Improving Social Functioning in Schizophrenia Through Social Cognitive Remediation

by

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Abstract

Social functioning deficits in schizophrenia represent a domain of performance that has only recently begun to be addressed by treatment interventions. Social cognition refers to how we think about and process information that is social in nature, and has been identified as a unique contributor to our ability to function as social beings. There is a growing evidence-base endorsing the effectiveness of social cognitive training in improving the social cognitive abilities of schizophrenia populations. However, continued research is required to establish whether improved social cognition transpires into positive changes in social functioning and further, whether the effects of this training are sustained over time. The primary purpose of this study was to investigate change over time in functional domains amongst a sample of individuals with schizophrenia following participation in social cognitive training. This pilot study applied a targeted social cognitive training program over 13 weeks to a mixed sample of outpatient and community-dwelling people with schizophrenia spectrum disorders. Participants were assessed at baseline and post-training and compared to a matched treatment as usual group. Domains of interest included social cognition, neurocognition, social functioning and quality of life. In addition, the sample was assessed at a six-month follow up period to explore the longer-term effects of such training. Furthermore, a qualitative analysis was conducted from narrative data obtained from interviews with participants of the program post-treatment and at follow-up. Quantitative data revealed preliminary evidence that the treatment group improved in social performance and all three domains of social cognition targeted by the program. Longitudinal data supported the sustainability of these initial changes and revealed the emergence of longer-term specific changes to
social functioning and quality of life. Finally, the narrative data obtained from participants of the program strongly suggested that the training had a positive impact on various aspects of their functioning beyond the expectations of the researchers. The overall findings provide endorsement for the utility and efficacy of social cognitive intervention in ultimately improving functional outcomes for people with schizophrenia that are durable over time.
Dedication

This achievement is dedicated to my mother. Thank you for your unwavering love, selflessness and unconditional belief in me. I know you will be proud.
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I wish to thank all individuals who participated in this project for giving their time, enthusiasm and effort. The considerable time I spent with these wonderful people was an educational and enjoyable experience, and their courage and warm-heartedness in the face of adversity has inspired me both professionally and personally. Thank you also to all the professionals of various mental health services who were involved in the project and researchers knowledgeable in this field of study who were very generous with their advice and resources.

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Most importantly, I would like to express my love and gratitude to my wife and two children. To my adoring wife, Di, words cannot justify how much I appreciate your contribution to this achievement. Without your selflessness, thoughtfulness and sacrifice, this simply would not have been possible. Finally, to my beautiful children, Isaac and Max, thank you for just being you and making me smile.
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Chapter 1

General Introduction

The ability to proficiently interconnect with others is a primary human need strongly associated with personal wellbeing (Baumeister and Leary, 1995; Kohut, 1984; Lee and Robbins, 1998; Andersen, Chen, & Carter, 2000; Mashek et al., 2006, Sheldon et al., 2001). Interdependence has been a focal point of many socio-philosophical pioneers, including Karl Marx and Dr. Martin Luther King, but was perhaps most powerfully advocated by Mahatma Ghandi who wrote,

"Interdependence is and ought to be as much the ideal of man as self-sufficiency," said Ghandi, "Man is a social being. Without interrelation with society he cannot realise his oneness with the universe or suppress his egotism. His social interdependence enables him to test his faith and to prove himself on the touchstone of reality." (Mahatma Ghandi, 1929).

Social interaction has a cumulative effect, which begins by providing an opportunity to meet new people and in turn opens the door to forming friendships. We learn so much from our friends and others in general because they help teach us, directly or indirectly, how to be objective, modest, courteous, empathic and many other lessons about the rules and expectations of society which ultimately plays a substantial role in allowing us to feel accepted and loved by others. If this knowledge
or skill is not developed appropriately or is somehow lost, then life itself for that person will inevitably become a more inhospitable and gloomy existence.

The World Health Organisation labelled their handbook on schizophrenia ‘youth’s greatest disabler’ (WHO, 2008). One suspects that this description is due to the cruel timing of onset of the disease which most commonly strikes when the individual should be socially active and enjoying life to the fullest (Häfner et al., 1994). Social dysfunction is a persistent hallmark of schizophrenia and consequently is a diagnostic criterion in the Diagnostic and statistical manual of mental disorders (4th ed., text rev.) (DSM-IV-TR) (American Psychiatric Association, 2000).

Moreover, there has long been an opinion held that the social dysfunction domain should standalone from the other collection of symptoms, positive and negative, inherent with schizophrenia (Lenzenweger & Dworkin, 1996; Lenzenweger, Dworkin, & Wethington, 1991; Strauss, Carpenter, & Bartko, 1974). Positive symptoms signify a distortion or excess of typical functioning ranging from hallucinations to florid delusions while negative symptoms reveal deficiencies in typical functioning which range from diminished ability to express emotions to poverty of speech.

Social functioning (SF) is a term that has been used to describe various areas of performance including, interpersonal competence, levels of social skill, social problem-solving ability and independent living skills (e.g. hygiene, financial management, self-care, etc). Subsequently, a view taken by many researchers has been to combine these assorted domains under the umbrella term “functional outcome” (FO) (Couture, Penn, & Roberts, 2006; Green, 1996).
The severity of social functioning deficits in individuals with schizophrenia is thought to be the most telling predictor of functional outcome (Bellack, Morrison, Wixted, & Mueser, 1990; Johnstone, Macmillan, Frith, Benn, & Crow, 1990; Perlick, Stastny, Mattis, & Teresi, 1992; Strauss & Carpenter, 1977; Tien & Eaton, 1992) (e.g. rate of relapse in discharged patients). There is at least some support for the contention that if the people who live with this illness were asked to prioritize the treatment they receive, they would elect to earmark their deficient social skills ahead of their negative and positive symptoms (Arvidsson, 2001; Foldemo, Ek and Bogren, 2004).

The treatment of social dysfunction in schizophrenia has been neglected in the past but in more recent times represented an area that the field of psychology has made significant progress in. The customary treatment preference for schizophrenia symptoms since the discovery of neuroleptics in the 1950’s has been to prescribe antipsychotic medication (Lieberman et al., 2005; Freedman, 2003). This intervention method undoubtedly has been one of psychology’s great success stories in respect to treating positive symptoms of schizophrenia. However, a conundrum faced by researchers and clinicians for many decades now, has been how to treat the additional features of schizophrenia that these drugs have limited effect on, namely negative symptoms and social functioning (Bellack et al., 2004; Harvey et al., 2004; Erhart, Marder & Carpenter, 2006; Alphs, 2006; Marder, 2006 & Stahl, 2007), which contribute to poorer outcomes and are considered more distressing to patients and family members than positive symptoms (Bow-Thomas et al, 1999; Dickerson et al., 1999; Green et al., 2000; Miley et al., 2005).

Various psychosocial approaches have been developed to target functional outcomes including psychoeducation, cognitive behavioural therapy and social skills
training, each demonstrating some level of efficacy (Kern et al., 2009; Wykes, 2011). Despite the development of alternative treatments for people with schizophrenia, and the positive results of these approaches, the proportion of recovered schizophrenia individuals in recent times has failed to improve (Jaaskelainen et al., 2012) so the pursuit for more efficacious interventions continues.

Individual levels of cognitive deficits in people with schizophrenia explain much of the variability of success in improving functional outcomes (Wykes et al., 1992; Wykes, 1994; Green, 1996), which stimulated considerable interest in the cognitive foundations of people with schizophrenia as a path to establishing greater recovery rates in these patients. Remediation programs focusing on improving cognitive ability (cognitive remediation) have been found by several reviews to have small to moderate effects in terms of improvement to functional outcome (Hayes & McGrath, 2000; McGurk et al., 2007; Wykes et al, 2011; Wykes & Spaulding, 2011).

Two general types of cognitive factors in schizophrenia have been described in the literature, neurocognition (such as working memory, problem-solving, attention, etc.) and social cognition. The obvious distinction between these factors is that neurocognition refers to non-social cognitive abilities (and from herein will be referred to as non-social cognition in this paper). There is abundant evidence that people with schizophrenia demonstrate enduring deficiencies in both neurocognition (Harvey, 1999; Heinrichs & Zakzanis, 1998; Saykin, et al., 1991) and social cognition (Edwards, Jackson, & Pattison, 2002; Corrigan & Toomey, 1995; Addington & Addington, 1998; Frith 1992; Brune, 2005; Green et al., 2012).

Research on social cognition has flourished in recent years (Green et al., 2008; Green et al, 2012). Social cognition (SC) has been identified as a powerful
mediatory variable of the relationship between non-social cognition (NSC) and functional outcomes (Roder & Schmidt, 2009; Bowie et al., 2010; Brittain et al., 2010; Schmidt, Roder & Mueller, 2010; Couture, Granholm & Fish, 2011; Fett et al., 2011). Social cognition is a specialised type of thinking that we draw on when socially engaged and deficiencies with these abilities have been found to be closely associated with functional outcome in individuals with schizophrenia. Against this background, social cognitive remediation programs targeting specifically social cognitive abilities have demonstrated promise for improving the functional recovery of people with schizophrenia (Horan et al, 2008; Choi et al., 2009; Kurtz & Richardson, 2012). Importantly, social cognition is considered to have an advantage as a treatment target over NSC remediation because conceptually it is more proximal to social functioning (Combs, et al., 2011; Roberts & Velligan, 2012).

Social cognitive models of schizophrenia have been proposed that are based on a perspective that schizophrenia is in essence an interpersonal disorder and that the root of problematic behaviour is not positive or negative symptoms, rather it is an inability to interact with the social environment (Bentall, 1990, 1994; Bentall, Kinderman, et al., 1994; Frith 1992, 1994, Penn, Corrigan, Bentall, Racenstein, & Newman, 1997). The notion that schizophrenia is essentially an interpersonal disorder has been around for a long time. It has been shown that childhood deficits in neurocognition or non-social cognition and social skills precede the onset of schizophrenia (see Asarnow, 1988, for review). This developmental theory of the pattern of schizophrenia posits that young children who display cognitive deficiencies (such as problems with attention) (Cornblatt, Obuchowski, Roberts, Pollack, & Erlenmeyer-Kimling, 1999) at a young age and are then faced with interpersonal deficits through adolescence (such as withdrawal, poor affect
regulation) can develop symptoms of psychopathology in adulthood (Asarnow, 1988; Penn et al., 1997). This developmental model certainly complements the neuro-sociological model proposed by (Carter & Flesher, 1995) that essentially proposes that people with schizophrenia cannot cope with the increasing cognitive demands that the social world imposes on them at a certain stage of development (i.e. late adolescence to early adulthood). Interestingly, this model may provide a plausible explanation for why onset of disease typically occurs in the early twenties. There is very limited evidence to suggest that SC deficits (as opposed to NSC and social skills) precede manifestation of schizophrenia however, and this represents an important area of future research (Kugelmass, Faber, Ingraham, & Frenkel, 1995).

Nevertheless, it is well established that SC plays a greater role than NSC (or basic cognition) in determining the ability of people with schizophrenia to interact socially (Fett et al., 2011). Evidence strongly suggests SC has a unique relationship with SF and has greater predictive potential of a persons’ SF level than NSC (Reed, Penn, Spaulding, & Sullivan, 1994; Spaulding, Weiler, & Penn, 1990; Corrigan & Toomey, 1995; Mueser, et al., 1996; Penn, Spaulding, Reed, & Sullivan, 1996; Sullivan, Marder, Liberman, Donahoe, & Mintz, 1990). This evidence provides great impetus for the inclusion of SC remediation in psychosocial rehabilitation programs for this population.

This paper will discuss in more detail the origins of SC, its suggested associations with schizophrenia, the outcomes of SC interventions already implemented and the shortcomings and limitations of research in this area to date. Also highlighted will be future recommendations for studies to consider advancing and enhancing the potential treatment of SF through SC interventions for people afflicted with this disorder.
Chapter 2

Social Cognition and its Relationship with Social Functioning

So what is social cognition? Well it is problematical to define something that is yet to be completely understood. This paradox makes it difficult to accurately define SC but fortunately there has been sufficient progress to make certain general statements regarding what SC signifies.

Social psychologists were unsurprisingly at the forefront of investigating SC and the term was pioneered in the course of the cognitive revolution of the 1960’s and 1970’s (Penn, Sanna, & Roberts, 2008). Humans are thinkers and we think differently when we are in social situations than when we are alone. To be able to comprehend our social behaviour we need to discover the thought processes that underlie this behaviour, social cognition.

Perhaps the most appealing definition is that, “Social cognition refers to the mental operations underlying social interactions, which include processes involved in perceiving, interpreting, and generating responses to the intentions, dispositions and behaviours of others.” (Green, Olivier, Crawley, Penn, & Silverstein, 2005, p. 882).

Other definitions proposed include, “SC refers to how people think about themselves and others in the social world” (Penn, et al., 2008, p. 408) or an intuitively simple portrayal, “People thinking about people” (Green, et al., 2005, p. 882).
The study of SC includes exploring what people observe in their social environments; how they translate and appraise this stimuli; what do they choose to store in memory, how do they organise this and how and when do people retrieve this information. Perhaps what is most phenomenal is that in most cases, all of these processes often transpire within seconds.

An evolutionary perspective that has been proposed is that SC in humans developed specifically for handling social situations, e.g. detecting cheating to avoid exploitation, for sexual gains, mate selection, mate attraction, retention, etc. This view that SC has evolved to enable humans to cope with adaptive changes that we face in the social world is also congruent with the genetic model of schizophrenia (Buss, 1995).

The investigation of the role of SC in schizophrenia is a fairly recent trend but it is proposed that by understanding social cognitive dysfunctions in people with schizophrenia we may gain a greater overall understanding of the deficits, which accompany this disorder. There is a theoretical framework that may encapsulate the mechanics of social behaviour that provides a foundation to try and understand specifically where the problems may lie for people with schizophrenia. The social problem-solving model hypothesizes that proficient interaction with any social stimulus involves three stages, receiving, processing and sending (Dickinson, Bellack, & Gold, 2007; Wallace, et al., 1980). Whilst it is conceded that social transactions do not exactly transpire in such a rigid ordered process, the theory exposes the difference between two commonly discussed concepts in schizophrenia research in relation to social dysfunction, SC and social skills. SC by and large is involved in the receiving and processing stages, whilst social skills are exhibited in the sending stage (i.e. the execution of verbal and non-verbal skills) (Dickinson, et
al., 2007). This information-processing model is perhaps not an ideal way to encapsulate SC processes due to the dynamic nature of social interactions but it provides a framework, which symbolises the mechanisms of SC.

A popular challenge to the SC construct has been that it is merely an extension of cognitive psychology and that the cognitive mechanisms are the same as those used to process non-social cognitive information. Proponents of the SC model however have discovered several findings that dispute this criticism and consolidate their position. Two issues have stimulated SC research with individuals with schizophrenia: firstly there is theoretical and empirical evidence suggesting that SC and NSC are somewhat related but nevertheless distinct areas. Secondly, it has been firmly established that SC supplies unique variance to FO (independent to NSC). These findings will now be discussed in more detail.

SC differs from NSC in various ways. Penn and colleagues (1997) explained the theoretical differences by evaluating the type of stimuli used in studies on NCS and SC and the relationship between stimuli and perceiver. NSC stimuli can constitute auditory signals, numbers, objects, words, etc. and these stimuli can be considered to be inactive, affectively impartial, and visible. Conversely, social stimuli can consist of anything from an analysis of a persons’ intent to the arrangement of a sequence of events in a social situation and can therefore be quite dynamic. Social stimuli are often unobservable and thus require inferential processing. SC also includes emotional processing, while neurocognition is comparatively emotionless (Penn, et al., 2008). The relationship between perceiver and stimulus is also different. With NSC the relationship is one-way because the perceiver acts on the stimulus but the relationship between perceiver and social stimulus is often bidirectional. For instance, a person (the social stimulus) can have
an effect on the perceiver by being complementary or derogatory and therefore the relationship is interactive (Penn, et al., 1997).

Empirical evidence from research on clinical populations also suggests that SC is distinct from NSC. This includes verification that some individuals display SC deficits yet still have intact NSC, such as those with prosopagnosia (Kanwisher, 2000); people with orbitofrontal cortex damage (Blair & Cipolotti, 2000), amygdala damage (Fine, Lumsden, & Blair, 2001) and people with high functioning Autism or Aspergers syndrome (Heavey, Phillips, Baron-Cohen, & Rutter, 2000; Klin, 2000). There is also evidence of the reverse happening where clinically impaired individuals have intact SC yet show NSC impairment, such as individuals with Williams syndrome (Jones, et al., 2000). Another study even suggests that this independence of domains is evident in healthy populations and found that even though highly intelligent individuals (e.g. physicists, mathematicians) displayed superior NSC abilities, this was not reflected in their SC ability (Baron-Cohen, Wheelwright, Stone, & Rutherford, 1999). Additionally, performance on IQ tasks does not reliably predict levels of ‘social intelligence’ (Penn, et al., 1997).

Moreover, experimental research affirms that whilst related, there is a clear distinction between SC and NSC through statistical analysis (Sergi, et al., 2007) and neural investigations (Adolphs, 2003; Brothers, 1990; Li, Chan, McAlonan, & Gong, 2009; Phillips, Drevets, Rauch, & Lane, 2003a, 2003b; Pinkham, Penn, Perkins, & Lieberman, 2003; van Hooren, et al., 2008). In particular, there is mounting evidence that a dedicated neural network exists devoted to dealing with social information, specifically the prefrontal cortex, amygdala, superior temporal sulcus and the fusiform gyrus (Adolphs, 2003; Brothers, 1990; Pinkham, et al., 2003). Brothers (1990) was the pioneering figure in the identification of SC neural areas and since
there have been numerous studies that have shown evidence that whilst handling social stimuli people with schizophrenia display atypical activation in these identified neural areas (for a review see: Pinkham, et al., 2003). Furthermore, a study involving people with schizophrenia who displayed abnormal processing in these neural areas found that this deficient brain activity was significantly associated with poorer social functioning, although considering that a small sample size was used (n=36) and that all participants were male, the generalisability of these results are limited (Pinkham, Hopfinger, Ruparel, & Penn, 2008). Nevertheless these important findings provide a clue as to what underlies SC and SF deficits in schizophrenia.

Considering that poor SF is associated with schizophrenia, the investigation of the human abilities that underlie SF is imperative when the goal is to achieve long-term intervention success. These factors, once identified can provide a focus for researchers and treatment providers and consequently, the second major influence that has stimulated SC research is the consistent findings of a significant association between SC and SF (Couture, et al., 2006). Many even have reported that SC is potentially a greater predictor of SF than NSC (Brune, Abdel-Hamid, Lehmkämper, & Sonntag, 2007; Pinkham & Penn, 2006; Roncone, et al., 2002; Fett et al., 2011) and if this is the case, then SC is an obvious target for psychosocial interventions.

There can be no doubt that proficient NSC is an important contributor to social functioning. NSC impairment is also ubiquitous in schizophrenia presentation and in many cognitive areas people with this disorder on average perform two standard deviations below healthy controls (Harvey, 1999; Heinrichs & Zakzanis, 1998; Saykin, et al., 1991).
An international consortium of academic, industry and government representatives (Measurement and Treatment Research to Improve Cognition in Schizophrenia [MATRICS]) reported that the key areas of deficits in cognition related to schizophrenia are verbal memory, attention/vigilance, visual learning and memory, working memory, processing speed, reasoning and problem solving and the focus of this paper – social cognition (Green & Nuechterlein, 2004). The majority of evidence from empirical studies strongly indicates that verbal memory is the most closely associated cognitive domain with SF (Green, 1996).

The question to be answered is therefore not if NSC is involved in SF, it is how much of a contribution does NSC make? Despite the bulk of researchers proposing significant associations between NSC aspects and FO, the reality is that these relationships are not particularly strong (Couture, et al., 2006). The majority of these studies could only account for 20-40% of the FO variance with neurocognitive measures (Addington & Addington, 1999; Jean Addington, Saeedi, & Addington, 2005; Penn, et al., 1997; Pinkham, et al., 2003; Silverstein, 1997). This means that there is 60-80% unaccounted variance in functional outcome that NSC measures are not tapping in to. What are the other significant contributors? This unaccounted variance has not been attributed to demographic variables and therefore raises a strong possibility that social cognition is involved (Couture, et al., 2006; Penn, et al., 1997).

There is mounting support that SC is not merely a contributing factor to FO but it may also mediate the relationship between NSC and FO (Addington, Saeedi, & Addington, 2006; Brekke, Kay, Lee, & Green, 2005; Nienow, Docherty, Cohen, & Dinzeo, 2006; Sergi, Rassovsky, Nuechterlein, & Green, 2006). In essence SC has substantial associations with NSC and FO (Green, et al., 2008) and the relationship
linking NSC and FO is reduced and in some cases eradicated when SC is factored in (Green, et al., 2008).

There have been several concerns raised about the methodology of studies proposing a relationship between SC and FO, including the assumption of this causal association while only observing a single time point (Couture et al., 2006). There have been two longitudinal studies that obtained preliminary evidence that SC was predictive of FO but this limitation evidently needs to be addressed in future research (Couture et al., 2006). Another concern is that the characteristics of the samples used in this research are variably reported, such as, education status, course of illness and levels of medication. Additionally an over-representation of males was found (over 70%) which is problematic because it cannot be ruled out that females may exhibit superior SF and also perhaps have different responses to treatment (Couture et al., 2006). Another concern with the research is that inpatients constituted more than 50% of the sample populations and whilst the treatment of this population is obviously important, given the push towards community-based care and the fact that the majority of the schizophrenia population are outpatients (Brier, 1995) this subgroup should arguably be the focus of research in this area (Couture et al., 2006). The vast majority of these studies that reported associations between SC and FO, reviewed by Couture et al. (2006) were statistically underpowered with 65% of them having power estimates of .50 or less for being able to find a moderate effect size. Furthermore, the results from almost all of these studies were correlational, so in an effort to test the theory further, (Sergi, et al., 2006) utilised structural equation modelling and they still found a link between SC and FO, independent of NSC (Sergi, et al., 2007). Other studies have replicated these results with either structural equation modelling or path analysis which strengthens the validity of this theory

Notwithstanding the limitations discussed, the numerous studies that have found SC to be related to FO (17% had adequate power of over .80: in review by Couture, 2006) provide sufficient evidence that a considerable relationship between SC and FO exists. In fact, these studies may likely be underreporting the associations between SC and FO here due poor statistical power. Taking all of these findings into account provides impetus for the implementation of SC intervention techniques with the goal of enhancing FO.
Chapter 3

Domains of Social Cognition Studied in Schizophrenia

SC research in healthy individuals is well-established and consists of a vast array of domains, of which only a handful have been transferred to the study of SC in schizophrenia (Couture, et. al., 2006). The areas most commonly considered are emotion recognition, attributional style and theory of mind and each of these domains will now be discussed in more detail.

Emotion Recognition

Emotion processing is a broad concept that involves the recognition, understanding and management of emotions in the self and others. Possibly due to a lack of theoretical development in this area, emotion recognition (ER) has been the almost exclusive focus of investigations of SC in schizophrenia. ER (also referred to in the literature as emotion perception) refers to the ability to interpret what someone is feeling from their facial expression or their vocal patterns and is one of the most widely studied domains in this field. There is an abundance of literature which suggests that people with schizophrenia show an impaired ability to identify and discriminate facial affect when compared to non-clinical control subjects (Addington, Penn, Woods, Addington, & Perkins, 2008; Addington, et al., 2006; Edwards, Jackson, & Pattison, 2002; Pinkham, et al., 2003). This poorer performance is also found in other clinical groups (e.g. depression and autism), which implies that
this functional deficit is not specific to schizophrenia (Addington & Addington, 1998; Bellack, Blanchard, & Mueser, 1996; Bolte & Poustka, 2003).

In comparison to positive emotions (e.g. happiness) individuals with schizophrenia appear to have particular difficulty with correctly recognising negative emotions (e.g. anger, fear) although the research in this area is limited to only a few studies (Borod, Martin, Alpert, Brozgold, & Welkowitz, 1993; Edwards, et al., 2002; Edwards, Pattison, Jackson, & Wales, 2001; Kohler, et al., 2003).

