relatively high already. This group presented with a high employment rate at baseline already, so there may be less space for them to improve after training. This aligns with the finding of the proposed theoretical path analysis model from Study One, which found a nonsignificant correlation between social skills and vocational functions in the FRP group. No significant correlation was found between social skills and vocational function after intervention in this study.

That we failed to find any significant effects of CSCIT on some outcomes measurements can be explained more with the following examples. Fiszdon et al. (2023) conducted an RCT study and reported that there were no significant improvements found for SCIT in terms of neurocognition, social cognition, self-report of community function, or symptoms in outpatients with schizophrenia spectrum disorders, though there was a trend-level, medium effect favouring the effect of SCIT on interpersonal and instrumental role function. Meanwhile, the different impaired speeds of functions caused different results; it was suggested by Eack et al. (2010) that social cognitive impairments in the interpretation of neutral faces were significantly associated with greater positive and general prodromal psychopathology among individuals at familial high risk for schizophrenia. These results are also echoed with other RCTs. For example, Dark et al. (2020) reported nonsignificant differences between SCIT and befriending control group for people with schizophrenia spectrum disorder, even when analyses were repeated in a subsample of participants who completed at least 50% of the training sessions. Gordon et al. (2018) also reported nonsignificant group differences between SCIT and TAU group for people with schizophrenia. The lack of effects could also be due to the fact that we did not include an identified a practice partner for each CSCIT participant and did not collect data on rates of homework adherence. Additionally, the age of participants younger than 30 years old was

only 41.2% for CSCIT + TAU Group and 35% for TAU Group respectively. Although there was no significant age difference in these older participants, it may be necessary to give them more intensive instruction with abundant opportunities for practice outside of the sessions skills taught during CSCIT to be evidenced in measurable gains (Roberts et al., 2014).

Programme safety is essential for health promotion in different populations. It entails process safety (Kletz, 2018). We did not report any adverse events related to the intervention throughout the study period, which was in accordance with the previous observations (Gordon et al., 2018) that the facilitator was credited with creating a calm, friendly environment within which participants reported feeling safe and supported. Any concerns or questions participants could be addressed, and all were assured of safety within the group regarding their level of comfort with personal disclosure and group interaction. Summarising all the findings and observations, CSCIT is therefore recommended as a safe and effective intervention for individuals with FRP.

The leading group facilitator (Y. W.) incorporated several additional elements that likely contributed to the high attendance of CSCIT. Before the training programmes, the group facilitator contacted participants and established a rapport. This involved discussing the training objectives, addressing any concerns or questions, and assuring all participants felt safe within the group, especially regarding personal disclosure and group interaction. Additionally, the group facilitator through sent reminder messages and follow-up phone calls to facilitate attendance if a participant missed a session.

Our findings therefore partially supported Hypothesis 2 on the secondary outcomes, that individuals at FRP in the CSCIT + TAU group showed significant improvements in mental state total symptoms and quality of life on vitality item at follow-up compared with the TAU control group.

5.4.4 Limitations

Several limitations in our study must be taken into account. First, recruitment in this

study was affected by the COVID-19 pandemic; all hospitals were suspended for research. The main reason for refusal to join this study was concern about the time limit under the pandemic (refusal due to time: 12 out of 49).

Second, we did not include measures of neurocognition as a secondary outcome measure. Patients with schizophrenia and FEP both showed worse performance across various neurocognitive tasks compared to HC groups (Bora & Pantelis, 2015; Fioravanti et al., 2012). It may be possible for social cognitive training to remediate neurocognition (Lindenmayer et al., 2018; Lindenmayer et al., 2013) on top of social cognition according to the medium-range correlation between neurocognition and social cognition (Deckler et al., 2018; González-Ortega et al., 2020; Sergi et al., 2007). Lo et al. (2023) found a significant main effect on several neurocognitive domains at 3 months follow-up in both SCIT + Rehab and Rehab groups with statistically significant improvements in processing speed and reasoning and problem-solving domains across both groups. Furthermore, the hypothetical model proposed in Study One found out neurocognition had a significant positive correlation with social cognition ($\beta = 0.353$, $t = 2.616$, $p = .009$) in individuals at FRP gives further support to this point. In future study, we will include measures of neurocognition as a secondary outcome measure of the intervention.

Third, the online training mode in this study may limit the effectiveness of these results. Due to the COVID-19 pandemic, this study had to change to adopt the online mode, which had never been done for SCIT. Classes were challenging to monitor when participants attended classes online. Previous research reports that the disadvantages of virtual teaching in medical education include technical difficulties, reduced active student involvement, and the loss of some aspects of assessment (Wilcha, 2020). Most medical students expressed the opinion that offline learning was superior to online learning regarding to effectiveness, efficiency, and atmosphere (Jiao et al., 2022). Students expressed a lack of confidence, dissatisfaction with interactions, and inability to correlate sequences (Sobana R et al., 2023).

Further studies may recommend a practice partner for SCIT participants to supervise.

Last, we did not formally evaluate the acceptability using a satisfaction survey (qualitative data) to collect participants' feedback on the CSCIT. In the future, immediately after completion of CSCIT, need to ask participants to complete a feedback questionnaire in which they will rate five aspects of CSCIT, including: 1) the perceived usefulness of the training in understanding emotions of other people; 2) the perceived usefulness of the training in understanding thoughts of other people or 3) the perceived usefulness of the training in getting along with others; 4) the perceived usefulness of the participant booklet in facilitating the learning of content; 5) and the practicability of the training; and 6) ask participants to rate their overall satisfaction level (Lo et al., 2023). Each question will be answered using a 5-point Likert scale ranging from (from 1 = *Totally disagree* to 5 = *Totally agree*). The questionnaire will be given to participants in the last session of CSCIT by a therapy assistant without the presence of the therapist who provides the CSCIT intervention (Lo et al., 2023).

5.5 Conclusions

Our study supports the feasibility and effectiveness of the Chinese version of SCIT for use in individuals at FRP in Hong Kong. Although the sample recruited for this study has limitations, some significant results are still found in our study. CSCIT may improve emotion perception, ToM, and social skills, and it may reduce paranoid attributional bias, mental state total symptoms, and vitality item of quality of life after CSCIT. Further research should be designed with full-scale RCTs, including a larger sample, longer training sessions (20-24 weeks) and a longer follow-up period to strengthen the study. Additionally, SOPS can be considered as another assessment instrument to assess the clinical symptoms of individuals at FRP besides PANSS. An identified practice partner for CSCIT + TAU group participants can be included to get better impact of training.

This study offers initial evidence that comprehensive social cognition training

programmes should be provided to FRP individuals to prevent them from developing psychosis despite their familial risk. Due to the pandemic, we could not recruit enough participants; mediation analysis cannot reflect the significant causal relationships between social cognition and social skills. However, the findings in this study may reflect the underlying possibility of a significant effect of improved social cognition on social skills. Therefore, more experimental studies are highly recommended to investigate the relationships between social cognition and social skills for individuals at FRP.

Ongoing collaboration between researchers and clinicians is crucial for designing and evaluating psychosocial interventions that aim to improve the well-being of individuals at FRP. Finally, this review underscores the importance of conducting longitudinal studies on youth at FRP, incorporating comprehensive assessments of social cognition, brain imaging, and clinical measures.

CHAPTER XIX

Summary of findings, implications, and recommendations

This chapter summarises the main findings of the study, presents the research and clinical implications, and offers recommendations for further study.

6.1 Summary of findings

The purpose of this study was to conduct preliminary work in Hong Kong with individuals with EP and at FRP. We wanted to better understand their early deteriorations in cognition and the impact on their social and occupational functions, and meanwhile a pilot RCT to evaluate if CSCIT could improve social and vocational functions among FRP individuals. The objectives were summarised into two major categories: 1) to construct the models among the relationships between neurocognition, social cognition, social skills, family support, and vocational functions in individuals with EP and at FRP using path analysis by conducting a pilot cross-sectional study; 2) to evaluate the efficacy of CSCIT in improving clinical, psychosocial, and vocational outcomes in individuals at FRP to reduce their risk of developing mental illness by conducting a pilot RCT

6.1.1 Construct the models among the relationships between neurocognition, social cognition, social skills, family support, and vocational functions in individuals with early psychosis and at familial risk for psychosis using path analysis by conducting a pilot cross-sectional study

A pilot cross-sectional study was conducted to construct the hypothetical pathways among the relationships between neurocognition, social cognition, social skills, family support, and vocational function in individuals with EP and at FRP. Significant differences were observed in the ANCOVA of the vocational function, social skills, and five neurocognitive domains (processing speed, verbal learning, visual learning, reasoning and problem-solving, and working memory), but no significant differences in family support, social cognition, and attention/vigilance among the groups. Post hoc comparisons indicated that only visual learning performance decreased significantly from the HC group to the FRP group to the EP group aligned with hypothesis 1. Visual learning functioning in the EP group had the poorest performance among the three groups, and the FRP group had poorer performance than the HC group. Vocational function, social skills, processing speed, verbal learning, and

neurocognitive composite score were impaired in EP compared to FRP and HC groups. Reasoning and problem-solving, and working memory were impaired in the EP group compared to the HC group.

Meanwhile, neurocognition had a positive significant relationship to social cognition for the hypothetical theoretical path analysis models of EP and FRP groups. Family support had an indirect relationship to vocational performance mediated by social skills in the EP group. Neurocognition has significantly associated with family support in the FRP group. The hypothetical theoretical path analysis model of the HC group was not supported, which evidently proved hypotheses 2-4 that it would not occur in the HC group.

6.1.2 Evaluate the efficacy of CSCIT in improving clinical, psychosocial, and vocational outcomes in individuals at FRP to reduce their risk of developing mental illness by conducting a pilot RCT

A pilot RCT was conducted to develop and test the clinical feasibility and preliminary effectiveness of the Chinese Social Cognition and Interaction Training (CSCIT) programme on those with individuals at FRP to improve their clinical, social, and vocational outcomes. It was a 5-week, 9-session programme (two sessions per week during the first 4 weeks and one session in the final week, each lasting 60–90 minutes). The results showed that CSCIT was highly relevant in enhancing their social understandings and functioning, and that it led especially to an improvement of emotion perception and social skills, which showed significant gains in both post-treatment and 3 months follow-up time points. The CSCIT + TAU group also showed an advantage over TAU control group in improving ToM at post-treatment, though this effect did not persist at follow-up.

There was a trend of reduction for a significant treatment group effect on the paranoid attributional bias item at post-treatment. The CSCIT + TAU group showed a minimal to small significant interaction effect on reducing mental state total symptoms at 3 months follow-up. There was a trend of reduction for a significant treatment group effect on the quality of life on

vitality item at 3 months follow-up.

According to our findings, we conclude that CSCIT is an effective intervention for individuals at FRP in the Chinese setting, which suggests that emotion perception, ToM, and social skills may improve after CSCIT, and paranoid attributional bias, mental state total symptoms, and quality of life on vitality item may reduce. In general, the results of this study suggest that CSCIT can be considered a safe and efficient intervention for individuals at FRP to improve their clinical symptoms, social cognition, and social skills.

6.2 Implications of the study

6.2.1 Research

The present study is a pioneering scientific study that specifically focuses on the relative contribution of neurocognition or social cognition or family support to vocational outcomes in individuals with EP and at the FRP.

First, impairments in functioning among patients with psychosis result from a variety of factors, most prominently deficits in neurocognition and social cognition, and the presence of negative symptoms. Many studies focused on the individual brain regions involved in the social cognition and ToM tasks in patients with schizophrenia, and many are conducted to investigate the relationships between neurocognition, social cognition, social skills, and vocational function in patients with schizophrenia. This study has also contributed to the understanding of the relationships between neurocognition, social cognition, social skills, family support, and vocational function in individuals with EP and at the FRP in Hong Kong and their differences.

Second, it offers insight into the delivery of the evidence-based practice of CSCIT on social cognition among those individuals with FRP to improve their mental state, social cognition, and social skills so as to be able to protect them from developing into psychosis as well as maintain their vocational function in the community.

Third, previous studies investigating the effects of SCIT have mainly been conducted on subjects who were psychosis patients, or focused on the effects of other interventions conducted on subjects who were individuals at FRP. This study has expanded the existing literature using individuals at FRP as the research population. It provides pilot evidence that similar intervention may also be offered to individuals at FRP with positive effects. More experimental studies are however highly recommended to investigate the effects of CSCIT of individuals at FRP before turning this into a regular clinical intervention protocol for FRP.

6.2.2 Health professionals and clinical practice

This study has several implications for health professionals and clinical practice. First, the findings provide evidence-based path analysis models for the significant relationship between neurocognition and social cognition in both EP and FRP groups, and the significant relationships between family support, social skills, and vocational function in the EP group. The results of this study help health professionals to understand those relationships better.

Second, the findings provide evidence-based SCIT for those health professionals who apply SCIT techniques as therapy. The results of this study help more health professionals to understand better what SCIT is and what the conditions of clinical, social, and vocational functions of individuals at FRP are.

Third, the findings of this study suggest that CSCIT is safe for individuals at FRP to practice. No adverse events were reported during this study. All participants in the CSCIT + TAU group underwent a 5-week CSCIT programme. Although no studies have focused on the use of CSCIT for individuals at FRP, this finding provides a new intervention option for health professionals in practice.

Fourth, the results of this study show that CSCIT can be treated as an education program because the findings provide evidence to allocate some resources on individuals at FRP to prevent their onset. Participants in the CSCIT + TAU group had improved emotion perception, ToM, and social skills, as well as reduced paranoid attributional bias, mental state

total symptoms, and vitality item of quality of life among CSCIT + TAU group compared with the TAU group. The programme helps participants understand the emotions and thoughts of other people in different social situations and get along with people. Health professionals may, therefore, consider using CSCIT as an intervention for individuals at FRP. Therefore, we can contact government officers and health professionals in hospitals or communities or via social media to promote the benefits of this intervention. We can also give talks in the communities to the public.

6.3 Recommendations

6.3.1 Research

This study has provided new insights into the relative contribution of neurocognition or social cognition or family support to vocational outcomes in individuals with EP and at FRP. We would like to recommend these key points:

1) In Study One, we proposed a possible pathway to understand better the early deteriorations in cognition and the impact on their social and occupational functions for individuals with EP and at FRP. Nonsignificant correlation was found between social cognition and social skills, due to the pandemic, we could not recruit enough participants for individuals at FRP; mediation analysis cannot reflect the significant relationship between social cognition and social skills. However, in Study Two, it found that improving social cognitive function led to better social skills after CSCIT training, although there was nonsignificant correlation between social cognition and social skills, it may reflect the underlying possibility of a significant effect for the direct impact of social cognition leading to increase in social skills. More experimental studies are highly recommended to investigate the relationships between social cognition and social skills for individuals at FRP.
2) Using a longitudinal design and with a larger sample size in the future studies, are

highly recommended to investigate which of the cognitive function deficits we found may have a predictive value for transition to psychosis.

3) In Study Two, further full-scale RCTs with sufficient-intensity intervention programmes are highly recommended to detect more definitive effects of CSCIT.
4) Studies focusing on the investigation of the mechanisms of CSCIT are also strongly recommended.
5) The same social cognitive measures were used at baseline, post-treatment, and follow-up, which could introduce potential practice effects. Although we explained this by analysing the Group x Time interaction effect as our main analysis, we recommend developing and using other forms to alternate social cognitive measures in the future clinical trials.

6.3.2 Health professionals and clinical practice

The results of this study suggest the following key messages for health professionals:

1) A 5-week, 9-session CSCIT programme (60–90 minutes per session, twice per week) is safe and suitable for individuals at FRP.
2) An identified practice partner for CSCIT + TAU group participants can be included to create a better impact with the training.

CHAPTER SEVEN

Conclusions

Psychosis is characterised by delusions, hallucinations, and formal thought disorders. Genetics play an important role in the cause of many mental illnesses. Many studies corroborated that neurocognition and social cognition are related to everyday functioning in schizophrenia. Social cognition is suggested to be an important mediator in the relationship between neurocognition and vocational function applied to individuals with schizophrenia using structural equation modelling, and family support may also play a positive role in the vocational function of schizophrenia. However, similar studies in Chinese communities are scarce, especially among individuals at FRP. In addition, studies using SCIT among individuals at FRP are limited; it remains to be seen if CSCIT could improve social and vocational functions among FRP individuals by conducting a pilot RCT.

The results of Study One partially support Hypothesis 1, which shows that deficits in neurocognition, social skills, and vocational function in psychosis may start before the first episode, since those functions were impaired in both the FRP and EP groups compared with healthy controls. Notably, visual learning emerged as a domain that exhibited progressive impairment across all three groups, indicating the potential utility of this factor as a biomarker for EP. Meanwhile, our findings partially support Hypotheses 2–3 for the proposed theoretical path analysis model for the EP and FRP groups. It indicates that individuals with poorer neurocognition likely have more problems with social cognition. This would lead to more difficulties in getting and maintaining jobs and developing good relationships with co-workers, and these individuals likely also have poorer competence in handling work-related social situations in the workplace. In addition, our findings do not support Hypothesis 4 for the hypothesised theoretical path analysis model for the EP and FRP groups. However, family support affects vocational function through the mediating effect of social skills in individuals

with EP, so good family support plays an important role in facilitating their social skills on the job. Furthermore, neurocognition also had a significant positive association with family support in the FRP group. It supports the statement that higher levels of family support are associated with better cognitive functioning. The hypothetical theoretical path analysis model for the HC group is not supported; this partially proves that these relationships do not occur in the HC group. Our next step is to detect cognitive predictors of transition to psychosis in the FRP group in a study with a longitudinal design and a larger sample size. This study also supports the clinical practice of early intervention among those with FRP to improve their neurocognition, social cognition, and social skills to enhance their vocational function in the community.

The results of Study Two partially support Hypothesis 1–2. We can conclude that CSCIT is a safe and effective therapy for FRP individuals. CSCIT may improve emotion perception, ToM, and social skills, and it may reduce paranoid attributional bias, mental state total symptoms, and vitality item of quality of life after CSCIT. This study provides initial evidence indicating that comprehensive social cognition training programs should be provided to FRP individuals to prevent them from developing into psychosis despite their familial risk. It also provides preliminary support for conducting more experimental studies to investigate the relationships between social cognition and social skills for individuals at FRP. Meanwhile, ongoing collaboration between researchers and clinicians is crucial for designing and evaluating psychosocial interventions aimed at improving the lives of FRP individuals.

APPENDICES

Appendix 1 A: Initial Ethical Approval from Hong Kong Hospital Authority's Research Ethics Committee/Institutional Review Board (REC/IRB)

醫院管理局
HOSPITAL AUTHORITY

群策群力爲病人 · 優質醫護滿杏林
Quality Patient - Centred Care Through Teamwork

Research Ethics Committee
(Kowloon Central / Kowloon East)

c/o Queen Elizabeth Hospital
30 Gascoigne Road Kowloon

Dr POON Lap Tak

Associate Consultant
Department of Psychiatry
United Christian Hospital

27 July 2020

Ref: KC/KE-19-0141/FR-1

Dear Dr POON,

The REC(KC/KE) members are appointed by the Cluster Chief Executives to review and monitor clinical research independently according to the guidance of Declaration of Helsinki and ICH GCP Guidelines in order to safeguard the rights, safety and well-being of research subjects. It has the authority to approve, require modifications (to secure approval), or disapprove research. This committee has power to terminate/suspend a research at any time if there is evidence to indicate that the above principles and requirements have been violated.

The Committee has reviewed and approved your research application on 14 May 2020 at a review panel meeting. The approval decision was based on the documents submitted and the information presented by you at the meeting. You are required to adhere to the attached conditions:

Title of Study	Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP)
Principal Investigator	Dr POON Lap Tak, Associate Consultant, Dept of Psychiatry, UCH
List of Co-investigators	Professor TSANG Wing Hong Hector, Chair Professor and Head, Cally Kwong Mei Wan Professor in Psychosocial Health, Dept of Rehabilitation Sciences, HK PolyU
	Mr CHUNG Ho Ming, Clinical Associate, Dept of Rehabilitation Sciences, HK PolyU
	Ms WENG Yiting, Dept of Rehabilitation Sciences, HK PolyU
Protocol title and version	Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP) [Research Protocol form Version 1.0 dated 30 June 2020]
Consent Form versions	- Research Project Informed Consent Forms (Parts I and II) [English Version: Informed consent form Version 1.0 dated 20 August 2019] [Chinese Version: <<同意書>> 版本(一); 日期: 二零一九年八月二十日]

HA(G) 1

Other Documents (Cont'd)	- Safety Check Protocol [Safety Check Protocol Version 1.0 dated 13 March 2019] - CV of Principal Investigator
Study sites approved	United Christian Hospital Psychiatric Center (UCHPC)
	Yung Fung Shee Psychiatric Center (YFSPC)
Conditions	1. Be compliant with the applicable laws and regulations (including Hong Kong laws), HA policy, professional code of conduct, guidance of ICH GCP and Declaration of Helsinki. 2. Apply a clinical trial certificate from Department of Health if indicated and submit a copy to this committee before the study begins. 3. Not deviate from, or make changes to the study protocol without prior written REC approval, except when it is necessary to eliminate immediate hazards to research subjects or when the change involves only logistical or administrative issues. 4. Report the followings to REC(KC/KE): (i) unexpected and serious adverse event (use KCKE SOP001F8)* within 7 calendar days for life-threatening or fatal event and within 15 calendar days for others from the date of first knowledge of the event (ii) study protocol or consent document change (use KCKE SOP001F7)* (iii) protocol deviation within 30 calendar days from the first awareness of the deviation/incident (iv) new information that may be relevant to a subject's willingness to continue participation in the study. 5. Report the date of the first study subject recruited to REC (use KCKE SOP001F10)* within 1 month. 6. Report the first study progress to REC by July 2021 and thereafter at 12 monthly intervals until study closure (use KCKE SOP001F9a)*. 7. Report study closure (use KCKE SOP001F9b)* by December 2022 8. Report the study results and submit any relevant publications to REC(KC/KE).

* *All post-approval activities such as protocol amendment, progress report, supplementary information and final report submissions should be made via HA CRER Portal.*

Consent Form versions (Cont'd)	- Research Project Informed Consent Form (Healthy Controls Group) [English Version: <<Informed consent form>> Version 1.0 dated 22 May 2020] [Chinese Version: <<同意書>> 版本(一); 日期: 二零二零年五月二十二日]
Information Sheet versions	- Research Project Information Sheet (Part I) [English Version: <<Information Sheet>> Version 1.0 dated 30 June 2020] [Chinese Version: <<資料頁>> 版本(一); 日期: 二零二零年六月三十日] - Research Project Information Sheet (Part II) [English Version: <<Information Sheet>> Version 1.0 dated 22 May 2020] [Chinese Version: <<資料頁>> 版本(一); 日期: 二零二零年五月二十二日] - Information Sheet (Healthy Controls Group) [English Version: <<Information Sheet>> Version 1.0 dated 22 May 2020] [Chinese Version: <<資料頁>> 版本(一); 日期: 二零二零年五月二十二日]
Certificate of indemnity/insurance	N/A
Other Documents	- Clinical Research Ethics Review Application Form - Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) Consensus Cognitive Battery (MCCB) [Chinese Version:《MCCB》版本(一)；日期：二零一九年八月二十日] - Chinese Facial Emotion Identification Test (C-FEIT) [「情緒知覺」測試版本(一)；日期：二零一九年八月二十日] - Chinese Social Cognition Screening Questionnaire (C-SCSQ) [《社交認知篩選問卷》版本(一)；日期：二零一九年八月二十日] - Vocational Social Skills Assessment Scale (VSSS) [《工作社交技巧自我施行表(VSSS)》版本(一); 日期: 二零一九年八月二十日] - The Chinese version of the Multidimensional Scale of Perceived Social Support (MSPSS-C) [《感受社會支持多面量表--家庭》版本(一)；日期: 二零一九年八月二十日] - Employment Outcome Checklist (EOC) [《就業成果檢查表(EOC)》版本(一)；日期: 二零一九年八月二十日] - The Positive and Negative Syndrome Scale (PANSS) [《陽性與陰性症狀量表（PANSS）》版本(一)；日期: 二零一九年八月二十日] - The Schizophrenia Quality of Life Scale Revision 4 (SQLS-R4) [《精神分裂症病患生活品質問卷 (SQLS-R4)》版本(一)；日期: 二零一九年八月二十日]

Review Panel (for full review only)

	Title and Name	Affiliation
Chairperson:	Dr KWAN Chung Kong	HA Staff
Members:	Professor Joseph KWOK	Independent Member / Non-Scientific Member
	Mrs Stella LAU	Independent Member / Non-Scientific Member
	Dr Eudora CHOW	HA Staff
	Dr CHAN Yiu Cheung	HA Staff
	Dr Mona LAM	HA Staff
	Dr Esther CHOW	HA Staff
	Dr Wingson CHAN	HA Staff
	Mr Oscar MANG	HA Staff

Dr KWAN Chung Kong
Panel Chairman of REC(Operation)
(Kowloon Central/Kowloon East)

cc. Chief of Service, Department of Psychiatry, UCH

Appendix 1 B: 1st Amendment Ethical Approval from Hong Kong Hospital Authority's Research Ethics Committee/Institutional Review Board (REC/IRB)

醫院管理局
HOSPITAL AUTHORITY

群策群力爲病人・優質醫護滿杏林
Quality Patient - Centred Care Through Teamwork

Research Ethics Committee
(Kowloon Central / Kowloon East)

c/o Queen Elizabeth Hospital
30 Gascoigne Road Kowloon

Dr POON Lap Tak

Associate Consultant
Department of Psychiatry
United Christian Hospital

15 June 2021

Ref: KC/KE-19-0141/FR-1

Dear Dr POON,

REQUEST FOR AMENDMENTS / UPDATE

The REC(KC/KE) members are appointed by the Cluster Chief Executives to review and monitor clinical research independently according to the guidance of Declaration of Helsinki and ICH GCP Guidelines in order to safeguard the rights, safety and well-being of research subjects. It has the authority to approve, require modifications (to secure approval), or disapprove research. This committee has power to terminate/suspend a research at any time if there is evidence to indicate that the above principles and requirements have been violated.