Whilst it is relatively accepted that facial affect impairment is worse in the acute phase of the illness (Gaebel & Wolwer, 1992; Gessler, Cutting, Frith, & Weinman, 1989; Penn, et al., 2000), there have been a few studies that suggest a relative stability of facial affect deficits exists. Addington and Addington (1998) reported that despite improvement in symptomatology, people with schizophrenia do not improve facial affect recognition and this finding has been replicated by other studies (Streit, Wolwer, & Gaebel, 1997; Kee, Green, Mintz, & Brekke, 2003; Amminger et al., 2012). In fact, there have been a few studies where relatives of schizophrenia patients have also displayed deficits in emotion recognition, which suggests that it may be an inherited trait with an endophenotypic quality (Addington, et al., 2008; Eack, et al., 2009; Kee, Horan, Mintz, & Green, 2004; Leppanen, et al., 2008). All of these findings strengthen the case for including emotion recognition as a target as part of a social cognition rehabilitation program.

There has been much debate as to whether emotion recognition is a specific or generalised impairment, i.e. is the lack of ability to detect emotions in faces a social cognitive deficit or is it due to a neuropsychological deficit that impairs the recognition of faces in general. There have been a variety of methodological
approaches adopted in order to determine the nature of this deficit whereby control tasks involving face recognition (i.e. testing the ability of the person to simply identify a face) have been included with mixed results. Some have supported a specific SC impairment (Heimberg, Gur, Erwin, Shtasel, & Gur, 1992; Walker, McGuire, & Bettes, 1984) whilst others have suggested that because people with schizophrenia performed similarly on facial affect and general face recognition tasks that the impairment is not due to lack of ER ability (Addington & Addington, 1998; Feinberg, Rifkin, Schaffer, & Walker, 1986; Gessler, et al., 1989; Kerr & Neale, 1993; Novic, Luchins, & Perline, 1984; Salem, Kring, & Kerr, 1996). For example, Kerr and Neale (1993) compared the performance of schizophrenia inpatients and normal controls on an ER task - the Face Emotion Identification Test. They also included a control task, the Test of Facial Recognition which requires the subject to match a target face shown to them from a sample of six faces presented. This control task was implemented to reveal whether the schizophrenia patients had general problems with face perception or whether the discrepancy was specific to the ability to identify emotions in the faces.

The results showed that the schizophrenia group performed significantly worse than the control group on the ER task and that the difference between groups in performance on the control task was the same indicating that the schizophrenia patients had a generalized deficit rather than a specific ER impairment. However, this study and others that propose a generalised deficit are compromised because the control tasks that were used in all (i.e. a general face recognition task) were also social in nature (as the ER tasks are) and therefore a distinction between a generalised and specific SC deficit cannot be conclusively made. A non-social perception control task is required for this assumption to have credence. Penn (2000)
utilised such a task in their study and found that participants with schizophrenia still showed significant impairment in facial affect recognition even after controlling for performance on a non-social performance task, therefore supporting the specific deficit model. Further replication of studies that use a control task, both of social and non-social perception is required to resolve the controversy in this area.

There have been numerous studies that have found facial affect recognition to be related to social functioning aspects including, quality of life and social skills (Hooker & Park, 2002; Ihnen, Penn, Corrigan, & Martin, 1998; Kee, et al., 2003; Mueser & Doonan, 1996; Penn, et al., 1996; Poole, Tobias, & Vinogradov, 2000). Penn et al. (1996) found that ER deficits had an association with diminished social interest and competence and Poole et al. (2000) found a similar association between ER ability and the interpersonal relationships component of the Quality of Life Scale (Heinrichs, Hanlon, & Carpenter, 1984). Both of these studies measured ER with the commonly utilised Pictures of Facial Affect series (Ekman & Friesen, 1976), which has 42 facial photographs that portray seven emotions (happy, sad, afraid, angry, disgusted, surprised and neutral). Six examples of each emotion were presented to subjects who were then asked to choose a label that best described the emotion expressed. Additionally, both studies found these relationships between ER and functional outcome even after controlling for NSC ability, which suggests that deficiencies in ER ability, which would logically help facilitate communication, can lead to difficulties with interpersonal relations. There is also preliminary evidence that levels of ER mediate the effects of NSC ability on social functioning through path analysis models conducted by (Brekke, et al., 2005) but this association should be treated cautiously due to its correlational nature.
Whilst the vast majority of emotion recognition studies have found impairments for people with schizophrenia, concerns have been raised about the diversity of tasks utilised (making comparison difficult) and the variety of clinical and demographic aspects of samples (Kee et al., 2009). A meta-analysis by Kohler et al., (2009) revealed that ER deficits in schizophrenia patients were significant relative to non-clinical samples (Cohen’s d= -0.91). The studies analysed revealed diverse effect sizes suggesting the presence of moderating variables on the severity of impairment. Indicators of greater ER impairment were increased age of participants, if they were currently hospitalised, greater symptom intensity and unexpectedly later age of onset. Despite these potential confounding variables, the sizeable effect size found provides adequate evidence of an emotion recognition deficit in this population (Kohler, Walker, Martin, Healey, & Moberg, 2009).

There has been an important model of emotional processing that has been largely overlooked in studies of social cognition, that of emotional intelligence (Mayer, Salovey, Caruso, & Sitarenios, 2001; Salovey & Sluyter, 1997). Emotional intelligence is described as containing four components, one of which is emotion recognition, which is the only branch of this model to be investigated extensively in SC research amongst schizophrenia populations to date. The four branches identified by this model are identifying, facilitating, understanding and managing emotions, which are all proposed to be critical for social cognition. Identifying emotions consists of recognizing expressed emotions in faces and voices; Facilitating emotions involves the appreciation of the usage of emotions; Understanding emotions relates to the participants comprehension of the differences and makeup of emotions and Managing emotions involves the ability to regulate emotions appropriately and effectively. Despite the logical notion that there is much more to emotion processing
the narrow focus on emotion recognition has resulted in the neglect of other emotion processing aspects and highlights areas that have been almost void of attention (Green, et al., 2008; Kee, et al., 2009). For instance, it is one thing to identify what emotion a person is feeling by looking at them, e.g. if smiling, but the more difficult judgment involves identifying why they are smiling. This requires the person to read between the lines and understand the context of the situation. Considering that these other areas of the emotion construct: facilitating, understanding and managing emotions have also been found to be impaired in schizophrenia populations (Eack, et al., 2008; Kee, et al., 2009) these areas should therefore become more of a focus in this field of research.

Considering that social cognition measures have typically suffered from a lack of psychometric soundness a relatively new measure of emotional intelligence the Mayer-Salovey-Caruso Emotional Intelligence Test 2.0 (MSCEIT; Mayer, et al., 2001) seems to be a viable alternative SC measure to assess the full spectrum of emotion processing abilities in people with schizophrenia. The test has been extensively scrutinised and has been found to have very good psychometric properties, both within healthy and schizophrenia populations (Eack, et al., 2008; Kee, et al., 2009; Salovey, et al., 2003), so much so that the MATRICS committee has included it as the sole SC measure in its recommended battery of cognitive tests. Furthermore, it is reported that superior performance on the MSCEIT is associated with various improved functional outcomes (Brackett, Mayer, & Warner, 2004; Kee, et al., 2009; Lopes, et al., 2004; Lopes, Salovey, & Straus, 2003; Mayer, Roberts, & Barsade, 2008; Rode, et al., 2007). These studies have a couple of common limitations, including the use of relatively global functioning scales that do not reveal any specific relationship with a functional outcome such as social skills. Also, there
were no tasks included that are not emotional in nature, leaving the possibility that a
generalised neurocognitive deficit was driving any impairment. One of the main
strengths of the MSCEIT is that it is a performance-based measure and therefore
requires the participant to demonstrate that they can effectively problem solve with
emotion-based stimuli as opposed to the commonly used self-report style measures
that can be associated with bias (Eack, et al., 2008; Kee, et al., 2009).

Attributional Style

Attributional style (AS) refers to how one rationalizes the causality of life
events (Bentall et al., 2001). We make attributions in order to understand what is
happening around us, therefore our causal beliefs or explanations have an inherent
impact on our behaviour (Harvey & Weary, 1984) and are so regularly expressed that
they can be found within every hundred words - written or spoken (Zullow,
Oettingen, Peterson, & Seligman, 1988). One particular type of AS, described by
Kinderman & Bentall (1996) as “personalising bias” has regularly been found to be
prominent in people who experience paranoia or persecutor beliefs, symptoms
commonly seen in schizophrenia. According to this theory, people with
schizophrenia faced with a negative outcome will attribute blame to others and will
fail to consider situational factors when making judgements about people (Bentall,
Corcoran, Howard, Blackwood, & Kinderman, 2001; Couture, et al., 2006;
Kinderman & Bentall, 1996). In a social situation for instance, (e.g. a person does
not look at them in the eye when they enter a room) a person with schizophrenia will
not take into account the context of the situation (e.g. that the person is in a busy
room and looking at something else) when making a personal judgement on another
person’s behaviour towards them. From limited research, there is some evidence of an association between AS and social functioning although this needs to be replicated in larger samples and in samples including women (Lysaker, Lancaster, Nees, & Davis, 2004; Waldheter, Jones, Johnson, & Penn, 2005).

So why do these people exhibit this particular attributional style? One explanation given requires an understanding of an AS that normal individuals have been found to exploit, i.e. a “self-serving bias” (Kaney & Bentall, 1989). In effect, self-serving bias is the tendency to hold others accountable when we experience a negative outcome and conversely, take the credit ourselves for positive outcomes. People with persecutory delusions have been found to also utilise self-serving bias but in an exaggerated fashion (Candido & Romney, 1990; Sweeney, Anderson, & Bailey, 1986). Kinderman & Bentall, 1996, propose that whilst functionally self-serving bias may be advantageous, as it serves to preserve self-esteem, it also creates a negative propensity towards others, which can manifest into both paranoid thinking and a personalizing bias (Merrin, Kinderman, & Bentall, 2007). This view has faced criticism because it appears to imply that people with persecutory and/or paranoid beliefs have relatively high self-esteem (Garety & Freeman, 1999) but this has been countered with an argument from Bentall (2001) that the self-esteem of these individuals fluctuates and therefore self-serving bias is not always capable of raising low-self esteem.

There have been many proposed explanations for why people with dysfunctional AS fail to rectify this bias including; a strong need for closure (Colbert & Peters, 2002) i.e. they are unable to deal with ambiguity; cognitive impairments (attention, memory, etc); data-gathering deficiencies and mentalising deficits (i.e. overlooking mental contexts of others) (Randall, Corcoran, Day, & Bentall, 2003);
but questions still remain in this area (Bentall, et al., 2001; Couture, et al., 2006; Penn, et al., 2008).

Another concept is the jumping to conclusions theory proposed by Hemsley & Garety (1986) who proposed that persecutory delusions are not due simply to AS, but are the consequence of requesting less information prior to decision making. Merrin et al. (2007) propose that it could be the result of a combination of AS and “jumping to conclusions” because constructing situational attributions requires greater cognitive exertion. Their study found that people with persecutory delusions asked substantially less questions, but asked proportionally more questions about others (supporting personalising bias) than controls before making causal attributions about hypothetical outcomes, and this behaviour was not influenced significantly by levels of intelligence nor a need for closure (Merrin, et al., 2007).

The Internal, Personal and Situational Attributions Questionnaire (IPSAQ: Kinderman & Bentall, 1996) is a measure that was developed to be able to reflect a persons tendency to direct blame towards others or the situation when presented with an array of positive and negative outcomes, in other words to measure personalizing bias. A noted concern with the IPSAQ is that participants need to provide both the cause of an outcome and also categorise who or what is to blame. Recent evidence has shown that discriminant validity can be improved when independent raters code the responses of participants but this has rarely been done in studies utilising this measure (Martin & Penn, 2002; Randall, et al., 2003).

There are a number of concerns in the area of AS that have yet to be addressed including the relatively poor psychometric properties of measures employed, which include the use of hypothetical outcomes and poor external validity.
A common problem with measures of AS is the lack of inclusion of items with ambiguous causality, where attribution of intentionality is vague because of an absence of situational cues. For example, the items on the IPSAQ consist of situations with either positive or negative causality only. People with persecutory delusions find it difficult to interpret ambiguous circumstances and often misconceive them as inauspicious and hostile (Freeman, et al., 2005; Freeman & Garety, 2003; Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002). This shortcoming has been addressed with the introduction of a relatively new measure, the Ambiguous Intentions Hostility Questionnaire (AIHQ; Combs, Penn, Wicher, & Waldheter, 2007) which incorporates outcomes that have ambiguous intentionality. Combs (2007) reported that ambiguous items on the AIHQ were more closely associated with paranoid/persecutory beliefs than intentional items making it a more attractive measure for use with populations exhibiting these particular biases, such as schizophrenia (Combs et al., 2007). Although the results from the study should be treated with caution due to the sample comprising non-clinical participants, initial findings from clinical studies implementing the AIHQ have provided promising data (Penn, et al., 2005; Waldheter, et al., 2005).

Theory of Mind

As was previously mentioned, in schizophrenia research, there has been a notable shift of focus from understanding positive symptoms to the treatment of the more chronic, persistent negative symptoms and social dysfunction. Interestingly, the recognition of social deficits in schizophrenia patients was originally emphasised by
the person that labelled the disorder in 1908 as schizophrenia, Eugen Bleuler (Bleuler, 1908). Bleuler proposed four principal aspects that defined schizophrenia, which constituted the diagnostic criterion of the disorder until as recently as the 1970’s. One of the fundamental features posited was ‘autism’, which was meant to describe the lack of ability that people with schizophrenia have when it comes to relating to others in an empathic manner (Andreasen, Calage, & O’Leary, 2008). It is a skill that is now commonly considered to be a component of a cognitive ability known as Theory of Mind.

Theory of mind (ToM), or otherwise known as ‘mentalising’, is one’s individually constructed theory of people. It shapes and formulates how we make sense of ourselves and others (Repacholi, Pritchard, Gibbs & Slaughter, 2003) and essentially, is the ability to know what others are thinking or feeling. ToM abilities, like SC in general, may have originated in order to allow human beings the necessary skills to cope with a progressively challenging social world, including the ability to read behaviours or detect deception by others (Brothers, 1990). This evolutionary account highlights the social essence of ToM and why its development is vital to social competence.

There is debate about whether people with some types of schizophrenia really have deficient ToM abilities or if they actually have exaggerated ToM skills and are simply not able to appropriately use them (i.e. they cannot turn them ‘off’, and therefore are constantly screening people for intentions, for instance in paranoid or persecutory delusions) (Abu-Akel & Bailey, 2000; Brune, 2001). There is however considerable evidence to suggest that the neural areas found to be associated with ToM (e.g. temporal and prefrontal cortex) are atypical in schizophrenia (Burns, 2004; Crow, 1993; Narr, et al., 2001). It is widely accepted that people with
schizophrenia perform poorly on ToM tasks. This is highlighted by a meta-analysis conducted by Bora et al. (2009) where large effect sizes (Cohen’s d = 0.90-1.08) were found for all ToM tasks including various modifications of three main types of ToM tasks: False-belief tasks; Hinting tasks and Eyes tasks. False belief tasks have been the most commonly used in the past and usually require that the subject infer the beliefs of another person. For example, Jane watches as an item is moved from its box to another spot only after Bob leaves the room. When Bob returns to the room where will he think the toy is? Hinting tasks are typically statements delivered to the subject who then needs to identify the actual intended meaning. For example, Fred sees a lolly shop is fast approaching whilst walking with his mother and says to her, “Gee I’m feeling a bit hungry”. What does Fred really mean? Finally, Eyes tasks require the subject to infer the intent of a person from only seeing their eyes. IQ was found to be a contributing factor to ToM deficits in individuals with schizophrenia who were in remission. However, this meta-analysis did not include studies that measured other cognitive abilities, such as verbal memory and attention, therefore conclusions regarding the specificity of the deficit cannot be determined (Bora, Yucel, & Pantelis, 2009).

There is evidence that ToM deficits are specific and not due to generalised cognitive impairment. A number of studies have found ToM to be inferior in individuals with schizophrenia compared to healthy controls after adjusting for cognitive abilities regardless of the type of ToM task used (Brune, 2003; Corcoran, Mercer, & Frith, 1995; Langdon, Coltheart, Ward, & Catts, 2001; Pickup & Frith, 2001).

It has also been proposed that psychotic symptoms in schizophrenia may be a consequence of deficits in ToM. Frith (1992) proposed that the psychotic person
cannot distinguish between subjective and real beliefs that they infer about others or themselves and therefore delusions are formed and maintained. In relation to interpersonal skills, people with poor ToM do not effectively interpret social cues and intentions from others which may tend to suggest a resultant communication breakdown which over time results in poor social skills and interpersonal functioning. There have also been significant findings that suggest ToM deficits are predictive of poor social functioning. In fact, ToM ability has been found to account for between 15-24 percent of the variance in SF in people with schizophrenia (Brune, 2005; Penn, et al., 2006; Roncone, et al., 2002). It is unclear whether ToM impairment precedes the manifestation of schizophrenia (i.e. whether ToM development in childhood is abnormal or not) (Brune, 2005).

There have been concerns raised regarding the properties of psychological measures of ToM. These include reliability, degree of overlap with cognitive abilities and the fact that most have been designed to test children with autism. In order to address these concerns, recently developed tests such as The Awareness of Social Inference Test (TASIT: McDonald, Flanagan, Rollins, & Kinch, 2003) have been utilised to assess adult populations. The TASIT includes control items that do not require intentional perception so that generalised cognitive deficits may be identified (Brune, 2005). The reliability and discriminant validity of many ToM tests however remains suboptimal because they often also require intact cognitive abilities such as verbal memory, attention and working memory (Park, Matthews, & Gibson, 2008). For instance, the Hinting task was found to be strongly correlated with NSC and this could be due to its low sensitivity (van Hooren, et al., 2008). Overall, comparison of studies is difficult because of the variety of task stimuli utilised (Brune, 2003; Sarfati, Hardy-Bayle, Nadel, Chevalier, & Widlocher, 1997).
Social Cognition Assessment Issues

There have been three main concerns with measures utilised in studies of SC with schizophrenia populations. Firstly, the psychometric properties of many SC assessment tools have yet to achieve a level that is analogous to NSC measures (Savla et al., 2012). For example, the reliability and validity properties of the ToM and ER measures in use are regularly omitted from reports and even when they are included, they are often poor (Savla et al., 2012; Couture, et al., 2006). The inadequacy of SC measures is a concern in this field and needs to be addressed, in particular ToM and AS measures. An important consideration is that many measures used in the past have been designed for use in non-psychotic populations (e.g. ToM measures for Autism). This has resulted in ceiling effects and a lack of confidence in the interpretation and meaning of scores. It is also critical for the SC domains to be operationally defined for the measures to maximise their potential to be psychometrically sound (Couture, et al., 2006).

Secondly, it is not certain whether SC measures reflect separate SC domains or a single common ability. The majority of studies in this field have only utilised a single measure of SC (Green, et al., 2008), which makes theoretical testing impractical. One study to include multiple SC measures (two ToM, three AS tasks) and report on the association between measures did not find significant overlap (van Hooren, et al., 2008). This suggests that SC is made up of multiple domains however, no ER tasks were included in this study and these results certainly need to be replicated. A more recent study, again exploring multiple areas of SC, found similar results supporting the hypothesis that social cognition is multi-dimensional.
and SC domains represent distinct constructs (Papas, Byrne & Thompson, submitted), however, a measure of attributional style was not included.

Thirdly, it is also uncertain if the SC measures contribute specifically to SC factors or are simply providing information about NSC factors, in other words do these measures provide unique meaning that exceeds the information received from NSC tools (Green, et al., 2005). This concern has largely been answered and discussed previously and SC, whilst related to NSC, has been shown to also explain unique variance in social functioning (Fett et al., 2011).

To somewhat address these concerns, the MATRICS group suggested several ways to strengthen the research field of SC in schizophrenia (Green & Nuechterlein, 2004). It was proposed that if future studies include multiple SC measures and employ an acceptable sample size it may be possible through statistical analysis to establish the degree of commonality among measures; secondly, this methodology will also allow the examination of the validity of existing theories in the field; and finally it was proposed that new SC measures be designed that have a narrow focus on the particular domain they are intended to assess, have particular sensitivity to the clinical subgroups that they will be employed with and that they are reliably replicated (Green, et al., 2008).
Chapter 4

Social Cognition Interventions

Frontline treatments for schizophrenia, such as atypical and typical neuroleptics have proven ineffective in improving SC and social functioning (Bellack et al., 2004; Penn, et al., 2008). The results of combining SF interventions and atypical medications have also not been fruitful (Green, et al., 2008). A majority of studies have reported that cognitive behavioural training (CBT) has a limited effect on SF (Cather et al., 2005; Gumley et al., 2003) however Van der gaard et al., (2011) recently reported that CBT can have a positive impact on SF.

The benefits of other rehabilitation programs designed to improve the interpersonal deficiencies of people with schizophrenia such as social skills training, family interventions and vocational training have had mixed success (Leonhard, Corrigan, & Penn, 2001). For example, social skills training has shown to be effective in improving the external features of people with schizophrenia such as eye contact, hand gestures, and posture but these topographical improvements have had little impact on FO such as quality of life (Kopelowicz, Liberman, & Zarate, 2006; Wallace, et al., 1980). A review of the literature by Kern, et al. (2009) revealed two main concerns: firstly, that the generalisation of training effects remains an issue and secondly that the majority of studies have measured the effectiveness of training by looking at improvements in symptoms and relapse rates which do not seem ideally suitable to rate the efficacy of these programs (Kern, Glynn, Horan, & Marder, 2009). This is not surprising if you consider that the abilities targeted by social skills
training are rather shallow because the internal mechanisms required to interact socially are not being targeted.

As discussed earlier, there has been a push to target mediating variables to increase the effectiveness of interventions designed to improve SF. Special interest has been shown in cognitive remediation since the innovative study of Green (1996) and this attention has more recently been extended to social cognitive remediation (Leonhard, Corrigan, & Penn, 2001).

General findings from reviews on the efficacy of SC interventions administered to people with schizophrenia are quite positive (Horan, et al., 2008; Kurtz, 2012). There are two types of SC interventions included in these reviews. Broad-Based SC interventions combine SC training with other therapeutic interventions. Typically the training consisting of NSC components as well as other domains such as social skills or vocational training. These broad-based interventions, such as Cognitive Enhancement Therapy (Hogarty & Greenwald, 2006; Eack, 2010) and Integrated Psychological Therapy (Brenner et al., 1992) have demonstrated moderate to strong positive effects on SF (Hogarty, Greenwald, & Eack, 2006; Roder et al., 2006). Targeted SC interventions comprise of SC training components only, whether that be focused on one or multiple SC domains and have also shown promise in their ability to improve functional outcomes for people with schizophrenia (Horan et al, 2008; Kern et al., 2009; Fett et al., 2011).

Of importance, no matter which intervention technique is utilised, is the need to establish whether any SC improvements actually transpire into effective changes to daily social behaviour. More recent reviews report that whilst SC interventions are able to improve SC abilities, particularly ER and to a lesser extent ToM, they are
shown to have limited impact on attributional style, and more importantly on
generalisable and durable functional outcomes (Fiszdon & Reddy, 2012; Roberts &
latter concern may be due to the inadequate attention past studies have given to
assessing the generalisability of SC skills learnt.

Of the broad-based SC interventions, all of those reviewed showed
improvements in SC, mostly ER ability (van der Gaag, Kern, van den Bosch, &
Liberman, 2002) and those that did include a measure of functional outcome also
found improvement in this area (Hodel, Kern, & Brenner, 2004; Hogarty, et al.,
2004, 2006). Whilst the broad-based treatment programs have shown promise in
improving SC and FO, there are limitations to this approach. These types of SC
interventions can be time and labour intensive which is restrictive when identifying
potential treatment settings (Roberts & Velligan, 2012). Furthermore, due to the
considerable variability in which these programs target SC, it cannot be determined
what specific component of the training was actually the catalyst in improving SC
and FO, i.e. whether it was due to the SC training employed or the NSC training
which all of them utilised (Fiszdon & Reddy, 2012).

Targeted interventions on the other hand exclusively employ SC training
techniques. Again, the entire selection of studies that were reviewed found some
level of positive change amongst SC domains and the studies that included a FO
measure also found the interventions to be effective in improving this area (Fiszdon
progressing in difficulty and found that ER was improved. Interestingly the control
group received neurocognitive remediation and didn’t improve on ER (although they
did improve verbal learning and memory), which supports the theory that SC is
distinct from NSC. Limiting this study was that there was only one SC domain targeted and there was no FO measure included.