The Committee has reviewed and approved your research application on 15 June 2021 by an expedited process. The approval decision was based on the documents submitted. You are required to adhere to the attached conditions:

Title of Study	Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP)
Principal Investigator	Dr POON Lap Tak, Associate Consultant, Dept of Psychiatry, UCH
List of Co-investigators	Professor TSANG Wing Hong Hector, Chair Professor and Head, Cally Kwong Mei Wan Professor in Psychosocial Health, Dept of Rehabilitation Sciences, HK PolyU
	Mr CHUNG Ho Ming, Clinical Associate, Dept of Rehabilitation Sciences, HK PolyU
	Ms WENG Yiting, Dept of Rehabilitation Sciences, HK PolyU

Protocol Amendments	Amendment Application Form - Research Protocol for Ethics Review Application [Research Protocol form Version 2.0 dated 7th May 2021] - Research Project Information Sheet (Part I) [English Version: <<Information Sheet>> Version 2.0 dated 7th May 2021] [Chinese Version: <<資料頁>> 版本(二); 日期: 二零二一年五月七日] - 電話開場白 [Chinese Version: <<電話開場白>> 版本（一）; 日期: 二零二一年五月七日]
Conditions	1. Be compliant with the applicable laws and regulations (including Hong Kong laws), HA policy, professional code of conduct, guidance of ICH GCP and Declaration of Helsinki. 2. Apply a clinical trial certificate from Department of Health if indicated and submit a copy to this committee before the study begins. 3. Not deviate from, or make changes to the study protocol without prior written REC approval, except when it is necessary to eliminate immediate hazards to research subjects or when the change involves only logistical or administrative issues. 4. Report the followings to REC(KC/KE): (i) unexpected and serious adverse event (use KCKE SOP001F8)* within 7 calendar days for life-threatening or fatal event and within 15 calendar days for others from the date of first knowledge of the event (ii) study protocol or consent document change (iii) protocol deviation within 30 calendar days from the first awareness of the deviation/incident (iv) new information that may be relevant to a subject's willingness to continue participation in the study. 5. Report the date of the first study subject recruited to REC (use KCKE SOP001F10)*. 6. Report the first study progress to REC by July 2021 and thereafter at 12 monthly intervals until study closure (use KCKE SOP001F9a)*. 7. Report study closure (use KCKE SOP001F9b)* by December 2022. 8. Report the study results and submit any relevant publications to REC(KC/KE).

* *All post-approval activities such as protocol amendment, progress report, supplementary information and final report submissions should be made via HA CRER Portal.*

Dr KWAN Chung Kong
Panel Chairman of REC(Operation)
(Kowloon Central/Kowloon East)

Appendix 1 C: 2nd Amendment Ethical Approval from Hong Kong Hospital Authority's Research Ethics Committee/Institutional Review Board (REC/IRB)

醫院管理局
HOSPITAL AUTHORITY

群策群力爲病人・優質醫護滿吉林
Quality Patient - Centred Care Through Teamwork

Research Ethics Committee
(Kowloon Central / Kowloon East)

c/o Queen Elizabeth Hospital
30 Gascoigne Road Kowloon

Dr POON Lap Tak

Associate Consultant
Department of Psychiatry
United Christian Hospital

22 July 2022

Ref: KC/KE-19-0141/FR-1

Dear Dr POON,

REQUEST FOR AMENDMENTS / UPDATE AND EXTENSION OF STUDY PERIOD

The REC(KC/KE) members are appointed by the Cluster Chief Executives to review and monitor clinical research independently according to the guidance of Declaration of Helsinki and ICH GCP Guidelines in order to safeguard the rights, safety and well-being of research subjects. It has the authority to approve, require modifications (to secure approval), or disapprove research. This committee has power to terminate/suspend a research at any time if there is evidence to indicate that the above principles and requirements have been violated.

The Committee has reviewed and approved your research application on 22 July 2022 by an expedited process. The approval decision was based on the documents submitted. You are required to adhere to the attached conditions:

Title of Study	Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP)
Principal Investigator	Dr POON Lap Tak, Associate Consultant, Dept of Psychiatry, UCH
List of Co-investigators	Professor TSANG Wing Hong Hector, Chair Professor and Head, Cally Kwong Mei Wan Professor in Psychosocial Health, Dept of Rehabilitation Sciences, HK PolyU
	Mr CHUNG Ho Ming, Clinical Associate, Dept of Rehabilitation Sciences, HK PolyU
	Ms WENG Yiting, Dept of Rehabilitation Sciences, HK PolyU

Protocol Amendments	REC(KC/KE) Protocol Amendment Application Form [KCKE SOP001F7] - Research Protocol for Ethics Review Application [Research Protocol form Version 3.0 dated 21st December 2021] - Q6.2 Application Form: Rectified the study end date from 31 July 2022 to 31 July 2023 - Q6.3 Application Form: Rectified the tentative final report date from 31 December 2022 to 31 December 2023
Conditions	1. Be compliant with the applicable laws and regulations (including Hong Kong laws), HA policy, professional code of conduct, guidance of ICH GCP and Declaration of Helsinki. 2. Apply a clinical trial certificate from Department of Health if indicated and submit a copy to this committee before the study begins. 3. Not deviate from, or make changes# to the study protocol without prior written REC approval, except when it is necessary to eliminate immediate hazards to research subjects or when the change involves only logistical or administrative issues. 4. Report the followings to REC(KC/KE): (i) unexpected and serious adverse event (use KCKE SOP001F8)* within 7 calendar days for life-threatening or fatal event and within 15 calendar days for others from the date of first knowledge of the event (ii) study protocol or consent document change (use KCKE SOP001F7)* (iii) protocol deviation within 30 calendar days from the first awareness of the deviation/incident (iv) new information that may be relevant to a subject's willingness to continue participation in the study. 5. Report the date of the first study subject recruited to REC (use KCKE SOP001F10)*. 6. Report the second study progress to REC by July 2022 and thereafter at 12 monthly intervals until study closure (use KCKE SOP001F9a)*. 7. Report study closure (use KCKE SOP001F9b)* by December 2023. 8. Report the study results and submit any relevant publications to REC(KC/KE).

** Forms available on REC(KC/KE) website.*

 # Principal Investigators(PI) are reminded to submit amendment application to REC(KC/KE) before leaving the original institution. Department heads/COSs concerned may coordinate the PI's replacement as needed.

** All post-approval activities such as protocol amendment, progress report, final report, deviation report and supplementary information submissions should be sent to REC(KC/KE) by email.*

Dr KWAN Chung Kong
Panel Chairman of REC(Operation)
(Kowloon Central/Kowloon East)

cc. Chief of Service, Department of Psychiatry, UCH

Appendix 1 D: Ethical Approval from The Hong Kong Polytechnic University's Research Committee

From: rohsesc@ ‹ <rohsesc@,
Sent: Wednesday, 7 August 2019 2:49 PM
To: Tsang, Hector [RS]
Cc: Man, David [RS] ›; Chung, Vangie [RS] ; YEE, Beniamin [RS, ›; LO, Alexandra [RS] ; Man, Gloria [RS; ›; Mok, Dennis [RS]
Subject: Application Result (HSEARS20190309001)

Dear Tsang Wing Hong Hector

Please note that the following application for human ethics approval has been approved:

Project Title: Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP)
Application Number: HSEARS20190309001 (Click here to view the application)
Principal Investigator: Tsang Wing Hong Hector
Department: Department of Rehabilitation Sciences
Approver / Delegate: Yee Kay Yan Benjamin

Human Subjects Ethics Application Review System
(It is a system-generated message. Please do not reply to it)

c.c. Approver / Delegates

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

Appendix 2 A: Research Project Information Sheet (English)

The Hong Kong Polytechnic University
Department of Rehabilitation Sciences
United Christian Hospital
Department of psychiatry

Research Project Information Sheet

Project title: Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP)

Title of Part I: Compare and explore the relationship between neurocognition, social cognition, social skills, family support, and vocational functions between individuals with EP and at FRP

Investigators:
Dr. Poon Lap Tak, Associate Consultant, Department of psychiatry, UCH
Professor Tsang Hector, Cally Kwong Mei Wan Professor in Psychosocial Health, Chair Professor and Head, Department of RS, HK PolyU
Mr. Chung, Ho Ming, Clinical Associate, Department of RS, HK PolyU
MS. WENG, Yiting, PhD student, Department of RS, HK PolyU

Project information:

General Information about Research

Schizophrenia and related psychoses are one of the most severe mental disorders, characterized by symptoms such as delusions, hallucinations, reduced motivation, disorganized communication, and blunted affect, which affects more than 23 million individuals worldwide. In Hong Kong, the estimation is 2.5 per 1000 based on a systematic review. Symptoms of schizophrenia or early psychosis usually first appear between age 16 and 30. Schizophrenia and related psychosis have strong familial link. Neurocognitive dysfunction is one of the core features of schizophrenia. This part of the study aims to explore the relationships between neurocognition, social cognition, social skills, family support and vocational functions in individuals with EP and at FRP. This is due to previous structural equation modeling suggested that neurocognition has a direct effect on vocational performance on schizophrenia patients. Social cognition has been suggested to be important mediating variables in the relationship between neurocognition and vocational outcome, but there are few relevant studies in individuals with EP. At the same time, no study has ever reported the relative contribution of neurocognition or social cognition to vocational outcomes in

individuals with familial risk of psychosis (FRP).

Role/Duties of Participants

Participants of this research will be required to undergo a series of tests (neurocognition, social cognitive, social skills, family support and vocational functions) to know much more about how they feel, think, social function and vocational function more. UCH will only be required for recruitment of 150 participants which consist of 75 for EP and 75 for FRP from UCHPC and YFSPC whilst the remaining 75 participants will be the matched healthy controls recruited from The Hong Kong Polytechnic University campus. EP and FRP participants will be recruited in UCHPC and YFSPC either (1) with the help of PI and doctors of his psychiatric team or (2) via the case managers of the EASY Clinic who are the nursing staff conduct case management service for EP and their caregivers regularly.

(1) For recruitment of EP, doctors who have full-day consultation sessions for early psychosis in the EASY clinic of UCHPC and YFSPC will refer the cases who appear to meet the inclusion criteria and are mentally stable to the RAs after consultation through email for further screening. RAs will contact them over the phone to do the screening. Those who meet all inclusion criteria after screening by the RA will be invited to join the study. As to the recruitment procedure for FRP, doctors in the EASY clinic will provide the information sheet to EP to share it with their family members.

(2) In addition, suitable EP and FRP participants will be recruited by case managers when they conduct case management service for EP and their caregivers by telephone contacts or home visits. The case managers will promote and introduce the project to potential EP and FRP participants. The RA will be informed by the case managers for those who show interest to this project. The RA will then contact the potential EP and FRP participants for screening and recruitment. If any participant is found to have psychological distress during the visit, an appropriate decision will be made following the safety-check protocol.

In view of the current situation of COVID-19 pandemic, the e-version of the informed consent form and information sheet will be sent to the participants through email before the 1st session of the assessment. After returning the signed hard copy informed consent form, the 1st session assessment will be arranged.

The 1st session assessment will be conducted either face-to-face (PolyU) or online depending on the availability of the participants. It will comprise of family support, vocational function, social cognition, social skills, and demographical characteristics (for 1.5 hours including intermittent breaks).

The 2nd session assessment will be the next day after the 1st session assessment. If the participants could not attend the 2nd session assessment the next day due to

illness, temporary work, or other reasons, they will be rescheduled for the 2nd session. Neurocognitive tests will be done through face-to-face interview (PolyU), assisted by computer software (for 1.5 hours including intermittent breaks). Infection control measures would be provided, including hand wipes, hand scrubs, disposable masks, and to ensure at least 1 meter for social distancing.
Hence, participants will be assessed twice (2 sessions). Participants will be terminated to participate in this study if they will not come to attend the 2nd session, and the data collected will be destroyed. However, the participants may indicate on the consent form that they will allow the researcher to continue using the data collected for the purpose of this study after their withdrawal.

Possible Risks and Discomforts

To the best of the researcher's knowledge, the anticipated risk with this study is minimal. Discomforts may include fatigue and boredom. To minimize discomforts of participants, the study will be divided into 2 sessions with intermittent breaks within each session. If the situation is serious, the referral doctor will be informed, and the doctor will decide participates whether to continue.

Possible Benefits

You will get a full clinical neurocognition, social cognitive, social skills, family support and vocational functions evaluation thereby knowing and understanding how you feel, thinking, social function and vocational function more. If the model proposed by this study is supported, persons with poorer neurocognition will like to have more problems with social cognition which will lead to more difficulties to develop good relationship with co-workers and have poorer competence in handling work-related social situations in the workplace. These will directly affect you to get and to keep employment. At the same time, if family support is shown to play an important role to both the vocational outcomes of individuals with EP and at FRP, good family support will facilitate your vocational function in the community. It will give support to early intervention among those with FRP to improve their neurocognition, social cognition and social skills so as to maintain their vocational function in the community.

Other procedures or treatments

Future treatment will not be affected if you do not join in the study. All care procedures will not differ whether you participate in the study or not.

Knowledge Update

This study will help clarify the relationship between neurocognition, social cognition, social skills, family support, and vocational functions between individuals with EP and at FRP. You will be informed in-charged about new information, if any, under this research. You may decide whether to continue to participate in the research or not.

Treatment and compensation

If you feel uncomfortable in any way during the assessment, you will be treated or be referred for treatment. You will not waive any legal rights by signing this agreement.

Voluntary participation/ Withdrawal / Termination

Participation in the study is voluntary. Your decision to participate or not will be respected. You have the right to terminate your participation at any time and without giving any reason during the study, and this will not affect your present or future medical care. If you feel uncomfortable in any way during the session, you may terminate/ discontinue participating in the study. If you withdraw from the study, data collected up will be destroyed without your consent. You may also allow the researcher to continue using the data collected for the purpose of this study after your withdrawal which can be mentioned in the informed consent form. You can take time to decide whether you wish to take part. By signing a written informed consent form, you will be given a signed copy of the consent form and information sheet for record.

Participation Allowance

Participants don't have to pay any extra fee in addition to the regular medical fee. And you will be given supermarket coupons for food and grocery equivalent to an amount of HKD150 after the 2nd session.

Confidentiality and Privacy

Your confidentiality will be the highest priority. If the information you provide is reported or published, this will be done in a way that does not identify you as its source. To ensure the highest form of confidentiality, we do not fill in your name on the questionnaire. Your signed consent form will be stored separately from your research data and personal information to further protect your confidentiality. Access to the data will be restricted to the researchers of this study. Along with this, your research data and personal information will be stored in the computers which are only accessible by the researchers. Data can be withdrawn and destroyed if requested by you and all data will be destroyed three years after the completion of

the study.

Under the laws of Hong Kong (in particular the Personal Data (Privacy) Ordinance, Cap 486), you enjoy or may enjoy rights for the protection of the confidentiality of your personal data, such as those regarding the collection, custody, retention, management, control, use (including analysis or comparison), transfer in or out of Hong Kong, non-disclosure, erasure and/or in any way dealing with or disposing of any of your personal data in or for this study. For any query, you should consult the Privacy Commissioner for Personal Data or his officer (Tel no.: 2827 2827) as to the proper monitoring or supervision of your personal data protection so that your full awareness and understanding of the significance of compliance with the law governing privacy data is assured.

By signing a written informed consent form, you are authorizing the Research Ethics Committee (REC) and the regulatory authority (ies) will be granted direct access to your study data for data verification.

Contact for further information

If you have any questions or concerns regarding the research, please feel free to contact Dr Poon, Department of psychiatry, UCH at telephone 3949 4000.
If you have questions related to your rights as a research participant, please contact Research Ethics Committee (Kowloon Central/Kowloon East) at 3506 8888.
Thank you for your kind support and participation!

The Hong Kong Polytechnic University
Department of Rehabilitation Sciences
United Christian Hospital
Department of psychiatry

Research Project Information Sheet

Project title: Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP)

Title of Part II: A pilot randomized controlled trial on the effect of the Chinese Social Cognition and Interaction Training (CSCIT) programme for individuals at FRP

Investigators:
Dr. Poon Lap Tak, Associate Consultant, Department of psychiatry, UCH
Professor Tsang Hector, Cally Kwong Mei Wan Professor in Psychosocial Health, Chair Professor and Head, Department of RS, HK PolyU
Mr. Chung, Ho Ming, Clinical Associate, Department of RS, HK PolyU
MS. WENG, Yiting, PhD student, Department of RS, HK PolyU

Project information:

General Information about Research

Identification and provision of interventions for those at "familial risk" of psychosis may delay or prevent their development into psychosis. Such interventions include cognitive behavioral therapy, supportive counselling, and psychoeducation. Interventions targeting at reducing their stress and increasing their resilience will thus improve their prognosis and treatment outcomes. This part of the study aims to explore the effectiveness of CSCIT in improving their clinical, vocational, and psychosocial outcomes to reduce their risk of developing mental illness for those with FRP. This is due to preliminary evidence based on pilot trials has demonstrated its efficacy to improve social cognition and social functioning, and further has yielded promising findings among outpatient with severe mental illness population and stable schizophrenia that the positive outcome might sustain over a 6-month follow-up period, even improving functional outcome for people at their first episode psychosis. Nevertheless, studies using SCIT among individuals at FRP are limited. It remains unknown if SCIT may contribute positively to social skills and vocational functioning of those at FRP.

Role/Duties of Participants

Participants of this research will be required to undergo a series of tests (mental state, social cognitive, social skills, quality of life and vocational function) to know much more about how they feel, think, clinical symptoms, social function and vocational function more. Hence, participants will be seen once/twice (2 sessions). The 1st session will comprise of mental state, social skills and quality of life assessments (for 1 hour including intermittent breaks) whilst the 2nd session will be for vocational function and social cognition tests (1 hour including intermittent breaks). The 1st Session will be on the day of signing/returning the signed informed consent form whilst the 2nd session will be the same day or next day after the 1st session. If participants could not attend the 2nd session next day due to illness, temporary work or other reasons, they will be rescheduled for the 2nd session. If any participant is found to have psychological distress during the visit, an appropriate decision will be made following the safety-check protocol.

Fifty-five participants will be the individuals at FRP come from Part I will be randomly assigned by computer into the CSCIT+Treatment-As-Usual (TAU) (experimental groups) or TAU groups (control groups). It's not allowed to change of study group. Experimental group participants will receive a 5-week, 9 sessions, and 9-hours of SCIT programme which is group training on social cognition. It contains understanding emotions skills, social cognitive biases skills and integration skills that improve social performance, interpersonal relationships and personal lives. At the same time, participants will be recorded on their normal pattern of life as usual which may include their daily routine consisting of work, study, and social activities. Control group participants will be recorded on their normal pattern of life as usual which may include their daily routine consisting of work, study, and social activities. Outcomes of social cognition, social skills, vocational function, mental state and quality of life will be assessed at baseline, immediately and 3 months following the intervention of the two groups. It will take 2 hours for each time.

Possible Risks and Discomforts

To the best of the researcher's knowledge, the anticipated risk with this study is minimal. Discomforts may include fatigue and boredom. To minimize discomforts of participants, the study will be divided into 2 sessions with intermittent breaks within each session. If the situation is serious, the referral doctor will be informed, and the doctor will decide participates whether to continue.

Possible Benefits

You will get a full clinical social cognitive, social skills, mental state, quality of life and

vocational functions evaluation thereby knowing and understanding how you feel, thinking, clinical symptoms, social function and vocational function more. If positive effects are found to the CSCIT will be able to improve social and occupational functioning of those at FRP, it will be able to protect them from developing into psychosis despite their familial risk.

Knowledge Update

This study will help clarify the CSCIT will be able to improve social and occupational functioning of those at FRP. You will be informed in-charged about new information, if any, under this research. You may decide whether to continue to participate in the research or not.

Treatment and compensation

If you feel uncomfortable in any way during the assessment, you will be treated or be referred for treatment. You will not waive any legal rights by signing this agreement.

Expected duration of study

Participants will participate in this study for up to approximately 5 months.

Voluntary participation/ Withdrawal / Termination

Participation in the study is voluntary. Your decision to participate or not will be respected. You have the right to terminate your participation at any time and without giving any reason during the study, and your withdrawal will not lead to any punishment or prejudice against you. If you feel uncomfortable in any way during the session, you may terminate/ discontinue participating in the study. If you withdraw from the study, data collected up will be destroyed without your consent. You may also allow the researcher to continue using the data collected for the purpose of this study after your withdrawal which can be mentioned in the informed consent form. You can take time to decide whether or not you wish to take part. By signing a written informed consent form, you will be given a signed copy of the consent form and information sheet for record.

Participation Allowance

Participants don't have to pay any extra fee in addition to the regular medical fee. And you will be given supermarket coupons for food and grocery equivalent to an amount of HKD200 after the 12th session.

Confidentiality and Privacy

Your confidentiality will be the highest priority. If the information you provide is reported or published, this will be done in a way that does not identify you as its source. To ensure the highest form of confidentiality, we do not fill in your name on the questionnaire. Your signed consent form will be stored separately from your research data and personal information to further protect your confidentiality. Access to the data will be restricted to the researchers of this study. Along with this, your research data and personal information will be stored in the computers which are only accessible by the researchers. Data can be withdrawn and destroyed if requested by you and all data will be destroyed three years after the completion of the study.

Under the laws of Hong Kong (in particular the Personal Data (Privacy) Ordinance, Cap 486), you enjoy or may enjoy rights for the protection of the confidentiality of your personal data, such as those regarding the collection, custody, retention, management, control, use (including analysis or comparison), transfer in or out of Hong Kong, non-disclosure, erasure and/or in any way dealing with or disposing of any of your personal data in or for this study. For any query, you should consult the Privacy Commissioner for Personal Data or his officer (Tel no.: 2827 2827) as to the proper monitoring or supervision of your personal data protection so that your full awareness and understanding of the significance of compliance with the law governing privacy data is assured.

By signing a written informed consent form, you are authorizing the Research Ethics Committee (REC) and the regulatory authority (ies) will be granted direct access to your study data for data verification.

Contact for further information

If you have any questions or concerns regarding the research, please feel free to contact Dr Poon, Department of psychiatry, UCH at telephone 3949 4000.
If you have questions related to your rights as a research participant, please contact Research Ethics Committee (Kowloon Central/Kowloon East) at 3506 8888.
Thank you for your kind support and participation!