In another study by Roncone, et al., (2004), inpatients were administered a Metacognitive learning program that was primarily constructed for people with learning disability. The goal of the training was largely about helping the patients form autonomous adaptive thinking habits instead of the rigid and passive style that they presented with through various arbitrated exercises related to ToM, ER and social intelligence (i.e. multiple SC domains). The results showed improvements in all 3 of these SC domains in comparison with the control group, and in adaptive functioning, although the result are hard to generalise because of the small sample size (n = 20) and the lack of structured treatment the control group received.

One of the most promising interventions in this field is Social Cognition and Interaction Training (SCIT). The SCIT was innovative in its integrated approach to SC training in that it utilised a group based format that targeted three domains of SC: ToM; ER and AS (Penn, et al., 1997). The SCIT was originally designed to be administered independently to other psychosocial treatments and run weekly for 18 weekly hour-long sessions. This was modified to five sessions per week for three months to accommodate the inpatient unit schedule. Findings from implementation of the SCIT pilot was first published in 2005, and results were promising with improvements found for AS (hostility bias) and ToM for inpatients with schizophrenia (Penn et. al., 2005). No improvements were found for emotion perception which the authors attributed to this being the focus of the first phase, i.e. emotion perception training was the most distant when the participants were assessed post-training. This study did not incorporate any measure of social functioning.
A secondary SCIT study with inpatients found moderate to large improvements in all 3 SC domains and two sub-domains of social functioning, as well as participants demonstrating enhanced interpersonal skills in the ward and a reduction in aggressive behaviour (Combs, et al., 2007). The improvement in ER, not found in the pilot SCIT study, was attributed by the authors to augmented emotion perception training sessions. A six-month follow up analysis for this study revealed that stability of gains made was modest, but inpatients SC performance was equivalent with the non-clinical control group (Combs, et al., 2009). The study was however limited by a different control sample being utilised post-treatment, and a lack of a randomly assigned control group.

Roberts & Penn (2009) again demonstrated the potential strength of the SCIT program where improvements were found in ER, ToM and social functioning. A notable difference in this study was that participants were derived from an outpatient sample. The study was limited by its quasi-experimental design and there were no improvements noted in attributional style. The authors accounted for this discrepancy in previous studies by a floor-effect reported in participant’s scores on the attributional style measure, meaning that participants had little room for improvement in this domain.

Horan, et al., (2009) utilised a SC intervention with a modified version of the SCIT but its design was improved by the addition of a randomly assigned control group. The intervention involved several components of the SCIT in addition to some computerised components of an earlier facial affect training modality (Wowler, et al., 2005). The only resultant improvement found for the outpatients was in ER but this was attributed by the authors to be due to the significant extra time that this domain was given in the training phase compared to the other areas of SC.
Additionally, ER is the most extensively studied aspect of social cognition in schizophrenia and received the most attention in intervention studies (Horan et al., 2009). Further, the exclusive improvement in ER could be attributed to the amenability of skills training to this domain (e.g. predominantly structured computerised exercises) in comparison to concepts related to ToM and AS which are more difficult to define and incorporate into training exercises. This study however failed to employ a SF measure and therefore the impact on FO cannot be determined.

Roberts, et al., (2010) trialled the SCIT with community dwelling outpatients and the results were again promising with improvements reported in ER and ToM, but not AS, which again was attributed to floor-effect scores on the AS measure. The study lacked a measure of SF and was an uncontrolled design with a convenience sample. Another modified version of the SCIT was utilised by Tas et al., (2012) with a clinically stable sample of outpatients. The family assisted version of the SCIT (F-SCIT) intervention included family members of the participants in the SCIT training, in essence to utilise family members as a mediatory pathway for improvements in participants to be generalised to real life. Results were promising with improvements found in the ER, ToM and social functioning domains, although again, not in attributional style. The study was however limited due to the unequal treatment and control group sizes as well as an unmatched number of training sessions between groups.

The SCIT was also utilised within a training program for outpatients, which compared this training to both neurocognitive training, and a hybrid combination of SC and this NC training (Horan et. al., 2011). Results showed that the SC training was superior to the NC training, however improvements were only noted in emotion recognition. The study was limited by a predominantly male sample and assessment
lacked a standardised diagnostic interview. Kleinlein, (2011) also conducted SCIT training with an outpatient population and found that those who completed the program made improvement within ER only, not the AS, ToM or SF domains and the study was limited by its quasi-experimental nature.

Targeted SC training studies have demonstrated the greatest impact on SC specific abilities. The various studies described that utilised targeted social cognitive interventions, the SCIT training in particular, provide some evidence that this independent approach to SC training can be effective in improving SC and functional outcome for people with schizophrenia. However, due to the diversity and range of these treatment modalities and limited available information about these interventions, specific conclusions are difficult to discern about what accounts for discrepancies in results. Different SCIT studies, for example, are also confounded by different samples (inpatient, outpatient, community-dwelling), a lack of consistency in use of SC and functional outcome measures, and varied time-courses of interventions. In many respects, this area of research is in need of replication with compatible methodology and intervention modality, therefore to make solid conclusions about what works and why may only come after years of further clinical trials.

The overall results from these targeted treatments provides excellent optimism for the utilisation of SC interventions in schizophrenia populations in particular those studies that incorporated multiple domains of SC and also showed improvements in adaptive functioning (Tas et. al., 2012; Combs, Adams, et al., 2007; Roncone, et al., 2004) which provides impetus for future SC interventions to follow this lead and target various areas of SC. Whilst these results provide a significant boost to the efficacy of SC interventions, the methodologies raise some questions.
There was a lack of attention on functional outcome; only a few studies have incorporated multiple measures of SC domains; there was variable consistency between treatment and control groups; quite a few of the studies were quasi-experimental (i.e. no randomisation process); and there has been a significant lack of studies in this area incorporating follow-up assessments six months or later to determine if treatment gains were maintained (Combs, 2009, Kleinlein, 2011). The current study will attempt to address some of the limitations of the extant research including the use of multiple measures of SC domains, matching treatment and control groups, and longitudinal analysis.

In terms of the intervention that this study utilises (which will be described in more detail later), the intervention is based on the evolved SCIT program. The rationale for this decision was that the SCIT program has the status as the most effective intervention available in terms of improving SC ability, which (as described in Chapter 2), has been identified as potentially the optimal gateway to improved functional outcome.
Chapter 5

Future Research Directions and Conclusions

In conclusion, there is a great deal of evidence to support the development of interventions that treat SC deficits in individuals with schizophrenia. There has been robust and consistent data that shows that these people have significant difficulties with perceiving, making sense of and reasoning about information in their social environments. Predictably these abilities have been found to play a significant role in functional outcome and the relationship is characterised by a unique association that is not explained by NSC, which makes it a viable target in psychosocial intervention. To be able to accurately assess change in SC functioning, these SC interventions need to utilise standardised, reliable and repeatable measures (Green, et al., 2008). It is vital for the use of multiple measures of SC in order to reveal the true relationships that may be present between these domains (Couture, et al., 2006).

There are several concerns surrounding this field of research, which is still a work in progress in many respects. Research into SC and schizophrenia has so far neglected many of the SC domains that have already been investigated in non-clinical populations and this needs to be addressed (Green, et al., 2008). The diverse nature of SC definitions and categories has complicated progress and exchange of ideas in the field (Green, et al., 2005). A National Institute of Mental Health meeting in 2006 identified three general barriers to significant progress in the area of SC in schizophrenia research:
1/ Sub-standard psychometric properties of measures: this area has been discussed already.

2/ Maturity of the field: SC in schizophrenia is an emerging area of research and is relatively immature in stature when compared to NSC in this area.

3/ Lack of Bridges to Basic Scientists: Scientists from other disciplines have been slow to embrace the area of SC in schizophrenia for many reasons, including the lack of standardised, psychometrically sound measurements and a general lack of consensus of this domain in the field. This is considered to be the greatest obstacle to progression in SC research because it takes a considerable amount of time and resources to acknowledge and build networks between scientists from different disciplines, which are necessary to propel the SC landscape forward (Green, et al., 2008).

Despite these shortcomings, at the very least it can be argued that the treatment of SC through remediation programs is a promising direction for this field. Nevertheless, it is quite probable that by exclusively treating SC that it is not going to be sufficient to improve FO levels to an optimal level and that there is likely to be a need to combine this with other psychosocial treatments. In other words, a structured broad-based program comprised of different intervention techniques (e.g. SC training, SS training and cognitive remediation) may provide better outcomes. This fusion of treatments would make sense given the heterogeneity of schizophrenia presentation and a ‘one size fits all’ mentality is not expected to remedy social dysfunction in people with schizophrenia given the variance that NSC accounts for and SS which are not addressed in SC interventions certainly need to also be addressed because of the relevance they have to achieving social competence.
Chapter 6

Experimental Aims and Hypotheses of Project

Although the area of research is emerging there is compelling evidence to support the development of interventions that treat SC deficits in people with schizophrenia. Firstly, it is well established that impaired SF, a pervasive feature of this disease, has been not been effectively treated by pharmacotherapy and psychotherapy interventions; secondly, it has been argued that the most proximal and unique contributing variable underlying social functioning is social cognition (i.e. the relationship is characterised by a unique association that is not explained by NSC); thirdly, domains of social cognition (especially ToM, ER & AS) have consistently been shown to have significant associations with social functioning; fourthly, cognitive remediation and social skills training programs have been largely unsuccessful in improving functional outcomes; finally, SC interventions have shown promising and effective improvements in various aspects of functional outcomes.

This research project intends to extend the work of other SC intervention studies whilst providing unique and improved methodology in order to further strengthen the argument for the implementation of this type of intervention. The aim therefore was to conduct an innovative, evidence-based SC intervention, which assists in improving functional outcomes (social functioning and QoL) for individuals with chronic schizophrenia.
This research project is comprised of three studies. *Study One* was designed to determine the efficacy of the social cognitive training program in improving functional outcomes for participants. A further aim was to investigate the influence of several moderator variables on functional outcomes, including: cognitive factors, medication dosage, illness length, education, gender and diagnostic subtype.

*Study Two* was designed to investigate the longer-term effects of training including any changes to social cognition and functional outcomes by repeating baseline and post-training assessment at a six-month follow-up period.

*Study Three* was designed to explore the individual experiences of participants who completed the intervention to further inform the evaluation and development of social cognitive training.

On the basis of the research findings, specifically, the following hypotheses have been formulated for the two quantitative studies within this project:

*Study One*

1. It is predicted that following the SC intervention an analysis of differences between treatment and control groups would reveal participants in the treatment group will demonstrate significant improvements in the three areas of SC targeted in the intervention compared to the control group.

2. It is also predicted that following the SC intervention, participants of the treatment group will demonstrate and report improvement in domains of functional outcome in comparison to the treatment as usual group.
3. It is also predicted that following the SC intervention, the neurocognitive ability of treatment group participants would not improve in comparison to the control group.

**Study Two**

1. It is predicted that at the six-month follow-up period, improvements made by the treatment group at post-treatment, on all social cognitive domains would be sustained.

2. It is also predicted that at the follow-up period that improvements demonstrated and reported by the TG, post-treatment, on all functional outcome domains would be sustained.

3. It is also predicted that the TG would not demonstrate any significant improvement at the follow-up period on any measure of neurocognitive ability

**Study Three**

The aims of conducting narrative interviews with participants were to:

1. Compliment the quantitative results

2. Provide insight into the strengths and weaknesses of the current program

3. Capture a sense of what was actually learnt in the GIST program

4. Inform future delivery of similar interventions.
Chapter 7

Study One

Evaluation of a Social Cognitive Training Program

Study one of this project involved the design and application of a social cognitive training program delivered to a cohort of individuals with schizophrenia. The study was designed to evaluate the capacity of such training to improve functional outcomes for these individuals.

In the current study it was hypothesised that:

1. It is predicted that following the SC intervention an analysis of differences between treatment and control groups would reveal participants in the treatment group will demonstrate significant improvements in the three areas of SC targeted in the intervention compared to the control group.

2. It is also predicted that following the SC intervention, participants of the treatment group will demonstrate and report improvement in domains of functional outcome in comparison to the treatment as usual group.

3. It is also predicted that following the SC intervention, the neurocognitive ability of treatment group participants would not improve in comparison to the control group.
Method

Sampling

This study utilised non-probability sampling, more specifically, purposive sampling. This technique is used when the researcher has the purpose of obtaining a sample that shares a particular characteristic (Haslam & McGarty, 1998), in this case, a particular mental illness of schizophrenia.

Purposive sampling recruited consumers of community mental health services, either living in the community, or residents of local supported accommodation centres who were clinically diagnosed with schizophrenia or schizoaffective disorders. The inclusion criteria for participants were:

1. Axis I diagnosis of schizophrenia spectrum disorder according to DSM-IV criteria.
2. Considered minimal to nil safety risk to researchers or other participants
3. Fluent in English language
4. The ability to give informed consent
5. Between the age of 18 and 65 years old

Sample Characteristics

The sample consisted of twenty participants, of which 13 were males and 7 females. Of the twenty participants in total, 13 were diagnosed with schizophrenia
and 7 with schizoaffective disorder. At the time of the commencement of the study, the participants ranged in ages from 22-57 years old (M = 34.8 yo).

**Recruitment of Participants**

Participants were consumers of the Victorian public mental health system including clinical and disability services. The rationale and procedure were outlined in presentations delivered to staff from the identified mental health services that the sample was to originate from. Staff members included case managers, key workers, day program workers and community support workers depending on which service they worked in. Following these presentations, all staff members were extended an invitation to be involved in the recruitment process and provided with advertising fliers. Appendix A and B contain copies of the advertising fliers utilised. Staff would then identify and approach prospective participants, who met inclusion criteria, either in person or by telephone. In addition, the fliers were advertised on the premises of participating services, which directed interested consumers to contact their case manager to become involved.

**Group Allocation/Treatment Conditions**

*Treatment Group (TG)*

The staff members were directed to initially offer to the consumer, participation in a group-based social-cognitive remediation program of thirteen weeks duration. Twelve participants were originally assigned to the treatment group, with six participants allocated to two treatment groups at the commencement of the
program. However, two participants did not complete the training program (i.e. completed less than six sessions), one from each treatment group, and therefore they were excluded from further analysis. These two participants dropped out of the program due to personal lifestyle circumstances that took priority over participation in the program. The treatment group was therefore comprised of two groups of five individuals (n=10). No modifications were made to their current treatment, including management of medication or to the various psychosocial services that were available to them.

*Treatment as Usual Group (TAUG)*

The control participants were subject to identical inclusion criteria. Participants were recruited to the Treatment as Usual group (TAUG) if, (1) the consumer declined interest in participating in the group program, but agreed to participate in the TAUG, (2) the consumer was directly approached by a case manager to participate in a control capacity only or, (3) the consumer self-referred themselves to a case manager based on flyers posted at various treatment settings. Ten participants were assigned to the Treatment as usual (TAUG) group (n =10) and were assessed in exactly the same manner as the TG. There was a normal continuation of currently available services and treatment to the consumer. The only difference therefore with the TG, in terms of assignment in this study, was that TAUG participants took no part in the social cognitive treatment program.

This method of group allocation was due to clinical constraints in that the researchers experienced a high attrition rate in recruiting participants, therefore it was not possible to randomly allocate participants to groups, as this was dependant on recruitment and time constraints of commencing the intervention.
Assessment Interview Procedure

The following procedure was the same for both TG and TAUG groups. Once a staff member had identified an appropriate consumer and discussed their potential involvement in the study, the staff member contacted the researcher directly to arrange for an initial assessment interview with the consumer.

In some cases the staff member, following discussion of the study with the consumer, passed on the consumer’s personal contact details to the researcher (signed consent was obtained) so that an initial interview could be arranged. During initial telephone contact, the researcher evaluated whether the consumer understood their potential involvement in the study and an initial assessment interview was then organised.

The location of the interviews varied according to the community mental health service that the consumer was affiliated with. However, all interviews were conducted in the same setting, respective to the service that they were consumers of. The interviews were either conducted by the researcher or by the research assistant, who was also a postgraduate PhD psychology candidate with an accredited four-year degree qualification in psychology.

The initial assessment interview commenced with an introduction and brief description of the study. In obtaining informed consent, the consumer was provided with a document written in plain language, which further explained the research and contained the contact details of the researcher. This document was read aloud by the interviewer whilst also being in view of the consumer. For the plain language statement and consent form see Appendix C. Following this the interviewer
evaluated the consumers understanding by asking for feedback about their perception of their involvement, the potential risks and benefits, remuneration, etc. If there were any concerns from the interviewers about the ability of the consumer to provide informed consent, a staff member, carer or third party would be asked to be present during the consent process. If for any reason the participant did not demonstrate that they were capable of giving informed consent then they would be excluded from the study. No participants in the study were identified as incapable of giving informed consent. After all enquiries were answered, the consumer was invited to read and sign a consent form and reassurances were made that the consumer may, at any time, choose to terminate the interview or cease participation in the study.

After obtaining informed consent, participants were asked to complete a demographic information sheet, which enquired about such things as: age at diagnosis; number of hospitalizations; medication; employment status and level of education. Appendix D contains a copy of this information sheet. The duration of the initial assessment interview was approximately one hour, and upon conclusion, each participant was booked in for a second assessment interview sometime within the next week, where the assessment process was completed (again approximately one hour duration).

**Measures**

In this study, demographic data; and clinical data including psychiatric diagnosis; symptom ratings; social functioning ratings; social cognitive ratings; and non-social cognitive ratings were obtained through individual assessments across two time points, at baseline (T1) and post-intervention (T2).
Assessing Diagnostic Status

All the participants for the study were linked with either a treating General Practitioner or psychiatrist, which is a pre-requisite condition to be eligible to receive the support services that they currently accessed. As mentioned earlier, all staff members involved in the recruitment of participants were directed to only consider consumers who had a diagnosis of a schizophrenia spectrum disorder.

In addition, diagnostic status and severity of symptoms were determined in the initial assessment through the administration of a diagnostic edition of the PANSS, The Structured Clinical Interview for DSM-III, (SCID-PANSS) (Kay, 1991). This “nosologic-dimensional” tool was developed to concurrently assess diagnostic status (according to DSM criteria) and the dimensional symptomatology of the schizophrenia patient. The SCID-PANSS assessors were trained in the administration of the SCID-PANSS by an experienced registered psychologist with accreditation in the administration and interpretation of the PANSS.

The SCID-PANSS contains a script that is referred to verbatim by the interviewer, so that the clinical data is obtained in a structured, systemized manner. The script contains a combination of yes-no and open-ended questions of the interviewee. On the right-hand side of each page a key is used to classify responses, which are later used for either scoring according to the PANSS, and diagnostic assessment is evaluated by reference to items where the text is in bold, and these items are applied to diagnostic evaluation according to the Structured Clinical Interview for DSM (SCID) (Spitzer et al., 1988). Therefore, SCID and PANSS ratings are conducted as the interview progresses, the interviewer circles the appropriate severity rating from 1-7 for each PANSS symptom assessed, and a rating
of 1-3 for SCID items (1=Absent, 2=Sub-Threshold, 3=Threshold). The format of
the SCID-PANSS is in a decision-tree sequence and therefore follow-up questions
often depend on preceding responses. Kay et al., 1991 reported strong inter-rater
reliability for the SCID-PANSS of between 0.85 and 0.97 for 34 inpatients assessed
by five psychiatrists.

Fifteen of the total twenty participants (N=20) were administered the SCID-
PANSS in initial assessment. Due to time constraints for the study, because of
unexpected delays in recruitment, five participants (n=5) in the TAUG were not
administered the SCID-PANSS. This decision was made by the researchers in light
of the consistency between diagnoses of previous participants obtained during the
assessment process. It must be noted that all participants at the time of this study
were assigned active case managers who were privy to information pertaining to
their client’s diagnostic status. With the consumer’s permission, the researchers
ensured that consultation with the case managers was made regarding satisfaction of
the study’s inclusion criteria (including diagnosis), prior to accepting referrals for
any of the participants.

Assessment of Emotion Recognition

The Diagnostic Analysis of Nonverbal Accuracy-2, Adult Facial Expressions
(DANVA-2-AF) (Nowicki & Duke, 1994).

The Diagnostic Analysis of Nonverbal Accuracy-2 is a computerized facial
affect recognition task that consists of five subtests. In this study, the Adult Facial
Expressions (DANVA-2-AF) subtest only was used to assess how well participants
could label the emotions depicted in twenty-four photographs of one of four recognised adult facial expressions. Each photo would display on the computer screen for two seconds, after which the participant chose if the adult was feeling angry, happy, sad or fearful. In the sample of photos, there were an equal number of males and females as well as an equal number of photographs that depicted emotions with a high and low intensity. Following the multiple-choice selection, the next photograph would appear (again for two seconds) and this would be repeated until all twenty-four stimuli were shown. The DANVA-2-AF has in college student samples shown a test-retest reliability co-efficient of 0.81 across a four-week period (McIntire, Danforth, & Schneider, 1997) and internal coefficient alphas of between 0.77 and 0.90 (Nowicki & Carton, 1993).

The Awareness of Social Inference Test (TASIT) (McDonald, Flanagan & Rollins, 2002).

The Awareness of Social Inference Test (TASIT) is a computerized video-based task grounded in social perception theory. Social perception is the ability to identify and decipher social stimuli in non-verbal, verbal and paralinguistic forms. The TASIT was developed as an instrument that could assess whether individuals can perform adequately on social perception tasks that the majority of those with normal social skills could achieve. It was designed to be clinically sensitive for individuals with traumatic brain injury who commonly demonstrate poor social behaviours (McDonald et al., 2003). The TASIT utilizes a series of video vignettes of one or more professional actors depicting varied components of social perception. The TASIT was intended to be uncomplicated for people with typical social skills
abilities, and this is highlighted by testing results from a community sample of 282 
who scored 85% or above on all parts of the TASIT (McDonald, et al., 2006). The 
TASIT comprises three parts, each have alternate forms.

The TASIT - Part 1 was used in this study to assess the ability of participant’s 
to identify emotions from dynamically presented stimuli. The TASIT - Part 1 consists 
of twenty-four short vignettes in which professional actors portray an equal amount 
of seven different emotions (anger, happiness, sadness, revolted, anxious, surprised 
and neutral). The participant made a choice from the seven emotions presented on a 
cue card and the assessor recorded the result. The remaining two parts of the TASIT 
will be discussed later in the assessment of theory of mind subsection.

Assessment of Attributional Style

The Ambiguous Intentions Hostility Questionnaire – Ambiguous Items (AIHQ-A) 
(Combs, 2007).

Attributional style was measured using the Ambiguous Intentions Hostility 
Questionnaire - Ambiguous Items (AIHQ-A, Combs, 2007), which is a shortened, 
five-item version of the entire AIHQ-A (15 items). Participants were read aloud five 
short vignettes and were asked to imagine that they themselves were part of these 
social situations. Participants were then asked to identify the intentions of characters 
in the stories, three questions about their own appraisal of how they felt about the 
situation/character (on Likert-scales) and how they themselves would likely respond 
to that situation.
The AIHQ generates three scores, Hostility bias (AIHQ-H), Blame bias (AIHQ-B) and Aggression bias (AIHQ-A). Scoring involves rating the hostility of the participant’s inference of the characters intentions, the level of blame attributed to others and finally the aggressiveness of the participants chosen response to the situation. The Blame score is a composite score derived from averaging the three Likert-scale ratings. The examiner rated the Hostility and Aggression Bias scores. In order to attain reliability of response scoring on the AIHQ-A task, 5 participants’ responses (i.e. 20% of the sample) were independently scored by both the examiner and a rater blind to the group allocation of participants and from this inter-rater reliability was obtained. The correlations between scores on the AIHQ-H component were 0.68; AIHQ-B was 0.93 and on the AIHQ-A was .89. The correlation between participant scores, post-treatment (i.e. Time 2), on the AIHQ-H was 0.96; AIHQ-B was 0.77 and AIHQ-A was 0.78, which signifies good reliability. The inter-rater reliability found in this study for AIHQ scores was similar to that reported in the literature. Combs, 2007b, found that agreement between raters (Intraclass Correlation Coefficient), on Hostility and Aggression Bias scores, was 0.85 and the reliability (Cronbach's alpha) of the Likert-rated Blame scores was 0.92.

Assessment of Theory of Mind

The Awareness of Social Inference Test (TASIT) (McDonald, Flanagan & Rollins, 2002).