Appendix 2 B: Research Project Information Sheet (Chinese)

香港理工大學 康復治療科學系

基督教聯合醫院 精神科

參與研究資料頁

研究題目: 具有家族性精神疾病風險的年輕人和早期精神疾病患者的認知、社交和職業功能

第一部分研究的題目：比較和探討早期精神疾病患者和具有家族性精神疾病風險的年輕人的神經認知、社會認知、社交技能、家庭支援和職業功能之間的關係

研究員:
潘立德醫生，副顧問醫生，精神科，基督教聯合醫院
曾永康教授，鄺美雲社會心理健康教授，講座教授及系主任，康復治療科學系，香港理工大學
鍾浩鳴，臨床助理，康復治療科學系，香港理工大學
翁弋婷，博士生，康復治療科學系，香港理工大學

研究資料:

研究概要

精神分裂症和相關精神病是最嚴重的精神障礙之一，其特徵是妄想、幻覺、動機減退、溝通紊亂和情感遲鈍等症狀，全世界有 2300 多萬人受到這些症狀的影響。在香港，根據一個系統回顧，估計為每千名人士中有 2.5 名。精神分裂症或早期精神疾病的症狀通常首先出現在 16 歲至 30 歲之間。精神分裂症與相關精神疾病具有很強的家族聯繫。神經認知功能障礙是精神分裂症的核心特徵之一。該部分研究的研究目的主要是探討具有家族性精神病風險的年輕人和早期精神病患者的神經認知、社會認知、社交技能、家庭支援和職業功能之間的關係。這是由於之前的結構方程模型表明，神經認知對精神分裂症患者的職業功能表現有直接影響。社會認知被認為是神經認知與職業功能結果關係的重要仲介變數，但對早期精神病患者個體的相關研究較少。與此同時，沒有研究報導神經認知或社會認知對具有家族性精神病風險的年輕人的職業結果的貢獻。

參加者的角色和義務

該部分研究的參加者將會接受一系列的評估測試(神經認知，社會認知，社交技能，家庭支援和職業功能)，以測量參加者的感覺、思維、社會功能和職業功能為目的。基督教聯合醫院精神科和容鳳書精神病治療中心會邀請 150 名參加者，其中 75 名為早期精神病患者，75 名為具有家族性精神病風險的年輕人，而其餘

75 名健康對照參加者則會在香港理工大學校園內招募。早期精神病患者和具有家族性精神病風險的年輕人將在包括來自基督教聯合醫院精神科和容鳳書精神病治療中心的（1）專案研究員和他的精神科團隊或（2）通過早期青少年精神病患者的早期評估個案經理的幫助下進行招募。個案經理是護理人員，定期為早期精神病患者和他們的照顧者提供個案管理服務。

（1）早期精神病患者的招募方法是在基督教聯合醫院精神科和容鳳書精神病治療中心有提供全天早期精神病治療服務(早期青少年精神病患者的早期評估服務診所)的醫生在會診後將符合入選標準且精神狀況穩定的病例通過電郵的形式轉介給研究助理以進行進一步的篩查。經研究助理電話聯絡及篩選後符合所有納入標準的受試者將被邀請參加本研究。具有家族性精神病風險的年輕人的招募流程是負責早期精神病患者的醫生將研究專案的資訊資料頁交給早期精神病患者，並讓他們分享給家人。

（2）此外，當個案經理通過電話隨訪、家訪等方式為早期精神病患者和他們的照顧者提供個案管理服務時，將也會招募到合適的早期精神病患者和具有家族性精神病風險的年輕人。個案經理會向有意參與的早期精神病患者及具有家族性精神病風險的年輕人推廣和介紹項目，然後將對此研究感興趣的早期精神病患者及具有家族性精神病風險的年輕人告知研究助理。研究助理會與有意參與的早期精神病患者及具有家族性精神病風險的年輕人聯繫進行篩選和招募。如果在訪問期間發現任何參與者有心理上的困擾，將根據安全檢查方案做出適當的決定。

鑑於當前 2019 冠狀病毒疫情的影響，我們將通過電子郵件發送電子版的知情同意書和研究資料頁予參加者，並在歸還已簽署的紙質知情同意書之後安排第一次測試。

第一次測試取決於參與者提供的日子，會以網上或面對面（香港理工大學）形式評估包括評估家庭支援、職業功能、社會認知、社交技能以及收集個人資料 (佔 1.5 小時，期間包括間歇性休息)。

第二次測試則會在第一次測試後的下一天進行。參加者如因生病、臨時工作等原因無法參與下一天測試，將會重新安排第二次測試。因為需要使用電腦軟體（佔 1.5 小時，期間包括間歇性休息)，測試會以面對面（香港理工大學）形式完成神經認知測試。

我們會提供感染控制措施，包括手巾、洗手液、一次性口罩，並確保至少 1 米的社交距離。

因此，參加者將要進行 2 次測試 。如果參加者不參加第二次測試，將被終止繼續參與本研究，所收集的數據將會被銷毀。然而，參加者亦可於知情同意書表示允許研究人員在他們退出後繼續使用於本研究用途所收集的數據。

潛在風險或不適

據研究員所知，參加這項研究的風險為極低。您可能會在過程中感到疲倦和沉悶。因此，這項研究會分成兩次進行，其中亦包括間歇性休息。如果情況嚴重將會告

知轉介的醫生，並由醫生決定是否可以繼續參與。

潛在得益

您將會得到一份屬於自己的神經認知、社會認知、社交技能、家庭支援和職業功能方面的臨床測量結果。透過測量結果，您可以更深層地明白自己的感覺，思想，社會功能和職業功能。如果本研究提出的模型得到支援，神經認知能力較差的人更容易出現社會認知方面的問題，這將導致與同事建立良好關係的難度加大，在工作場所處理與工作相關的社交場合的能力下降。這些將直接影響您獲得和保持就業。同時，如果家庭支持對具有家族性精神疾病風險的年輕人和早期精神疾病患者的職業結果都有重要影響，那麼良好的家庭支援將促進您們在的職業功能。支持對具有家族性精神疾病風險的年輕人實行早期干預，提高其神經認知、社會認知和社交技能，以維持其在社區的職業功能。

其他程序或治療

不參加該研究不會影響您往後的治療。所有醫護程式不會因為參加與否而有差別。

知識上的更新

該研究會解釋到早期精神疾病患者和具有家族性精神疾病風險的年輕人的神經認知、社會認知、社交技能、家庭支援和職業功能之間的關係。如果有任何關於該研究並有可能會影響您是否繼續參與此研究的更新資料，您將會收到相關的通知。

治療和賠償

如研究人員察覺您在參與評估測試過程中，情緒或身體上有任何不適現象，研究人員將會為您進行治療或轉介您接受治療。您不會透過簽署本同意書而放棄任何法律權利。

自願參與 /中途退出/ 終止研究

參與這項研究純屬自願性質，無論您決定參加與否，您的決定都會被尊重。您可以在研究期間終止參與，沒有給予理由而退出，並不會影響您現在或日後所接受的醫療及護理服務。此外在參與研究過程中，若您情緒或身體上有任何不適現象，您有權利終止繼續參加這項研究。一旦您要退出研究，如果沒有得到您的同意，退出前所收集的數據將會被銷毀。您亦可於知情同意書表示允許研究人員在您退出後繼續使用從您身上所收集的數據用於本研究用途。您會被給予足夠的時間去考慮是否參與這項研究。簽署同意書後，您將獲得一份參與研究資料頁及已簽署的同意書副本作為紀錄。

參與研究收費及報酬

除要繳付常規醫療費用外，您無需繳交額外費用。完成兩次測試後，您將獲得一張價值港幣一百五十元正的超市禮券。

保密及私隱

您的身份將會絕對保密。所有需要發表的資料或報導，將不會顯示您的身份。為了高度保密，我們不會在問卷上填寫您的姓名。閣下所簽署的同意書會與您的研究數據及個人資料分開保存，並只有本研究的研究員可以閱讀。所有您的研究數據及個人資料將會存放在只有研究員可以接觸的電腦內，所得資料可以因應您的要求而抽出和銷毀，所有資料亦會在研究完成後三年銷毀。

根據香港法律規定（特別是第 486 章《個人資料（私隱）條例》），您享有或可享有確保您的個人資料保密的權利，例如在或為本研究中有關收集、監管、保留、管理、控制、使用（包括分析或比較）、轉進或轉出香港、不披露、清除和／或以任何方式處理或棄置的權利。如有任何問題，請您諮詢個人資料私隱專員或其職員（電話號碼：2827 2827），以瞭解妥善監控或監管您的個人資料保護之事宜，以確保您完整掌握和瞭解遵守規管個人資料私隱的法律之重要性。

因為簽訂書面同意書，您授權臨床研究倫理委員會和監管機構直接核查您的研究數據。

查詢

如您對是項研究有任何查詢，請與基督教聯合醫院 精神科潘立德醫生聯絡 (電話: 3949 4000)。

若您對作為研究參加者所享有的權利有任何疑問，請致電 3506 8888 與九龍中及九龍東聯網臨床研究倫理委員會聯絡。

多謝閣下的支持和參與!

香港理工大學 康復治療科學系
基督教聯合醫院 精神科

參與研究資料頁

研究題目： 具有家族性精神疾病風險的年輕人和早期精神疾病患者的認知、社交和職業功能

第二部分研究的題目：中國社會認知互動訓練對家族性精神疾病風險的年輕人的效果的隨機對照試驗

研究員：
潘立德醫生，副顧問醫生，精神科，基督教聯合醫院
曾永康教授，鄺美雲社會心理健康教授，講座教授及系主任，康復治療科學系，香港理工大學
鍾浩鳴，臨床助理，康復治療科學系，香港理工大學
翁弋婷，博士生，康復治療科學系，香港理工大學

研究資料:

研究概要

對那些有家族性精神病風險的人進行識別和提供干預可能會延緩或阻止他們發展成精神病。這些干預措施包括認知行為治療、支持性諮詢和心理教育。旨在減輕他們的壓力和增強他們的恢復力的干預措施將因此改善他們的預後和治療結果。該部分研究的研究目的主要是探討中國社會認知互動訓練對改善具有家族性精神病風險的年輕人的臨床、職業和社會心理結果方面的有效性，以降低他們罹患精神疾病的風險。這是基於之前的初步研究證據證明其療效可以改善社會認知和社會功能，並進一步證明對嚴重的門診精神疾病患者和穩定的精神分裂症患者產生了良好的作用，其積極的結果可以維持到 6 個月的隨訪，同時改善首發的思覺失調患者的功能。然而，目前沒有對家族性精神疾病風險的年輕人使用社會認知互動訓練的研究。尚不清楚社會認知互動訓練是否對家族性精神疾病風險的年輕人的社會技能和職業功能作出積極貢獻。

參加者的角色和義務

該部分研究的參加者會接受一系列的評估測試 (精神狀態、社會認知、社交技能、生活品質和職業功能)，以測量參加者的感覺、思維、臨床症狀、社會功能和職業功能為目的。參與者在每一階段測試會出席 1 次或 2 次。第一次測試將會進行精神狀態，生活品質和社交技能的測試 (佔 1 小時，包括間歇性休息) 。第二次測試則是社會認知和職業功能(佔 1 小時，包括間歇性休息) 。第一次測試將會在簽署參與研究同意書或歸還已簽署的知情同意書當天進行，而第二次測試則會在第一次測試的當天或下一天進行。參加者如因生病、臨時工作等某種原因無法

參與第二次測試，將會重新安排第二次測試。如果在訪問期間發現任何參與者有心理上的困擾，將根據安全檢查方案做出適當的決定。
55 名曾參與第一部分的具有家族性精神病風險的年輕人將會再次邀請參加，將會由電腦隨機分派為中國社會認知互動訓練及照常治療組 (實驗組) 和照常治療組（控制組）。參與者不允許改變研究小組。
實驗組將接受“中國社會認知互動訓練計劃”，內容包括 5 周，9 節，9 小時的小組社會認知訓練。主要有情緒理解技巧，社會認知偏見技巧和整合各種技巧，為了改善參與者的社交表現、人際關係以及個人生活。同時亦會記錄他們常規的生活方式，包括他們的日常工作，學習和社會活動。
控制組的參與者只需要記錄他們常規的生活方式，包括他們的日常工作，學習和社會活動。
將所有參與者亦須在基線、干預後即時和干預後3個月進行社會認知、社會技能、職業功能、心理狀態和生活品質的評估。每次 2 小時。

潛在風險或不適
據研究員所知，參加這項研究的風險為極低。您可能會在過程中感到疲倦和沉悶。因此，這項研究會分成兩次進行，其中亦包括間歇性休息。如果情況嚴重將會告知轉介的醫生，並由醫生決定是否可以繼續參與。

潛在得益
您將會得到一份屬於自己的神經認知、社會認知、社交技能、家庭支援和職業功能方面的臨床測量結果。透過測量結果，您可以更深層地明白自己的感覺，思想，社會功能和職業功能。同時，如果研究結果顯示中國社會認知互動訓練對具有家族性精神疾病風險的年輕人有積極影響，能夠改善他們的社會和職業功能，這將能夠保護他們不受家庭遺傳風險發展為精神病的影響。

知識上的更新
這項研究將有助於闡明“中國社會認知互動訓練計劃”是否能夠改善具有家族性精神病風險的年輕人的社會和職業功能。如果有任何關於該研究並有可能會影響您是否繼續參與此研究的更新資料，您將會收到相關的通知。

治療和賠償
如研究人員察覺您在參與評估測試過程中，情緒或身體上有任何不適現象，研究人員將會為您進行治療或轉介您接受治療。您不會透過簽署本同意書而放棄任何法律權利。

預期研究的持續時間
您將參加本研究最長可達大約 5 個月。

自願參與 /中途退出/ 終止研究

參與這項研究純屬自願性質，無論您決定參加與否，您的決定都會被尊重。您可以在研究期間終止參與，沒有給予理由而退出，而此舉不會導致您受到任何懲罰或不公平對待。此外在參與研究過程中，若您情緒或身體上有任何不適現象， 您有權利終止繼續參加這項研究。一旦您要退出研究，如果沒有得到您的同意，退出前所收集的數據將會被銷毀。您亦可於知情同意書表示允許研究人員在您退出後繼續使用從您身上所收集的數據用於本研究用途。您會被給予足夠的時間去考慮是否參與這項研究。簽署同意書後，您將獲得一份參與研究資料頁及已簽署的同意書副本作為紀錄。

參與研究收費及報酬

除要繳付常規醫療費用外，您無需繳交額外費用。完成 12 次測試後，您將獲得一張價值港幣二百元正的超市禮券。

保密及私隱

您的身份將會絕對保密。所有需要發表的資料或報導，將不會顯示您的身份。為了高度保密，我們不會在問卷上填寫您的姓名。閣下所簽署的同意書會與您的研究數據及個人資料分開保存，並只有本研究的研究員可以閱讀。所有您的研究數據及個人資料將會存放在只有研究員可以接觸的電腦內，所得資料可以因應您的要求而抽出和銷毀，所有資料亦會在研究完成後三年銷毀。

根據香港法律規定（特別是第 486 章《個人資料（私隱）條例》），您享有或可享有確保您的個人資料保密的權利，例如在或為本研究中有關收集、監管、保留、管理、控制、使用（包括分析或比較）、轉進或轉出香港、不披露、清除和／或以任何方式處理或棄置的權利。如有任何問題，請您諮詢個人資料私隱專員或其職員（電話號碼：2827 2827），以瞭解妥善監控或監管您的個人資料保護之事宜，以確保您完整掌握和瞭解遵守規管個人資料私隱的法律之重要性。

因為簽訂書面同意書，您授權臨床研究倫理委員會和監管機構直接核查您的研究數據。

查詢

如您對是項研究有任何查詢，請與基督教聯合醫院 精神科潘立德醫生聯絡 (電話: 3949 4000)。

若您對作為研究參加者所享有的權利有任何疑問，請致電 3506 8888 與九龍中及九龍東聯網臨床研究倫理委員會聯絡。

多謝閣下的支持和參與!

Appendix 3 A: Research Project Informed Consent Form (English)

The Hong Kong Polytechnic University
Department of Rehabilitation Sciences
United Christian Hospital Department of psychiatry
Research Project Informed Consent Form

Project title: Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP)

I have read the INFORMATION SHEET.

I have been explained the details of this study. I have had opportunities to ask questions and all my questions have been satisfactorily answered. I voluntarily consent to participate in this study. I understand that I can withdraw from this study at any time without giving reasons, and my withdrawal will not lead to any punishment or prejudice against me. And this will not affect your present or future medical care. I am aware of any potential risk in joining this study. I also understand that my personal information will not be disclosed to people who are not related to this study and my name or photograph will not appear on any publications resulted from this study.

I am not giving up any of my legal rights by signing this form.
If I request to withdraw from this study, I ☐agree/☐ disagree that the researcher may continue to use the research data provided before I withdrew from this study.

By signing this consent form, I certify that all information provided is true and correct.
By signing this form, I understand that KC/KE cluster REC is one of the authorized parties to access my records related to the study for ethics review purpose.

I can contact Dr Poon, Department of psychiatry, UCH at telephone 3949 4000 for any questions about this study. If I have complaints related to the investigator(s), I can contact Ms Vangie Chung, Secretary of the Departmental Research Committee, Department of RS, HK PolyU at 2766 4329. If I have questions related to my rights as a research participant, I can contact Research Ethics Committee (Kowloon Central/Kowloon East) at 3506 8888.
I know I will be given a signed copy of this consent form.

Participant's name	Participant's signature	Date
Investigator's name	Investigator's signature	Date

Appendix 3 B: Research Project Informed Consent Form (Chinese)

香港理工大學 康復治療科學系

基督教聯合醫院 精神科

參與研究同意書

研究題目: 具有家族性精神疾病風險的年輕人和早期精神疾病患者的認知、社交和職業功能

本人已細閱有關此計劃的參與研究資料頁。

研究員/研究統籌員亦已向本人充分解釋這項研究的細節。本人亦有機會提出有關疑問，也得到滿意的解答。本人明瞭各項條款並願意參與此計劃。本人明白，本人可不提出任何原因而於任何時間退出本研究，同時不影響本人現在及日後所獲得的治療。本人已知道參加此研究的風險。本人亦明白本人所提供的個人資料不會洩露給與這項研究沒有關係的人士。此外，本人的名字或照片將不會出現在任何有關本研究的出版物裏。

本人不會透過簽署本同意書而放棄任何法律權利。

若本人要求退出本研究，本人 □同意 / □不同意研究人員可以繼續使用本人退出本研究前所提供的研究數據。

本人謹於本同意書簽署，證明本人提供的所有資料均為正確無誤。

本人亦允許九龍中及九龍東聯網臨床研究倫理委員會及有關法定機構在合適的條例及法例容許下在不侵犯本人的私隱情況中，直接翻查本人的研究數據以核實研究計劃。

若有任何關於該項研究的問題，本人可聯絡基督教聯合醫院 精神科潘立德醫生

<<同意書>> 版本(一); 日期: 二零一九年八月二十日

(電話 ：3949 4000)。 若有任何關於研究人員的投拆，本人可聯絡香港理工大學康復治療科學系研究委員會秘書，鍾靜妍女士(電話: 2766 4329) 。

若有任何關於參加該項研究的權利，本人可聯絡九龍中及九龍東聯網臨床研究倫理委員會(電話: 3506 8888) 。

簽署同意書後，本人將獲得一份參與研究資料頁及已簽署的同意書副本作為保存。

參與者姓名	參與者簽署	日期
研究人員姓名	研究人員簽署	日期

<<同意書>> 版本(一); 日期: 二零一九年八月二十日

Appendix 4: Employment Outcome Checklist (EOC)

就業成果檢查表(EOC)（1）

A. 人口資料

1. 姓名 _____

2. 性別 _____ 3. 年齡 _____

4. 診斷 _____ 5. 婚姻狀況_____

6.教育水準：

未接受正規教育	小學	中學	大專及以上

（請在合適的表中打✓）

B. 就業狀況

1. 以往公開就業（在一般勞動市場擁有的一份工作）的經驗（2）：___年___月___日

2. 在過去3個月公開就業的經驗：____ 月____ 日

3. 目前就業狀況：

公開就業	支持性就業	庇護性就業	過渡性就業	未就業（轉到D部分）	其他：（請註明）

（請在合適的表中打✓）

C. 已就業者填寫此部分

1.工作細節

1.1 工作職位（如職務與職責等）（3）：_____

1.2 工作性質（全職/兼職）：

_____

1.3 收入：_____元/月

1.4 每天的工作時間：_____小時

1.5 曠工（過去3個月的總數）：_____天

1.6 對目前工作/培訓的總體滿意度：（培訓特指支援性就業等中所涉及的內容）

非常滿意	滿意	一般	不滿意	非常不滿意

（請在合適的表中打√）

1.7 滿意或者不滿意的原因（如收入、同事關係、自尊、職位等）：

_____

_____

1.8 過去3個月工作的經歷

	工作/培訓（4）	時間	收入	離職原因（5）
i.				
ii.				
iii.				

1.9 找工作花費的時間：_____周（時間以星期計算）

1.10 找到工作之前經歷失敗的次數：_____次

2. 社會支持

2.1 社會活動的頻率 （6）

一周1次	一周1-3次	一周4-5次	一周6-7次	超過7次

（請在合適的表中打√）

2.2 社會活動的性質：

_____

2.3 與同事的關係：

非常好	好	一般	差	非常差

（請在合適的表中打√）

2.4 與管理者的關係：

非常好	好	一般	差	非常差

（請在合適的表中打√）

3.工作壓力

3.1 在過去3個月中，你是否感受到了工作壓力？

是	否

（請在合適的表中打√）

3.2 工作壓力的程度：

非常高	高	適中	較低

（請在合適的表中打√）

3.3 工作壓力的來源：_____

（如：工作量、同事歧視、工作業績要求等）

D. 目前未就業者填寫

1. 工作細節 （7）

1.1 過去3個月中的工作經歷

	工作/培訓	時間	收入	離職原因
i.				
ii.				
iii.				