The TASIT – Part 2 & Part 3 were used to measure theory of mind abilities. The TASIT - Part 2, Social Inference Minimal, assessed the ability of participants to deduce the thoughts and intentions of professional actors in various everyday
situations. There are an equal number of sincere and sarcastic remarks in the sample of 16 vignettes. The participant is asked four yes/no questions about the thoughts, feeling, intentions and meaning of the character/s in each scene. The answer to these questions must be interpreted from the verbal, non-verbal and paralinguistic cues in the scene.

The TASIT - Part 3, Social Inference Enriched, comprises 16 vignettes that have actors again communicating sarcasm, i.e. non-literal meaning, as well as communications where the actor/s are using literal meaning but are saying it only to be kind (e.g. “Of course, I don’t mind you being late”). Part 3 includes additional information about the speaker’s true belief to the viewer, which further assesses the participants’ ability to utilize explicit information that is contextually based in inferring mental states. As in Part 2, the participant is asked four yes/no questions about the thoughts, feeling, intentions and meaning of the character/s for each scene. McDonald, et al., 2006 reported fair psychometric properties for the TASIT, with test-retest reliability ranging between 0.74 and 0.88 and alternate forms reliability between 0.62 and 0.83.

**The Hinting Task (HT) (Corcoran, Mercer & Frith, 1995)**

The Hinting Task (HT) is comprised of ten brief, written scenarios, which were read aloud to the participant, portraying an interaction between two characters. At the end of each scenario, one of the characters hints something and the participant’s were asked to interpret the intended meaning of that character. (E.g. Jill says, “I don’t like this train”, “What does Jill mean when she says this?”). If the participant correctly interpreted the meaning of the character, they were awarded two
points, if not then a pre-determined prompt was given to accentuate the hint already provided. If the correct response was given at this stage, the participant is given a score of one point, however an incorrect response was scored 0 points. Corcoran, et al., 1995, reported a Cronbach’s alpha reliability of 0.65 for the HT.

Assessment of Functional Outcome

Assessment of functional outcome was divided into two subcategories, social functioning (SF) and quality of life (QoL) and will herein be discussed in terms of these separate classifications.

Quality of Life

The Personal Well-Being Index (PWI) (Cummins, Eckersley, Pallant, Van Vugt, & Misajon, 2003).

The Personal Wellbeing Index (PWI) was developed to provide a valid instrument that can measure both objectively and subjectively an individual’s quality of life and has been used across 48 countries (McGillivray et al, 2009). The PWI is a self-reported scale, comprising eight satisfaction items, each relating to a domain of quality of life that participants are asked to rate themselves. The eight domains are standard of living, achieving in life, health, relationships, future security, safety, community-connectedness, and spirituality/religion. These eight items when combined make up the PWI score, however an additional optional question can be asked that asks for an overall rating of satisfaction with one’s life as a whole. The participants completed all eight PWI items and the additional question by rating from
1 (completely unsatisfied) to 10 (completely satisfied) on a Likert-scale. The PWI score was calculated by averaging the total of the Likert-scale ratings for each item. The additional question was treated as a separate score. The Cronbach alpha reliability has been reported between 0.70 and 0.86 in across several studies in Australia and overseas (International Wellbeing Group, 2006), whilst the test-retest reliability has been demonstrated as sufficient with a reliability of 0.84 across a two-week time period (Lau and Cummins, 2005). Whilst not used with schizophrenia populations to the writer’s knowledge, the PWI has been utilised in samples with severely impaired cognitive ability. The PWI was chosen for this study due to its strong psychometric properties and use in a vast array of clinical samples (International Wellbeing Group, 2006).

*The Manchester Short Assessment of Quality of Life (MANSA) (Priebe, Huxley, Knight and Evans, 1999).*

The Manchester Short Assessment of Quality of Life (MANSA) is a shortened, modified version of the Lancaster Quality of Life Profile (LQLP) and was utilized as a secondary measure of quality of life (QoL). The MANSA was developed to account for shortcomings of the LQLP, namely, an excessive administration time (30 minutes) and a number of irrelevant items for discriminating between samples or for demonstrating change over time (Priebe et al., 1999). There are twelve satisfaction questions rated on a Likert-scale (from 1 - couldn’t be worse to 7 - couldn’t be better) and four categorical questions, answered either by yes or no. The 12 scale satisfaction items relate to: life as a whole, employment or unemployment, financial situation, number and quality of friendships, leisure
activities, accommodation, personal safety, people that the patient lives with (or living alone), sex life, relationship with family, physical health, and mental health.

The four categorical items assess: the existence of close friendships; whether or not they had contact with friends in the current week; accusation of committing a crime; and being a victim of physical violence. Psychometric properties of the MANSA demonstrate a high inter-reliability of 0.83 with the longer version, LQLP, and the Cronbach’s alpha for ratings of satisfaction was 0.74 (Priebe et al., 1999).

**Social Functioning**

*The Social Functioning Scale (SFS) (Birchwood et al., 1990).*

The Social Functioning Scale (SFS) was originally developed to assess the social adaptation in patients with schizophrenia. The SFS was devised due to limitations of previous social functioning measures, which failed to include or exclude more appropriate domains of living that are particularly relevant to this cohort. For example, people with schizophrenia are often not married, nor gainfully employed and their level of functioning is lower than mainstream populations. Therefore, what may be considered more fundamental domains of functioning such as level of independence and daily tasks of living are included in the SFS, and domains such as employment and marital status have been assigned less significance than previous social functioning measures.

An examiner can administer the SFS or it can be self-completed which comprises of 79 items across seven domains of social functioning: social engagement; interpersonal communication; independence-competence;
independence-performance; prosocial activities; employment and recreation. The items are rated on a four-point scale, with higher points reflecting a higher level of functioning in that domain. Raw scores for each domain are converted to scaled scores with a mean of 100 and standard deviation of 15, based on a sample of 334 individuals with schizophrenia and a total SFS score is also calculated when all the domain scores are added. The psychometric properties of the SFS demonstrate a Cronbach’s alpha of 0.81 (Hellvin et al., 2010) and test-retest reliability of 0.83 (Jolley et al., 2005).

The Social Skills Performance Assessment (SSPA) (Patterson et al., 2001).

The Social Skills Performance Assessment (SSPA) provides a novel method of assessing social skills because of its direct nature. This brief task, which takes 12 minutes to administer, comprises of two, role-play conversations conducted between examiner and subject for three minutes duration each. The conversations were semi-structured in that an introduction script is provided and several prompts and rules for the conversation are also given to the examiner to follow. The conversations involved social problem situations (e.g. negotiating repairs on a property with the landlord) and the interviewer’s role was to reciprocate the dialogue and answer as spontaneously as possible. In addition the interviewer was only to use the provided prompts if the participant was quiet for 10 seconds and the conversation had halted. The SSPA tasks were audio-recorded and played back to score them, using Likert-scales to rate several domains including interest/disinterest; focus; clarity; fluency and social appropriateness. Some domains were subjectively rated from observations made during the role-plays, such as affect and grooming. Inter-rater reliability for the
SSPA total score was 0.91 according to Shrout & Fleiss, 1979. Furthermore, test-retest reliability for a random sample of 21 patients with schizophrenia over a one-week period was 0.92 (Patterson 2001). In order to attain reliability of response scoring on the SSPA task, 5 participants’ responses (i.e. 20% of the sample) were independently scored by both the examiner and a rater blind to the group allocation of participants and from this inter-rater reliability was obtained. The correlations between scores on the SSPA total score amongst the examiners was 0.86, which signifies excellent reliability and replicates similar inter-rater reliability found in the literature (Shrout & Fleiss, 1979; Patterson, 2001).

Assessment of Non-Social Cognition


The National Adult Reading Test (NART) is a commonly used test to estimate pre-morbid intelligence and has been found to correlate highly with a person’s general level of cognitive ability (Crawford, Stewart, Cochrane, Parker, & Besson, 1989). The NART comprises a list of 50 irregularly pronounced words, which the participant must read aloud to the examiner. The examiner marks each word on an answer sheet according to whether the word was pronounced correctly or not. The amounts of errors made in pronunciation are used to calculate a NART error score, which is then converted into a predicted Wechsler Adult Intelligence Scale, third edition (WAIS-III, 1995) Full-Scale IQ score (FSIQ).

The NART has demonstrated high reliability coefficients including spilt-half reliability of 0.93 (Nelson, 1982), test-retest of 0.98 (Crawford, 1989; Nelson, 1982).
and inter-rater reliability of 0.88 (Crawford, Parker, Stewart, Besson, & De Lacey, 1989b; O’Carroll 1987). The NART also provides decent estimates of premorbid intelligence except at the identified ceiling level of IQ’s in excess of 125 (Nelson & Willison, 1991). Furthermore, sound test-retest reliability of 0.82 has been demonstrated for the NART when applied to schizophrenia populations (Smith, Roberts, Brewer & Pantelis, 1998).

*Letter Number Sequencing Task (LNS) (Wechsler, 1997).*

This measure of attention and working memory was taken from the Wechsler Memory Scale, Third Edition (WMS-III; Wechsler, 1997) and has adequate reliability with internal at 0.83 and test-retest at 0.78. The task requires the participant to successfully reorganise a series of mixed digits and letters that is read aloud to them by the examiner. The subject must tell the examiner, firstly, what the numbers were in order from smallest to largest digit and then recall the letters in alphabetical order. For example a string may be presented as “4-J-5-S”. The correct rearrangement of this would be “4-5-J-S”. The actual task began with 2 characters and increased gradually in level of difficulty up to 8 characters. There were three trials at each level and the examiner halted testing when two trials were failed at the same level. Each character was read aloud at the rate of one per second. The number of correctly recalled trials was then totalled and used to calculate an age-adjusted scaled score derived from norms in the WMS-III manual.
Logical Memory Task (LM) (Wechsler, 1997)

The Logical Memory Task was another task from the Wechsler Memory Scale, Third Edition (WMS-III; Wechsler, 1997) as an indicator of verbal episodic memory.

The participant is asked to remember as much as possible about two short stories read aloud to them. Immediate recall (Logical Memory I) is administered directly after each presentation and the participant is prompted to recall the story as exactly as possible. The delayed recall test (Logical Memory II) is administered after 30 minutes’ delay, and the score is the number of recalled details out of a maximum of 50. The delayed recall total score was used in this study. Internal consistency and test–retest reliability are satisfactory (0.70) (Strauss, Sherman, & Spreen, 2006).

Verbal Fluency Task (FAS) (Benton & Hamsher, 1989).

In the FAS version of the verbal-fluency task (Benton & Hamsher, 1989), which measures semantic memory and divergent thinking, participants were instructed to tell the examiner as many words as they could think of beginning with a certain letter (F, A or S) in three one-minute trials. They were directed not to use proper nouns (e.g. London/John), or to simply add a different ending to a word already said (e.g. sing/singing). Following this letter-fluency task, an additional category-fluency task was administered which required the participant to name as many animals as they could in one minute. All responses were written on a scoring sheet by the examiner and totals for each letter and the animal category were later transformed to a z score based on norms (Tombaugh, Kozak & Rees, 1999). This
task is considered to have good psychometric properties including near perfect inter-
scorer reliability and high test-re-test reliability (0.88) (Tierney et al., 1988).

Ethics Approval & Informed Consent

Approval was obtained from the Ethics Committees of Deakin University
(Appendix E), Eastern Health (Appendix F) and Eastern Access Community Health
(Appendix G). All participants who gave written informed consent to participate
were given written and oral descriptions of the study. Written material indicated to
the participants that their individual treatment programs would not be compromised
by their involvement in the study. Copies of the consent form and plain language
statement are provided in Appendix C.

Procedure

The involvement of participants in the study differed according to the group
they were allocated to.

Treatment Group (TG)

Those participants in the treatment group (TG) completed two separate pre-
assessment interviews. The pre-assessment interviews each were approximately sixty
minutes in duration and were conducted within one week of each other. They
concluded no more than two weeks prior to the commencement of the group
program. Following assessment, TG participants would then attend the weekly (1hr)
group sessions for the duration of the thirteen-week program. Upon completion of
the program, within a two-week period, the TG participants then completed one post-
assessment interview, which was ninety minutes duration, due to the exclusion of
certain aspects of the initial interview that were not chosen to be repeated (i.e. SCID-
PANNS, Demographic information and Informed Consent).

**Control Group (TAUG)**

The involvement of the TAUG for this study was identical in nature, with a
couple of exceptions. Firstly, as mentioned, the pre-assessment interviews (T1) of
some participants in the control group (N=5) were shorter in duration (40-45
minutes) due to the omission of the SCID-PANSS, and were therefore only required
to sit for one interview at T1. Secondly, the members of the TAUG did not
participate in the SC training program, and continued to receive normal ongoing
treatment.

**Materials for Assessment**

The computer-based assessment measures (DANVA-2, TASIT) were
administered on a TOSHIBA Satellite Pro A100 laptop computer. For any tasks that
required timing a CE & RoHS certified electronic timer was used. Additionally, a
SONY IC MP3 recording device was used for any tasks that demanded audio
recording (e.g. SSPA, Qualitative Interviews).
Social Cognitive Training Program Description

The *Growth in Social Thinking* (GIST) program is a manualised social cognitive training intervention that was designed by the researchers of this project. Some tasks and training materials utilised in the program have also been reproduced or modified from various sources, which are all acknowledged within the manual. Appendix H contains a copy of the GIST treatment manual. The GIST program was also influenced by the design of the most successful social cognitive training program in the extant research, the social cognitive and interaction training program (SCIT: Roberts et al., 2006).

The GIST program is designed for delivery in a group format and consists of various material and information designed to educate and improve on participants social cognitive abilities and includes psycho-education; discussion of social cognition principles; learning specific social cognition strategies; utilising specific social cognition strategies to analyse social stimuli and various problem-solving exercises. The group size was a maximum of six people and the program was delivered over 13 weekly sessions of between 50-70 minutes.

The content of the GIST program is divided into four stages, Recognising Feelings; Looking at the Big Picture; Connecting with Others and Putting it All Together, with each stage consisting of 3-4 sessions:

- Stage 1: Recognising Feelings (4 sessions incl. introduction session)
- Stage 2: Looking at the Big Picture (3 sessions)
- Stage 3: Connecting with Others (3 sessions)
- Stage 4: Putting It All Together (3 sessions)

*Total = 13 sessions*
Stage 1, *Recognising Feelings*, was focused on developing participant’s ability to identify and recognise emotions, both negative and positive, in themselves and others. Stage 2, *Looking at the Big Picture* was aimed at improving the participant’s ability to take into account multiple sources of information from social stimuli in order to make more informed, unbiased judgments when evaluating social situations and the intentions of others. Stage 3, *Connecting with Others*, demonstrated the importance of and fundamental principles underlying the ability to empathise with others and how to go about considering different perspectives. Stage 4, *Putting it All Together*, was focused on collaborating all the information and skills covered in preceding sessions, in order to demonstrate how each area of social cognition taught complimented each other and that when utilised together, are much more effective.

All sessions in the GIST program were comprised of recurring elements, commencing with a review of the previous session’s content and discussion of any homework set. Following this, the participants discussed any experiences they may have had during the week between sessions that related to any previous topics that had been covered, before introducing the topic for the upcoming session.

The sessions were administered solely by the same instructor for the entirety of the program. Delivered in a group setting, the method of delivering the intervention was homogenous (i.e. not individualised) and whilst semi-structured, the execution of each session remained flexible enough to allow for the varying levels of psychological dysfunction amongst group members.
The first session was focused on personal introductions, providing expectations for the program and construction of group rules. The majority of remaining sessions involved some form of: psychoeducation; discussion of social cognition principles; learning and utilising specific social cognitive strategies. Various methods of delivery were employed during the program relative to the content of each stage, which included: group discussion; computer training tasks; quizzes; photographs; dissecting video and cinema footage; PowerPoint slide presentations; problem-solving exercises and exploration of personal experiences. Initially, most of the tasks were initiated at a basic level and gradually became more challenging as the program progressed. Individual feedback and assistance was frequently provided to participants throughout, but also group involvement was strongly encouraged in answering others questions to build insight and provide opportunities for positive reinforcement. Sessions frequently ended with homework tasks and encouragement to practice strategies learnt in between sessions.

As discussed the framework of the SCIT program was referred to when designing the GIST program due to it’s standing as the yardstick of SC training in this area (the SCIT manual was not available to the researchers of this study) therefore we would like to acknowledge the creators of SCIT. In addition, various tasks and stimuli were sourced from the research literature and utilised within the program, with all being acknowledged and referenced in the GIST manual.

Of particular mention is that parts of the Metacognitive Training for Patients with Schizophrenia (MCT) (Moritz & Woodward, 2007) were utilised throughout the program, particularly in the Looking at the Big Picture and Connecting with Others stages. The researchers contacted one of the co-authors of the Metacognitive training modules, Professor Steffen Moritz, and permission was obtained to utilise and
reproduce these resources. The MCT training program contains multiple modules that target the cognitive biases and distortions of those with schizophrenia. Also worthy of mention was the use of the Mind Reading Interactive training computer software program (Version 1.3) in the Recognising Feelings stage of GIST. This interactive and systematic emotions program has been utilised in previous research conducted with the aim of teaching emotion recognition amongst people with on the Autism spectrum. Permission was given by one of the designers of the program, Professor Simon Baron-Cohen.

**Results**

The hypotheses for this study were analysed using a mixed-design repeated measures ANOVA with a within-subjects factor of time (pre, post) and a between-subject factor of group (treatment, control) for each dependent variable of interest. This statistical technique was favoured as participants of treatment and control groups were administered the same battery of measures on two separate occasions, pre and post intervention, with the current study investigating changes over time.

Conducting a series of mixed repeated measures ANOVAS with a relatively small sample size was considered appropriate for this study for the following reasons. Firstly, it was decided that it was particularly important, considering the clinical nature of the study, to control for Type 2 error so that any meaningful differences found in those receiving the intervention would be potentially revealed. Therefore, although there was a risk of increasing Type I error by conducting several ANOVAS, this risk was considered an acceptable one to allow for meaningful appraisal of the data. Secondly, repeated measures ANOVA, has the advantage of
minimizing the effect of individual differences. The error effect is not influenced by individual differences and we are able to detect smaller treatment effects, therefore this design was considered appropriate in this study due to the small sample size and the pilot status of the intervention.

Mixed-model repeated measures ANOVA were therefore performed in the analysis of this study to examine mean differences over time (pre and post intervention) between the treatment group (TG) and control group (TAUG) on all social cognitive, functional outcome and neurocognitive variables.

**Effect Size Estimates**

To estimate the magnitude of any changes revealed from pre to post-test in the treatment condition, within-group effect sizes were computed to supplement repeated measures analyses, considering the relatively small sample size.

This study utilised the correlation coefficient, $r$, as the effect size measure due to its versatility and common use (Field, 2001). Partial eta squared ($\eta^2$) results produced by SPSS were square rooted and hence converted to $r$ values (Hullet and Levine 2003). Evaluation of the magnitude of effect size was determined according to Cohen’s recommended suggestions for $r$-values:

- $r = 0.10$ (small effect): in this case, the effect explains 1% of the total variance.
- $r = 0.30$ (medium effect): the effect accounts for 9% of the total variance.
- $r = 0.50$ (large effect): the effect accounts for 25% of the variance. (Cohen, 1988, 1992).
Preliminary Analyses

Data were analysed using SPSS 19.0.0 statistical software package. Preceding inferential statistical analysis, various data screening process were completed, including an appraisal of the principle assumptions underlying repeated measures ANOVA. The data screening processes were applied to a total of 20 cases (N=20), with variables examined for data entry accuracy, missing data, and violations of ANOVA assumptions.

Missing Data

Missing data was explored through descriptive statistics and manual checking of all variables. No missing data were found for any variable in the SPSS dataset, therefore no replacements or transformations were required.

Examination of Parametric Assumptions

Similar to other ANOVA tests, a normal distribution is assumed in the dependent variables of repeated measures ANOVA. Examining variable outliers, skewness, kurtosis, homoscedasticity and linearity tested whether the assumption of normality were met.

For all variables of interest in the dataset, standardised values were calculated and scatter plots were examined to identify the presence of outliers which were defined as having standardised scores > ± 3.3. One entry was identified as meeting outlier criteria and after being confirmed as a valid, was transformed to the next
lowest (non-outlier) value. Descriptive analysis of normality revealed no significant skewness or kurtosis (i.e. \( > \pm 2.0 \), Curran, West & Finch, 1996) on variables to be analysed, therefore no transformations were considered. Graphical methods were also used to examine normality of variables, including histograms (with normal curve superimposed), box plots and frequency polygons. Following these data screening processes, the assumption of normality for all variables of interest were considered met. Residual scatterplots were additionally examined to investigate violations of homoscedasticity and linearity, with none found.

**Descriptive Statistics**

**Sample Characteristics**

The sample for this study, consisting of people with an established clinical diagnosis on the schizophrenia spectrum, were compared to available normative data (where possible) in terms of their results on social cognitive, functional outcome and neurocognitive measures. The purpose of this analysis was to ascertain a) whether, as expected, the sample demonstrated clinical deficits on the variables of interest, and b) whether the sample is representative of the cohort it was recruited from.

**Current Sample Comparison with Normative Data**

Excluding the AIHQ subscales (which will be discussed in a later section), the sample means for participants at baseline for all social cognitive variables were \( > 2.0 \) standard deviations below the means when compared to appropriate normative data (Ranging from -2.31 to -3.63). Therefore, as expected the participants of this
study demonstrated significantly impaired ability over a range of social cognitive abilities.

In relation to the functional outcome variables, similarly, the standardised means for the sample on the PWI (-1.94) and the SSPA (-5.87) were significantly below the means of respective normative data. The standardised mean for the MANSA was -.30, but the normative data for this measure was derived from a population of schizophrenia patients. Interestingly, the standardised mean on the SFS was actually 1.74 standard deviations above normative data, which will be considered in the discussion section. The standardised means for the sample on the LNS (-.75), LMS (-1.50) (WMS-III; Wechsler, 1997), and FAS (-1.40) (Tombaugh, Kozak & Rees, 1999) were also below the means of respective normative data. Overall, this analysis substantiates the previously stated hypothesis that the sample demonstrated clinical deficits in the majority of variables of interest, and that the sample of this study is representative of the schizophrenia population it was recruited from.

**Comparison of Sample Groups**

Exploratory data analysis was conducted to report the clinical and demographic information of the treatment and control groups at baseline. As is summarised in Table 1, one-way analysis of variance revealed no significant mean differences between the groups for any demographic or clinical variable at pre-test. Similarly, ANOVA comparison of the TG & TAUG at baseline found no significant differences on any of the social cognitive, neurocognitive or functional outcome variables.
Table 1

*Demographic and Clinical Information at Baseline*

<table>
<thead>
<tr>
<th></th>
<th>Treatment (TC) (n=10)</th>
<th>Treatment as Usual (TAUG) (n=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean/% SD</td>
<td>Mean/% SD</td>
</tr>
<tr>
<td>Age</td>
<td>35.60 12.69</td>
<td>34.00 8.18</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>60.00</td>
<td>70.00</td>
</tr>
<tr>
<td>Female</td>
<td>40.00</td>
<td>30.00</td>
</tr>
<tr>
<td>Diagnosis (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>70.00</td>
<td>60.00</td>
</tr>
<tr>
<td>Schizoaffective</td>
<td>30.00</td>
<td>40.00</td>
</tr>
<tr>
<td>PANSS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptoms Total</td>
<td>40.90 13.71</td>
<td>40.60* 12.10</td>
</tr>
<tr>
<td>PANSS Total</td>
<td>84.40 24.62</td>
<td>82.80* 22.00</td>
</tr>
<tr>
<td>Age of Diagnosis</td>
<td>22.30 6.34</td>
<td>23.00 7.67</td>
</tr>
<tr>
<td>Occupation Status(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>90.00</td>
<td>80.00</td>
</tr>
<tr>
<td>Employed</td>
<td>10.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Years of Education</td>
<td>10.30 1.34</td>
<td>11.00 1.70</td>
</tr>
<tr>
<td>NART – Error Score</td>
<td>25.40 6.83</td>
<td>28.70 7.38</td>
</tr>
<tr>
<td>NART – Predicted FSIQ</td>
<td>106.92 5.67</td>
<td>104.18 6.12</td>
</tr>
<tr>
<td>Living Status (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supported</td>
<td>40.00</td>
<td>40.00</td>
</tr>
<tr>
<td>Independent</td>
<td>60.00</td>
<td>60.00</td>
</tr>
</tbody>
</table>

*PANSS statistics for the TAUG based on a total of 5 participants only

**Comparison of Treatment Groups**

As mentioned, two different therapy cohorts received the social cognitive intervention; therefore the two intervention groups were also compared to examine any potential differences between baseline, clinical and variables of interest. As
represented in Table 2, ANOVA revealed that the two groups that received the intervention differed significantly on two demographic variables, Age and Age of Diagnosis. Due to the small sample size of each group (n=5) the two groups were combined (n=10) for all subsequent statistical analyses.

Table 2

*Comparison of the Two Intervention Groups at Baseline*

<table>
<thead>
<tr>
<th></th>
<th>Group A (n=5)</th>
<th>Group B (n=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean/%</td>
<td>SD</td>
</tr>
<tr>
<td>Age</td>
<td>26.40</td>
<td>6.27</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>60.00</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>40.00</td>
<td></td>
</tr>
<tr>
<td>Diagnosis (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>70.00</td>
<td></td>
</tr>
<tr>
<td>Schizoaffective</td>
<td>30.00</td>
<td></td>
</tr>
<tr>
<td>PANSS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptoms Total</td>
<td>46.40</td>
<td>16.33</td>
</tr>
<tr>
<td>PANSS Total</td>
<td>94.80</td>
<td>30.11</td>
</tr>
<tr>
<td>Age of Diagnosis</td>
<td>16.80</td>
<td>3.35</td>
</tr>
<tr>
<td>No of Hospitalisations</td>
<td>8.20</td>
<td>8.90</td>
</tr>
<tr>
<td>Occupation Status(%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>90.00</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Years of Education</td>
<td>10.80</td>
<td>1.48</td>
</tr>
<tr>
<td>NART – Error Score</td>
<td>26.80</td>
<td>6.76</td>
</tr>
<tr>
<td>NART – Pred. FSIQ</td>
<td>105.76</td>
<td>5.61</td>
</tr>
<tr>
<td>Living Status (%)</td>
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<td></td>
</tr>
<tr>
<td>Supported</td>
<td>40.00</td>
<td></td>
</tr>
<tr>
<td>Independent</td>
<td>60.00</td>
<td></td>
</tr>
</tbody>
</table>

* Significant difference between means found, p<.05
**Hypothesis Testing**

**Repeated Measures Analysis**

To test the hypotheses predicted a-priori, mixed-model repeated measures ANOVAs were performed to examine differences between the TG and the TAUG on selected measures at pre-treatment (T1) and post-treatment (T2). The means and standard deviations across time for all variables of interest are presented in Table 3. For all ANOVA analyses reported, critical assumptions, including: Box’s M; Assumption of sphericity; and homogeneity of variance (Levenes’ Test) were non-significant unless specified.

**Investigating Hypothesis One**

The first hypothesis of this study predicted an analysis of differences between treatment and control groups post-intervention would reveal improvement in functional outcome (FO) (Social functioning (SF) & Quality of Life (QoL)) by participants in the TG in comparison to the TAUG. Mixed repeated measures ANOVAs were performed on the two SF measures, the Social Functioning Scale (SFS) and the Social Skills Performance Assessment (SSPA) tasks, as well as two QoL measures, the Personal Wellbeing Index (PWI) and the Manchester Short Assessment of QoL (MANSA). All analyses were focused on comparing the means of treatment and control groups’ pre and post intervention on these tasks.

ANOVA revealed a significant group x time interaction effect for the SSPA, Wilks’ Lambda = .56, $F_{(1,18)} = 14.15$, $p = .001$, $r = .66$. As represented in Figure 1, the TG demonstrated significantly improved performance on the SSPA task.
following participation in the GIST program and this improvement corresponded to a large effect size. The difference between the TG means was significant from T1 (M = 46.9, SD = 10.65) to T2 (M = 55.50, SD = 12.77).

Figure 1. SSPA Group x Time Interaction Pre-Post Intervention

As can be seen in Figure 2, although repeated measures ANOVA revealed trend level improvement on the SFS for the TG, the predicted interaction effect of group x time on the SFS was non-significant, Wilks’ Lambda = .89, $F_{(1,18)} = 2.27, p = .15, r = .33$.

Figure 2. SFS Group x Time Interaction Pre-Post Intervention.
ANOVA revealed trend level improvements on both the MANSA and the PWI by the TG (see Figures 3 and 4), however the interaction effects were non-significant, $F_{(1,18)} = 3.27, p = .09, r = .39$ (PWI), $F(1,18) = 4.00, p = .06, r = .42$ (MANSA).

**Figure 3.** MANSA Group x Time Interaction Pre-Post Intervention

There was a non-significant interaction effect on the PWI, but a main effect was detected, Wilks’ Lambda = .78, $F_{(1,18)} = 5.01, p = .04, r = .47$. As homogeneity of variance was violated (Levenes = .04), a more stringent $p$ value of .01 was utilised and the main effect for time ($p = .04$) was no longer considered significant.

**Figure 4.** PWI Group x Time Interaction Pre-Post Intervention.
### Table 3

**Clinical Measures and Outcomes by Treatment Conditions Across Time**

<table>
<thead>
<tr>
<th></th>
<th>Intervention (N = 10)</th>
<th>Effect Size (r)</th>
<th>Treatment as Usual (N = 10)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
<td>Time 1</td>
</tr>
<tr>
<td><strong>Neurocognition</strong></td>
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<td><strong>Social Cognition</strong></td>
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<td></td>
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<tr>
<td>Hinting Task</td>
<td>14.60</td>
<td>16.80**</td>
<td>.60</td>
</tr>
<tr>
<td>TASIT: Part 1</td>
<td>18.00</td>
<td>22.40*</td>
<td>.49</td>
</tr>
<tr>
<td>AIHQ-A: Hostility</td>
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<td>1.50**</td>
<td>.61</td>
</tr>
<tr>
<td>Blame</td>
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<td>2.34*</td>
<td>.46</td>
</tr>
<tr>
<td>Aggression</td>
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<td>TASIT: Part 3</td>
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<td>46.10**</td>
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<td><strong>Functional Outcome</strong></td>
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<tr>
<td>PWI</td>
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<td>60.38</td>
<td>.39</td>
</tr>
</tbody>
</table>

Note: Standard deviations appear in brackets. Effect sizes are reported as Cohen’s r results. Results are from mixed model repeated measures ANOVAs. All statistical tests are 2-tailed, significance level of p < .05. AIHQ-A: The Ambiguous Intentions Hostility Questionnaire – Ambiguous Items; TASIT: The Awareness of Social Inference Test; DANVA: Diagnostic Analysis of Nonverbal Accuracy; LNS: Letter Number Sequencing; SFS: Social Functioning Scale; SSPA: Social Skills Performance Assessment; MANSA: Manchester Short Assessment of quality of life; PWI: Personal Wellbeing Index.

Significant time x group interaction at *p < 0.05, **p < 0.01.
Investigating Hypothesis Two

Hypothesis two predicted that participants in the treatment group would demonstrate significant improvements in all three domains of SC targeted in the intervention in comparison to the control group.

Emotion recognition was assessed by two measures in the current study, The Awareness of Social Inference Test (TASIT) - Part 1, and the Diagnostic Analysis of Nonverbal Accuracy-2, Adult Facial Expressions (DANVA-AF). A mixed-model repeated measures ANOVA revealed a significant interaction effect between groups across time for the TASIT Part 1, Wilks’ Lambda = .76, $F_{(1,18)} = 5.67, p = .03, r = .49$. This result, represented in Figure 5, indicates that for those in the treatment group, their performance on the TASIT Part 1 significantly improved from T1 (M = 18.0, SD = 5.52) to (M = 22.40, SD = 2.63) following the intervention compared to the control group, corresponding to a medium to large effect size. Results suggest an increase in the TG participant’s ability to recognise emotions from video footage of social situations in comparison to the TAUG.

![Figure 5. TASIT – Part 1 Group x Time Interaction Pre-Post Intervention.](image-url)
Similarly, repeated measures ANOVA found a significant group x time interaction effect for the DANVA, Wilks’ Lambda = .77, \(F_{(1,18)} = 5.41, p = .03, r = .48\). Results show that participants who completed the intervention reduced the amount of errors made in correctly recognising emotions from photographs of faces. Reflected in Figure 6, TG participants improved considerably from T1 (\(M = 10.40, SD = 3.50\)) to T2 (\(M = 8.70, SD = 3.20\)) on performance on the DANVA in comparison with the TAUG, corresponding to a medium to large effect size.

![DANVA](image)

*Figure 6. DANVA Group x Time Interaction Pre-Post Intervention.*

Attributional style was assessed by a single measure, the Ambiguous Intentions Hostility Questionnaire - Ambiguous Items (AIHQ-A), which has three subscales, hostility (AIHQ-H), blame (AIHQ-B) and aggression (AIHQ-AG), which were separately scored and examined under analysis. Repeated measures ANOVA found a significant group x time interaction effect for the AIHQ-H, Wilks’ Lambda = .62, \(F_{(1,18)} = 10.75, p = .004, r = .61\). Levene’s test was violated indicating that the variance of scores on this measure was considered to be too different. Lindman (1974, p. 33) reports that the \(F\) statistic is rather robust against violations of this assumption and so a decision was made to correct for this violation by utilising a
more stringent p value of .01, and following this, the interaction effect remained significant.

This result suggests that TG participants showed a reduction in the level of hostility in their responses to ambiguous situations following the intervention in comparison with the TAUG and is represented in Figure 7. This reduction in hostility from T1 (M = 10.00, SD = 3.13) to T2 (M = 7.50, SD = 1.58) rated for TG participants on the AIHQ-H corresponded to a large effect size.

![AIHQ - Hostility](image)

*Figure 7. AIHQ-H Group x Time Interaction Pre-Post Intervention.*

Similarly, repeated measures ANOVA revealed a significant group x time interaction effect for the AIHQ-B, Wilks’ Lambda = .79, $F_{(1,18)} = 4.73$, $p = .04$, $r = .46$. This result, represented in Figure 8 suggests that TG participants showed a reduction in the level of blame in their responses to ambiguous situations from T1 (M = 16.20, SD = 3.52) to T2 (M = 11.70, SD = 3.16) following the intervention corresponding to a medium to large effect size.
Likewise, Repeated measures ANOVA found a significant group x time interaction effect for the AIHQ-AG, Wilks’ Lambda = .76, $F_{(1,18)} = 5.59$, $p = .03$, $r = .49$. This result, represented in Figure 9, indicates that TG participants showed a reduction in the level of aggression in their responses to ambiguous situations from T1 ($M = 7.70$, $SD = 2.11$) to T2 ($M = 6.40$, $SD = 1.78$) following the intervention corresponding to a medium to large effect size. Results showed a 16.88% reduction in hostile attribution by TG participants following the intervention, in comparison to a slight increase by the TAUG.
Theory of mind ability was assessed by two separate measures, the Hinting Task, and two separate components of the TASIT, Part 2 and Part 3. A repeated measures ANOVA revealed a significant group x time interaction effect for the Hinting Task, Wilks’ Lambda = .64, $F_{(1,18)} = 9.98$, $p = .005$, $r = .60$. This result suggests that participants who completed the intervention improved considerably in their ability to infer the intentions of others in comparison with the TAUG. This improvement, corresponding to a large effect size, is shown in Figure 10 with the means of TG participants improving from T1 (M = 14.60, SD = 5.52) to T2 (M = 16.80, SD = 4.66).
Similarly, a repeated measures ANOVA revealed a significant group x time interaction effect for the TASIT Part 2, Wilks’ Lambda = .66, $F_{(1,18)} = 9.46, p = .007, r = .59$. This result shows that participants who completed the intervention improved considerably in their ability to infer meaning and intention from conversations and paralinguistic cues, which corresponded to a large effect size. This improvement is reflected in Figure 11, with the means of TG participants improving from T1 (M = 38.80, SD = 9.25) to T2 (M = 47.70, SD = 8.11).

Figure 10. Hinting Task Group x Time Interaction Pre-Post Intervention.
Likewise, repeated measures ANOVA revealed a significant group x time interaction effect for the TASIT Part 3, Wilks’ Lambda = .62, $F_{(1,18)} = 11.17$, $p = .004$, $r = .62$. This result suggests that participants who completed the intervention improved considerably in their ability to infer meaning and intention from verbal and visual information in comparison with the TAUG. This improvement for the TG with a change in means from T1 (M = 40.90, SD = 13.03) to T2 (M = 46.10, SD = 10.60), corresponded to a large effect size, and is reflected in Figure 12.
Investigating Hypothesis Three

Hypothesis three predicted that neurocognitive (NC) ability would not improve as an effect of the intervention. No significant differences were found on NC measures (Letter Number Sequencing Task (LNS); Logical Memory Task (LM); Verbal Fluency Task (FAS) when the groups were compared by mixed repeated ANOVA’s across group x time from pre-test to post-test. However, significant main effects for time were found for LMS, $F_{(1,18)} = 20.88, p = .000, r = .73$ and FAS, $F_{(1,18)} = 6.95, p = .02, r = .53$ indicating that all participants showed improvement on these measures from T1 to T2 regardless whether they participated in the treatment or not. These main effects will be considered in the discussion section.

Investigating the Influence of Neurocognitive Deficits on Social Cognition

A key limitation that could affect the use of multiple measures in this study is the contribution of neurocognitive deficits (NC) to the poor performance on social cognitive tasks. It was decided to investigate this because some tasks utilised in this study place high demand on NC domains and therefore this could have affected performance on SC tasks. (E.g. logical memory on TASIT, working memory on TASIT; verbal fluency on AIHQ and Hinting Task). For example, we wanted to investigate if the results change when we control for effects of low fluency on free verbal responses on tasks such as the AIHQ and Hinting Task.

Firstly, to investigate the influence of neurocognitive ability on results, significant correlations between NC measures, SC and FO measures were identified for further analysis. Logical memory (LMS) was significantly correlated with the HT
(r = .56, p = .01), TASIT Part 2 (r = .55, p = .01) and TASIT Part 3 (r = .64, p = .002). All AIHQ-A subtasks were significantly correlated with the LNS task (AIHQ-H, r = -.56, p = .01; AIHQ-B, r = -.49, p = .03; AIHQ-AG, r = -.61, p = .004), as was the HT (r = .45, p = .04) and finally, the AIHQ-AG was significantly associated with the NART (r = .54, p = .01).

All of these relationships were considered important to examine further with the use of ANCOVA analysis. We attempted to partial out the variance explained by the NC domains and investigate if the results of the group x time analysis would be any different.

To examine the unique contributions of neurocognitive ability, a 2 (time) X 2 (group) analysis of covariance (ANCOVA) was conducted on the identified relationships from the correlation matrix with the SC variables and all associated neurocognitive variables entered as covariates.

All reported interaction effects of group x time from the repeated measures analyses remained significant when controlling for neurocognitive influence. The overall results suggest that the improvements made by the TG were not affected significantly by the neurocognitive deficits of participants.

**Investigating the Influence of Moderator Factors**

We also investigated the influence of potential confounding variables on SC and FO at T1 & T2 including: clinical symptomatology, medication dosage, illness duration, age of diagnosis, employment, residential, attendance, education, gender,
age and diagnostic subtype in order to examine if any factors may have impacted on results.

Again, we firstly examined the influence of these moderator variables on results, by identifying any significant correlations between these and, SC and FO variables. Significant relationships were identified between AIHQ-H ($r = .51, p = .02$), AIHQ-AG ($r = .48, p = .03$), HT ($r = -.50, p = .03$), TASIT P2 ($r = -.47, p = .04$) and TASIT P3 ($r = .46, p = .04$) with gender. The AIHQ-H ($r = -.48, p = .03$) and SSPA ($r = .47, p = .04$) had significant associations with the subjects’ place of residence.

Given these findings, all of these associations were subjected to further analysis. Additionally, the correlation between the MANSA and gender approached significance ($r = -.44, p = .053$) so was also included in further analysis.

2 (time) X 2 (group) ANCOVAs were conducted on the social cognitive variables with aforementioned moderator variables individually analysed as covariates. All of the interaction effects for group x time remained significant when controlling for these moderator variables. This suggests that the improvements made by the treatment group remained significant despite controlling for these moderator variables.

2 (time) X 2 (group) ANCOVAs were also conducted on the functional outcome variables with the identified moderator variables entered as covariates. The interaction effect on the PWI remained non-significant, therefore controlling for gender on the PWI across time did not change the result we obtained earlier. However, the time X group effect on the MANSA, which was previously insignificant, reached statistical significance when gender was entered as a covariate,
Wilks’ Lambda = .78, $F_{(1,18)} = 4.69$, $p = .045$, $r = .22$. This result, represented in Figure 13 suggests that gender may have had some influence on the effectiveness of the intervention and will be considered further in the discussion section.

*Figure 13. MANSA – Relationship Between Gender and MANSA Results*
Discussion

Overview

The purpose of Study 1 was to evaluate the post-treatment outcomes of a pilot-treatment program, GIST, a social cognitive remediation initiative, designed to improve the social cognitive ability of adults diagnosed with schizophrenia. The treatment program is a multi-modal, clinical model of psychosocial training guided by social cognitive theory, which targets social cognitive domains and utilises an interactive group approach strongly facilitated by the provision of feedback and repetition.

Of particular importance for this study was to determine whether or not any post-treatment changes in social cognitive ability translated into changes in social functioning and to a lesser extent, quality of life. The sample for the current study comprised of adult outpatients with schizophrenia who were consumers of various community mental health services. Comparison of the TG to TAUG indicated that those who completed the GIST program demonstrated significant improvements across the board on social cognitive domains.

These positive results did not however translate into significant improvement on all indicators of functional outcome. Those who completed the GIST program demonstrated significant improvement on a task of social performance. Overall, the results of the post-treatment evaluation provided preliminary support for the pilot treatment program in improving social cognitive ability and social performance.
Social Cognition

It was hypothesized that post-treatment improvements would be produced in all social cognitive domains of participants completing the treatment program (hypothesis two). To test this hypothesis the means of all social cognitive variables were compared pre-test and post-test against the TAUG. Results provided strong support for this hypothesis and each social cognitive domain and relevant measures will be discussed separately.

Emotion Recognition

As anticipated, emotion recognition ability, as measured by performance on the DANVA, significantly improved for those participating in the treatment program compared to the TAUG. The pre-post differences revealed in this analysis replicate similar findings in previously reported research implementing variations of social cognitive training (Frommann et al., 2003; Roncone et al., 2004; Wolwer et al., 2005; Combs et al., 2007; Horan et al., Roberts & Penn, 2009; Wolwer & Frommann, 2011).

The second measure of emotion recognition (ER) was Part one of the TASIT, which also examined pre-test and post-test, and similarly results revealed that the TG significantly improved over time. Whilst this result is also consistent with aforementioned research, which aimed to improve emotion recognition with social cognitive training, this study to our knowledge is the first to utilise the TASIT Part one as an ER measure and conduct a social cognitive intervention. This measure
comprises video footage of a series of scenarios with one or two actors portraying realistic social situations and the task of the participant is to identify the emotion expressed by the character. The value in this instrument lies in the naturalistic format, as it employs dynamic stimuli rather than the still images of the DANVA. Furthermore, the complexities and subtleties of emotion expression, such as tone of voice, facial expression and body language can be captured in this type of format. Another strength of the TASIT is that it is a measure of generalization because it utilises audio and visual cues that make it a more realistic task for evaluating emotion recognition ability. The TASIT also has a range of emotions not measured in the DANVA that require a greater understanding of emotions, including revulsion, surprise and anxiety. It also allows for analysis of neutral expressions. For these reasons, and that the improved performance on the TASIT was similar to that found on the DANVA, the TASIT (Part One) shows potential as a useful tool to measure emotion recognition in future research.

**Attributional Style**

In the current study, assessment of attributional style was restricted to only one measure (this was the only construct that was not assessed with multiple measures). However, the AIHQ-A does provide separate scores for hostile attributional bias, blame bias and aggressive bias and therefore provides different levels of information pertaining to this construct. The treatment group effects extended to produce reductions in hostility, blame and aggression of those who completed the GIST program. The significant reductions in all three AIHQ-A
domains post-treatment again provide support for our hypothesis and these results are consistent with past research (Combs et al., 2007).

The results for the current study are promising as improvement was found in all three areas of attributional style measured by the AIHQ-A following the SC intervention. These findings provide preliminary support that the participants who completed the treatment program were more likely, than they were at baseline, to make more informed decisions and generate more appropriate causal explanations about ambiguous situations presented to them (Combs et al., 2007).

The sample was found to have attributional bias scores that were comparable to norms derived from a population of healthy college students (i.e. between -.31 to .65 standard deviations for all three AIHQ domains). These results therefore suggest a floor effect such that the participants of both groups actually demonstrated less attributional bias than the healthy sample. This floor effect may be explained by several factors. The task involves the examiner directly asking the participant for responses to questions about social situations that they are imagining happening to them. The task therefore requires a certain amount of insight into one’s typical reactions and drawing on past experiences. The extant literature shows that people with schizophrenia have difficulties in these two areas, memory (Aleman, Hijman, de Haan & Kahn, 1999) and insight (Jablensky et. al., 1992; Amador et. al., 1994) and this suggests that the accuracy of their responses in reply to what they might do, how they may feel, and drawing on past memories of similar situations, may be questionable. If the participants cannot reflect and predict accurately in answering these questions, then perhaps the responses are not truly indicative of their level of attributional bias and are therefore masking any AS deficits that are there.
Another factor may be that the participants are reporting in a favourable fashion to engage with the examiner, and paint a better picture of them as a person (i.e. social desirability bias). For instance, the nature of the questions (e.g. what was the reason for that? What would you do about it?) is quite probing, and it would not be unreasonable for the participant to feel pressured when answering if they were overly self-conscious. The tendency to give a response that provides a favourable impression of them self may also be influenced by the social isolation many of these people experience. The supportive, non-judgmental, close attention given to the participant during the assessment process may create an environment and experience that a person lacking social connectivity with others may value, and therefore wish to preserve by providing answers that reflect well on their personality. It may be more beneficial to have the participant’s self-report responses to the task, so that direct questioning is avoided. This may reduce the perceived pressure and self-enhancement bias experienced by participants.

A final reason may be that the participants were emotionally detached when responding to questions, which may be due to a lack of assertiveness, or a pattern of passive behaviour and attitude that has been associated with people with schizophrenia (Rector, Beck, & Stolar, 2005). These problems of passivity and engagement would be difficult to resolve in terms of modifying the assessment task, but perhaps this suggests another valuable target of intervention in the treatment of schizophrenia, assertiveness training.

Considering the potential reasons for baseline bias in the normative range, participant responses on the attributional bias task should be treated with caution. The significant improvements in attributional bias scores that were achieved by the treatment group in comparison to the control group may be explained by these
individual factors (e.g. social desirability, lack of insight, etc), however it is also possible that the strength of the intervention contributed to this improvement.

Considering that improvement in AS in similar studies has been relatively rare, it may be that a characteristic of the GIST intervention was responsible for the promising results of this study. In particular, (as mentioned in Chapter 7, Method) the incorporation of components of the Metacognitive Training for Patients with Schizophrenia (MCT) (Moritz & Woodward, 2007) may be influential in explaining this improvement in AS. For instance, a main focus of this modality of training encompasses multiple tasks that target cognitive biases and distortions of those with schizophrenia, concepts closely associated with attributional bias.

**Theory of Mind**

The performance of the treatment group on the Hinting Task variable also improved significantly following participation in the treatment program, which again is consistent with prior research (Roncone et al., 2004; Penn et al., 2005; Choi & Kwon, 2006; Combs et al, 2006). Similarly, TG participants improved their performance on the TASIT Part’s 2 & 3 variables indicating a significant increase in their ability to infer the intentions and meaning of others. These results also are consistent with prior research targeting ToM improvement through social cognitive training (Roberts & Penn, 2009; Mazza et al., 2010). The results are encouraging but there may be questions raised as to the effective generalization of these ToM improvements. For instance, when participants encounter “real-life” social situations, rather than two-dimensional, artificial stimuli (in testing and training), they are likely to be in some way emotionally involved and there is a need to be able to regulate
one’s own emotional response to effectively empathise with another. The lack of emotional arousal experienced by the participant is something that has not been simulated or reproduced in either the outcome measures or in the training stimulus utilised.

**Functional Outcome**

It was hypothesized that post-treatment improvements would be produced in all functional outcome (FO) domains of participants completing the treatment program (hypothesis one). To test this hypothesis the means of all FO variables were compared pre-test and post-test against the TAUG. As discussed in the method section, functional outcome (FO) was divided into two sub-categories, Social Functioning (SF) and Quality of Life (QoL). Results were mixed, and provided some preliminary support for this hypothesis, and within this section, each domain and relevant measures will be discussed separately.