1.2 對之前工作/培訓的總體滿意情況：

非常滿意	滿意	一般	不滿意	非常不滿意

（請在合適的表中打✓）

1.3 滿意或者不滿意的原因：

_____

1.4 嘗試找工作的次數（8）：_____次

2. 社會支持

2.1 社會活動的頻率：

低於一周1次	一周1-3次	一周4-5次	一周6-7次	超過7次

（請在合適的表中打✓）

2.2 社會活動的性質：

_____

2.3 過去3個月曾從事過的工作中與同事的關係：

非常好	好	一般	差	非常差

（請在合適的表中打✓）

2.4 過去3個月曾從事過的工作中與管理者的關係：

非常好	好	一般	差	非常差

（請在合適的表中打✓）

評估日期：

評估者簽名：

備註：

（1）這份問卷主要針對參與者填寫日期當天計算的過去3個月工作的情況；

（2）參與者至今的所有公開就業的時間總和，例如：第一份工作持續20天，第二份工作持續2個月5天，第三份工作持續1個月15天，過去3個月總共做了3份工作，總時間為4個月10天，以此類推；

（3）例如：銷售員、辦公室文員、服務員、清潔工等，可以描述相應的職務與職責；

（4）填寫工作內容或培訓內容，例如：酒店前臺/培訓如何成為一名商品推銷員；

（5）已就業者填寫指參與者目前處於有工作的狀態，但是在過去的3個月可能換了一份或多份工作，所以描述前一次或者前幾次工作離職的原因，例如：與同事的合作問題、與老闆的溝通問題、工作專注力欠佳、工作的準確度不夠、完成工作的品質不好等；

（6）社交活動:在公共場合中參與者與除家人以外的人如同事、同學、朋友等進行的交流活動.e.g.戶外運動、看電影、打麻將、外出聚餐、宗教活動、慶祝活動等；

（7）未就業者填寫指參與者目前處於沒有工作的狀態，但是在過去的3個月可能有從事過一份或多工作，若有從事過請描述相應的工作內容，若沒有則填寫“無”；

（8）指過去3個月，參與者嘗試找工作的次數，但必須曾採取過實際的行動，比如打電話諮 詢、投簡歷、參加面試等。

Appendix 5: Vocational Social Skills Assessment Scale (VSSS)

工作社交技巧自我施行表(VSSS)

調查問卷

面對下列與求職或工作有關的情況， 你會感到困難嗎？

回答問題指引：

a. 無論作在職與否，按你現在的能力或表現作答。

b. 按下列評分標準作答：

1 – 時刻感到困難
2 – 經常感到困難
3 – 間中感到困難
4 – 偶然感到困難
5 – 甚少感到困難
6 – 完全不感到困難

	答案(1-6)
1. 打電話預約面試時間	_____
2. 參加面試	_____
3. 面試時穿合適的衣服	_____
4. 因急事向上級請假	_____
5. 解決與上級的糾紛	_____
6. 解決與同事的糾紛	_____
7. 不說別人是非	_____
8. 與同事合作完成一件事	_____
9. 當疲倦時，拒絕加班的要求	_____
10. 協助指導新同事或為新同事做工作示範	_____

Appendix 6: The Chinese version of the Multidimensional Scale of Perceived Social Support (MSPSS-C)

感受社會支持多面量表--家庭

指導語：我們想瞭解您對下列敘述的看法，請仔細閱讀每個句子，然後選出最能描述您感受的選項。

假如您非常強烈不同意，請圈選「1」

假如您強烈不同意，圈選「2」

假如您有些不同意，圈選「3」

假如您沒意見，圈選「4」

假如您有些同意，圈選「5」

假如您強烈同意，圈選「6」

假如您非常強烈同意，圈選「7」

	非常強烈不同意	強烈不同意	有些不同意	沒意見	有些同意	強烈同意	非常強烈同意
1. 我的家人的確努力要幫我	1	2	3	4	5	6	7
2. 我能從家人得到所需的情緒上的協助與支持	1	2	3	4	5	6	7
3. 我可以告訴家人我的煩惱	1	2	3	4	5	6	7
4. 我的家人樂意幫我下決定	1	2	3	4	5	6	7

Appendix 7 A: The Chinese Facial Emotion Identification Test (C-FEIT) - Photos

「情緒知覺」測試

JACFEE (12 photos)

E5 Anger	E8 Anger	E22 Disgust	E24 Disgust
			
E30 Fear	**E32 Fear**	**E38 Happiness**	**E40 Happiness**
			
E46 Sadness	**E48 Sadness**	**E53 Surprise**	**E56 Surprise**
			

JACNeuF (9 photos)

N30	N31	N32	N33
			
N38	**N49**	**N50**	**N54**
			
N56			
			

Appendix 7 B: The Chinese Facial Emotion Identification Test (C-FEIT) - Answer sheet

「情緒知覺」測試

1. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
2. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
3. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
4. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
5. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
6. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
7. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
8. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
9. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
10. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
11. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
12. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
13. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
14. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
15. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
16. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
17. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
18. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
19. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
20. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性
21. 高興、悲哀、憤怒、厭惡、害怕/懼怕、驚奇/驚訝、中性

Appendix 7 C: Chinese Facial Emotion Identification Test (C-FEIT) – Permission

Re: Permission to use the instruction sheet of the Chinese-Facial Emotion Perception Test (C-FEIT)

I am interested to use the instruction sheet of the Chinese Facial Emotion Perception Test (C-FEIT) for clinical or research purpose (please further state in form below).

I am willing to adhere to the following conditions in use of the instruction sheet.

1. I will cite this reference in any of the reports or publications in which the C-FEIT instruction sheet is used: Lo, P. M., & Siu, A. M. (2018). assessing social cognition of Persons with schizophrenia in a Chinese Population: a Pilot study. *Frontiers in psychiatry*, *8*, 302.
2. I will communicate to you a summary of the research results using the C-FEIT.
3. I will not re-distribute the C-FEIT instruction sheet, and would direct interested parties to contact the original authors about the use of the sheet
4. The C-FEIT instruction sheet will be solely used for research and educational purposes and no commercial activities and interests should be involved in the use of the scale.
5. I understand that this permission only grant me the right to use the C-FEIT instruction sheet and I need to purchase the photos used in C-FEIT from photo sets namely JACFEE and JACNeuF (developed by Matsumoto and Ekman) in order to conduct the C-FEIT.

(Signature)_____ Date: _____26/3/2019_____

Name: _____ Weng Yiting _____

Post / Job Title: _____ PhD student _____

Organization: Department of Rehabilitation Sciences, The Hong Kong Polytechnic University

Address: _____ ST 816, The HKPU, HK _____

Telephone: _____27664675_____ Fax: _____ N/A _____

Email: _____ yvonne.yt.weng@ _____

How the C-FEIT instruction sheet would be used: __ It will be used in the PhD study to assess the social cognition. The title of the study is "Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP)"_____

Appendix 8 A: The Chinese Social Cognition and Screening Questionnaire (C-SCSQ)

1

社交認知篩選問卷
香港版

原作者：David L. Roberts, PhD (Version 4.1, Jan 2009)
中文版：Panmi Lo & Dr Andrew Siu (Dec 2011)
聯絡方法　lmt628@

* The Chinese Social Cognition and Screening Questionnaire was validated by Lo & Siu (2018). Lo, P. M.T., & Siu, A. M.H. (2018). Assessing social cognition of Persons with schizophrenia in a Chinese Population: a Pilot study. Frontiers in psychiatry, 8, 302.

社交認知篩選問卷
使用指引

「社交認知篩選問卷」可以個別(即「一對一」)或組別形式進行。在「一對一」形式中，「參與者答題紙」可由評估員或參與者填寫，而在「組別」形式中，該表格則由參與者填寫。

指引
清楚讀出以下的「參與者指示」，如有需要，亦請附以解釋。然後，逐一讀出十個小段落，每一段落後設有三條是非題(分別是A、B、C題)，最後有關「肯定正確程度」的題目(即D題)。

在讀出每一個小段落前，需確保參與者專心聆聽、準備妥當，可說：「已準備就緒嗎？」，及以眼神接觸，來確定參與者的狀態。每一段落**只可讀出一次**，並**以適度和穩定的讀速進行，不可改變語調來不當地強調某一部分**。除非因受外界滋擾而影響問卷調查的進行，否則，不可重讀小段落中任何一部分。

在小段落8中，出現「美玲／偉文」兩組名詞。在個別的形式中，需使用與參與者相同的性別名詞，在小組形式若分別有男女參加者，則使用「美玲」。

評估員可自行決定，是否向參與者提供「D題提示咭」，以示在D題中四個回應的選項。

給參與者指示
”在進行此問卷時，我會讀出10個小故事，而我希望你假設那些情境發生在你的身上。我想你用心聆聽，因為我不可重讀故事的任何一部分。讀完每一個故事後，我會向你發問3條有關那故事的是非問題。”

”這是第一個故事，你已準備就緒嗎？”

(1) 試幻想：某一星期日早上，與你同住於一大廈內的鄰居致電你，她說：「昨晚，你有否整夜聽見那些噪音？」你回應，因你只管看電視，並沒有聽見任何噪音。你的鄰居續說：「你知道，我常常難以入睡，我需要一個安靜舒適的環境。」之後，她掛上電話。

[只在介紹第一組是非題時，說：***現在，我將發問3條有關那故事的是非題，請以你最佳的記憶來回答每一條問題。在一些題目中，可能沒有非黑即白的簡單正確答案，那時，只需根據那故事作出最好的猜想。好了，以下是第一條問題。***]

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A. 你的鄰居是否在星期日的早上致電你？
B. 在你的鄰居致電你之前的那個晚上，你是否一早已上床就枕？
C. 你的鄰居是否認為你令她難以入睡？

[此時，評估員可選擇是否給予參與者「D題指示咭」，以示D題中的四個回應選項。]

D. 對於最後一個答案，即C題的答案，你有多肯定你是正確的 ？
1. 完全不肯定
2. 少少不肯定
3. 相當肯定
4. 非常肯定

(2) 試幻想：你正尋找工作，你的朋友告知你，在警局對面那條街道上的一間新餐廳，正招聘員工。你致電那餐廳，希望他們給予你面試機會。餐廳經理說：「我可在晚膳繁忙時段前，下午4時45分接見你。」翌日，你乘搭的巴士遲到了，下午5時，你才抵達那餐廳。那經理說：「現在，我不準備接見你。」他走過你的身邊，然後走進廚房。你這趟是白跑了，最終一無所獲。

A. 那餐廳位於警局的附近？
B. 那餐廳是否廣受歡迎？
C. 那經理是否嘗試無禮地對待你？
D. 對於最後一個答案，你有多肯定你是正確的？
1. 完全不肯定
2. 少少不肯定
3. 相當肯定
4. 非常肯定

(3) 試幻想：有一晚，你意外地多煮了炒飯，決定致電你的朋友，邀請她/他前來你家，一起用餐。她/他沒有接電，所以你留了口訊。你等待回覆，直至食物也涼了，但是，你的朋友最終也沒有現身。最後，你吃下了那些涼了的炒飯，之後出外走走。在散步之際，你見到你的朋友與別人，開開心心地從戲院中出來。當他們見到你時，你的朋友感到驚奇。

A. 那夜，你一早吃飯嗎？
B. 你是否弄了湯麵作那天的晚餐？
C. 你的朋友是否希望，你不會於戲院見到他們？

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D. 對於最後一個答案，你有多肯定你是正確的？
1. 完全不肯定
2. 少少不肯定
3. 相當肯定
4. 非常肯定

(4) 試幻想：你前往醫院探望一位出了意外的親友。你正嘗試找尋通往三樓的樓梯，但是，因指示不清，你在長長的走廊中迷了路。最後，你見到一扇門，上面寫著:「醫生專用」。你打開那門，見到很多人穿上白袍。有一位女士定眼望著你，並指向那門。最後，你找到了那樓梯，之後走到你親友的病房。

A. 那些穿白袍的是護士嗎？
B. 你親友的病房是否位於三樓嗎？
C. 那女士想你離開那房間嗎？
D. 對於最後一個答案，你有多肯定你是正確的？
1. 完全不肯定
2. 少少不肯定
3. 相當肯定
4. 非常肯定

(5) 試幻想：一位新朋友邀請你一起吃晚飯。當你倆抵達餐廳，你見到一群人正圍坐於一張大桌子用膳，他們呼叫你們，而你們就跟他們一起用餐。他們裝扮得很好，在一片歡聲笑語中閒談。你的朋友沒有提醒你，但那餐廳的收費是相當昂貴的。你不明菜單中所列的是甚麼東西，你的朋友因而為你點了菜。在吃甜品前，你的朋友向你說：「我想，我們應該離開。」

A. 那群正圍大桌子用膳的人是否之前已互相認識的呢？
B. 你的朋友是否提出在吃主菜前離開？
C. 你的朋友是否因為你的緣故而提早離開？
D. 對於最後一個答案，你有多肯定你是正確的？
1. 完全不肯定
2. 少少不肯定
3. 相當肯定
4. 非常肯定

(6) 試幻想：你前往便利店購買牙膏。那處，出現了一條長長的人龍，待你排至人龍的前面時，只見一位職員，趕忙地工作。你的牙膏價值１６元，你給收銀員２０元，她找回給你２元，她說：「下一位。」當你離開後，發現她少給了你。

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她應找給你4 元，但是，只給了你2元。

A. 你是否在店裏購買了潤手霜？
B. 那便利店繁忙嗎？
C. 在找續時，那收銀員是否意外地少給了你？
D. 對於最後一個答案，你有多肯定你是正確的？
1. 完全不肯定
2. 少少不肯定
3. 相當肯定
4. 非常肯定

(7) 試幻想：那天是雨天。你前往圖書館，想找尋一些飲食雜誌。你最終找到了，但差不多沒有位子可供坐下。唯一的椅子就是在那堆滿了運動書籍的桌子旁。無論如何，你坐下了。之後，有一陌生男子走上前來，說：「唏，你不見那桌子上的書本嗎？」他定睛望著你，搖搖頭，然後離開了。之後的整個下午，你就在翻閱那些雜誌。

A. 那天，圖書館繁忙嗎？
B. 你是否找尋有關飲食的雜誌嗎？
C. 那陌生人對你不滿嗎？
D. 對於最後一個答案，你有多肯定你是正確的？
1. 完全不肯定
2. 少少不肯定
3. 相當肯定
4. 非常肯定

(8) 試幻想：在某一星期四晚上，你前往投注站買六合彩彩票，你恰巧遇上美玲／偉文，她/他就是那位在你未搬至另一大廈前的鄰居。你一直喜歡與美玲／偉文做朋友，所以，你與她/他閒談起來。她/他沒說了甚麼，而你也感到疲倦。當你離開前，你向她/他說：「不如遲些約吃晚飯吧。」她/他說：「遲些見啦。」翌日，你致電她/他，並留了口訊。她/他沒回覆，所以，在下一星期，你便留了第二和第三個口訊。她/他仍然沒回覆。

A. 你是否比美玲／偉文早些離開投注站？
B. 美玲／偉文現在是否與你住在同一大廈？
C. 美玲／偉文是否嘗試避開你？
D. 對於最後一個答案，你有多肯定你是正確的？
1. 完全不肯定

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2. 少少不肯定
3. 相當肯定
4. 非常肯定

(9) 試幻想：早上，你家裏的洗衣機壞了，只可穿上一件不漂亮的上衣，走上街買麵包。你在麵包舖的人龍排隊等候，當輪候到你時，收銀員望著你，說：「我不能替你服務。」她向下望，說：「那收銀機出現了些問題。」你決定走到上一條街道的麵包舖，當你離開之時，你與一位女士擦身而過，她一邊拿著書，一邊大笑。

A. 你是否住在鄉村地方？
B. 那天，你是否穿了一件美觀的上衣？
C. 挨近門的那位女士有否嘲笑你？
D. 對於最後一個答案，你有多肯定你是正確的？
1. 完全不肯定
2. 少少不肯定
3. 相當肯定
4. 非常肯定

(10) 試幻想：在十二月時，你正經過市中心的一條街道上。一位穿著厚厚外套的男子走上前來，說：「我可否用 5 分鐘跟你談談？我想向你說些好消息。」他在街道上東張西望，說：「不如走到那大廈的後面談談，那裏的風沒那麼大。」因你將出席一個會議，但快將遲到，便說：「對不起，我要走了。」之後，你便離開。

A. 那男子是否向你說，他想用 10 分鐘跟你談談？
B. 室外是否和暖？
C. 那男子是否真的想向你說些好消息嗎？
D. 對於最後一個答案，你有多肯定你是正確的？
1. 完全不肯定
2. 少少不肯定
3. 相當肯定
4. 非常肯定

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社交認知篩選問卷
參加者答題紙

姓名：_____ **評估日期：**_____

每一個故事，均設有 3 條問題。在每一問題中，請圈出**最合適**的答案。然後，在 D 題中，圈出你對 C 題答案的肯定程度。

1. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

2. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

3. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

4. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

5. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

6. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

7. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

8. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

9. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

10. A) 是 / 非 B) 是 / 非 C) 是 / 非
D) 1. 完全不肯定 2. 少少不肯定 3. 相當肯定 4. 非常肯定

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Lo, P. M.T., & Siu, A. M.H. (2018). Assessing social cognition of Persons with schizophrenia in a Chinese Population: a Pilot study. Frontiers in psychiatry, 8, 302.

社交認知篩選問卷
計分紙

姓名：_____ **評估日期：**_____

項目	分數
認知能力篩選分數(neurocognitive screening)	/20
心智解讀理論（theory-of-mind/perspective taking）	/10
妄下定論傾向（jump-to-conclusion tendency）	/4
被迫害的歸因傾向（paranoid attributional bias）	/5

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社交認知篩選問卷
計分方法

社交認知篩選問卷分為四個項目包括認知能力篩選分數(neurocognitive screening)、心智解讀理論 (theory-of-mind/perspective taking)、妄下定論傾向 (jump-to-conclusion tendency)及被迫害的歸因傾向 (paranoid attributional bias)。

(一) 認知能力篩選(neurocognitive screening)
此項目的分數由十個題目的A及B題計算出來，正確答案可得1分，不正確答案為0 分，滿分為20分。

正確答案如下

	A	B
1	是	否
2	是	是
3	否	否
4	否	是
5	是	否
6	否	是
7	是	是
8	是	否
9	否	否
10	否	否

此項目所得的分數可用作反映參與者是否適合接受社交認知互動訓練，

- 類別4：高於15分：適合接受社交認知互動訓練
- 類別3：13至15分：其認知功能有可能影響其社交認知功能，但參加者仍有足夠的認知能力接受社交認知互動訓練
- 類別2：12分：邊緣適合接受社交認知互動訓練
- 類別1：低於12分：其認知功能對其社交認知能力有很大程度的影響,建議參加者先接受認知訓練後，再重做此問卷以確認參加者是否有接受社交認知訓練的需要

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（二）心智解讀理論（theory-of-mind/perspective taking）

此項目的分數由十個題目的C題計算出來，正確答案可得1分，不正確答案為0分，滿分為10分。

正確答案如下

	C
1	是
2	否
3	否
4	是
5	否
6	是
7	是
8	是
9	否
10	否

（三）妄下定論傾向（jump-to-conclusion tendency）

此項目的分數由十個題目中的D題計算出來，計算方法如下:

- 第一步: 在C題答錯的題目，記下該題目中的D題的分數並將其相加起來(例如: 一個參加者在(二)的分數是8分，在2題及第3題的C題答錯，在第2題，她的D題分數是3分，在第3題，她的D分數是4分，將3分及4分相加，得出7分)
- 第二步： 將上述的總數除以在C題答錯的題目數目 (即7除以2＝3.5分)，得出(三) 妄下定論傾向的分數

此項目的最低可得0分，最高為4分。越高分表示該參加者的妄下定論傾向越高。

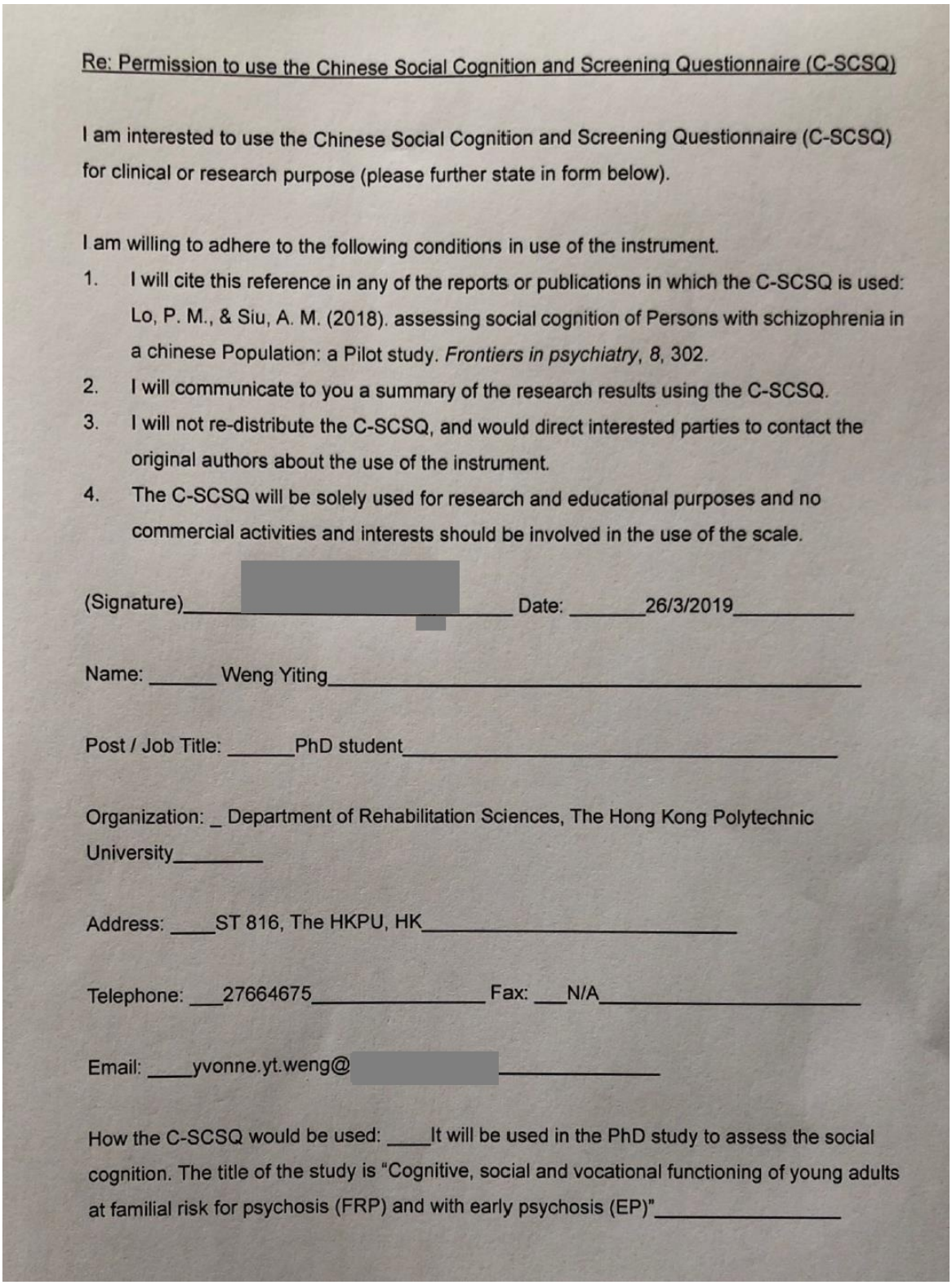
（四）被迫害的歸因傾向（paranoid attributional bias）

此項目是於以下題目答錯的總分2C，3C，5C，6C及9C，最低為0分，最高為5分。 越高分表示該參加者的被迫害的歸因傾向越高。

但需留意若其在心智解讀理論的分數等於或低於5，或在認知能力篩選分數等於或低於１４，則此分數未必能反映其歸因傾向。

* The Chinese Social Cognition and Screening Questionnaire was validated by Lo & Siu (2018).
Lo, P. M.T., & Siu, A. M.H. (2018). Assessing social cognition of Persons with schizophrenia in a Chinese Population: a Pilot study. Frontiers in psychiatry, 8, 302.

Appendix 8 B: The Chinese Social Cognition and Screening Questionnaire (C-SCSQ) – Permission



Re: Permission to use the Chinese Social Cognition and Screening Questionnaire (C-SCSQ)

I am interested to use the Chinese Social Cognition and Screening Questionnaire (C-SCSQ) for clinical or research purpose (please further state in form below).

I am willing to adhere to the following conditions in use of the instrument.

1. I will cite this reference in any of the reports or publications in which the C-SCSQ is used: Lo, P. M., & Siu, A. M. (2018). assessing social cognition of Persons with schizophrenia in a chinese Population: a Pilot study. *Frontiers in psychiatry*, *8*, 302.
2. I will communicate to you a summary of the research results using the C-SCSQ.
3. I will not re-distribute the C-SCSQ, and would direct interested parties to contact the original authors about the use of the instrument.
4. The C-SCSQ will be solely used for research and educational purposes and no commercial activities and interests should be involved in the use of the scale.

(Signature)_____ Date: _____26/3/2019_____

Name: _____ Weng Yiting_____

Post / Job Title: _____PhD student_____

Organization: _ Department of Rehabilitation Sciences, The Hong Kong Polytechnic University_____

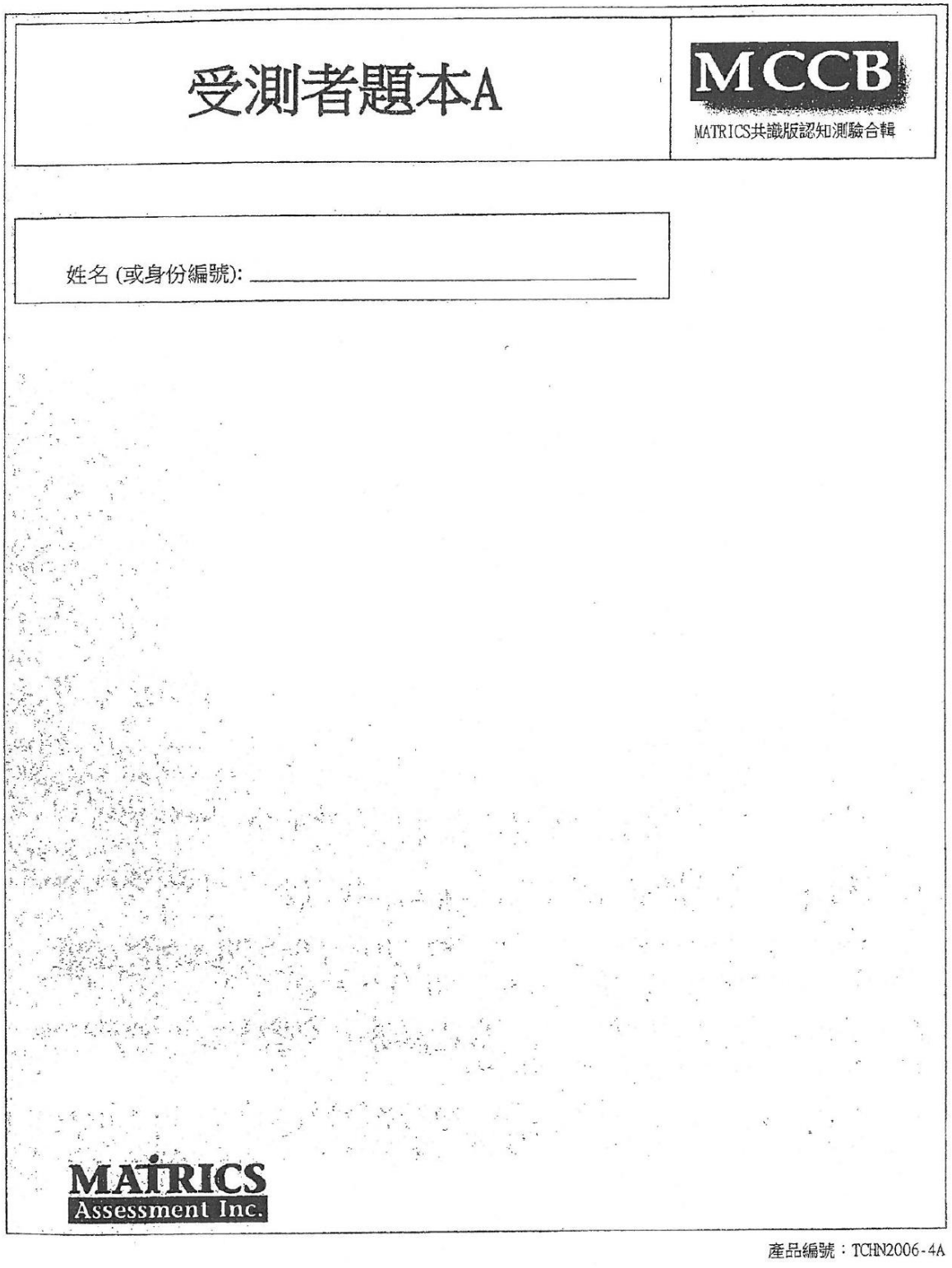
Address: ____ST 816, The HKPU, HK_____

Telephone: ___27664675_____ Fax: ___N/A_____

Email: ____yvonne.yt.weng@_____

How the C-SCSQ would be used: ____It will be used in the PhD study to assess the social cognition. The title of the study is "Cognitive, social and vocational functioning of young adults at familial risk for psychosis (FRP) and with early psychosis (EP)"_____

Appendix 9 A: MATRICS Consensus Cognitive Battery (MCCB) – Respondent's Booklets


受測者題本A

MCCB

MATRICS共識版認知測驗合輯

姓名 (或身份編號): _____

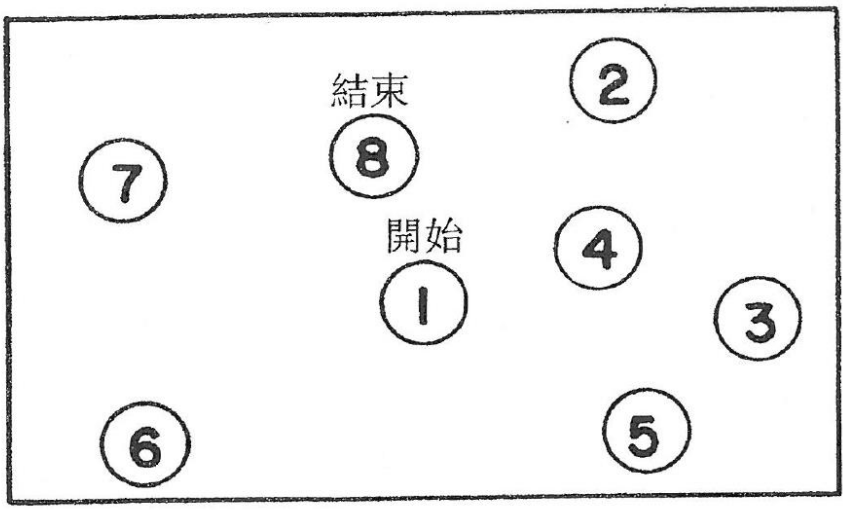
MATRICS Assessment Inc.

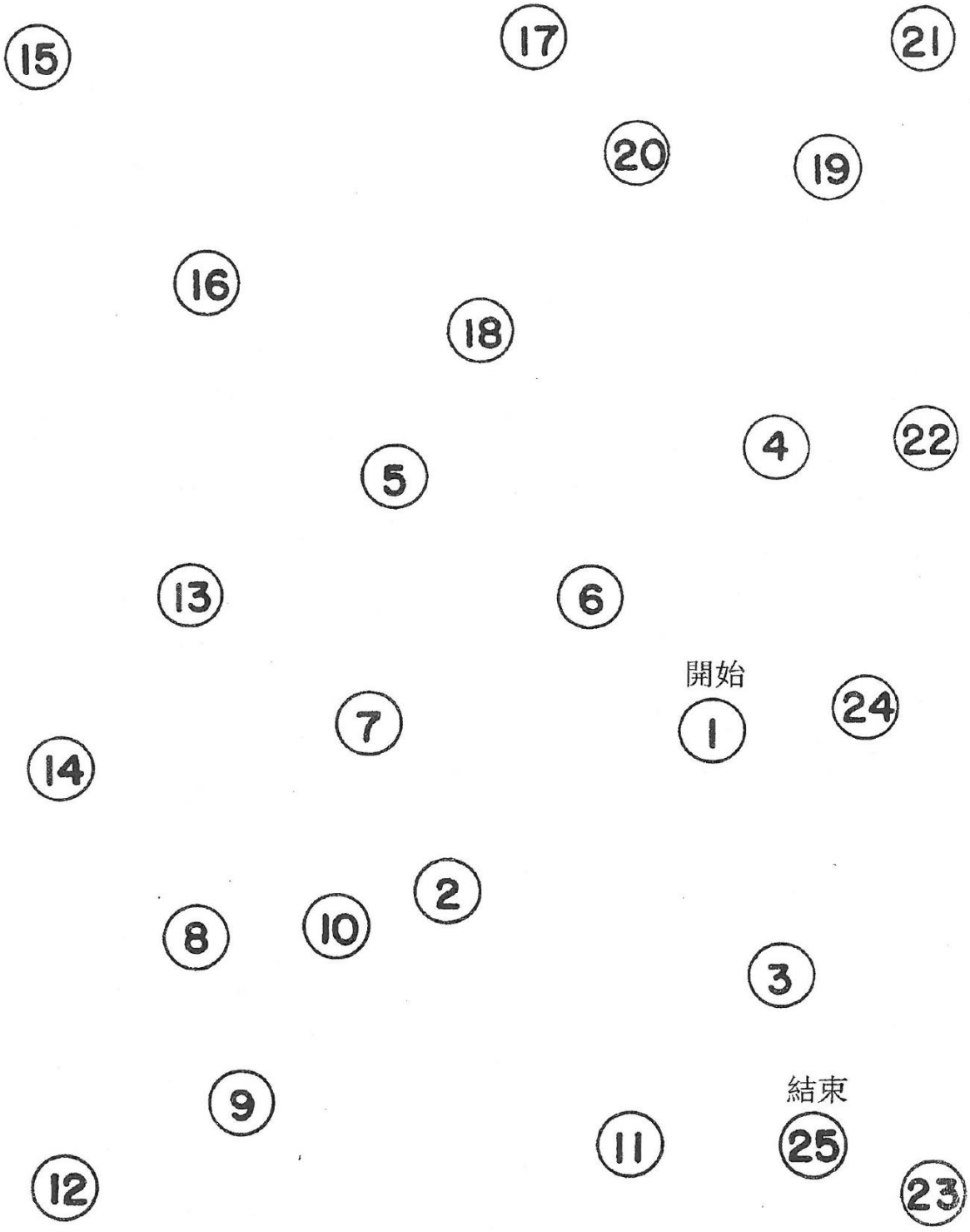
產品編號：TCHN2006-4A

路徑描繪測驗

A 部分

範例題




15
17
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開始
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3
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結束
11
25
12
23

提示

⊃	≡	≻	X	∧	=	*	∋	∞
1	2	3	4	5	6	7	8	9

⊃	∧	≡	⊃	≻	=	≡	X	⊃	=		≡	⊃	=	⊃	≡

X	=	⊃	≡	∧	=	≻	X	⊃	≡	=	∞	X	≻	∋

X	∧	*	∋	⊃	≻	*	X	∋	∧	≡	∞	≻	X	*

≡	X	∧	⊃	=	X	⊃	∧	=	*	∞	∋	≻	=	X

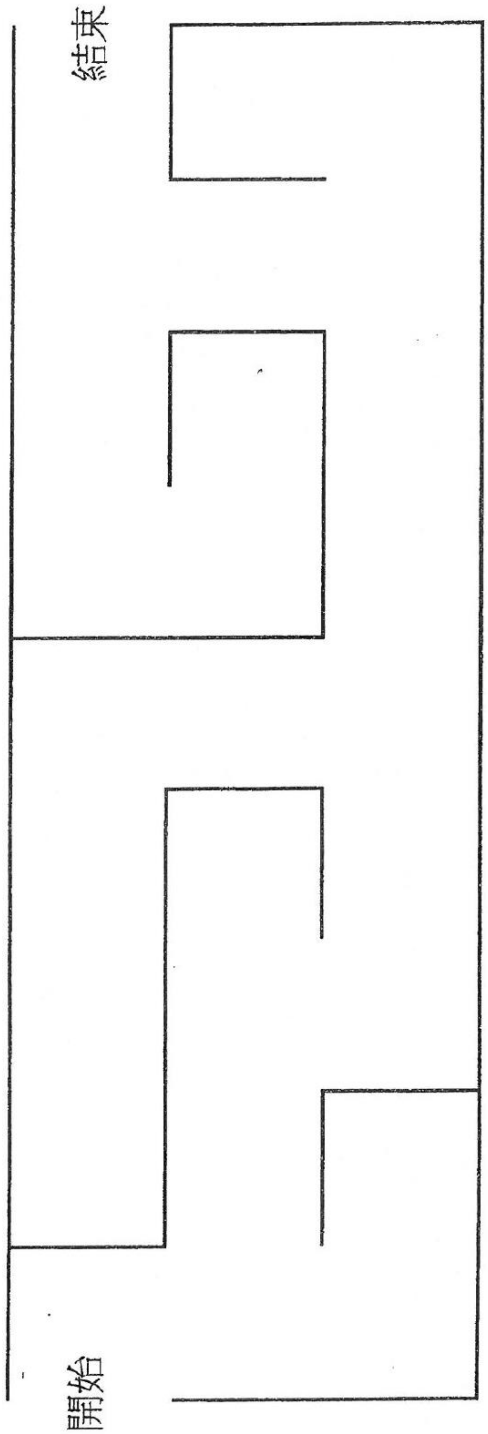
∞	∧	∋	≻	=	*	X	∧	≡	≻	*	∞	≡	∋	⊃

=	∞	*	≡	≻	=	X	∞	⊃	*	≡	∧	=	∋	X

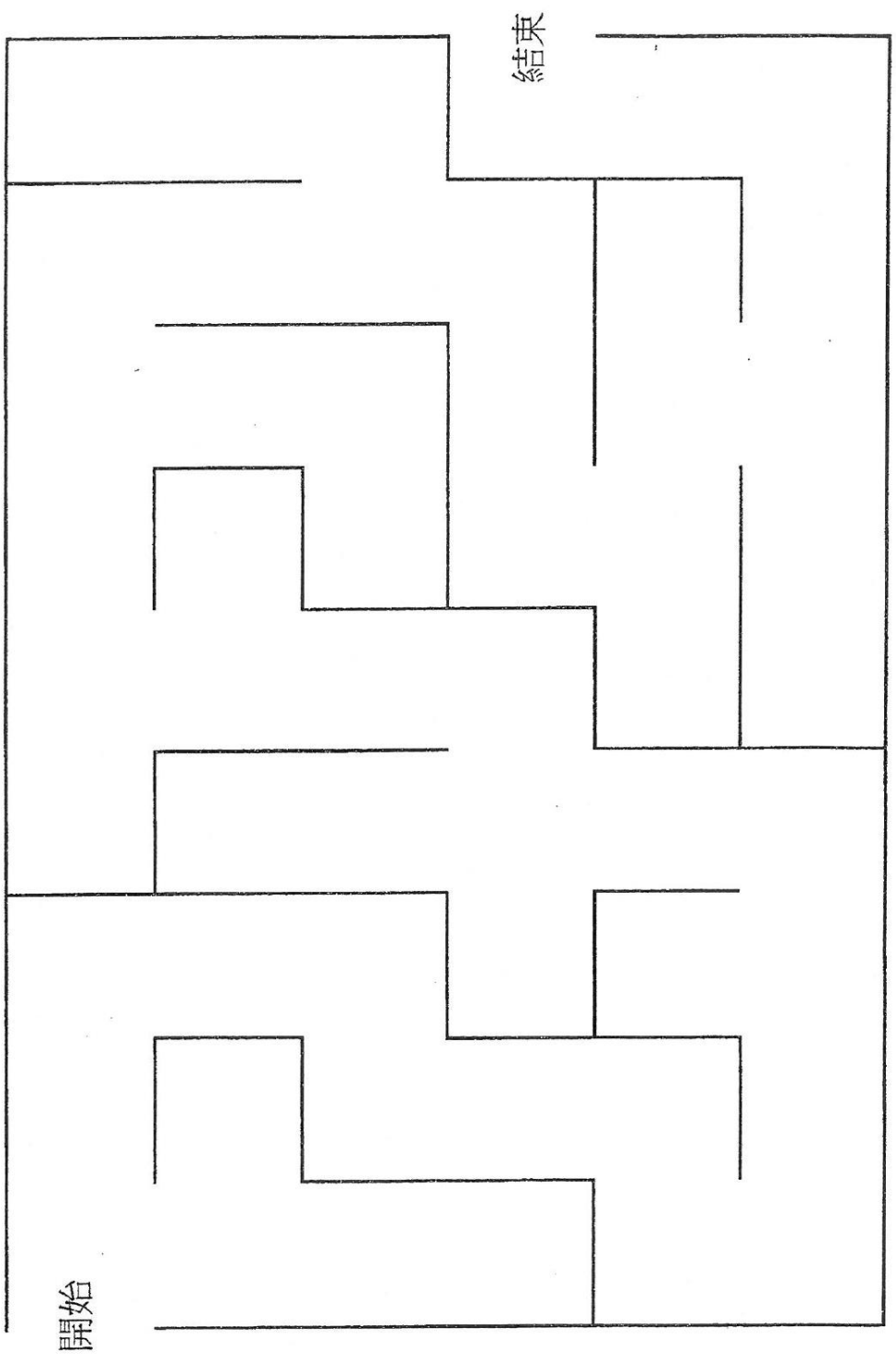
≡	∋	*	∞	≻	*	∋	∧	⊃	∞	≡	⊃	X	≻	=

∧	≡	⊃	=	X	≡	⊃	=	∞	*	≻	∧	X	∋	∞

A



B



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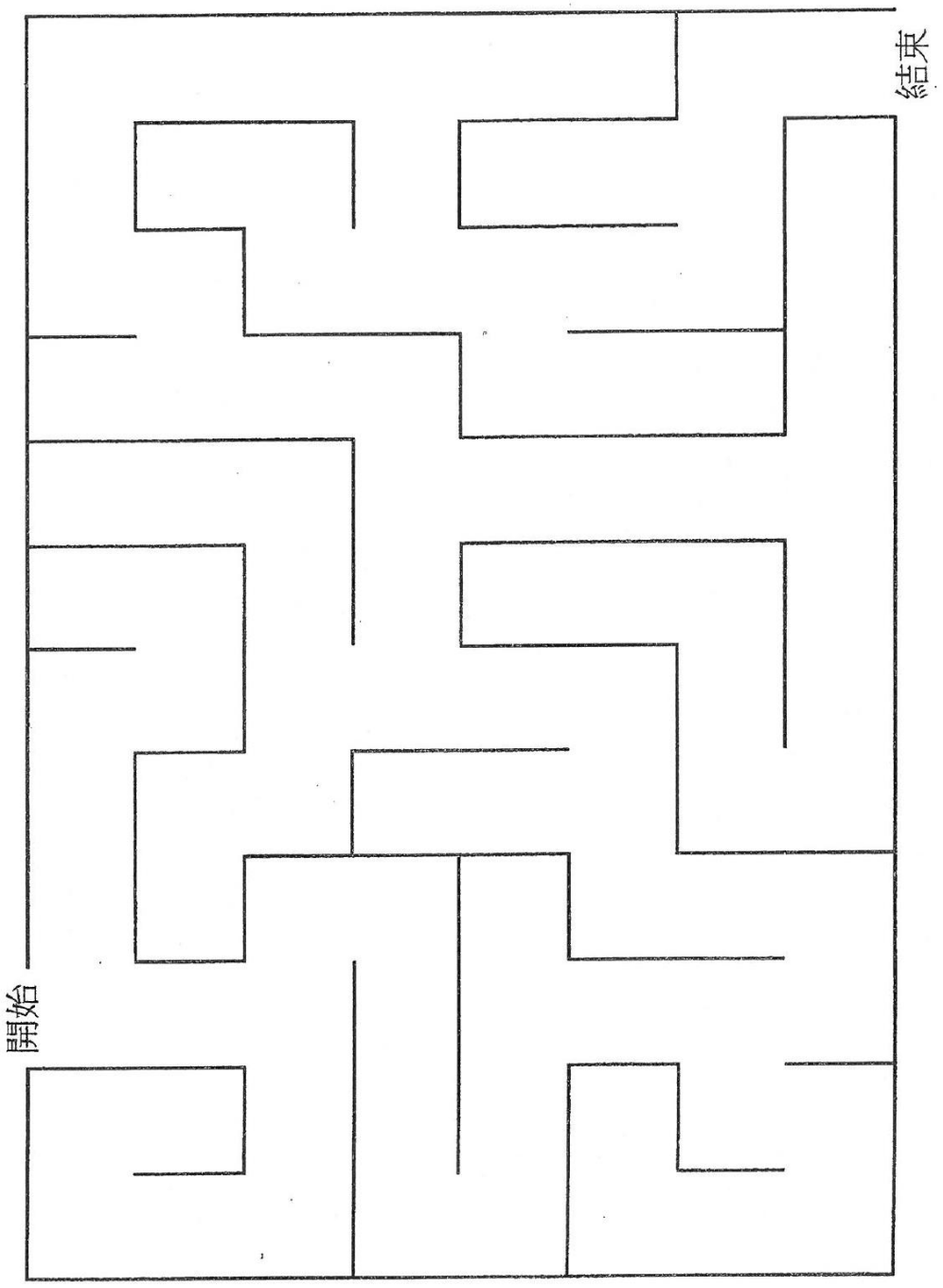

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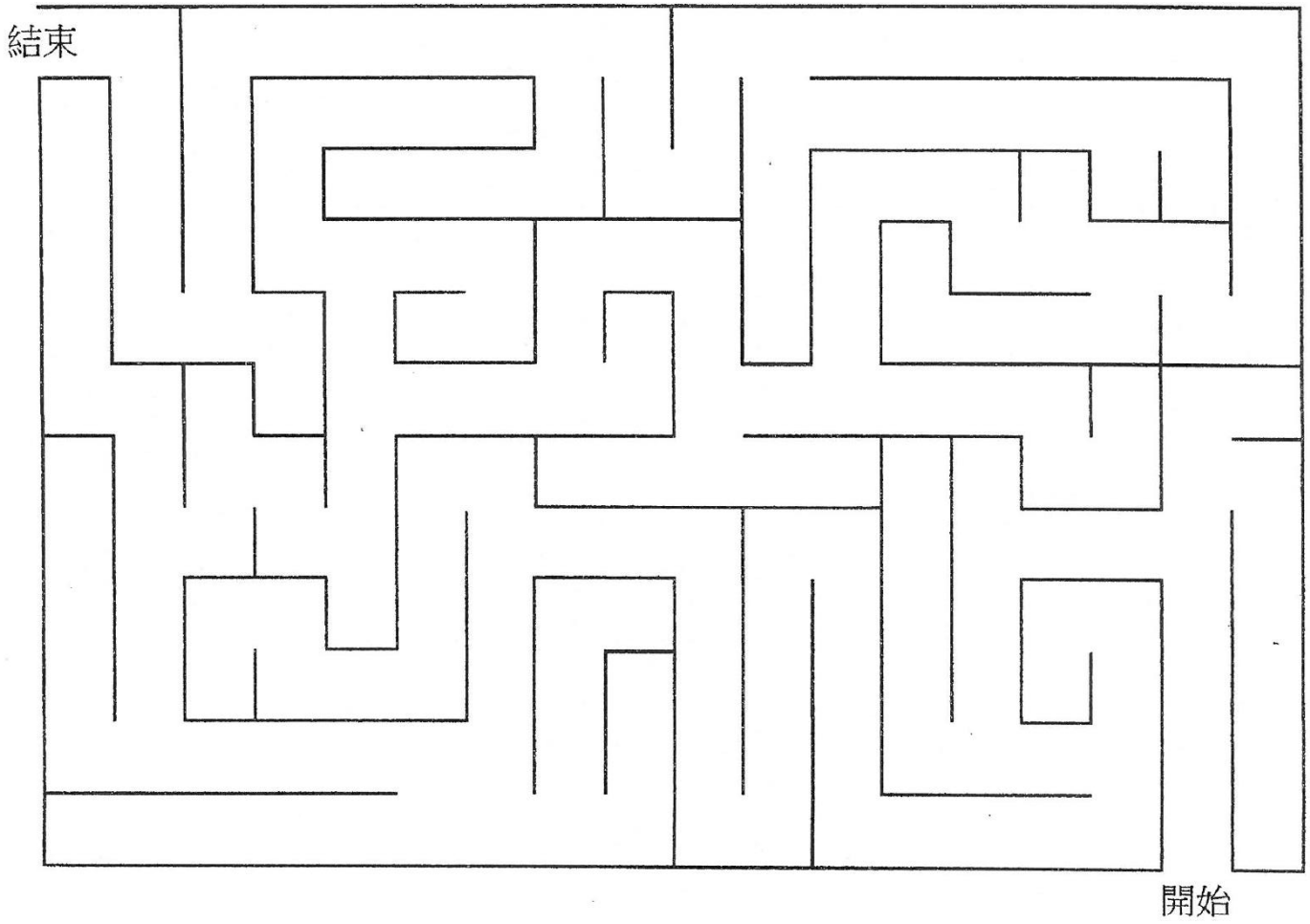