**Social Functioning**

Improvement in ratings of social functioning (SF) was hypothesized as a result of participation in the treatment program. To test this hypothesis, mean scores for two variables, the SFS and SSPA scales, were compared at pre-treatment and post-treatment. Results were mixed, with participants showing trend level improvements in levels of SF on the SFS at post-treatment, compared to baseline, but these were not statistically significant. With reference to the existing literature, these findings were not consistent with previous research, which found significant
improvement on the SFS following SC intervention (Combs et al., 2007). However this study by Combs et al., 2007 only reported two subscales of the SFS and did not provide total SFS scores.

To further scrutinise this result, an examination of the frequency distributions on this measure was conducted. The standardised mean on the total SFS score at baseline for all participants was actually 1.74 standard deviations above normative data. Only four of the twenty participants reported a SFS score < 0.66 standard deviations below normative scores from a non-schizophrenia population. This indicates that the 80% of the sample reported baseline SFS scores equal to or above a normative population, which suggests that the non-significant impact of the GIST program on SFS may be due to ceiling effects on this measure.

The SFS has traditionally been the most commonly utilised measure of SF in the body of literature on SC intervention amongst schizophrenia populations. However, the SFS is arguably more useful in capturing ensuing changes that eventuate from smaller improvements over time, for example, a larger social network, or new habits of social behaviour (Burns & Patrick, 2007). In other words, the SFS does not seem to be sensitive to the kinds of micro changes that we might expect to see as the most proximal result of social cognitive training. Many of the participants in this study have lived with schizophrenia long-term and have severe handicaps resistant to immediate change. The SFS is arguably insensitive to small changes in behaviour and therefore not necessarily adequate for use in relatively short-term studies such as this (Burns & Patrick, 2007).

The literature has yet to identify ‘gold standard’ functional outcome scales when studying people with schizophrenia (Mausbach et al., 2009). Unique to this
study is the utilization of multiple measures for both social functioning and quality of life in an attempt to more effectively capture any changes in these inherently eclectic domains.

The SSPA was chosen to evaluate SF because it is a performance based rather than self-report measure. The post-treatment results on the SSPA revealed rather contrasting findings compared to the SFS results, which were most encouraging. Following the intervention, TG participants demonstrated significant improvements on this social performance task, which were similar to pre-post differences found in past social cognitive training research (Roberts & Penn, 2009).

This is one of the most encouraging results of the study in that this suggests that social functioning can be improved indirectly by targeting social cognitive ability. This result provides preliminary ratification for the underlying theory of this treatment model and importantly suggests that the effects of the GIST program may generalize to daily social behaviour. In considering why there were significant changes found on the SSPA and not the SFS, there may be several reasons for this, (1) as mentioned, the SFS is more suited to detecting long-term changes in SF that take time to take effect, (2) the SFS is informant-reported and therefore relies on the participant to accurately and reliably report their circumstances, and is therefore susceptible to bias and self-presentation effects, and (3) the SSPA is a behavioural, performance based measure which arguably makes it more ecologically valid and more proximal to the kinds of things that social cognitive training is targeting in comparison to the SFS. The small differences which occur at the level of interpersonal interaction are likely easier to capture in this behavioural task.
Whilst encouraging, these results are tempered by the fact that all participants continued to perform at least one standard deviation level below the normative population on this measure. This indicates that although improvements were demonstrated, participant’s social skill performance was well below normal functioning. These findings lend support to the notion that social functioning improvements are only likely to be marginal following social cognitive training.

**Quality of Life**

There were two self-report measures utilised in this study to assess ratings for quality of life (QoL) of the participants, the Manchester Short Assessment of QoL (MANSA) and the Personal Wellbeing Index (PWI). From the statistical analysis, there were no significant differences found for the TG pretest to posttest on both of these measures suggesting that GIST participation had no significant effect on how QoL was rated. It maybe that the QoL measures are similar to the SFS in that they are perhaps more useful in capturing ensuing changes that eventuate from smaller improvements over time, i.e. the MANSA and PWI may be more suited to detecting long-term changes in QoL which take time to take effect. The reliability of self-report data about quality of life from people in this cohort may also be questionable given common insight, cognitive and emotional deficits. The validity and problematic issues surrounding self-report data in this population is considered in further detail in the general discussion section. These results did not replicate findings the only social cognitive intervention study with a schizophrenia population that has utilised a QoL measure (Tas & Brune, 2012), which reported significant improvement in QoL for participants of its remediative program.
Gender Effect on Quality of Life

The effects of gender on the results was explored diligently and revealed that when gender was entered as a covariate in a time x group ANOVA for the MANSA, the interaction effect which was previously not significant, became significant. This result could be explained by the higher levels of quality of life self-reported by females compared to males. This pattern is not unexpected as it is commonly reported in the extant literature that levels of social dysfunction is greater in males than females (Angermeyer, Kühn & Goldstein, 1990; Usall et. al., 2007). There were no effects for gender on any other variables identified in the analysis.

Neurocognition

In relation to hypotheses three, there were no significant differences from pretest to posttest on any measure of neurocognitive ability (LNS, LM and FAS). This result was anticipated given that these abilities were not the focus of the intervention. However, main effects for time were found for LM and FAS indicating that all participants, regardless of group allocation, showed improvement on these tasks from T1 to T2. These main effect results are likely to be a consequence of practice effects. Both Logical Memory and verbal fluency have been shown to be susceptible to this influence when measured repeatedly without alternate forms (Cunje et. al., 2007; Schnabel, 2012). To reduce these practice effects, alternate forms to measure these domains could be utilised. The fact that both groups were similar in terms of the gains that we attribute to the practice effects make the
evaluation of the results of the neurocognitive domains more comparable and representative.

**Strengths and Limitations of the Current Study**

There are number of both strengths and limitations to the current study, which perhaps reflects the emerging and developing nature of this type of intervention with this cohort.

A strength of the current study is that the sample was comprised of outpatients from community health settings. The social cognitive and social functioning deficits in people with schizophrenia remain following acute phases of the illness, and by recruiting outpatients, where individual symptoms are less severe and more stable, the effects of a program are likely to be more telling and more meaningful to researchers. In addition, the sample comprised an even cross-section of males and females, allowing for a better represented sample in terms of gender than most previous social cognitive interventions.

A further strength of the study is the use of multiple assessment measures for various domains of interest. We chose to utilise multiple measures for ToM, ER and SF because of the poor psychometric properties of many tasks measuring these domains amongst schizophrenia populations, and therefore by using two measures we may enhance construct validity and increase reliability by reducing measurement error. By using multiple measures, we also increased the probability of finding meaningful information about the construct we were interested in because several measures are more likely to adequately sample the types of things that participants
should know and be able to do in the domain being measured. The results therefore, which found that participants of the treatment group made significant gains on multiple measures of SC domains provides the researchers with greater confidence that the improvements made can be attributed to the actual abilities we were aiming to improve.

Another strength in terms of the assessment tasks of this study, was that not only multiple tasks were utilised, but also that the alternative measures of each domain contributed *unique* information about the ability being measured in different ways. As already discussed, the TASIT measured a wider range of emotions and different cue formats, whilst the SSPA measured performance in comparison to the self-report SFS, and measured observable differences rather than longer term changes in social functioning.

This was the first social cognitive training study to date, which has found significant improvement in *all* social cognitive domains and at least one SF measure for participants completing the intervention. Whilst this is a pilot study, these results represent a real endorsement of the potential that this kind of intervention has.

The study also had several limitations. The major limitation was the small sample size, which directly affects statistical power. With small sample size comes limited statistical power to detect anything but moderate to large effect sizes, as is the case in this study. This suggests that improvements on domains that did not show significant change following the intervention (i.e. social functioning on SFS and quality of life) may have not been detected due to these limitations.

An obvious but important limitation of this study is the lack of data on symptomatology obtained for approximately half of the control participants at
baseline. This is a regrettable omission from the dataset and was due to time constraints and lack of resources imposed on the researcher. This limitation meant that limited evaluation and discussion of the influence of symptom severity was included in this study. It also means that the symptom severity of each group cannot be assumed to be equal, therefore one could not argue that the results of the study are affected by this potential bias. Having said this, the samples were derived from the same populations, and all other characteristics of the two groups do not differ significantly. It is also regrettable that PANSS ratings were not compiled at post-treatment and follow-up to explore if there was any effect on symptomatology as a result of the treatment program.

This study should be considered as a pilot or feasibility study. In pilot testing, there are generally two stages, the first of which is to conduct open clinical trials, before then conducting randomised controlled trials. This intervention trial is in the initial stage and therefore a cautious approach to interpretation should be followed. Nevertheless, the results from this study can expand on the increasing research on social cognitive training for this cohort.

The quasi-experimental design of the study limits the generalization of the findings and the lack of randomization may dent the confidence in assignment of treatment effects.

One final limitation of this study is that for some part, the examiner assessing the participant’s pre and posttest was also the facilitator of the intervention. This arrangement can be seen as a compromising to results in that a rapport between participant and facilitator may have had an effect on assessment results. It could be argued that participants, perhaps tending to a kind of social desirability bias,
responded in a manner that would be viewed favourably by the researcher. This was partly addressed by testing inter-rater reliability on these measures, but this cannot rule out the potential for this bias on these results.

**Future Directions for Research**

The encouraging findings of the current study provide impetus for further trials of this and similar interventions. The practice of social cognitive training has received considerable attention in recent years, and the design and delivery has continued to evolve. The fact that many of these programs have utilised different tasks and methods in order to deliver the training shows that the scope of interventions used within the program is broad which makes this type of training adaptable and suitable to the heterogeneous population who suffer from schizophrenia, whether they be inpatients or outpatients, male or female, 18 or 50 years of age, and whether they are American, Spanish or Australian.

**Self-Report vs. Clinician Rated Measures**

The findings from this project suggest that amongst the various outcome measures there are significant differences in their ability to detect changes over time. Subtle differences in the actual domains that they are measuring has been discussed earlier in this project (Discussion section – Study one: Functional Outcome), e.g. that the social functioning scale (SFS) perhaps lends itself to detecting changes over a longer period of time than the social skills performance assessment (SSPA). It is also
worth discussing the variable format of outcome measures utilised in this study and what impact that could have had on results, more specifically, the argument of self-report versus clinician-rated measures demands attention. In this project, whilst the vast majority of SC measures were objectively assessed, all of the functional outcome measures relied on self-report, except for the SSPA, which was clinician-rated.

This in hindsight perhaps provides concerns in relation to the methodology of measuring functional outcome over time. Numerous studies have identified that self-reports of everyday functioning by those with schizophrenia are often incongruent with ratings obtained objectively and from other people (McKibbin et al., 2004, Patterson et al., 1997, Schaub et al., 2012). There is a belief that psychopathology can skew personal judgments of affective, cognitive and social states (Atkinson, Zibin & Chuang, 1997), which if the case may distort results and so such influences need to be considered. However, Bell and colleagues (2007) directly explored whether self-report measures instruments were valid for schizophrenia patients with poor insight. They found that in spite of demonstrated poor insight levels, self-report measures were valid for most personality and symptom domains.

**Social Knowledge**

The majority of SC interventions, including this project has utilised three of the five SC domains recommended by the National Institute of Mental Health (NIMH), i.e. Theory of Mind, Attributional Style and Emotional Processing. *Social knowledge* was identified in a NIMH meeting in 2006 as one of five domains that defined social cognition in schizophrenia research (Green et al., 2008). Social
knowledge has not been incorporated into the training presented here, and the
majority of other SC interventions to date have also not incorporated this domain.
The researchers of this GIST program chose to utilise the same three SC domains,
which were consistently used in the SC training program with the best evidence to
date, the SCIT program. Social knowledge can also be referred to as social schemas,
and consists of the understanding of the goals, rules, unspoken roles and the social
behaviours that are appropriate and expected in the social world. On reflection, we
cannot fully expect participants of past SC training to effectively apply the SC cues
and skills taught without providing training on social knowledge. The method
employed so far in SC training research seems to be paradoxical. If one does not
have the knowledge and awareness of what is expected and is acceptable in social
situations, how can one be an effective social being? For these reasons, it could be
argued that social knowledge is designated as the initial step in future SC training.

Conclusion

This study provides preliminary evidence indicating that this social cognitive
program contributes to post-treatment improvement in SC ability and SF for people
with schizophrenia accessing community health services. In addition to this, the
study has strengthened the case for targeting SC as a mediator to improve social
functioning. The findings overall of this study provide a strong impetus for further
research in the area of SC and schizophrenia however the pilot nature of this study
requires that the results be treated cautiously. As such there is scope for further
improvement to strengthen the effectiveness of this intervention.
Chapter 8

Study Two

Longitudinal Efficacy Evaluation of Social Cognitive Training

Overview of Study Two

Fundamentally, the best indicator of treatment effectiveness is to assess change across time. That is, the main goal of any intervention is to see sustainable long-term changes in favour of short-term, transient gains. Longitudinal investigation into the enduring effects of social cognitive training for people with schizophrenia has been limited thus far. The inclusion of longitudinal analysis in this area of research could be quite telling, considering that even if targeting social cognition skills does lead to improved social functioning, gains are not likely to develop or be recognised for some time after the training is conducted due to the very nature of this functional domain. For instance, if we train someone to more accurately recognise emotions or improve one’s ability to empathise with another, surely that person will need time to implement these skills in their social environment before that person will be able to notice any improvement to their social life and social aptitude. In other words, one must need time to put these newly learnt SC skills into practice in order to judge whether or not their ability to function socially has improved or not.
Another consequence of limited longitudinal research in this area is that it is also largely unclear how durable these trained SC skills are. The high-prevalence of neurocognitive deficits demonstrated in the schizophrenia population conceivably casts some doubt on the enduring sustainability of any gains made in training of various faculties. If SC gains were shown to be sustainable and led to better long-term social functioning, than this would provide further support and impetus for a continued focus on SC as a justifiable target of psychosocial rehabilitation for people with schizophrenia.

For all of these reasons, the current study aimed to investigate the stability of the SC skills learnt and changes in functional outcome by participants following completion of the social cognitive intervention.

**Experimental Aims and Hypotheses**

On the basis of the rationale outlined in this introductory section, the following hypotheses for the current study have been formulated:

4. It is predicted that at the six-month follow-up period, improvements made by the treatment group at post-treatment, on all social cognitive domains would be sustained.

5. It is also predicted that at the follow-up period that improvements demonstrated and reported by the TG, post-treatment, on all functional outcome domains would be sustained.
6 It is also predicted that the TG would not demonstrate any significant improvement at the follow-up period on any measure of neurocognitive ability

**Method**

**Sample Characteristics**

The sample for this longitudinal study consisted of all twenty participants who took part in the original study, of which 13 were males and 7 females. Of the twenty participants in total, 13 were diagnosed with schizophrenia and 7 with schizoaffective disorder. At the time of the commencement of the study, the participants ranged in ages from 22-57 years old (M = 34.8 yo).

**Measures and Procedures**

At a pre-determined period, six months following the post-intervention assessment of Study 1 (i.e. Time 2), all participants of that study were invited to be assessed again. This assessment time point will now be referred to as Time 3 (T3).

The measures and procedures utilised in assessment for T3 were identical to those at Time 1, (reported in Study 1) except that no SCID-PANSS or demographic information was collected. In brief, consent was obtained, and the clinical assessments were conducted through individual assessments of 60-90 minutes duration. Measures of emotion recognition included The Diagnostic Analysis of Nonverbal Accuracy-2 (DANVA-2-AF) and Part One of The Awareness of Social Inference Test (TASIT). Parts two and three of the TASIT and The Hinting Task
were utilised to measure theory of mind. The Ambiguous Intentions Hostility Questionnaire - Ambiguous Items (AIHQ-A) was utilised to measure attributional style. Measures of social functioning included The Social Functioning Scale (SFS) and The Social Skills Performance Assessment (SSPA), whilst quality of life was measured by the Personal Wellbeing Index (PWI) and the Manchester Short Assessment of Quality of Life (MANSA). Again the same measures from Study One were utilised to assess non-social cognitive abilities including: verbal episodic memory - The Logical Memory Task (LM); semantic memory and divergent thinking - Verbal Fluency Task (FAS) and finally attention and working memory - Letter Number Sequencing Task (LNS).

Results

Preliminary Analyses

Data were analysed using SPSS 19.0.0 statistical software package. Preceding inferential statistical analysis, data screening processes were completed, including an appraisal of the principle assumptions underlying repeated measures ANOVA. The data screening processes were applied to a total of 20 cases (N=20), with variables examined for data entry accuracy, missing data, and violations of ANOVA assumptions. Following the data screening analysis, there were no missing data to consider and no violations of assumptions identified in the data for this study.
Introduction to the Analyses

To test the hypotheses predicted a-priori for this study, mixed-model repeated measures ANOVAs were performed to examine differences between the treatment group (TG) and the treatment as usual group (TAUG) on selected measures at three time periods: pre-treatment (T1); post-treatment (T2); and follow-up (T3). The means and standard deviations across time for all variables of interest are presented in Table 4. If the time factor across dependent variables was statistically significant in the ANOVA test, (i.e. a significant interaction effect between group and time was found), then Bonferroni pair wise comparisons were computed to identify specific differences between time periods. As in study one, for all ANOVA analyses reported, critical assumptions, including: Box’s M; Assumption of sphericity; and homogeneity of variance (Levenes’ Test) were non-significant unless specified.
Table 4

Clinical Measures and Outcomes by Treatment Condition Over Time

<table>
<thead>
<tr>
<th></th>
<th>Intervention (TG)</th>
<th>Treatment as Usual (TAUG)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 10)</td>
<td>(N = 10)</td>
</tr>
<tr>
<td></td>
<td>Time 1 (Base)</td>
<td>Time 2 (Post)</td>
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<tr>
<td></td>
<td>Time 1 (Base)</td>
<td>Time 2 (Post)</td>
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<td></td>
<td>Time 1 (6 mth)</td>
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</tr>
<tr>
<td>Neurocognition</td>
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<tr>
<td>LNS</td>
<td>3.90 (.12)</td>
<td>4.00 (.125)</td>
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<tr>
<td></td>
<td>4.40 (.135)</td>
<td>3.80 (.79)</td>
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<td></td>
<td>4.40 (.135)</td>
<td>3.70 (.74)</td>
</tr>
<tr>
<td></td>
<td>4.50 (.85)</td>
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<tr>
<td>Verbal Fluency</td>
<td>27.60 (15.58)</td>
<td>29.60 (13.87)</td>
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<td></td>
<td>31.70 (15.51)</td>
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</tr>
<tr>
<td></td>
<td>29.20 (11.07)</td>
<td>30.90 (13.04)</td>
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<tr>
<td>Logical Memory</td>
<td>17.30 (8.21)</td>
<td>19.30 (7.45)</td>
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<tr>
<td></td>
<td>19.40 (7.20)</td>
<td>13.50 (6.06)</td>
</tr>
<tr>
<td></td>
<td>15.70 (5.87)</td>
<td>15.70 (5.74)</td>
</tr>
<tr>
<td>Social Cognition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hinting Task</td>
<td>14.60 (5.52)</td>
<td>16.80** (4.66)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17.30* (3.97)</td>
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<td></td>
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<tr>
<td></td>
<td>13.50 (4.28)</td>
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<tr>
<td>TASIT: Part 1</td>
<td>18.00 (5.52)</td>
<td>22.40* (2.63)</td>
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<td></td>
<td></td>
<td>21.60 (2.80)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16.40 (2.80)</td>
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<td></td>
<td></td>
<td>15.80 (2.82)</td>
</tr>
<tr>
<td></td>
<td>16.20 (2.29)</td>
<td></td>
</tr>
<tr>
<td>AIHQ-A: Hostility</td>
<td>2.00 (.63)</td>
<td>1.50** (.32)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.26** (.23)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.12 (.106)</td>
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<td></td>
<td></td>
<td>2.52 (.78)</td>
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<tr>
<td></td>
<td>2.60 (.65)</td>
<td></td>
</tr>
<tr>
<td>Blame</td>
<td>3.24 (.70)</td>
<td>2.34* (.63)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.14* (.49)</td>
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<tr>
<td></td>
<td></td>
<td>3.18 (.104)</td>
</tr>
<tr>
<td></td>
<td>3.18 (.88)</td>
<td></td>
</tr>
<tr>
<td>Aggression</td>
<td>1.54 (.42)</td>
<td>1.28* (.36)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.14** (.16)</td>
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<td>2.02 (.75)</td>
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<td></td>
<td>2.10 (.83)</td>
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</tr>
<tr>
<td></td>
<td>2.30 (.77)</td>
<td></td>
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<tr>
<td>TASIT: Part 2</td>
<td>38.80 (9.25)</td>
<td>47.70** (8.11)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>49.90** (8.25)</td>
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<tr>
<td></td>
<td></td>
<td>39.20 (9.20)</td>
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<td></td>
<td></td>
<td>37.30 (8.25)</td>
</tr>
<tr>
<td></td>
<td>39.00 (8.67)</td>
<td></td>
</tr>
<tr>
<td>TASIT: Part 3</td>
<td>40.90 (13.03)</td>
<td>46.10** (10.60)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45.20** (11.37)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>43.00 (10.00)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>42.50 (9.61)</td>
<td></td>
</tr>
<tr>
<td>DANVA</td>
<td>10.40 (3.50)</td>
<td>8.70* (3.20)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.30+ (2.58)</td>
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<td></td>
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<td>11.60 (1.58)</td>
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<td></td>
<td>11.90 (1.79)</td>
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<tr>
<td></td>
<td>11.40 (1.26)</td>
<td></td>
</tr>
<tr>
<td>Functional Outcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFS</td>
<td>124.90 (15.86)</td>
<td>134.60 (22.53)</td>
</tr>
<tr>
<td></td>
<td>138.70+ (16.81)</td>
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</tr>
<tr>
<td></td>
<td>126.90 (21.75)</td>
<td>125.60 (22.20)</td>
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<tr>
<td>SSPA</td>
<td>46.90 (10.65)</td>
<td>55.50** (12.77)</td>
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<td></td>
<td>55.10** (11.28)</td>
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<td></td>
<td>44.20 (13.56)</td>
<td>43.80 (12.28)</td>
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<tr>
<td>MANS A</td>
<td>4.37 (1.03)</td>
<td>4.68 (1.07)</td>
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<tr>
<td></td>
<td>4.87* (1.30)</td>
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</tr>
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<td></td>
<td>3.93 (1.14)</td>
<td>3.77 (1.44)</td>
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<tr>
<td>PWI</td>
<td>52.13 (13.58)</td>
<td>60.38 (17.16)</td>
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<td></td>
<td>61.50++ (14.52)</td>
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<tr>
<td></td>
<td>50.75 (24.76)</td>
<td>50.50 (21.64)</td>
</tr>
</tbody>
</table>

Note: Standard deviations appear in brackets. Results from mixed model RM ANOVAs. All statistical tests are 2-tailed, significance level of p < .05. AIHQ-A: The Ambiguous Intentions Hostility Questionnaire – Ambiguous Items; TASIT: The Awareness of Social Inference Test; DANVA: Diagnostic Analysis of Nonverbal Accuracy; LNS: Letter Number Sequencing; SFS: Social Functioning Scale; SSPA: Social Skills Performance Assessment; MANS A: Manchester Short Assessment of quality of life; PWI: Personal Wellbeing Index.

Significant time x group interaction at *p < 0.05, **p < 0.01. Significant main effect at +p < 0.05, ++p < 0.01
Hypothesis Testing

Investigating Hypothesis One

The first hypothesis of study two predicted an analysis of differences between treatment and control groups post-intervention would reveal that any improvements found in functional outcome (FO) from T1 to T2 would be sustained in by participants in the treatment group in comparison to the treatment as usual group (TAUG). Functional Outcome (FO) comprised of two sub-categories, social functioning (SF) & quality of life (QoL).

Mixed repeated measures ANOVAs were performed on the two SF measures, the Social Functioning Scale (SFS) and the Social Skills Performance Assessment (SSPA) tasks, as well as two QoL measures, the Personal Wellbeing Index (PWI) and the Manchester Short Assessment of QoL (MANSA). All analyses were focused on comparing the means of treatment and control groups’ across the three time periods on these tasks.