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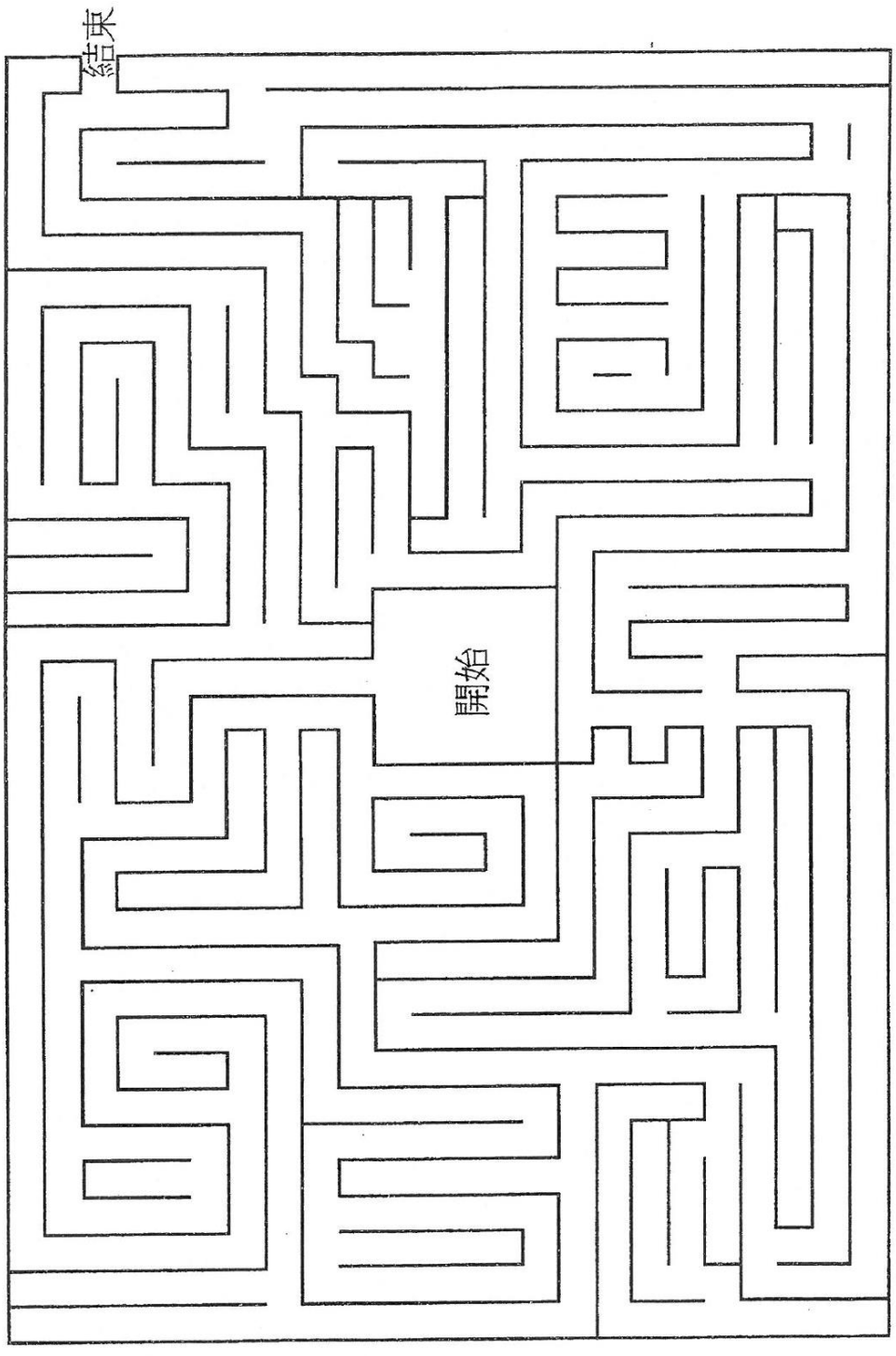
結束
開始

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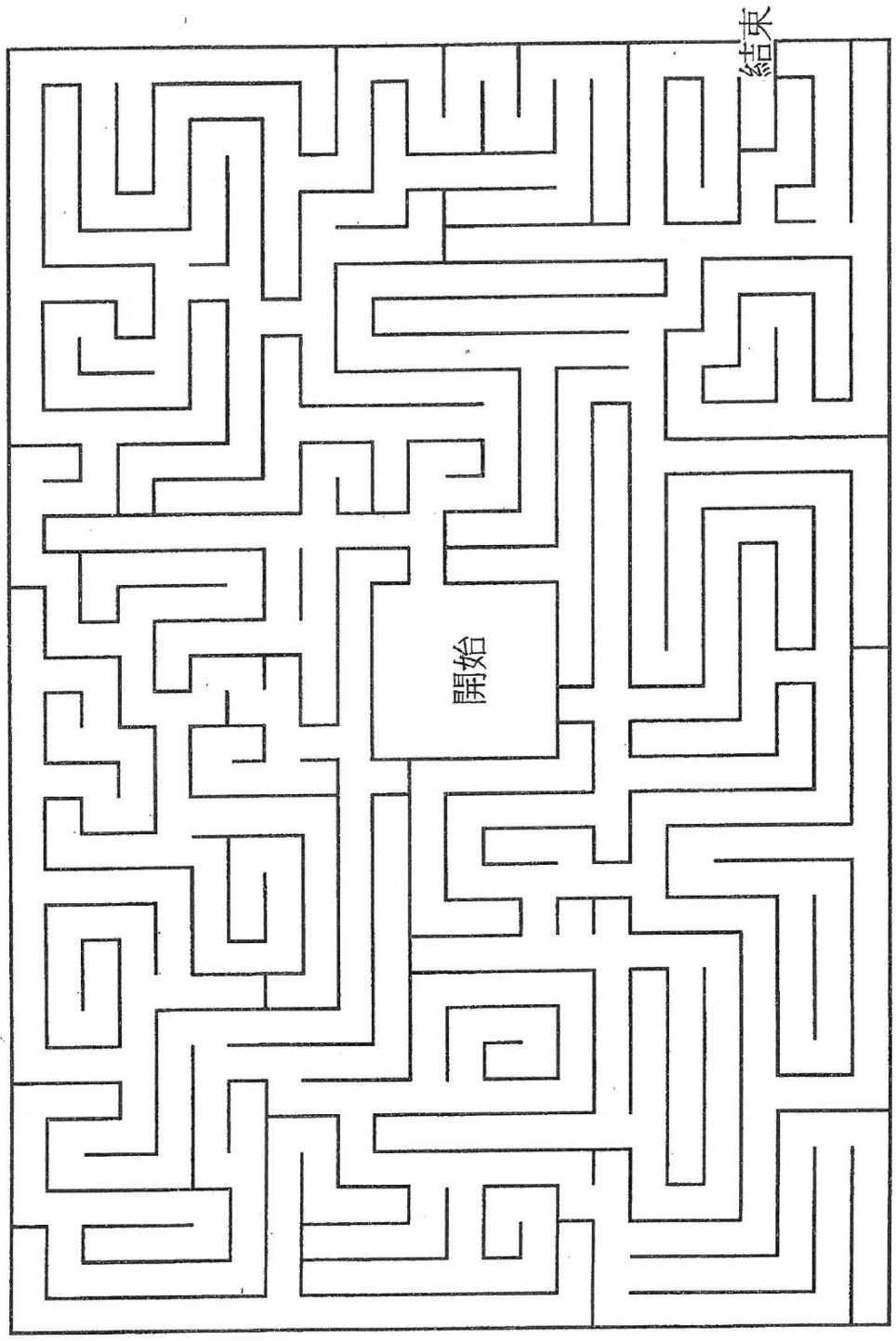


測－1

測－2

測－3

1. 小瑪早上起來覺得神清氣爽。她睡得很好，覺得精神充沛，而且沒有任何擔心或煩惱的事。以下的各個行為，對於保持她的愉快心情有多少幫助？

行為1：她起床然後享受接下來的一整天。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為2：小瑪很享受她的感覺，然後決定要來想想並感激所有順利進行的事。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為3：小瑪決定要忽略她的感覺，反正也不可能持久。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為4：她帶著愉快的心情打電話給她憂鬱的母親，然後試著讓她開心點。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

2. 安安跟他的某位同事一樣認真工作，甚至更認真。事實上，他的想法通常較能為公司帶來正面績效。他的同事工作表現平庸，但是參與辦公室黨派所以較容易獲得晉升。因此當安安的老闆公布他的這位同事獲得當年度優異獎時，安安非常生氣。以下的各個行
為，對於改善安安的心情有多少幫助？

行為1：安安坐下，然後想想他生命中以及工作上所有正面的事。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為 2：安安列了一張表，列出他同事正面和負面的特質。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為 3：安安為他的情緒感到難受，他告訴自己為一個自己無法掌控的事情難過是不對的。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為 4：安安決定告訴大家他的同事工作表現有多差，因此並不配獲得優異獎。安安蒐集了備忘錄和筆記來佐證，因此他並不是口說無憑。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

3. 珍珍不知道她的帳單什麼時候到期、還有多少張帳單還沒收到，也不知道自己是否有能力繳清。然後她的車子開始發出怪聲，修車的師傅告訴她，修好車子的費用太高了，可能不值得。珍珍難以入睡，她一晚會醒來很多次，而且她一直在擔心。以下的各個行為，對於改善她的煩惱有多少幫助？

行為1：珍珍試著算出她欠了多少錢、還有多少繳費單該付、以及什麼時候到期。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為2：珍珍學會了深層放鬆技巧，來讓自己冷靜下來。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為3：珍珍找了一位財務規劃師，來幫助她找出適當管理財務的方法。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為4：她決定要找一份薪水較高的工作。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

4. 對阿迪來說，似乎沒有任何事情順利。他生命中喜歡做的事不多，也沒什麼事可以讓他開心的。在接下來的一年中，以下的各個行為，對於改善阿迪的心情有多少幫助？

行為1：阿迪開始打電話給他有一陣子沒聯絡的朋友，然後約好要拜訪幾個人。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為2：他開始吃比較營養的食物、早睡、然後多運動。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為3：阿迪覺得自己讓別人心情不好，所以決定要自己一個人，直到他找出讓自己不開心的原因。他覺得自己需要一個人獨處。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為4：阿迪發現晚上邊看電視邊喝一兩瓶啤酒，真的能讓他心情好轉。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

5. 小柏從公司開車回家時，一台貨櫃拖車硬切到他的車子前面，他根本來不及按喇叭。小柏立刻急轉到右邊避免撞車。他氣炸了。以下的每個行為，對於處理他的怒氣有多少幫助？

行為1：小柏在高速公路上開了幾公里後，硬切到卡車司機前面，給了對方一個教訓。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為2：這種事情常有，小柏沒想太多，就直接開車回家。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為3：小柏對著卡車司機大吼大叫、而且用髒話咒罵他。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為4：他發誓再也不在那條路上開車。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

1. 阿強在過去一年中在職場交到了好友。今天他朋友告訴他說，在另一間公司找到了工作因此他會搬走，這把他嚇了一大跳。他朋友之前沒有提過他在找其他工作的事情。如果阿強選擇用以下方式來反應，對於維持良好友誼有多少幫助？

回答1：阿強為朋友感到開心，而且告訴朋友他很高興他找到了新工作。
在接下來的幾個禮拜中，阿強做了一些安排，確保他們保持聯絡。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答2：阿強很難過朋友要走了，但是他認為這件事表示他朋友沒有很在乎他。
畢竟他的朋友沒有告訴他自己在找工作的事。反正朋友要離開了，阿強沒說什麼，
他反而去找其他同事當朋友。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答3：阿強非常生氣朋友什麼都沒說。他決定不理他的朋友來表達不滿，
直到朋友對他說明自己所做的事情。阿強認為如果他的朋友什麼都不提，
就證明了這個朋友不值得與他交談。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

2. 小羅的老師剛打給小羅的父母，告訴他們小羅在學校表現不好。老師告訴小羅的父母他們的小孩上課不專心、干擾他人，而且靜不下來。這位老師不擅長管教好動的男孩子，小羅的父母想知道到底發生什麼事。接著老師說他們的孩子若是不改進就會被留級。 父母非常生氣，以下的反應對他們的孩子有多少幫助？

回答1：父母告訴老師他們非常驚訝，因為這是他們第一次聽到小羅有問題。
他們要求見老師一面，並且要求校長也一起參與會面。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答2：父母告訴老師如果她繼續威脅說要小羅留級，他們就會跟校長報告這件事。
他們說：「如果我們的小孩留級，我們會要你個人負責任，你是老師，你的責任是教書，不是責怪學生。」

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答3：小羅的父母掛老師電話，然後打給校長。他們抱怨老師威脅他們，並要求幫兒子轉班。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

3. 每件事對麗如來說都很順利。當別人在抱怨工作的時候，麗如升了官而且還大幅加薪。她的孩子都非常快樂，在學校表現也很好，她的婚姻很穩定而且很幸福。麗如開始覺得自己了不起，而且發現自己想對朋友炫耀她的生活。以下的各個回應，對於維持她與別人的關係有多少幫助？

回答1：因為每件事情都這麼順利，所以麗如是可以感到驕傲的。
但是麗如也明白有些人覺得她在炫耀，或者可能忌妒她，所以她只跟好朋友表達她的感受。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答2：麗如開始思考所有在未來有可能出問題的事情，好讓自己從不同的觀點來看自己的人生。她明白良好的感覺不會一直維持。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答3：麗如當晚跟丈夫分享了她的感受。然後她決定他們一家人週末應該花些時間相處，一起參與幾個家庭活動。

a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

Appendix 9 B: MATRICS Consensus Cognitive Battery (MCCB) – Administrator's Forms

施測人員表格A

MCCB
MATRICS共識版認知測驗合輯

施測人員 _____

評估編號 _____

「受測者資料」

身分編號: _____

姓名 (非必填):

_____

測驗日期: ____ /____ ____
年 月 日

生日: ____ /____ ____
年 月 日

年齡 = ____, ____
歲 個月

性別: ☐ 女 ☐ 男

種族:
☐白種人
☐非裔美國人或黑人
☐西班牙裔人或拉丁人
☐亞洲人
☐印第安人／阿拉斯加原住民
☐太平洋島民
☐ 一個種族以上（請說明）

_____

族群:
☐ 西班牙裔人或拉丁人
☐ 非西班牙裔人／拉丁人

慣用手 (寫字):
☐右 ☐左

最高學歷 (全時教育年數):
_____ 受測者
_____ 受測者父親
_____ 受測者母親

其他資訊:

_____ _____
_____ _____
_____ _____

MATRICS Assessment Inc.

分數格

測驗	原始分數	T-分數*	百分位數*
1 TMT			
2 BACS SC			
3 HVLT-R	測-1 | 測-2 | 測-3 | 總和		
4 WMS-III SS			
5 NAB Mazes			
6 BVMT-R	測-1 | 測-2 | 測-3 | 總和		
7 Fluency			
8 MSCEIT™ ME			
9 CPT-IT	2-位 | 3-位 | 4-位 | 平均值		

認知領域分數格

領域	T-分數*	百分位數*
感知訊息處理速度（綜合(1) *TMT*、(2) *BACS SC* 與 (3) *Fluency* 的T-分數／百分位數）		
注意力／警覺性 *(CPT-IP 分數)*		
工作記憶 *(WMS-III SS 分數)*		
口語學習 *(HVLT-R 分數)*		
視覺學習 *(BVMT-R 分數)*		
推理與問題解決 *(NAB Mazes 分數)*		
社會認知 *(MSCEIT™ ME 分數)*		
整體綜合分數		

* *請見英文MCCB 手冊中的附件C，其中有將原始分數轉換為T-分數與百分位數的表格。請見此表格背面有關填第一頁表格的說明。*

註： *在開始執行測驗一之前，請先閱讀MCCB 手冊。第五與第六章分別有「執行」與「評分」的說明。*

應告知受測者測驗合輯包含注意力、學習、記憶與問題解決等評量；此外，評量項目可能須花一個半小時才能完成。測驗施測人員應告知受測者，評量項目將包含不同難易程度的試題，受測者最好能盡力回答每個題目，以達到最大助益。

施測人員唸給受測者的文字皆以粗體字印刷。

Trail Making Test (TMT): Part A
[*路徑描繪測驗* (TMT): A 部分]

測驗1

執行範例題

準備好開始測驗時，將受測者題本A 翻到*Trail Making Test*: A 部分 「範例題」，然後直接平放在受測者面前的桌上，受測者端的桌子應距離題本末端約15公分。給受測者一隻鉛筆， 並且說： **在這個頁面**（指向這一頁面） **上有一些數字。從數字1**（指向1）**開始畫一條線到2**（指向2），**再從2畫到3**（指向3），**從3畫到4**（指向4），**依此類推，直到你到達終點**（指向標有「結束」的那個圓圈）**。盡可能快地畫線條。鉛筆不要離開紙。 準備好了嗎？ 開始！**

如果受測者在範例題上犯了一個錯誤，應指出這個錯誤，並給予解釋。以下的解釋的方式是可以接受的：

1. **你的起點的圓圈是不正確的。 這是你的起始位置**（指向數字1）。

2. **你跳過了這個圓圈** （指向受測者忽略的圓圈）。 **你應該從1**（指向1）**開始畫到2**（指向2），**從2畫到3**（指向3），**依此類推，直到你到達標有「結束」**(指向結束的地方) **的那個圓圈。**

3. **請不要讓鉛筆離開紙張，連續畫到下一圓圈。**

解釋錯誤後，施測人員要標出錯誤的部分，並說：**從這裡繼續**（指向上一個按照順序正確完成的圓圈）。

如果受測者仍無法完成範例題A，握住受測者的手，然後指導他／她將鉛筆沿著線條畫（橡皮擦端向下）。然後說：**現在換你試試看。將你的鉛筆尖朝下。記住，你應該從數字1**（指向1）**開始畫一條線到2**（指向2），**再從2畫到3**（指向3），**從3畫到4**（指向4），**依此類推，直到你到達標有「結束」**（指向結束的地方）**的那個圓圈。請不要亂跳圓圈，按照順序從一個數字畫到下個數字。如果你出錯，請將錯誤標示出來。別忘了，速度要盡量快一點。 準備好了嗎？ 開始！**

如果受測者這次能正確回答範例題，請開始做測驗A 部分。如果無法，重複一樣的程序直到受測者成功完成試題，否則就表示他／她顯然無法做這些題目。

一旦受測者成功完成範例題，而且他／她的態度表現出理解做題的方式，就請說：**很好！ 讓我們來做下一個**。然後翻到測驗頁面。

執行測驗

說：**在這個頁面上有數字1到25。請以同樣的方式做這個測驗。從數字1**（指向1）**開始畫一條線到2**（指向2），**再從2畫到3**（指向3），**從3畫到4**（指向4），**依此類推，直到你到達終點**（指向結束的地方）。**別忘了，速度要盡量快一點。 準備好了嗎？ 開始！**

開始計時。如果受測者出現錯誤，立即告訴他／她，並讓受測者返回到上一個正確的點，並從該點繼續進行測驗。不要停止計時。

受測者完成A 部份後，拿走測驗單並以秒數記錄受測者所花費的時間。以完成試題所需增加的時間，作為計算錯誤的方式。

測驗1

TMT 分數:

(以秒計時；
以300秒為上限)

評分

在右側分數格中以秒記錄總答題時間。

過了300秒後就停止測驗，無論受測者是否已經完成試題。

Brief Assessment of Cognition in Schizophrenia: Symbol Coding (BACS SC) [*簡易精神分裂症患者認知評估：* 符號編碼 (BACS SC)]

測驗2

執行測驗

(測驗時間為90秒)

翻到MCCB 受測者題本A 的正確頁面，然後唸以下內容給受測者聽：
請看這頁上方的方格。請注意每個符號都不一樣，而且每個符號下方都有一個不同的號碼。現在看看下面這些方格（指著方格）。**上半部有符號，但是方格下半部是空的。你的任務是在每個符號下填入對應的編號。例如，這是第一個符號**（指著例題１）。**當我看上面的提示時，我看到這個符號下面有一個1，因此我在下面填入1**（在例題1下寫1）。**下一個符號下面有一個5，因此我在下面填入5**（在例題2下寫5）。**下一個是這個符號；這裡的提示下面是2**（寫下2）。**現在你把剩下到這條粗線為止的例題完成。**受測者應使用鉛筆，不用橡皮擦或原子筆。如果受測者出錯，請糾正他。然後說：**好!有任何問題嗎?**回答所有問題。說：**如果你出錯，你不能擦掉，但是你可以在原本的號碼上寫下新的號碼。好，填入與符號相對應的號碼，速度要盡量快一點。由左到右橫向一排一排答題**（指著題目），**不要跳過任何題目。準備好了嗎？**
請在說開始前確定受測者專注於題目上，而且手上握著鉛筆，
已準備好要答題。**開始。**說完開始之後立刻按下碼錶。

90秒後請受測者停止作答。

測驗2

BACS SC 分數:

(正確答題數；
110題為上限)

評分

將BACS SC 評分範本（附於資料組合包中）放在受測者題本中，符號編碼的答案頁面之上。 圈出錯誤的回答。從90秒中完成的題數中扣除錯誤答案的數目。 然後計算正確答案的數目，並在這裡的空格處記下分數。

Hopkins Verbal Learning Test—Revised™ (HVLT-R™) [*霍普金斯語言學習測驗－修正版*™ (HVLT-R™)]

測驗3

執行測驗

使用HVLT-R 測驗表格。你將執行三個「學習測試」。 此測驗執行完畢後， 將填好的HVLT-R 表格附於MCCB 施測人員表格中。 在本頁測驗3的空格中寫下表格編號。

學習測試說明

測試1

說下面這段話：

我要唸一串字給你聽。仔細聽，因為我唸完的時候會請你告訴我，你還記得哪些字。你可以用任何順序來告訴我那些字。準備好了嗎？

- 如果有需要可以重複此段說明或換個方式說明
- 唸字的速度約為每字2秒
- 如果對方沒有在你說完最後一個字之後立刻開始回報這些字，請說下面這段話：

好。現在告訴我你還記得哪些字。盡量說。

在測試1的欄位中逐字記下答案（包括重複的字以及新出現的字）。當對方表示已經不記得任何其他字時，請進行測試2。

測試2

說下面這段話：

我們現在要再試一次。我要把同一串字再唸給你聽。仔細聽，然後請你告訴我你還記得哪些字。任何順序都可以，包括第一次你告訴我的那些字。

套用測試1的相同程序，在測試2的欄位中記下答案。接著進行測試3。

測試3

說下面這段話：

我要再唸一次這串字。跟剛剛一樣，我要請你告訴我你還記得哪些字，任何順序都可以，包括剛剛你告訴我的那些字。

套用先前測試的相同程序，在測試3的欄位中記下答案。

評分

加總*正確*回報的字數。出現發音等小錯誤時加以糾正（例如：「肉柱」說成「肉軌」），但將這些答案都計算為正確答案。自我糾正也算在正確答案內。明顯的語誤（例如：「生菜」說成「白菜」、「飯店」說成「汽車旅館」）就算是錯誤，不可算在測試分數中。

將受測者正確記得的字數，記錄在所提供的空白處。

測驗3

HVLT-R 分數:

測試1	測試2	測試3

(三次測試中受測者正確記憶的字數；每次測試以12字為上限)

使用的表格：_____

HVLT-R™

(*Hopkins Verbal Learning Test–Revised*™)

[霍普金斯語言學習測驗-修正版]

表格1

測驗表格

Jason Brandt 博士 • Ralph H. B. Benedict 博士

語義類別：四條腿的動物、寶石、居所

姓名 _____ 性別_____ 年齡_____ 歲_____ 個月

評估員 _____ 日期_____/_____/_____

詞語名單	學習測試		
	測試1	測試2	測試3
獅子			
翡翠			
馬			
帳篷			
藍寶石			
飯店			
山洞			
玉石			
老虎			
珍珠			
牛			
小房子			
正確回答總數=			

	原始分數	*T*-分數
回憶詞語總數（測試1、2和3的所有正確回答的總和）		

Wechsler Memory Scale-III (WMS III): Spatial Span [*魏氏記憶力量表第三版* (WMS III)：空間記憶廣度]

測驗4

你將會使用WMS Spatial Span 板。

規則

停止測驗的規則

Spatial Span Forward [前向空間記憶廣度] 與Spatial Span Backward [反向空間記憶廣度] 任一試題中的兩項測試皆為零分時。另外，即使已經通過測試1 也不要停止測驗，請仍執行Spatial Span Forward 與Spatial Span Backward 每項測試的兩個試題。

記錄規則

依照受測者敲方塊的順序，記錄每個方塊的數字。

評分規則

每個測試0 - 1分

執行「Forward」項目

將Spatial Span 板放在桌上，方塊的數字面向你， 板子置於受測者中線的位置，以便他／她能輕易碰到方塊。 說：**現在我要你跟著我一起做，**
按照我的順序摸我所摸過的方塊。

按照Spatial Span Forward 試題1中測試1 (在下一頁) 的順序敲方塊，速度約為每個方塊一秒。

繼續依下列順序執行Spatial Span Forward 的試題，把答案記錄下來。
如果已經達到停止測驗的標準， 或如果Spatial Span Forward 試題都已執行完畢，請開始Spatial Span Backward 的部分。

試題／測試		答案	分數0或1
1. 測試1	3 – 10		
測試2	7 – 4		
2. 測試1	1 – 9 – 3		
測試2	8 – 2 – 7		
3. 測試1	4 – 9 – 1 – 6		
測試2	10 – 6 – 2 – 7		
4. 測試1	6 – 5 – 1 – 4 – 8		
測試2	5 – 7 – 9 – 8 – 2		
5. 測試1	4 – 1 – 9 – 3 – 8 – 10		
測試2	9 – 2 – 6 – 7 – 3 – 5		
6. 測試1	10 – 1 – 6 – 4 – 8 – 5 – 7		
測試2	2 – 6 – 3 – 8 – 2 – 10 – 1		
7. 測試1	7 – 3 – 10 – 5 – 7 – 8 – 4 – 9		
測試2	6 – 9 – 3 – 2 – 1 – 7 – 10 – 5		
8. 測試1	5 – 8 – 4 – 10 – 7 – 3 – 1 – 9 – 6		
測試2	8 – 2 – 6 – 1 – 10 – 3 – 7 – 4 – 9		
		FORWARD 總分： 範圍：0到16	

執行「Backward」項目

說：**現在我要摸更多方塊。這次我停下來的時候，我要你以相反的順序摸我所摸過的方塊。例如：如果我摸這個方塊**（方塊3），**然後再摸這個方塊**（方塊5），**你要怎麼做？**

如果回答是對的，說：**沒錯， 下一個方塊是這個。記得要依相反的順序摸方塊。**

接著進行試題1（在下一頁）。

如果受測者在方塊3和方塊5的範例中順序出錯，指著方塊然後說：
不對，我摸了這個， 然後這個，所以順序要相反的話， 你要先摸這個，
然後再這個。現在我們試試看另一題。 如果我摸這個（方塊9），
然後這個（方塊1），**你要怎麼做？**

無論受測者在第二次範例中的答案對或錯，都接著進行試題1。

繼續（依下方順序）執行Spatial Span Backward 的試題，
直到停止測驗的標準已經達到，或所有試題都已執行完畢。把答案記錄下來。

試題／測試		（正確答案）／答案	分數0或1
1. 測試1	7 – 4	(4 – 7)	
測試2	3 – 10	(10 – 3)	
2. 測試1	8 – 2 – 7	(7 – 2 – 8)	
測試2	1 – 9 – 3	(3 – 9 – 1)	
3. 測試1	10 – 6 – 2 – 7	(7 – 2 – 6 – 10)	
測試2	4 – 9 – 1 – 6	(6 – 1 – 9 – 4)	
4. 測試1	5 – 7 – 9 – 8 – 2	(2 – 8 – 9 – 7 – 5)	
測試2	6 – 5 – 1 – 4 – 8	(8 – 4 – 1 – 5 – 6)	
5. 測試1	9 – 2 – 6 – 7 – 3 – 5	(5 – 3 – 7 – 6 – 2 – 9)	
測試2	4 – 1 – 9 – 3 – 8 – 10	(10 – 8 – 3 – 9 – 1 – 4)	
6. 測試1	2 – 6 – 3 – 8 – 2 – 10 – 1	(1 – 10 – 2 – 8 – 3 – 6 – 2)	
測試2	10 – 1 – 6 – 4 – 8 – 5 – 7	(7 – 5 – 8 – 4 – 6 – 1 – 10)	
7. 測試1	6 – 9 – 3 – 2 – 1 – 7 – 10 – 5	(5 – 10 – 7 – 1 – 2 – 3 – 9 – 6)	
測試2	7 – 3 – 10 – 5 – 7 – 8 – 4 – 9	(9 – 4 – 8 – 7 – 5 – 10 – 3 – 7)	
8. 測試1	8 – 2 – 6 – 1 – 10 – 3 – 7 – 4 – 9	(9 – 4 – 7 – 3 – 10 – 1 – 6 – 2 – 8)	
測試2	5 – 8 – 4 – 10 – 7 – 3 – 1 – 9 – 6	(6 – 9 – 1 – 3 – 7 – 10 – 4 – 8 – 5)	
		BACKWARD 總分： 範圍：0到16	

評分

在每個測試中，如果順序正確無誤則可獲得1分。若受測者沒有敲到所有指定的方塊，或在敲的順序上出錯則分數為零。

測驗4

WMS-III Spatial Span 總分:

範圍：0到32

(Forward 總分與Backward 總分加總)

Neuropsychological Assessment Battery® (NAB®): Mazes [*神經心理衡鑑測驗合輯*® (NAB®): 迷宮]

測驗5

執行測驗

使用受測者題本A，其中包含「執行功能模組題本」（Executive Functions Module Response Booklet）表格1。

記錄

請打勾（✓）表示，受測者是否在時限內完成迷宮。以秒記錄完成的時間。

評分

若受測者沒有在時限內完成迷宮，則分數為零。若受測者在時限內完成迷宮，請圈出對應迷宮完成時間的分數。

請參閱MCCB 手冊中第六章裡的文字與圖片。

停止測驗

連續三個零分後請停止測驗。

測驗說明

說：**我要請你完成一些迷宮。**將MCCB 受測者題本翻到迷宮A，然後說：
我要你盡可能快速地完成這個迷宮。試著不要出錯也不要有叉出去的線。這是「開始」（指著起點），**你會從這裡開始，然後這是「結束」**（指著終點），**你會在這裡結束。不可以走捷徑不繞過角落，或穿過任何線來到達終點。此外，我要請你一旦開始走迷宮，就不要讓筆離開紙。**將筆交給受測者。**準備好了嗎？開始。**開始計時，讓受測者完成迷宮A。如果受測者犯了數個錯誤，用另外一個顏色的筆示範完整走完迷宮的方式。
有關迷宮B 到G，說：**這是另一個迷宮。從這裡開始**（指著起點），
然後在這裡結束（指著終點）。 **記得一旦下筆就不要讓筆離開紙。**
準備好了嗎？開始。開始計時。

如果受測者從「開始」以外的地方開始，立刻請他／她停止並讓他／她從頭開始。如果受測者問他／她是否可以自我修正，說：**可以，你可以劃過自己的線往回走，但是筆請不要離開紙。**

如果受測者走到死路，說：**繼續試看看你能不能走出來**，如果他／她拒絕，請記錄時間並將分數記為零。

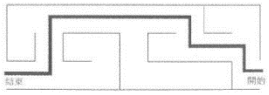
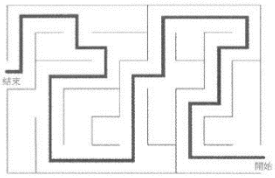
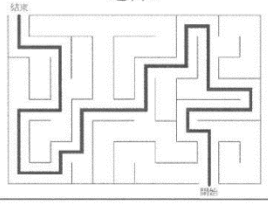
若受測者跨越任何線超過0.7公分就視為出錯。如果是在直線上出錯，
就請受測者停止，並在線上劃一條斜線來標示錯誤；然後指示他／她到錯誤的點，並指導他／她從該點繼續。在轉彎處，若是受測者抄捷徑未繞過角落，
而是畫圓弧線，且偏移尖角頂點達0.7公分就視為犯錯。再次請受測者停止，
並在線上劃一條斜線來標示錯誤；然後指示他／她到錯誤的點，並指導他／她從該點繼續。不可讓受測者旋轉迷宮。

測驗5

NAB 迷宮分數:

(7個迷宮總分；上限為26)

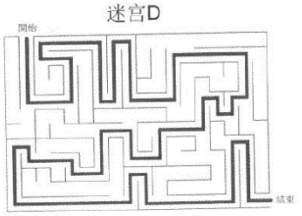
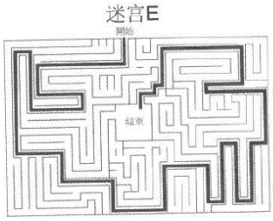
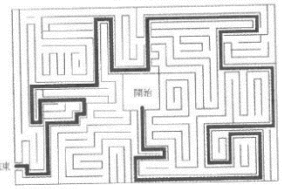
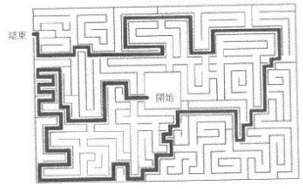
受測者

迷宮題	時限	完成	完成時間（秒）	分數
迷宮A 	30秒	□ 否		0
		□ 是		2 (1-3秒) 1 (4-30秒)
迷宮B 	30秒	□ 否		0
		□ 是		2 (1-11秒) 1 (12-30秒)
迷宮C 	30秒	□ 否		0
		□ 是		2 (1-15秒) 1 (16-30秒)

施測人員

繼續→

受測者

迷宮題	時限	完成	完成時間（秒）	分數
迷宮D 	120秒	☐ 否		0
		☐ 是		5 (1-32秒) 4 (33-45秒) 3 (46-59秒) 2 (60-79秒) 1 (80-120秒)
迷宮E 	240秒	☐ 否		0
		☐ 是		5 (1-73秒) 4 (74-100秒) 3 (101-126秒) 2 (127-164秒) 1 (165-240秒)
迷宮F 	240秒	☐ 否		0
		☐ 是		5 (1-87秒) 4 (88-119秒) 3 (120-146秒) 2 (147-184秒) 1 (185-240秒)
迷宮G 	240秒	☐ 否		0
		☐ 是		5 (1-99秒) 4 (100-129秒) 3 (130-168秒) 2 (169-201秒) 1 (202-240秒)
施測人員				迷宮原始分數

質性特點（若有請打勾 ✓）

☐ 延遲一段時間才開始走迷宮　☐ 衝動／迅速開始　☐ 做法馬虎　☐ 跨線的錯誤

評論／註解：

Brief Visuospatial Memory Test—Revised (BVMT-R™) [*簡易視覺空間記憶測驗—修正版* (BVMT-R™)]

測驗6

你將會使用BVMT-R Recall Stimulus Booklet [BVMT-R 回憶刺激題本]。

(展示每個頁面10秒)

執行測驗

學習測試 1：打開MCCB 受測者題本A，翻開到標有「測-1」的頁面， 並說：
我會給你看一張紙，上面有六個圖形。我要請你仔細觀察這些圖形，並盡可能記得越多圖形越好。你只有十秒鐘可以觀察整頁的圖形。我會把圖形放在這裡（把手放在眼睛的高度，約離受測者40公分處）。**我把圖表拿走之後，試著依照圖形原本的位置以及樣子畫出每個圖形。**

重複說明並視需要經常加以解釋。打開BVMT-R 回憶刺激題本到適當的表格處（也就是表1、3、4、5或6），然後把題本面向下放在受測者面前。在本頁「測驗6」的空格處，寫下BVMT-R 表格號碼。受測者準備好時，距受測者約40公分處打開刺激題本的頁面。可以將BVMT-R 回憶刺激題本舉起至眼睛高度，或將BVMT-R 回憶刺激題本的底緣站在桌上，然後筆直地拿著題本。*請務必將刺激圖表打開整整10秒鐘*。受測者以眼掃描刺激圖表時才開始計時。

經過10秒之後，取走回憶刺激題本然後說：**現在盡可能地依照原本在頁面上的位置畫出每個圖形，畫出越多圖形越好。**

受測者做題時沒有時限，可依各自所需時間完成，鼓勵受測者盡量精確地畫出圖形（可以使用橡皮擦）。施測人員可以鼓勵受測者在不確定答案時猜猜看。受測者表示他／她已經完成圖形時，請受測者放下鉛筆。將MCCB 受測者題本翻到標有「測-2」的測試2答案紙，不讓受測者看到測試1 的答案紙。

學習測試 2 與 3：說：**剛剛做得不錯。 現在我想知道如果再給你一次機會，你能不能記得更多圖形。 我會把整頁的圖形再給你看十秒鐘。**
這次盡可能記得越多圖形越好， 包括上一次你記得的圖形。
試著畫出每個圖形的確實形狀， 以及它們的正確位置。

若受測者有任何問題，停下來回答，在施測人員表格上做註解或評論，然後再次如上所述將刺激圖表打開整整10秒鐘。經過10秒之後，取走回憶刺激題本，然後請受測者在測試2的答案紙上畫下他／她的答案。 受測者表示他／她已經完成圖形時，立刻將題本翻到標有「測-3」的測試3答案紙，不讓受測者看到測試2的答案紙。

受測者表示他／她已經完成圖形時，立刻取走受測者題本。

評論：

測驗6

BVMT-R 分數:

測試1	測試2	測試3

(三次測試中正確記憶的圖形數；每次測試12分為上限)

使用的表格：____

評分

請參閱MCCB 手冊中第六章與附件A。

Category Fluency: Animal Naming (Fluency)
[*類別流暢度*：動物名稱（流暢度）]

測驗7

執行測驗

(60秒的測驗時間)

對受測者說：

現在告訴我越多動物的名稱越好。盡可能快速地告訴我。任何動物都可以；可以是農場、叢林、海洋動物或家中寵物。舉例來說，你可以從狗開始。準備好了嗎？ 開始！

立刻開始計時。一共有60秒的作答時間。如果受測者在時間到之前停止了，鼓勵他／她說出更多名稱。若受測者停頓15秒以上，請重複基本的說明，但請繼續計時。

1. _____	13. _____	25. _____	37. _____
2. _____	14. _____	26. _____	38. _____
3. _____	15. _____	27. _____	39. _____
4. _____	16. _____	28. _____	40. _____
5. _____	17. _____	29. _____	41. _____
6. _____	18. _____	30. _____	42. _____
7. _____	19. _____	31. _____	43. _____
8. _____	20. _____	32. _____	44. _____
9. _____	21. _____	33. _____	45. _____
10. _____	22. _____	34. _____	46. _____
11. _____	23. _____	35. _____	47. _____
12. _____	24. _____	36. _____	48. _____

評分

每個不同的動物名稱可獲得1分。若受測者說出的動物名稱具上下從屬關係（例如：狗、可卡犬、黑拉布拉多、黃金獵犬），則每個動物名都可獲得1分。

若受測者說出假想的動物名稱（例如：獨角獸、龍），則分數為零。

絕種的動物也可得分（例如：恐龍、長毛象）。

任何列出人類的答案皆可得分（例如：人類、人、尼安德特人）。

測驗7

流暢度分數：

(在60秒內列出的所有動物數目)

Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT™): Managing Emotions [*Mayer-Salovey-Caruso 情緒智力測驗* (MSCEIT™): 管理情緒]

測驗8

說明

唸以下內容給受測者：

MSCEIT™為能力測驗，因此有些答案會比其他答案分數高；有些答案會給予部分分數。請回答所有題目，這樣最有益。錯誤的答案不會扣分。

現在我會把每一題的題目唸給你聽，你同時讀表格上的題目。等我唸完，請決定你認為最好的答案，然後把這個答案告訴我。

有時候受測者會問怎麼回答某些題目，或某些題目是什麼意思。有時候你需要解釋說明來回答這些提問，這些是屬於比較能直接了當回答的疑問。其他提問可能比較複雜，必須小心回答以免造成受測者回答偏頗。通常這麼說就夠了：**沒關係，現在你只要盡你的能力回答，你回答完之後我們再來討論。**如果受測者無法在兩個答案之間做決定或不確定如何作答，請說類似以下的話：**我知道有些問題很難回答，但是請試著盡力選擇一個答案。**受測者應回答每個問題。

執行D 部分

說：**請為每一個行為選擇一個答案。**

大聲唸出每個題目，然後圈出受測者的答案。（左側空白處的小數字，對應MSCEIT 電腦評分系統中的題號。）

1. **小瑪早上起來覺得神清氣爽。她睡得很好，覺得精神充沛，而且沒有任何擔心或煩惱的事。以下的各個行為，對於保持她的愉快心情有多少幫助？**

行為1：她起床然後享受接下來的一整天。

1 a. 非常沒幫助 b. 有點沒幫助 c. 沒差別 d. 有點幫助 e. 非常有幫助

行為2：小瑪很享受她的感覺，然後決定要來想想並感激所有順利進行的事。

2 a. 非常沒幫助 b. 有點沒幫助 c. 沒差別 d. 有點幫助 e. 非常有幫助

行為3：小瑪決定要忽略她的感覺，反正也不可能持久。

3 a. 非常沒幫助 b. 有點沒幫助 c. 沒差別 d. 有點幫助 e. 非常有幫助

行為4：她帶著愉快的心情打電話給她憂鬱的母親，然後試著讓她開心點。

4 a. 非常沒幫助 b. 有點沒幫助 c. 沒差別 d. 有點幫助 e. 非常有幫助

2. **安安跟他的某位同事一樣認真工作，甚至更認真。事實上，他的想法通常較能為公司帶來正面績效。 他的同事工作表現平庸，但是參與辦公室黨派所以較容易獲得晉升。因此當安安的老闆公布他的這位同事獲得當年度優異獎時，安安非常生氣。以下的各個行為，對於改善安安的心情有多少幫助？**

行為1：安安坐下，然後想想他生命中以及工作上所有正面的事。

5 a. 非常沒幫助 b. 有點沒幫助 c. 沒差別 d. 有點幫助 e. 非常有幫助

行為 2：安安列了一張表，列出他同事正面和負面的特質。

6 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為 3：安安為他的情緒感到難受，他告訴自己為一個自己無法掌控的事情難過是不對的。

7 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為 4：安安決定告訴大家他的同事工作表現有多差，因此並不配獲得優異獎。
安安蒐集了備忘錄和筆記來佐證，因此他並不是口說無憑。

8 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

3. 珍珍不知道她的帳單什麼時候到期、還有多少張帳單還沒收到，也不知道自己是否有能力繳清。
然後她的車子開始發出怪聲，修車的師傅告訴她，修好車子的費用太高了，可能不值得。
珍珍難以入睡，她一晚會醒來很多次，而且她一直在擔心。以下的各個行為，
對於改善她的煩惱有多少幫助？

行為1：珍珍試著算出她欠了多少錢、還有多少繳費單該付、以及什麼時候到期。

9 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為2：珍珍學會了深層放鬆技巧，來讓自己冷靜下來。

10 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為3：珍珍找了一位財務規劃師，來幫助她找出適當管理財務的方法。

11 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為4：她決定要找一份薪水較高的工作。

12 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

4. 對阿迪來說，似乎沒有任何事情順利。他生命中喜歡做的事不多，
也沒什麼事可以讓他開心的。在接下來的一年中，以下的各個行為，
對於改善阿迪的心情有多少幫助？

行為1：阿迪開始打電話給他有一陣子沒聯絡的朋友，然後約好要拜訪幾個人。

13 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為2：他開始吃比較營養的食物、早睡、然後多運動。

14 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為3：阿迪覺得自己讓別人心情不好，所以決定要自己一個人，
直到他找出讓自己不開心的原因。他覺得自己需要一個人獨處。

15 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為4：阿迪發現晚上邊看電視邊喝一兩瓶啤酒，真的能讓他心情好轉。

16 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

5. 小柏從公司開車回家時，一台貨櫃拖車硬切到他的車子前面，他根本來不及按喇叭。
小柏立刻急轉到右邊避免撞車。他氣炸了。以下的每個行為，對於處理他的怒氣有多少幫助？

行為1：小柏在高速公路上開了幾公里後，硬切到卡車司機前面，給了對方一個教訓。

17 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為2：這種事情常有，小柏沒想太多，就直接開車回家。

18 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為3：小柏對著卡車司機大吼大叫、而且用髒話咒罵他。

19 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

行為4：他發誓再也不在那條路上開車。

20 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

執行H 部分

說：**請為每一個回答選擇一個答案。**

大聲唸出每個題目，然後圈出受測者的答案。

1. 阿強在過去一年中在職場交到了好友。今天他朋友告訴他說，
在另一間公司找到了工作因此他會搬走，這把他嚇了一大跳。
他朋友之前沒有提過他在找其他工作的事情。如果阿強選擇用以下方式來反應，
對於維持良好友誼有多少幫助？

回答1：阿強為朋友感到開心，而且告訴朋友他很高興他找到了新工作。
在接下來的幾個禮拜中，阿強做了一些安排，確保他們保持聯絡。

21 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答2：阿強很難過朋友要走了，但是他認為這件事表示他朋友沒有很在乎他。
畢竟他的朋友沒有告訴他自己在找工作的事。反正朋友要離開了，阿強沒說什麼，
他反而去找其他同事當朋友。

22 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答3：阿強非常生氣朋友什麼都沒說。他決定不理他的朋友來表達不滿，
直到朋友對他說明自己所做的事情。阿強認為如果他的朋友什麼都不提，
就證明了這個朋友不值得與他交談。

23 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

2. 小羅的老師剛打給小羅的父母，告訴他們小羅在學校表現不好。
老師告訴小羅的父母他們的小孩上課不專心、干擾他人，而且靜不下來。
這位老師不擅長管教好動的男孩子，小羅的父母想知道到底發生什麼事。
接著老師說他們的孩子若是不改進就會被留級。父母非常生氣，
以下的反應對他們的孩子有多少幫助？

回答1：父母告訴老師他們非常驚訝，因為這是他們第一次聽到小羅有問題。
他們要求見老師一面，並且要求校長也一起參與會面。

24 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答2：父母告訴老師如果她繼續威脅說要小羅留級，他們就會跟校長報告這件事。他們說：「如果我們的小孩留級，我們會要你個人負責任，你是老師，你的責任是教書，不是責怪學生。」

25 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答3：小羅的父母掛老師電話，然後打給校長。他們抱怨老師威脅他們，並要求幫兒子轉班。

26 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

3. 每件事對麗如來說都很順利。當別人在抱怨工作的時候，麗如升了官而且還大幅加薪。她的孩子都非常快樂，在學校表現也很好，她的婚姻很穩定而且很幸福。麗如開始覺得自己了不起，而且發現自己想對朋友炫耀她的生活。以下的各個回應，對於維持她與別人的關係有多少幫助？

回答1：因為每件事情都這麼順利，所以麗如是可以感到驕傲的。但是麗如也明白有些人覺得她在炫耀，或者可能忌妒她，所以她只跟好朋友表達她的感受。

27 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答2：麗如開始思考所有在未來有可能出問題的事情，好讓自己從不同的觀點來看自己的人生。她明白良好的感覺不會一直維持。

28 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

回答3：麗如當晚跟丈夫分享了她的感受。然後她決定他們一家人週末應該花些時間相處，一起參與幾個家庭活動。

29 a. 非常沒幫助　b. 有點沒幫助　c. 沒差別　d. 有點幫助　e. 非常有幫助

評分

使用MSCEIT™ 第四分冊（Branch 4）評分軟體（附於MCCB 資料組合包中）來評分。請參閱MCCB 手冊中第六章的說明。

測驗8

測驗8 **MSCEIT™ ME** 分數：：

(分冊分數使用一般共通評分系統)

Continuous Performance Test—Identical Pairs (CPT-IP) [*連續表現測驗—相同配對* (CPT-IP)]

測驗9

你將會使用MATRICS 國際版的CPT-IP 軟體光碟。

請參閱MCCB 手冊中第五章裡的CPT-IP 測驗執行說明。

測驗9

測驗9 **CPT-IP** 分數：

2位數　3位數　4位數

電腦生成報告之DPRIME 值

評分

請參閱MCCB 手冊中第六章裡的評分說明。完成之後，請將電腦產生的分數報告附於MCCB 施測人員表格中。

填第一頁表格的說明

左側

通常研究設計會要求應該要完成哪些項目。視你打算使用的電腦評分方式而定，可能會需要填寫年齡、性別以及最高學歷。以下是一些項目的解說。

評估編號：在這裡輸入此次評估在臨床試驗中是第幾次重複進行MCCB 評估。

姓名：受測者的姓名；若在進行研究，則填研究的名稱。

生日：在需要更保護身分資料的情況下，最好輸入生日的月與年即可，不要輸入日期。

其他資訊：你可以在其他資訊的三個欄位提供更多資訊。在第一欄寫下變數，然後在第二欄寫下實際的值。例如：
發病年齡 19
地點 MPRC

右側

在上面的「分數格」中的「原始分數」欄裡，將你已經寫在施測人員表格中的分數抄在這裡。如果你將使用MCCB 電腦評分系統，你就不用手動計算 HVLT-R 與BVMT-R 測試的總和，或CPT-IP 子測驗的平均值，也無須查詢 *T*-分數或百分位數。

產品編號: TCHN2006-3A www.matricsinc.org A 0 9 8 7 6 5 4 3 2 1

Appendix 10: The Schizophrenia Quality of Life Scale Revision 4 (SQLS-R4)

精神分裂症病患生活品質問卷 (SQLS-R4)

我們想了解**過去七天中（包括今天）**，有關您的生活品質。請針對下列每項敘述，選擇一個適當的答案，並用筆將答案的圓圈塗滿。

		從不 1	很少 2	有時 3	經常 4	總是 5
1.	我提不起勁兒做日常工作和活動。	○	○	○	○	○
2.	我不太想做日常工作和活動。	○	○	○	○	○
3.	我擔心我的未來。	○	○	○	○	○
4.	我覺得孤獨。	○	○	○	○	○
5.	我覺得沒有希望。	○	○	○	○	○
6.	我覺得恐慌。	○	○	○	○	○
7.	我可以完成我每天的日常活動。	○	○	○	○	○
8.	我容易把別人的話誤解成是在侮辱或批評我。	○	○	○	○	○
9.	我發現自己很難專心。	○	○	○	○	○
10.	我發現自己很難和別人打成	○	○	○	○	○
11.	我覺得心情低落。	○	○	○	○	○
12.	我覺得我還可以應付得來日常工作和活動。	○	○	○	○	○
13.	我覺得很迷惘，對自己不確定。	○	○	○	○	○
14.	我睡得很好。	○	○	○	○	○
		從不 1	很少 2	有時 3	經常 4	總是 5
15.	我的心情時好時懷。	○	○	○	○	○
16.	我擔心自己不會好轉。	○	○	○	○	○
17.	我總是擔心一些事情。	○	○	○	○	○
18.	我覺得別人想要避開我。	○	○	○	○	○
19.	一想到過去我的心情就變得煩亂。	○	○	○	○	○
20.	我記不住事情。	○	○	○	○	○
21.	我覺得和這世界隔絕了。	○	○	○	○	○
22.	和一群人在一起時，我會感到不自在。	○	○	○	○	○
23.	我很難清楚地思考。	○	○	○	○	○
24.	我經常有令自己不開心的想法。	○	○	○	○	○

SQLS R4 **(繼續)**

我們想了解**過去七天中（包括今天）**，有關您的生活品質。請針對下列每項敘述，選擇一個適當的答案，並用筆將答案的圓圈塗滿。

		從不 1	很少 2	有時 3	經常 4	總是 5
25.	我有自殺的念頭。	○	○	○	○	○
26.	我覺得快樂。	○	○	○	○	○
27.	我覺得沮喪。	○	○	○	○	○
28.	我覺得昏昏欲睡。	○	○	○	○	○
29.	我覺得無法休息。	○	○	○	○	○
30.	我很關心我的社交生活。	○	○	○	○	○
31.	我覺得累。	○	○	○	○	○
32.	我覺得身體虛弱。	○	○	○	○	○
33.	我覺得自己的生活不正常。	○	○	○	○	○

Appendix 11: The Positive and Negative Syndrome Scale (PANSS)

陽性與陰性症狀量表（PANSS）(評估近一個月的症狀表現）

1.無 2. 很輕 3.輕度 4.中度 5.偏重 6.重度 7.極重

陽性症狀量表	評分	陰性症狀量表	評分
P1---- 妄想	□	N1--- 情感遲鈍	□
P2----概念紊亂	□	N2---情緒退縮	□
P3----幻覺性行為	□	N3--- 情感交流障礙	□
P4----興奮	□	N4---被動/淡漠/社交退縮	□
P5----誇大	□	N5---抽象思維能力障礙	□
P6----猜疑/被害	□	N6--- 交流缺乏自發性和流暢性	□
P7----敵對性	□	N7--- 刻板思維	□
一般精神病理學症狀量表	評分		評分
G1—關注身體健康	□	G9—異常思維內容	□
G2—焦慮	□	G10—定向障礙	□
G3—自罪感	□	G11—注意障礙	□
G4—緊張	□	G12—自知力缺乏	□
G5—裝相和作態	□	G13—意志障礙	□
G6—抑鬱	□	G14—衝動控制障礙	□
G7—動作遲緩	□	G15--先占觀念	□
G8—不合作	□	G16—主動回避社交	□

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SCI-PANSS

SCI–PANSS

Structured Clinical Interview – Positive and Negative Syndrome Scale

Lewis A. Opler, M.D., Ph.D.
Stanley R. Kay, Ph.D.
J.P. Lindenmayer, M.D., &
Abraham Fiszbein, M.D.