ANOVA’s revealed a significant group x time interaction effect for the SSPA was present, consistent with Study 1, Wilks’ Lambda = .44, $F_{(2,36)} = 11.04, p = .001$, $r = .75$. As reflected in Figure 14, the treatment group improved significantly more than the TAUG at T2, and with the inclusion of T3 we have seen these changes sustained. To identify the pattern of change, Bonferroni corrected post-hoc analysis was utilised. Specifically we looked at the significance of each pair wise comparison between all three-time periods. Examination of this analysis revealed that revealed that performance on the SSPA by those in the TG differed significantly from T1 to T2 ($p = .03$), and T1 to T3 ($p = .004$), but performance from T2 to T3 did not significantly differ ($p > 1.0$) indicating that the improvements were sustained.
In study 1, from T1 to T2, the predicted interaction effect of group x time on the SFS was non-significant, but the TG showed trend level improvement in comparison to the TAUG. In study 2, there was again no significant interaction found for group x time across Times 1, 2 and 3, Wilks’ Lambda = .71, $F(2,36) = 3.46$, $p = .056$, $r = .54$. The nature of this interaction was explored further, through a simple main effects analysis (by splitting the data file by group (TG and TAUG) and retesting the time effect with an ANOVA) for the treatment and control groups separately. This analysis revealed that participants of the TG significantly improved from T1 to T3 ($P = .04$) indicating that when changes on the SFS from T1 to T3 were combined, TG participants significantly improved from baseline. These changes over time on the SFS are represented in Figure 15.

*Figure 14. SSPA Group x Time Interaction Over Times 1, 2 and 3.*
ANOVA revealed a significant interaction effect over time on the MANSA, Wilks’ Lambda = .66, $F_{(2,36)} = 4.38, p = .03, r = .58$ (See Figure 16), indicating that the TG reported improvements to their QoL in comparison to the TAUG. However, simple main effects and post-hoc analysis revealed that both TG and TAUG participants failed to improve significantly on the MANSA over any time period.

**Figure 15.** SFS Group x Time Interaction Over Times 1, 2 and 3.

**Figure 16.** MANSA Group x Time Interaction Over Times 1, 2 and 3.
As seen in Figure 17, a repeated measures ANOVA found a non-significant group x time interaction effect for participants ratings on the PWI over time, Wilks’ Lambda = .78, $F_{(2,36)} = 2.38, p=.12, r = .47$. However, given the low observed power (.41) and that there was a substantial effect size (.22), it is possible that this result could be attributed to the small sample size. In light of this, simple main effects were again calculated. This analysis showed that the simple main effect for the TG, over the three time periods, was significant compared to the control group, Wilks’ Lambda = .27, $F_{(2,18)} = 10.99, p=.005, r = .85$. To explore the actual differences between the three time periods, post-hoc analysis was also conducted which revealed significant change for the TG only from T1 to T3 ($p=.02$). These results are similar to those reported for the SFS, in that there was no significant change in Study 1, but over a longer time period the ratings of QoL on the PWI were significantly improved for members of the TG compared to the TAUG.

![Figure 17. PWI Group x Time Interaction Over Times 1, 2 and 3.](image-url)
Investigating Hypothesis Two

Hypothesis two of Study Two predicted that participants in the treatment group would demonstrate significant improvements in all three domains of SC targeted in the intervention in comparison to the control group over three time periods. Recall that emotion recognition (ER) was assessed by two measures in the current study, the Awareness of Social Inference Test (TASIT) Part 1 and the Diagnostic Analysis of Nonverbal Accuracy-2, Adult Facial Expressions (DANVA-AF).

ANOVA revealed a non-significant interaction effect between groups and across time for the TASIT-Part 1 (See Figure 18), which was further explored to understand the specific patterns of change. Post-hoc analysis revealed that TG participants performed significantly better at T2 from baseline ($p=.025$) and a non-significant change from T2 to T3 which suggests that these improvements on the TASIT-Part 1 were sustained at follow up.

![TASIT - Part 1](image.png)

*Figure 18. TASIT – Part 1 Group x Time Interaction Over Times 1, 2 and 3.*
Repeated measures ANOVA found a non-significant group x time interaction effect for performance on the DANVA over time, Wilks’ Lambda = .73, $F_{(2,36)} = 3.21, p=.07, r = .52$ (See Figure 19). However, again, given the low observed power (.53) and that there was a substantial effect size (.52), it may be that a significant result was not identified due to the small sample size of the study. Therefore, post-hoc analysis was calculated which showed that the simple main effect for the treatment group over the three time periods was significant when compared to the control group, Wilks’ Lambda = .36, $F_{(2,18)} = 7.21, p=.02, r = .80$. The average DANVA score from T1 (M=-2.10, SD=1.41) to T2 (M=-1.45, SD=1.38) decreased, as did the average score from T2 (M=-1.45, SD=1.38) to T3 (M=-1.27, SD=.99).

Bonferroni corrected post hoc tests revealed that performance on the DANVA by those in the TG differed significantly from T1 to T2 ($p=.03$), and from T1 to T3 ($p=.02$). There was no significant difference found between T2 and T3, therefore the improvements were sustained at follow up. This suggests that participants improved performance in being able to recognise emotions from photographs of faces following the GIST program was sustained at follow up period.

![DANVA](image)

*Figure 19. DANVA Group x Time Interaction Over Times 1, 2 and 3.*
Attributional style was assessed by a single measure, the Ambiguous Intentions Hostility Questionnaire - Ambiguous Items (AIHQ-A), which has three subscales, hostility (AIHQ-H), blame (AIHQ-B) and aggression (AIHQ-AG), which were separately scored and examined under analysis.

Repeated measures ANOVA found a significant group x time interaction effect for the AIHQ-H, Wilks’ Lambda = .55, $F_{(2,36)} = 6.90$, $p = .006$, $r = .67$. Post-hoc analysis revealed a significant change in AIHQ-H ratings from T1 to T3 ($p = .04$), as represented in Figure 20, signifying that these changes were sustained.

![AIHQ-Hostility](image)

*Figure 20. AIHQ-H Group x Time Interaction Over Times 1, 2 and 3.*

ANOVA results calculated for the AIHQ-B revealed a significant group x time interaction effect, Wilks’ Lambda = .67, $F_{(2,36)} = 4.15$, $p = .03$, $r = .57$ and are represented in Figure 21. Post-hoc comparisons showed that these changes for the TG occurred from T1 to T2 ($p = .007$) and from T2 to T3 ($p = .001$), and with no
significant difference between T2 and T3 this suggests these improvements in attributional style for the TG were sustained at follow up.

Figure 21. AIHQ-B Group x Time Interaction Over Times 1, 2 and 3.

Likewise, Repeated measures ANOVA found a significant group x time interaction effect for the AIHQ-AG, Wilks’ Lambda = .54, $F_{(2,36)} = 7.23, p = .005, r = .68$. This result, represented in Figure 22, indicates that TG participants showed a reduction in the level of aggression in their responses to ambiguous situations following the intervention corresponding to a medium to large effect size.
Two separate measures, the Hinting Task and two components of the TASIT, part 2 and part 3 assessed theory of mind ability. A repeated measures ANOVA revealed a significant group x time interaction effect for the Hinting Task, Wilks’ Lambda = .59, $F_{(2,36)} = 5.85$, $p = .01$, $r = .64$. This result suggests that participants who completed the intervention improved considerably in their ability to infer the intentions of others in comparison with the TAUG over time. This improvement, corresponding to a moderate to large effect size, is reflected in Figure 23. Post hoc-analysis revealed significant improvements for the TG from T1 to T2 ($p=.03$) and from T1 to T3 ($p=.01$) with no significant change from T2 to T3 meaning that the changes were sustained.
Similarly, a repeated measures ANOVA revealed a significant group x time interaction effect for the TASIT Part 2, Wilks’ Lambda = .56, $F_{(2,36)} = 6.78$, $p = .007$, $r = .67$. This result shows that participants who completed the intervention improved considerably over time in their ability to infer meaning and intention from conversations and paralinguistic cues, which corresponded to a large effect size. This improvement is reflected in Figure 24. Post-hoc analysis revealed significant improvements for the TG from T1 to T2 ($p = .005$) and from T1 to T3 ($p = .02$) with no significant change from T2 to T3 meaning that the changes were sustained.
Figure 24. TASIT – Part 2 Group x Time Interaction Over Times 1, 2 and 3.

Likewise, as represented in Figure 25, repeated measures ANOVA revealed a significant group x time interaction effect for the TASIT Part 3, Wilks’ Lambda = .55, $F_{(2,36)} = 6.93, p = .006, r = .67$. Post-hoc analysis revealed significant improvements for the TG from T1 to T2 ($p = .01$) and from T1 to T3 ($p = .04$) with no significant change from T2 to T3 meaning that the changes were sustained.

Figure 25. TASIT – Part 3 Group x Time Interaction Over Times 1, 2 and 3.
Investigating Hypothesis Three

Hypothesis three predicted that neurocognitive (NC) ability would not improve as an effect of the intervention. No significant differences were found on NC measures (Letter Number Sequencing Task (LNS); Logical Memory Task (LM); Verbal Fluency Task (FAS)) when the groups were compared by mixed repeated ANOVA’s across group x time from pre-test to post-test. However, significant main effects for time were found for LMS, $F_{(1,18)} = 20.88, p = .000, r = .73$ and FAS, $F_{(1,18)} = 6.95, p = .02, r = .53$ indicating that all participants showed improvement on these measures from T1 to T2 regardless whether they participated in the treatment or not. These results may well be explained by practice effects and will be considered in the discussion section.

Discussion

Overview

The purpose of Study 2 was to evaluate the follow-up outcomes of a pilot-treatment program, a social cognitive remediation initiative. The program was designed to improve the social cognitive ability of adults diagnosed with schizophrenia. This study therefore adopted a longitudinal design to investigate the carry-over effects, if any, of the social cognitive intervention following a six-month interval.

Of particular importance for this study was to determine whether or not any post-treatment improvements in social cognitive ability, social functioning and quality of life were sustained. Overall, the longitudinal stability of functioning for
people with schizophrenia in these domains, following social cognitive remediation, is not well understood. The sample for Study 2 comprised of exactly the same adult outpatients with schizophrenia who were consumers of various community mental health services. In Study 1, a comparison of the treatment group to TAUG indicated that those who completed the GIST program demonstrated significant improvements across the board on social cognitive domains, and on one measure of social functioning. For Study 2, results revealed that treatment group participants, in comparison to the TAUG, at least maintained these improvements in the same domains. Additionally, treatment group participants showed enough improvement on another SF scale, and one QoL scale at follow-up for these changes to be considered significant from baseline. Overall, the results of the follow-up evaluation provided added preliminary support for the pilot treatment program, GIST, in improving social cognitive ability and social performance.

**Social Cognition**

It was hypothesized that at the six-month follow-up period, improvements made by the treatment group, post-treatment, on all social cognitive domains (hypothesis one) would be sustained. To test this hypothesis the means of all social cognitive variables were compared pre-test, post-test and follow-up, against the TAUG. Results provided strong support for this hypothesis and subsequently each social cognitive domain and relevant measures will be discussed separately.

**Emotion Recognition**

In Study 1, the treatment group improved significantly from pre to post treatment in their ability to identify emotions, as measured by performance on the
DANVA task. Although there was no significant interaction effect found in the longitudinal analysis of Study 2, improvements in emotion recognition (ER) made by the treatment group following participation in the GIST program were sustained at the six-month post-treatment follow-up. The findings that the treatment group sustained ER changes over this amount of time and performance had not significantly declined from the post-treatment period, are unprecedented in targeted social-cognitive training research. These results reflect past studies that have reported improvements in emotion recognition following SC training being maintained for one week (Combs et al., 2008), one month (Marsh et al., 2010) and Wolwer & Frommann (2009) found some evidence of affect recognition improvements being maintained after 4-6 weeks. Combs et al. 2009, reported that following SC training, schizophrenia participants scores on a measure of emotion recognition remained significantly higher than baseline performance, however these scores significantly declined from post-treatment to follow-up.

The second measure of ER that was utilised was part one of The Awareness of Social Inference Test (TASIT), and as described in Study 1, results revealed that the TG significantly improved following GIST participation. Although there was no significant interaction effect found in the longitudinal analysis of Study 2, the improvements made by the TG in accurately identifying emotions from video scenarios of social situations were sustained at follow-up. These results add weight to the potential use of the TASIT as a realistic and useful tool to measure ER in both the short and medium term in future research.
Attributional Style

As in Study 1, the current study’s assessment of attributional style was restricted to one measure, the Ambiguous Intentions Hostility Questionnaire - Ambiguous Items (AIHQ-A), but as discussed previously, this task does provide three separate scores for hostile attributional bias, blame bias and aggressive bias. The treatment group effects, reported in Study 1, extended to produce reductions in hostility, blame and aggression of those who completed the GIST program. The results for the current study are novel and promising as improvements made by the TG in all three sub-domains of attributional style were sustained at follow-up. These findings provide preliminary support that the participants who completed the GIST program were more likely than the TAUG, to make more informed decisions and generate more appropriate causal explanations about ambiguous situations presented to them. As far as the writer is aware this is the first study in this area of research to include attributional style as an outcome measure in a longitudinal design.

Theory of Mind

As reported in Study 1, the performance of the TG on the Hinting Task following participation in GIST, improved significantly in comparison to the TAUG. As anticipated, these gains were retained at the follow-up period, six-months after the intervention. Similarly, TG participants maintained their improved performance on the TASIT Part’s 2 & 3 at follow-up, indicating a sustained improved ability to infer the intentions and meaning of others in comparison to the TAG group. To the writer’s best knowledge, this is the first study in this area of research to demonstrate a retention of gains in ToM performance at a six-month follow up period.
**Functional Outcome**

It was hypothesized that at the six-month follow-up period, improvements made by the TG, post-treatment, on all functional outcome domains (hypothesis two) would be sustained. To test this hypothesis the means of all functional outcome variables were compared pre-test, post-test and follow-up, against the TAUG. As in Study 1, functional outcome (FO) was separated into two categories, Social Functioning (SF) and Quality of Life (QoL). Results were mixed, but provided strong support for this hypothesis, and within this section, each domain and relevant measures will be discussed separately.

**Social Functioning**

As discussed in Study 1, the TG failed to show significant improvements on the Social Functioning Scale (SFS) post-treatment in comparison to the TAUG. However if you recall, there were trend level improvements for the TG found. The longitudinal analysis again revealed a non-significant interaction effect for the SFS over time. Interestingly, analysis of the mean differences for the TG at follow-up revealed that there was indeed a significant improvement in self-reported SF levels by TG participants from baseline to the follow-up period. Recall in Study I, a critical discussion about the ability of the SFS to detect short-term changes in SF. The results for this current study, endorse this argument, and suggest that some changes to SF may require a longer time to manifest, and that the SFS may be more useful in capturing ensuing SF changes that eventuate from smaller improvements over time.
With reference to the existing literature, these encouraging results were not consistent with previous research, which failed to find sustained significant improvement on the SFS following SC intervention (Combs et al., 2009). These significant SF improvements were realised despite 80% of the sample reporting baseline SFS scores equal to or above a normative population.

The Social Skills Performance Assessment (SSPA) was chosen to evaluate SF because it is a performance based rather than self-report measure. The post-treatment results from Study 1, on the SSPA revealed that following the intervention, TG participants demonstrated significant improvements on this social performance task. As predicted, these improvements were also sustained at the follow-up period providing further support for our hypothesis.

Quality of Life

In Study 1, on both quality of life (QoL) measures, the Manchester Short Assessment of QoL (MANSA) and the Personal Wellbeing Index (PWI), there were no significant differences found for the TG pretest to posttest, suggesting that participation in the GIST program had no significant effect on how QoL was rated. However, for the current longitudinal study, the results were mixed but quite different to Study 1. For the MANSA, the TG showed a steady improvement from baseline to the follow-up period, however there was no significant difference in means between the TG over time in comparison to the TAUG. Given the trend level improvement of the TG compared to the TAUG, the lack of statistical significance that was found may be due to the low statistical power of the study.
Interestingly, as was reported with the SFS, there were trend level improvements on PWI scores, without being statistically significant, following participation in the GIST program by the TG (i.e. from T1 to T2), but the increase in scores again at T3, meant that the self-reported improvements in QoL from baseline to follow-up were significant. This mirrors what was seen in the SFS and therefore provides impetus for the argument that the GIST program not only produces short-term benefits but also longer sustainable changes that may only become apparent after a length of time. Recall from Study 1 the limited inclusion of QoL outcome measures in previous social cognitive interventions, and to the writer’s best knowledge this is the first study to explore effects on QoL in a longitudinal design in this area.

The longitudinal improvement in subjective wellbeing reported by participants of the TG may be explained by a shift in participant’s sense of self and ability to understand their social world. Subjective wellbeing (SWB) has been described as a positive and stable mood that sits within a genetically determined limited range (Cummins, 2010). One’s SWB is said to remain within this set-point range because it is controlled by an active management system referred to as Subjective Wellbeing Homeostasis. In effect this theory posits that our mood is generally predictable and relatively consistent and there are certain external and internal buffers that ‘protect’ our mood from oscillating below or above our personalized range of SWB. It is proposed that this Homeostatically Protected Mood (Cummins, 2010) can be compromised when one experiences challenges of an overwhelming nature. As a result, our affective experience swings towards the dominant positive or negative emotion and our SWB is displaced from its normal
range. It has been argued that when homeostasis fails and this condition is chronic that this is when people experience depression.

As reported in the results section of Study 1, the average SWB score rated by participants in this study at baseline or T1 was 51, which equates to 1.94 standard deviations below the means of respective normative data. The average SWB rated by the Australian population is 75, which suggests it is normal to feel positive about oneself, whilst only 4.4% of people scored 50 or below (Cummins, 2010). These results are consistent with this homeostasis theory in that significant negative challenges to the Homeostatically Protected Mood will diminish SWB ratings given the well-reported challenges that those with schizophrenia face on a daily basis over a sustained period of time.

One of the external buffers proposed to effectively manage Homeostatically Protected Mood is the support and intimacy that one acquires from relationships with others. Treatment group participants improved SWB could be related to improvements in quality of relationships as a result of developed social cognitive abilities. It is also proposed that internal buffers of Homeostatically Protected Mood include adaptive cognitive appraisals, which preserve self-esteem and therefore moderate the influence of stressors on Homeostatically Protected Mood (Cummins, 2010). Elements of the GIST program such as attributional bias and cognitive reappraisal of social cues foster cognitions, which can potentially restructure one’s reality and likely reduce the negative impact of social experiences that have previously been unsuccessful and dispiriting. For example, if one has experienced a negative attitude from someone in a social interaction, rather than thinking that they were somehow to blame for the negative outcome, they may think to themselves, “Perhaps that person is having a bad day today and it’s nothing to do with me”. This
is one type of cognitive appraisal and there are many other cognitive devices that preserve one’s self-esteem and Homeostatically Protected Mood and if repeated over many situations over time may lead to increased SWB.

Essentially it is proposed that people with low SWB require additional resources in order to re-establish homeostasis control of SWB, like such resources that are a part of the social cognitive training provided in the GIST program. This pattern of re-establishing homeostasis control of SWB replicated early findings of an unpublished study by Cummins & Hammond, 2012, which has found in that carers with low SWB have reported significantly improved SWB over time when provided with extra support such as counselling and education. These findings support the inclusion of longitudinal methodology in assessing the efficacy of social cognitive training in future research. Research in SWB has proposed an inverse relationship between PWI and depression scores (Cummins, 2010; Lovibond & Lovibond 1995) and therefore to better inform results it may be beneficial to include an outcome measure of depression in future SC training to compare mood as well as SWB.

**Neurocognition**

In relation to hypotheses three, and consistent with Study 1, there were no significant differences at follow-up from baseline or post-treatment, on any measure of neurocognitive ability (LNS, LM and FAS). This result was anticipated given that these abilities were not the focus of the intervention.
**Strengths and Limitations of the Current Study**

There are a number of strengths and limitations of the current study, which again reflects the emerging and developing nature of this type of intervention with this cohort, especially in terms of a longitudinal design. Some of the strengths of Study 1 have already been discussed and remain relevant to this study including; sample characteristics (outpatient, even gender ratio) and the use of multiple and alternative forms of assessment measures for various domains. A unique strength of this study is that the same sample of participants was available and all completed assessments across all three time-points of this study, which is conducive to a consistent and reliable analysis. Also, to the writer’s best knowledge, this is the only longitudinal study that has explored the carry over effects of a social cognitive intervention for SC, SF and QoL domains.

Again many of the limitations for the current study mirror what has been discussed previously in Study 1. These include the small sample size which directly affects statistical power; lack of data obtained on symptomatology post treatment and at follow-up; quasi-experimental design and lack of randomization and the potential compromising influence on results of having the same person as the examiner and facilitator of the intervention. A further limitation was that due to clinical constraints, there was no thorough assessment of whether participants, at time 3, had engaged in new treatments or medications following the intervention.
Future Directions for Research

Introduction to Mental Health Models

The promising evidence emanating from social cognitive intervention research suggests there should be serious consideration for SC training to be incorporated into early intervention models of mental health services to target schizophrenia spectrum disorders, as well as those considered at risk of developing schizophrenia (e.g. familial history of schizophrenia, schizotypal personality traits). The financial cost of schizophrenia is immense, with the direct health system costs in Australia estimated at $661 million in 2001 or approximately $18,000 per person with schizophrenia, which equated to six times more than the average Australian would spend on health care (SANE Australia 2002, Killackey, et al., 2008). In the US, Wu et al., 2002, reported that the direct health care costs of schizophrenia were $22.7 billion. An intervention that can potentially cultivate and stimulate the desire for people with schizophrenia to initiate and increase social relations would be of inestimable benefit on both an individual and community level. Improved functional outcomes, such as social functioning, are important indicators of successful rehabilitation and recovery (Brekke and Nakagami, 2010). The cost-effectiveness of SC training within the schizophrenia population is unreported in the extant literature, however in terms of this project, the estimated costs per participant, whilst difficult to calculate accurately, would be relatively insignificant when considering the individual direct health care costs reported in the figures above. Community mental health providers are always looking for programs that can deliver evidence-based, user-friendly training for their consumers. Implementation of similar inventions to establish a more robust evidence base is necessary to foster and develop this type of
intervention so that in time it may become a highly innovative addition to standard practice in these settings.

Social Support

The long-term effects of being social dysfunction will naturally lead to poor social networks or worse, isolation that is very common with people who suffer from schizophrenia. As a result, no matter how much people learn during SC training provided to them, or how willing and motivated they are to improve their level of social functioning, if they don’t have the opportunity to utilise, practice and master these skills then gains will be minimal at best. To foreshadow what is reported in the qualitative analysis of this project (see Chapter 6), many people who completed the GIST program complained of having limited opportunities to socialize with others to put into action what they had learnt during the SC training. This issue highlights the importance of providing participants of similar future training, social resources and services that are available to them in their local area. It would have been beneficial for participants of this study to receive information about and be directed to local social support services, and opportunities to meet and socialize with others in an effort to help these people reconnect to their communities. It would make sense to work collaboratively with case managers and the broader mental health services in order to achieve this. Improved social networks can act as supportive systems in promoting mental health and reduce psychological stress (Greenblatt et al., 1982).
Realistic and Natural Tasks

The future of SC training appears to be heading towards more naturalistic and interactive approaches (Brown, Tas & Brune, 2012). For example, to utilise materials and tasks that are as realistic as possible, for social situations are complex, multifarious experiences that cannot be easily replicated in a classroom-type setting. The more realistic our training methods area, the more effective they should theoretically be. This project endeavoured to use some innovative audio-visual training tools during the program, such as interactive video-footage of social scenes, but there is scope to improve the level of realism in the tools that are used in these types of interventions. Already discussed in the qualitative study, as suggested by participants, is the use of in-vivo, real-life social situations, for example, social interactions in public areas (trains, shopping centres, etc). Although this may present ethical and logistical challenges, this form of training should not be overlooked and remains an intriguing option for future researchers. In the same vein, virtual reality media may also play a vital role in future SC training Simulation training is attractive not only for its potential realism but it also reduces risk to participants in comparison to in-vivo training, and can provide greater control over the training procedures.