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Structured Clinical Interview for the Positive and Negative Syndrome Scale

SCI-PANSS

L. A. Opler, M.D., Ph.D. S. R. Kay, Ph.D. J. P. Lindenmayer, M.D. A. Fiszbein, M.D.

Patient Name or ID: _____

Interviewer: _____ Date: ____ / ____ / ____

Data on "Lack of Spontaneity and Flow of Conversation" (N6), "Poor Rapport" (N3), and "Conceptual Disorganization" (P2)

Hi, I'm ... We're going to be spending the next 30 to 40 minutes talking about you and your reasons for being here. Maybe you can start out by telling me something about yourself and your background?

(Instruction to interviewer: Allow at least 5 minutes for a non-directive phase serving to establish rapport in the context of an overview before proceeding to the specific questions listed below.)

Data on "Anxiety" (G2)

1. Have you been feeling worried or nervous in the past week? _____

IF YES, skip to question 3. IF NO, continue.

2. Would you say that you're usually calm and relaxed? _____

IF YES, skip to question 8. IF NO, continue.

3. What's been making you feel nervous (worried, not calm, not relaxed)? _____
4. Just how nervous (worried, etc.) have you been feeling? _____
5. Have you been shaking at times, or has your heart been racing? _____
6. Do you get into a state of panic? _____
7. Has your sleep, eating, or participation in activities been affected? _____

Data on "Delusions (General)" (P1) and "Unusual Thought Content" (G9)

8. Have things been going well for you? _____
9. Has anything been bothering you lately? _____
10. Can you tell me something about your thoughts on life and its purpose? _____

11. Do you follow a particular philosophy (any special rules, teachings, or religious doctrine)? _____

12. Some people tell me they believe in the Devil; what do you think? _____

IF NO (i.e., he/she doesn't believe in the Devil), skip to question 14.
IF YES (i.e., he/she does believe), continue.

13. Can you tell me more about this? _____

14. Can you read other people's minds? _____

IF NO, skip to question 16. IF YES, continue.

15. How does that work? _____

16. Can others read your mind? _____

IF NO, skip to question 19. IF YES, continue.

17. How can they do that? _____

18. Is there any reason that someone would want to read your mind? _____

19. Who controls your thoughts? _____

Data on "Suspiciousness/Persecution" (P6) and "Poor Impulse Control" (GI4)

20. How do you spend your time these days? _____

21. Do you prefer to be alone? _____

22. Do you join in activities with others? _____

IF YES, skip to question 25. IF NO, continue.

23. Why not? ... Are you afraid of people, or do you dislike them? _____

IF NO, skip to question 26. IF YES, continue.

24. Can you explain? _____

Skip to question 26.

25. Tell me about it. _____

26. Do you have many friends? _____

IF YES, skip to question 30. IF NO, continue.

27. Just a few? _____

IF YES, skip to question 29. IF NO, continue.

28. Any? .... Why? _____

Skip to question 32.

29. Why just a few friends? _____

30. Close friends? _____

IF YES, skip to question 32. IF NO, continue.

31. Why not? _____

32. Do you feel that you can trust most people? _____

IF YES, skip to question 34. IF NO, continue.

33. Why not? _____

34. Are there some people in particular who you don't trust? _____

IF NO to question 34 and YES to question 32, skip to question 41.

IF NO to question 34 and NO to question 32, skip to question 36.

IF YES to question 34, continue.

35. Can you tell me who they are? _____

36. Why don't you trust people (or name specific person)? _____

IF "DON'T KNOW" or "DON'T WANT TO SAY," continue. Otherwise, skip to question 41.

37. Do you have a good reason not to trust ...? _____

38. Is there something that .... did to you? _____

39. Perhaps something that ... might do to you now? _____

IF NO, skip to question 41. IF YES, continue.

40. Can you explain to me? _____

41. Do you get along well with others? _____

IF YES, skip to question 43. IF NO, continue.

42. What's the problem? _____

43. Do you have a quick temper? _____

44. Do you get into fights? _____

IF NO, skip to question 48. IF YES, continue.

45. How do these fights start? _____
46. Tell me about these fights. _____
47. How often does this happen? _____
48. Do you sometimes lose control of yourself? _____

IF NO, skip to question 50. IF YES, continue.

49. What happens when you lose control of yourself? _____
50. Do you like most people? _____

IF YES, skip to question 52. IF NO, continue.

51. Why not? _____
52. Are there perhaps some people who don't like you? _____

IF NO, skip to question 54. IF YES, continue.

53. For what reason? _____
54. Do others talk about you behind your back? _____

IF NO, skip to question 57. IF YES, continue.

55. What do they say about you? _____
56. Why? _____
57. Does anyone ever spy on you or plot against you? _____
58. Do you sometimes feel in danger? _____

IF NO, skip to question 64. IF YES, continue.

59. Would you say that your life is in danger? _____
60. Is someone thinking of harming you or even perhaps thinking of killing you? _____
61. Have you gone to the police for help? _____
62. Do you sometimes take matters into your own hands or take action against those who might harm you? _____

IF NO, skip to question 64. IF YES, continue.

63. What have you done? _____

Data on "Hallucinatory Behavior" (P3) and associated delusions

64. Do you once in a while have strange or unusual experiences? _____
65. Sometimes people tell me that they can hear noises or voices inside their head that others can't hear. What about you? _____

IF YES, skip to question 68. IF NO, continue.

66. Do you sometimes receive personal communications from the radio or TV? _____

IF YES, skip to question 68. IF NO, continue.

67. From God or the Devil?: _____

IF NO, skip to question 83. IF YES, continue.

68. What do you hear? _____
69. Are these as clear and loud as my voice? _____
70. How often do you hear these voices, noises, messages, etc.? _____
71. Does this happen at a particular time of day or all the time? _____

IF HEARING NOISES ONLY, skip to question 80. IF HEARING VOICES, continue.

72. Can you recognize whose voices these are? _____
73. What do the voices say? _____
74. Are the voices good or bad? _____
75. Pleasant or unpleasant? _____
76. Do the voices interrupt your thinking or your activities? _____
77. Do they sometimes give you orders or instructions? _____

IF NO, skip to question 80. IF YES, continue.

78. For example? _____
79. Do you usually obey these orders (instructions)? _____
80. What do you make of these voices (or noises); where do they really come from? _____
81. Why do you have these experiences? _____

82. Are these normal experiences? _____

83. Do ordinary things sometimes look strange or distorted to you? _____

84. Do you sometimes have "visions" or see things that others can't see? _____

IF NO, skip to question 88. IF YES, continue.

85. For example? _____

86. Do these visions seem very real or life-like? _____

87. How often do you have these experiences? _____

88. Do you sometimes smell things that are unusual or that others don't smell? _____

IF NO, skip to question 90. IF YES, continue.

89. Please explain. _____

90. Do you get any strange or unusual sensations from your body? _____

IF NO, skip to question 92. IF YES, continue.

91. Tell me about this. _____

Data on "Somatic Concern" (GI)

92. How have you been feeling in terms of your health? _____

IF OTHER THAN "GOOD," skip to question 94. IF "GOOD," continue.

93. Do you consider yourself to be in top health? _____

IF YES, skip to question 95. IF NO, continue.

94. What has been troubling you? _____

95. Do you have any medical illness or disease? _____

96. Has any part of your body been troubling you? _____

IF YES, skip to question 98. IF NO, continue.

97. How is your head? Your heart? Stomach? The rest of your body? _____

98. Could you explain? _____

99. Has your head or body changed in shape or size? _____

IF NO, skip to question 102. IF YES, continue.

100. Please explain. _____

101. What is causing these changes? _____

Data on "Depression" (G6)

102. How has your mood been in the past week: mostly good, mostly bad? _____

IF "MOSTLY BAD," skip to question 104. IF "MOSTLY GOOD," continue.

103. Have there been times in the past week when you were feeling sad or unhappy? _____

IF NO, skip to question 114. IF YES, continue.

104. Is there something in particular that is making you sad? _____

105. How often do you feel sad? _____

106. Just how sad have you been feeling? _____

107. Have you been crying lately? _____

108. Has your mood in any way affected your sleep? _____

109. Has it affected your appetite? _____

110. Do you participate less in activities on account of your mood? _____

111. Have you had any thoughts of harming yourself? _____

IF NO, skip to question 114. IF YES, continue.

112. Any thoughts about ending your life? _____

IF NO, skip to question 114. IF YES, continue.

113. Have you attempted suicide? _____

Data on "Guilt Feelings" (G3) and "Grandiosity" (P5)

114. If you were to compare yourself to the average person, how would you come out: a little better, maybe a little worse, or about the same? _____

IF "BETTER," skip to question 117.
IF "ABOUT THE SAME," skip to question 118.
IF "WORSE," continue.

115. Worse in what ways? _____

116. Just how do you feel about yourself? _____

Skip to question 120.

117. Better in what ways? _____

Skip to question 120.

118. Are you special in some ways? _____

IF NO, skip to question 120. IF YES, continue.

119. In what ways? _____

120. Would you consider yourself gifted? _____

121. Do you have talents or abilities that most people don't have? _____

IF NO, skip to question 123. IF YES, continue.

122. Please explain. _____

123. Do you have any special powers? _____

IF NO, skip to question 126. IF YES, continue.

124. What are these? _____

125. Where do these powers come from? _____

126. Do you have extrasensory perception (ESP), or can you read other people's minds? _____

127. Are you very wealthy? _____

IF NO, skip to question 129. IF YES, continue.

128. Explain please. _____

129. Can you be considered to be very bright? _____

IF NO, skip to question 131. IF YES, continue.

130. Why would you say so? _____

131. Would you describe yourself as famous? _____

132. Would some people recognize you from TV, radio, or the newspaper? _____

IF NO, skip to question 134. IF YES, continue.

133. Can you tell me about it? _____

134. Are you a religious person? _____

IF NO, skip to question 140. IF YES, continue.

135. Are you close to God? _____

IF NO, skip to question 140. IF YES, continue.

136. Did God assign you some special role or purpose? _____

137. Can you be one of God's messengers or angels? _____

IF NO, skip to question 139. IF YES, continue.

138. What special powers do you have as God's messenger (angel)? _____

139. Do you perhaps consider yourself to be God? _____

140. Do you have some special mission in life? _____

IF NO, skip to question 143. IF YES, continue.

141. What is your mission? _____

142. Who assigned you to that mission? _____

143. Did you ever do something wrong — something you feel bad or guilty about? _____

IF NO, skip to question 149. IF YES, continue.

144. Just how much does that bother you now? _____

145. Do you feel that you deserve punishment for that? _____

IF NO, skip to question 149. IF YES, continue.

146. What kind of punishment would you deserve? _____

147. Have you at times thought of punishing yourself? _____

IF NO, skip to question 149. IF YES, continue.

148. Have you ever acted on those thoughts of punishing yourself? _____

Data on "Disorientation" (GI0)

149. Can you tell me today's date (i.e., the day, month, and year)? _____

IF YES, skip to question 151. IF NO, continue.

150. Can you tell me what day of the week it is? _____

151. What is the name of the place that you are in now? _____

IF NOT HOSPITALIZED, skip to question 154. IF HOSPITALIZED, continue.

152. What ward are you on? _____

153. What is the address of where you're now staying? _____

IF ABLE TO TELL, skip to question 155. IF NOT ABLE TO TELL, continue.

154. Can you tell me your home address? _____

IF NOT HOSPITALIZED, skip to question 156. IF HOSPITALIZED, continue.

155. If someone had to reach you by phone, what number would that person call? _____

156. If someone had to reach you at home, what number would that person call? _____

157. What is the name of the doctor who is treating you? _____

If NOT HOSPITALIZED, skip to question 159. IF HOSPITALIZED, continue.

158. Can you tell me who else is on the staff and what they do? _____

159. Do you know who is currently the president (prime minister, etc.)? _____

160. Who is our governor (premier, etc.)? _____

161. Who is the mayor (town supervisor, etc.) of this city (town, etc.)? _____

Data on "Difficulty in Abstract Thinking" (N5)

I'm going to now say a pair of words, and I'd like you to tell me in what important way they're alike. Let's start, for example, with the words "apple" and "banana." How are they alike — what do they have in common? **IF THE RESPONSE IS THAT "THEY'RE BOTH FRUIT," THEN SAY:** Good. Now what about ...? *(Select three other items from the Similarities list at varying levels of difficulty from Appendix A.)*

IF AN ANSWER IS GIVEN THAT IS CONCRETE, TANGENTIAL, OR IDIOSYNCRATIC (E.G., "THEY BOTH HAVE SKINS," "YOU CAN EAT THEM," "THEY'RE SMALL," OR "MONKEYS LIKE THEM"), **then say:** OK, but they're both fruit. Now how about ... and ... : how are these alike? *(Select three other items from the Similarities list at varying levels of difficulty from Appendix A.)*

APPENDIX A
Items for Similarities in the evaluation of "Difficulty in Abstract Thinking"

Circle the Similarities Used

1. How are a ball and an orange alike?
2. Apple and banana ?
3. Pencil and pen?
4. Nickel and dime?

5. Table and chair?
6. Tiger and elephant?
7. Hat and shirt?
8. Bus and train?

9. Arm and leg?
10. Rose and tulip?
11. Uncle and cousin?
12. The sun and the moon?

13. Painting and poem?
14. Hilltop and valley?
15. Air and water?
16. Peace and prosperity?

Note on Appendix A. Similarities are generally assessed by sampling four items at different levels of difficulty (i.e., one item selected from each quarter of the full set). When using the PANSS longitudinally, items should be systematically altered with successive interviews so as to provide different selections from the various levels of difficulty and thus minimize repetition.

Notes on Similarities responses:

_____

_____

_____

_____

You've probably heard the expression, "Carrying a chip on the shoulder." What does that really mean? There's a very old saying, "Don't judge a book by its cover." What is the deeper meaning of this proverb? *(Select two other proverbs from the list in Appendix B at varying levels of difficulty.)*

APPENDIX B
Items for assessing PROVERB INTERPRETATION in the evaluation of "Difficulty in Abstract Thinking"

Circle the Proverbs Used

What does the saying mean:
1. "Plain as the nose on your face"
2. "Carrying a chip on your shoulder"
3. "Two heads are better than one"
4. "Too many cooks spoil the broth"

5. "Don't judge a book by its cover"
6. "One man's food is another man's poison"
7. "All that glitters is not gold"
8. "Don't cross the bridge until you come to it"

9. "What's good for the goose is good for the gander"
10. "The grass always looks greener on the other side"
11. "Don't keep all your eggs in one basket"
12. "One swallow does not make a summer"

13. "A stitch in time saves nine"
14. "A rolling stone gathers no moss"
15. "The acorn never falls far from the tree"
16. "People who live in glass houses should not throw stones at others"

Note on Appendix B: Proverb interpretation is generally assessed by sampling four items at different levels of difficulty (i.e., one item selected from each quarter of the full set). When using the PANSS longitudinally, items should be systematically altered with successive interviews so as to provide different selections from the various levels of difficulty and thus minimize repetition.

Notes on Proverb responses:

_____

_____

_____

_____

Data on "Lack of Judgment and Insight" (G12)

162. How long have you been in the hospital (clinic, etc.)? _____

163. Why did you come to the hospital (clinic, etc.)? _____

164. Did you need to be in a hospital (clinic, etc.)? _____

IF YES, skip to question 167. IF NO, continue.

165. Did you have a problem that needed treatment? _____

IF NO, skip to question 169. IF YES, continue.

166. Would you say that you had a psychiatric or mental problem? _____

IF NO, skip to question 169. IF YES, continue.

167. Why?....would you say that you had a psychiatric or mental problem? _____

IF NO, skip to question 169. IF YES, continue.

168. Can you tell me about it and what it consisted of? _____

169. In your own opinion, do you need to be taking medicine? _____

IF YES, skip to question 171.
IF NO and unmedicated, skip to question 172.
IF NO and medicated, continue.

170. Why then are you taking medicines? _____

Skip to question 172.

171. Why?... Does the medicine help you in any way? _____

172. Do you at this time have any psychiatric or mental problems? _____

IF YES, skip to question 174. IF NO, continue.

173. For what reason are you at the hospital (clinic, etc.)? _____

Skip to question 175.

174. Please explain _____

175. Just how serious are these problems? _____

IF UNHOSPITALIZED, skip to question 178.
IF HOSPITALIZED, continue.

176. Are you ready yet for discharge from the hospital? _____

177. Do you think you'll be taking medicine for your problems after discharge? _____

178. What are your future plans? _____

179. What about your longer-range goals? _____

Well, that's about all I have to ask of you now. Are there any questions that you might like to ask of me? Thank you for your cooperation.

Data on "Difficulty in Abstract Thinking" (N5)

I'm going to now say a pair of words, and I'd like you to tell me in what important way they're alike. Let's start, for example, with the words "apple" and "banana." How are they alike — what do they have in common? **IF THE RESPONSE IS THAT "THEY'RE BOTH FRUIT," THEN SAY:** Good. Now what about ...? *(Select three other items from the Similarities list at varying levels of difficulty from Appendix A.)*

IF AN ANSWER IS GIVEN THAT IS CONCRETE, TANGENTIAL, OR IDIOSYNCRATIC (E.G., "THEY BOTH HAVE SKINS," "YOU CAN EAT THEM," "THEY'RE SMALL," OR "MONKEYS LIKE THEM"), then say: OK, but they're both fruit. Now how about ... and ... : how are these alike? *(Select three other items from the Similarities list at varying levels of difficulty from Appendix A.)*

APPENDIX A
Items for Similarities in the evaluation of "Difficulty in Abstract Thinking"

Circle the Similarities Used

1. How are a ball and an orange alike?
2. Apple and banana ?
3. Pencil and pen?
4. Nickel and dime?

5. Table and chair?
6. Tiger and elephant?
7. Hat and shirt?
8. Bus and train?

9. Arm and leg?
10. Rose and tulip?
11. Uncle and cousin?
12. The sun and the moon?

13. Painting and poem?
14. Hilltop and valley?
15. Air and water?
16. Peace and prosperity?

Note on Appendix A: Similarities are generally assessed by sampling four items at different levels of difficulty (i.e., one item selected from each quarter of the full set). When using the PANSS longitudinally, items should be systematically altered with successive interviews so as to provide different selections from the various levels of difficulty and thus minimize repetition.

Notes on Similarities responses:

You've probably heard the expression, "Carrying a chip on the shoulder." What does that really mean? There's a very old saying, "Don't judge a book by its cover." What is the deeper meaning of this proverb? *(Select two other proverbs from the list in Appendix B at varying levels of difficulty.)*

APPENDIX B
Items for assessing PROVERB INTERPRETATION in the evaluation of "Difficulty in Abstract Thinking"

Circle the Proverbs Used

What does the saying mean:
1. "Plain as the nose on your face"
2. "Carrying a chip on your shoulder"
3. "Two heads are better than one"
4. "Too many cooks spoil the broth"

5. "Don't judge a book by its cover"
6. "One man's food is another man's poison"
7. "All that glitters is not gold"
8. "Don't cross the bridge until you come to it"

9. "What's good for the goose is good for the gander"
10. "The grass always looks greener on the other side"
11. "Don't keep all your eggs in one basket"
12. "One swallow does not make a summer"

13. "A stitch in time saves nine"
14. "A rolling stone gathers no moss"
15. "The acorn never falls far from the tree"
16. "People who live in glass houses should not throw stones at others"

Note on Appendix B: Proverb interpretation is generally assessed by sampling four items at different levels of difficulty (i.e., one item selected from each quarter of the full set). When using the PANSS longitudinally, items should be systematically altered with successive interviews so as to provide different selections from the various levels of difficulty and thus minimize repetition.

Notes on Proverb responses:

Appendix 12: Demographic Characteristics

參加者資料表格

編號									

測試日期（年/月/日）: _____

1. 個人資料

姓名: _____ 年齡：_____出生日期（年/月/日）: _____

性別: 男/女　　婚姻狀況: 單身/已婚

文化程度:　□小學　□中學　□大專及以上

職業（如果目前失業，寫下之前的職業）: _____

住址（區/街）:

電話號碼. _____（手提）_____（家） 聯絡人及電話:_____

生育情況：□無小孩　□有小孩：____歲____男____女

父母的精神狀況：_____　兄弟姐妹的精神狀況：_____

參加者類型: 健康人群[ ]　早期精神疾病患者[ ]　家族性精神疾病風險的人[ ]

2. 健康狀況

精神科診斷: _____發病日期（年/月/日）: _____首次住院年齡：_____

住院記錄（參加本計畫前）: 日期從近向遠

天數	持續時間		住院原因及徵兆	自願/強制
	由（年/月/日）	至（年/月/日）		

服用藥物資料(藥物名稱、副作用等)：_____

_____

研究人員姓名: _____　簽署: _____　日期: _____

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