Conclusion

This study provides preliminary evidence that post-treatment improvements in SC ability and SF were sustained over six months for people with schizophrenia accessing community health services following participation in the GIST program. Furthermore, the findings suggest that over time, not only do post-treatment changes remain significant; in some functional outcome domains these changes actually
increase. The overall findings of this pilot study provide impetus for more
longitudinal research to be conducted in this area to determine whether changes are
generalizing to longer-term indicators of social functioning, such as size and quality
of social networks. There is also a need to refine and standardise the measurement of
social cognitive and social functioning domains so that more authentic comparisons
of similar research can be conducted.
Chapter 9

Study Three - Qualitative Analysis of Social Cognitive Training

Introduction

In order to evaluate the effectiveness of a training modality, it makes sense to ask the people who complete such training. The extant literature in the field of social cognitive training for people with schizophrenia lacks any narrative accounts of the experiences of these participants following completion of such programs. A thorough search of the literature revealed that there are no previous studies in this particular area that have included a specific qualitative component. Quantitative analysis does not provide the kind of insight and perspective that can be captured from the voices of those who are the particular focus of research. Qualitative methodology is more interested in the subjective experience and the meaning of participant’s responses, which is in contrast with predestined, established variables analysed in quantitative analysis (Storey, 2007). The current study sought to obtain narrative interviews with the TG participants in order to explore in more detail the perceptions and viewpoints of those involved. The aim of including these interviews in this study was to compliment the quantitative results; provide insight into the strengths and weaknesses of the current program; capture a sense of what was actually learnt in the GIST program, and inform future delivery of similar interventions.
Method

With the above mentioned aims of these interviews in mind, the researchers decided on six open-ended questions to ask each treatment group participant (n=10) at both post-intervention and follow up (i.e. T2 & T3). Those in the treatment as usual group did not participate in any such interviews.

The researcher conducted individual semi-structured interviews with each participant following post intervention assessment at T2 and T3. Interviews were conducted with an informal and conversational style lasting from ten to twenty minutes. Respondents gave consent for the interviews to be tape-recorded, which were conducted in the same setting as in previous assessments of this study. Respondents were each asked the following questions:

1. How have you found the GIST program helpful to you?

2. What are your thoughts on how the GIST program was delivered?

3. Following the program, how has your understanding of social situations changed?

4. What has changed in your understanding of other people?

5. What has changed in how you relate to other people?

6. How do you think the program could be improved?

During the interview, it was important that rapport was initially established, the order of questions was guided by the interview and responses were probed in an attempt to access the respondent’s internal experience. The interviews were fully transcribed from the voice recordings, the transcriptions were read over multiple
times and integrating, relational ideas from the data, or emergent themes, were extracted (Richards, 2005). This iterative approach to analysis allowed the researcher to gain a realistic sense and comprehension of the meaning underlying participant’s responses.

The data was analysed according to an interpretative phenomenological analysis (IPA) model. The researcher made this decision because of the primary interest in the experience, understanding and meaning that these people were giving in their responses. IPA is utilised as a qualitative method when the researcher is interested in a participant’s idiographic experience of a phenomenon (such as the GIST intervention) (Smith & Osborn, 2003). Furthermore an IPA approach was used to analyse the data in the most telling and effective way given the homogeneity and small size of the sample. IPA studies are befitting for samples such as this because the methodology requires case-by case individual analysis of interviews, which gives the researcher an opportunity to narrate a rich detailed account of the insight and perceptions of those interviewed (Smith & Osborn, 2003). The IPA analysis for this study revealed a number of emergent themes, which are subsequently described, along with examples of illustrative quotes from participants (P).

**Qualitative Results and Discussion**

It was decided that the underlying themes identified from the interviews be combined from the two time periods as the same questions were asked at both times and there were little differences in responses. Discussion of the themes are organised in relation to the five questions asked of participants.
The Helpfulness of the GIST Program

A strong theme identified from the interviews was that participants felt valued and empowered by being involved in a novel and contrasting approach to traditional intervention. Various statements from participants that clearly communicated its benefits and positive features identified the helpfulness of the GIST program. The overwhelming message from participants was that they were frustrated and dissatisfied with the progression of their past and current treatment, and that they were surprised and appreciative of the opportunity to be offered an alternative treatment such as the GIST program. There was a strong inference by participants that by even being offered to do the GIST program, they felt like they were being seen in a different light than they had previously experienced within the care system. They communicated that they were being identified as people, with an illness, rather than a label. Participants expressed that they felt important enough to be receiving treatment that would help improve them as functioning people in society, not just treatment of their ‘symptoms’. These findings are consistent with previous self-report research that people with schizophrenia indicated a lack of emphasis on more humanistic domains such as social functioning in their treatment (Coursey, Keller & Farrell, 2005; Middleboe et al., 2001).

“It was great to be listened to and talked to by psychologists instead of just being pumped with drugs ... it made me feel like I was important” (P-T).

“All we get is meds (medications) and lots of questions from people, when I
did this program it felt like I was at least doing something for myself ... with my illness” (P-AN).

The participant’s positive evaluation of receiving a psychosocial intervention as an alternative to traditional psychopharmacological treatment represents a very important factor when considering the treatment needs of people with schizophrenia. From the perspective of people with schizophrenia, research has to some extent explored the unmet needs of these individuals in relation to their mental health care (For a review of this literature see Mojtabai et al, 2004). Treatment needs identified by staff, carers and patients are quite different (Slade, Phelan & Thornicroft, 1998; Slade et al., 1996), where staff and carers tended to highlight psychotic and physical symptoms as focuses of treatment, patients drew attention to their psychological distress and the social impact of their condition (Arvidsson, 2001; Hansson et al., 2001). Further, the needs identified by patients were considered more reliable than staff ratings (Slade et al, 1999). These findings suggest that when assessing the treatment needs of these individuals, multiple perspectives should be considered. These findings support what participants of this qualitative study are saying, when talking about the helpfulness of the GIST program. Essentially, the underlying theme was that these individuals felt like their emotional and psychological needs are being not being met by their treatment providers. That is, apart from medication, they want more from their mental health practitioners and the type of training they participated in during this study had gone some way to meeting this need.

Participant’s comments also reflected some common therapeutic factors that have been reported from group psychotherapy (Yalom, 1995). Participants reflected on a shift from feeling alone and ashamed to feeling similar to others and more understood. The value of being listening to others and being heard by others within
the group was a common theme from respondents. The solitary lifestyles of many of
the respondents in combination with the stigmatisation experienced in society has
had a major impact on the self-concepts of these people and has reinforced a sense of
shame and low self-efficacy. Being amongst a group of people with similar issues
and experiences seemed to have a powerful impact on participants understanding of
themselves and what is common to their illness. This unique effect of being part of a
peer-group is something that cannot easily be replicated by any other form of
intervention.

“*Just hearing that others were like me...it just made me feel like it isn’t just
me that have these problems*” (P-C).

“*Learning how other people react, who have schizophrenia...just the
knowledge that we do jump to conclusions is good to know because then I can
kind of understand that’s why I am this way sometimes*” (P-T).

Many participants commented about the lack of opportunity to practice and
utilise the skills and knowledge they had gained during the GIST program because of
both or either a poor social network or a common belief that the larger community
have a negative stigma about people with schizophrenia. The issue of stigma in
society about people with mental illness, but especially schizophrenia, is a reality
that is not easily dealt with (Jablensky et. al., 1999) but it is beyond the scope of this
program, in its current state, to explore and attempt to address the issue of stigma
that participants will likely face in society. However, in relation to a lack of a social network, that most participants identified with, it is perhaps a more attainable future goal of this program to empower participants to seek out social resources, services, support groups, etc. with the aim of assisting participants to become more proactive in the pursuit of improving their social network.

Participants reported increased levels of self-confidence, which seemed to be directly related to a better understanding of how to approach and deal with social information. With less apprehension about what may be the intentions of others combined with enhanced knowledge of how and why people may be thinking in given situations, etc., respondents felt that they had a greater willingness to approach social situations that they perhaps would have avoided in the past.

Participant’s responses reflected a shift in their capacity to show themselves self-compassion. More specifically, many participants reported a realisation that it is common for people to make mistakes and that their illness makes things even more difficult for them to work things through when in confusing or ambiguous social situations. In other words, participants were more accepting and forgiving of themselves for making mistakes, and believing that all people get things wrong at times, and that it’s ok to be wrong. These findings are endorsed by previous empirical work on self-compassion, which has reported a positive association with a sense of social-connectedness (Neff, 2003, Neff, Kirkpatrick & Rude, 2007) and well being (Neely, Schallert, Mohammed, Roberts, & Chen, 2009).

“I’m more confident and I can approach people easier than before, like a girl at TAFE the other day, I wouldn’t have asked her anything before because I
would think I would stuff something up, but I went up to her and we talked a little bit” (P-AZ).

Participants reported a greater sense of optimism in general which seemed to stem from having a less paranoid, doubtful outlook on their lives. Many revealed that they were far less likely to expect the worst to happen in a lot of social situations, which has the effect of diminishing negative automatic thoughts and instead encouraging them to have a more positive social attitude. These encouraging outcomes, seemingly related to a cognitive shift in participants, is consistent with empirical research on cognitive models of therapy and schizophrenia that found changes in cognitive appraisals are associated with positive changes in social performance (Morrison et al., 2012).

“I didn’t realize I was very paranoid before this program...people out to get me. Now it’s like I’m not getting a fit when checking the mail, I’m not expecting the worst to happen all the time, it’s a pleasant change ... it’s exhausting expecting the world’s going to blow up at anytime... so it’s nice to be enjoying a little of my time ” (P-D).

Participants revealed that by observing and learning from other group members during the GIST program this instilled hope in their own situations and fostered a motivation to improve themselves. There was a real sense that years of social isolation for many of the participants had resulted in an idiosyncratic and
detached existence with little exposure to what people similar to them can achieve. The contact they did have with their cohort was not in the context of a sharing, learning environment.

“By seeing others in the group coming out with right answers and talking about good things that had happened to them during the week made me feel like I could maybe do that as well” (P-L).

“Seeing another group member go from being paranoid about thinking his picture was in one of the slideshows to figuring out why something that happened in his own life was inspiring” (P-F).

**Appraisal of GIST Program Delivery**

Respondents commented favourably on the structure and format of the sessions, in particular the way the information was patiently delivered; all the information presented tied in together at the end of the GIST program; the appropriate length of each session in respect to their capacity to concentrate; and the naturalistic props and materials that were used. There was an apparent uneasiness reported by participants with any changes to the delivery of the GIST program from week-to-week, for instance at times, due to the pilot nature of the intervention, there were slight deviations to the routine of the program and at other times there were technical difficulties experienced. These seemingly inconsequential nuances were not considered significant to the facilitator at the time of delivery, but the responses
from participants indicate otherwise and highlight that this cohort of people can be quite sensitive when structure and predictability are compromised. This feedback makes sense when one considers the level of cognitive impairment inherent in this population, which limits their ability to concentrate and engage in a learning environment.

“Other programs I have done I usually don’t last until the end, maybe it was because one hour was a good time length as my concentration is not the best” (P-D).

“The person (facilitator) made it easy to explain ... he took his time and explained things enough times so that we could get it” (P-AZ).

**Changes in Understanding Social Situations**

Most participants reported that they have noticed changes in the way that they approach social stimuli and ambiguous events. Respondents commented on the tendency to refrain from making hasty decisions and try and deliberate more logically before making choices and actions. Some reported developing more adaptive schemas about how to respond to social cues and information. However some respondents talked about now being aware of what can be considered in understanding social situations, this amount of information can be daunting and scary. These responses perhaps best directly reflect changes in attributional style, that is, participants reported a diminished tendency to jump to conclusions, which represents a key goal of the intervention. The participants improved self-confidence,
reported earlier, may stem from the knowledge that they are likely making more informed, better decisions when given social information.

“I now step back, take time to understand things before I react” (P-O).

“Decisions I used to make before ... when you are weak in yourself you tend to trust other people who you maybe shouldn’t. Instead of doubting yourself, I have more faith in myself.... this I think is because having a plan, a drill, systems built in if something happens you have a plan to how to react to it ... so you think you can deal with things better” (P-T).

“I’ve learnt to be more rational, to empathise, to understand body language and facial expressions ... why... to make more logical conclusions” (P-D).

“Social stuff is really hard and intense, sometimes after doing the program I felt there’s too much to think about” (P=CH).

Changes in Understanding and Relating to People

Participants reported less paranoia about other people’s intentions towards them and more logical reasoning about people’s behaviours. Respondents commented on being more approachable and willing to initiate interpersonal exchanges. There was a sense that participants to some extent had been able to let go of past negative experiences with other people and make an effort to implement new
skills and knowledge learnt in the GIST program. A common theme from participants was that following the program, there was less doubt and uncertainty in their minds when expressing themselves to others or interacting with the social environment, because they felt that they were giving things a greater level of consideration and thought before either speaking or acting.

“I learnt to be more direct with people and not doubt that I haven’t thought things through” (P-O).

“I’m not as shy and anxious of people to walk up to people and talk to them…. I guess I’ve spent most of my life observing people and just judging by facial expressions rather than talking to people and figuring out what is going on… not afraid to talk lot easier, more confident in approaching someone doesn’t matter facial expression … physical appearance and mental feelings are two different things” (P-AZ).

“I think I’m more logical, less paranoid and (I have) more logical expectations from others… my responses are now more normal…. not everyone is out to get me, I’m less suspicious, and more caring” (P-D).

“I’m more assertive with others, not passive, since a child I’ve been like this, definitely noticed changes in how I respond (to others)” (P-L).
“You can’t judge everything by facial expression….some people are good at hiding when sad and happy…. I now have strategies to find out by talking to them or asking someone they’re friends with” (P-AN).

Suggestions to Improve the GIST Program

Participants commented on several ways to improve the program but most of these ideas were to provide adjunctive information about other areas of self-improvement, such as cognitive functioning, anger management, coping with anxiety and assertive communication. In many ways the great variation in suggestions from participants about what to include in the GIST program, symbolised the range of cognitive impairment and limited coping strategies experienced by this population. Many respondents thought that there could be more “real-life” exposure incorporated into the program for instance using real situations (e.g. commuting on trains, going to shopping centres/cafes) as learning environments. What was clear from the participant’s response was that they were very eager for knowledge and skills in order to improve themselves. In summary, participants reported that training of this kind, i.e. psychosocial/psycho-educational/life training skills was fantastic and enjoyable and they wanted more of it in their lives.

“There should be more role playing between the participants in real life ... go to shops together, talk about what we thought of people we ran into, on trains... what was that person feeling or thinking...” (T-D).
“Add anger management, learn to not be scared of it (anger), how to interact with angry people, and your own anger management” (P-D).

“How to be more assertive with others... that could’ve been in there ... also what happens when you get rejected” (P-L).

“I’d like to know how to concentrate better so that I don’t get lost when talking to someone” (P-C).

“I tend to get confused when too much going on ... like in a party or something... I’d like to know how to fix this” (P-AZ).

**Post-treatment Survey**

In addition to the qualitative analysis, a survey was administered to participants following completion of GIST (i.e. at T2). All 10 TG participants were asked to complete a brief survey rating the value and delivery of the GIST program. As shown in Table 5, participants were complimentary of the program and found it both helpful and delivered at a satisfactorily level. All of the participants rated the materials as understandable and would recommend others to do the GIST program. The entire sample rated the group as “helpful” and the vast majority of participants rated that they understood social situations and could relate to people “better” following the program.
Table 5

*Post-Treatment Survey Results*

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<tr>
<th></th>
<th>No</th>
<th>Yes</th>
<th>Not at all</th>
<th>Maybe</th>
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<td>Did you understand the information and materials? (Yes/No)</td>
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<td>Was the group helpful to you? (Yes/No)</td>
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<td>Would you recommend it to others? (Yes/No)</td>
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<td>Can you better understand social situations?</td>
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<tr>
<td>Can you better understand and relate to people?</td>
<td>20</td>
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<td>70</td>
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</table>

**Strengths and Limitations of the Current Study**

The inclusion of post-treatment evaluation by participants to gauge the efficacy of the intervention is a strength of this study, and to the writer’s knowledge this has only been reported once before in this type of research (Roberts et. al.,
This study however is unique in that it gathered qualitative feedback from participants, rather than closed question type analysis utilised by Roberts et al., 2010, which provided narrative accounts of the effectiveness, potential strengths and weaknesses of the intervention.

The brief length of the interviews that were conducted limited this study and it may be advantageous for future studies to extend this narrative component to include more in depth questioning so that experiences of participants are even better understood. Another limitation was that the facilitator conducted the interviews, which may have influenced the responses of participants due to a desirability bias considering that the facilitator and participants had spent considerable time together during the course of the GIST program. A further limitation was that the same questions were asked of participants at Time 2 and Time 3, which restricted the breadth of information that may have been extracted in the analysis. Different questions asked at Time 3 (from Time 2) could have been more informative and could have included such enquiries about the sustainability of changes, level of consolidation of learnt concepts and specificity of longer-term changes.

Conclusion

In conclusion, this qualitative addition to the project has provided a valuable insight into the participant’s experience of undertaking SC training, one that has not been reported before. The responses from participants strongly suggest that not only is it welcomed and valued, the impact and benefits of SC training goes well beyond improving SC ability or social functioning.
As discussed, participants revealed that they experienced several extensive positive changes in various domains of functioning including improved levels of confidence, self-identity, optimism, insight into deficits and reduced anxiety and paranoia. Participants also expressed some positive changes that were perhaps more expected in that they were related to SC abilities and SF. Participants revealed that they felt were more adept at thinking through situations, considering different levels of information before making decisions based on social stimuli, and approaching more social situations than in the past. It seems that the majority of changes reported are related more specifically to attributional style and that these changes perhaps indicate moderate changes to participant’s social schemas. Another underlying theme was the appreciation and excitement in being offered and receiving alternative therapies to psychopharmacology, which bodes well for further training in this area, if there is intrinsic motivation to engage in similar programs. The intriguing and revealing information derived from participant interviews is not only heartening and encouraging for the continued delivery of SC training but also provides an impetus for future studies to incorporate qualitative analysis to further inform the development of this field.
Chapter 10

General Discussion

Schizophrenia is characterized by a multiplicity of complex problems and those who suffer from this debilitating disease are no strangers to hardship, distress and loneliness. One of the most common and telling consequences of living with this illness is the detrimental impact it has on one’s ability to competently function in their social environment (Bellack, Morrison, Wixted, & Mueser, 1990). Traditionally, there has been a lack of effective treatment options to assist in the domain of social functioning (Leonhard, Corrigan, & Penn, 2001), however in recent years, Social cognition has emerged as a unique and influential mediator of social functioning (Green, et al., 2008; Green et al., 2012). Subsequent research findings from social cognitive training programs have shown that by improving the social cognitive abilities of those with schizophrenia can result in enhanced social functioning (Horan, et al., 2008). Recovery in social functioning for people with schizophrenia is therefore beginning to be considered achievable for really the first time through social cognitive remediation/training. However this field of research is still developing and requires further investigation to provide more impetus for this line of approach to become common practice in schizophrenia treatment.

The current clinical research project was a preliminary evaluation of a social cognitive intervention among outpatients with schizophrenia, augmented with a longitudinal analysis and qualitative inquiry. The primary focus of this study was to investigate change over time in a variety of domains among a sample of individuals
with schizophrenia. The domains of interest in this study were social cognition, social functioning and neurocognition and all were assessed with multiple measures.

The project consisted of three separate, interrelated studies, comprising a comprehensive evaluation of outcomes from the delivery of a social cognition training program, GIST. Study 1 utilised a quasi-experimental, pre-post design to evaluate the efficacy of the GIST program in a community sample of outpatients. Study 2 investigated the longitudinal outcomes of participants who completed the GIST program a longitudinal to assess whether any gains made post-treatment would be sustained at a six-month follow-up period. Study 3, presented a qualitative analysis conducted to evaluate the subjective experiences of participants following completion of the GIST program. Overall, results from all three studies were promising, with some supportive evidence for the effectiveness of the GIST program in producing sustained longitudinal changes. Notwithstanding the limitations associated with these three studies, which have been described previously in respective discussion sections, these studies are notable for different reasons.

Firstly, Study 1 of this project has replicated past research in this area in that social cognitive training has the potential to remediate social cognitive ability in the schizophrenia population (Horan, et al., 2008). Given that there is considerable diversity in approaches to the format and content of this training across studies it seems that variations to this training are relatively inconsequential (McGurk et al., 2007; Wykes et al., 2011). This therefore suggests that there is a certain liberty available to researchers in the design of future social cognitive training to incorporate progressive, innovative components to refine and maximize treatment outcomes. In addition to the improved social cognitive abilities, a less frequently reported outcome in the extant literature was that GIST participation was associated with improved
social skills (Combs et al., 2007; Roberts & Penn, 2009). Considering improved social functioning was the ultimate goal of this study, this result further ratifies the underlying hypothesis of the unique mediatory contribution of social cognition to social functioning (Green, et al., 2008). Further support for social cognition being a unique predictor of social functioning (Couture, et al., 2006) is that these improvements were achieved without any focus on non-social cognition abilities being targeted in the program and no changes in these abilities post-treatment.

There has been very limited research conducted on the sustainability of changes in social cognitive abilities and functional outcome following social cognitive training (Combs et al. 2009). The results revealed by Study 2 of this project therefore provide valuable insight into the potential long-term benefits of such training. For the entire outcome domains measured, to the writer’s best knowledge, this was the first study of its kind to find that positive changes to social cognition and functional outcome domains were either longitudinally sustained or improved over time. Changes in social cognitive abilities found in post-treatment were all sustained six months later. Furthermore, significant improvements to social functioning and quality of life emerged over time, which were not present post-treatment. These findings indicate support for the capacity of people with schizophrenia to retain these learnt social cognitive skills and are valuable in informing the future design of studies in this area, particularly highlighting that some improvements in functional outcome may not become apparent unless a longitudinal analysis is employed.

Finally, the novel inclusion of a qualitative analysis in Study 3 of this project unearthed some important and surprising results. The evaluation of participant’s subjective experiences of completing the GIST program, revealed effects that were more far-reaching than anticipated. Participants not only reported a greater level of
confidence in approaching social situations as a result of learning these new skills, but also reported personal changes that further endorse the programs worth. Various themes emerged from their narrative accounts including greater self-understanding, an instillation of hope, raised self-esteem and less paranoia about the intentions of others. These findings highlight the value in incorporating a qualitative component to studies of this nature, but what was paramount was how much these individuals valued having the opportunity to participate in a treatment modality alternative to traditional medication. By talking to them it was revealed how the training not only improved areas of their social functioning, but also helped them to feel better about themselves and meet their treatment needs as they see them.

The narrative feedback represents an exciting addition to the treatment literature and provides validation of how receptive and important this type of training can be. It demonstrates that psychosocial interventions, such as this pilot project, represent a real area of need in the treatment of schizophrenia. It is hoped that the positive quantitative and qualitative outcomes from such training support the generation of funding that facilitates this type of training becoming more available to the people that need and want it.

We acknowledge there are several limitations to the study, which have been discussed, including the small sample size, incomplete data on clinical symptomatology, and quasi-experimental design. Potentially the most concerning limitation may be the partial blinded assessment utilised throughout the study. Whilst this is not an ideal situation, the researchers were constricted by clinical and financial constraints to utilise more blind assessment. It should be reiterated that in addition to partial use of inter-rater reliability, there was partial assistance within the assessment and consensus ratings were completely blind. The researchers acknowledge that in
consideration that the effect sizes of this study in general are larger than comparable studies, it is possible that bias was introduced to the results due to issues related to blind assessment. However, it is also possible that these results are veritable effects of the intervention.

The study also constitutes many strengths and areas of improvement over similar studies in the research literature, including utilisation of alternative and multiple measures for all domains (enhancing construct validity and reliability); this is the only longitudinal study in this area that has explored the carry over effects of a social cognitive intervention for SC, SF and QoL domains; and this is the only study to include a qualitative component with open-ended analysis providing narrative accounts of participants and their experience of the intervention. Finally, acknowledging the pilot nature of the study, in terms of findings, this is the first social cognitive training study to date, which has found significant improvement in all social cognitive domains and at least one SF measure.

Perhaps the most important underlying finding from this project is that it affirms the belief that people with schizophrenia are not condemned to a socially inadequate existence, a thought championed by Bleuler over three decades ago.

“Schizophrenia (‘dementia’) is by no means always a permanent state. It is accessible to influences from the environment. It is not the ‘core syndrome’ of a hereditary destructive disease process.”

Manfred Bleuler (1978, pp. 418)

The above statements from Bleuler argue that rather than considering the cognitive and behavioural effects inherent with schizophrenia as degenerative and
interminable (i.e. ‘dementia’), we should look upon this condition as being
changeable.

The progress in the holistic treatment of schizophrenia has historically been
characterized by an emphasis on a psychopharmacological approach, and treatment
options available to the schizophrenia population that successfully target
impoverished social functioning are limited (Green, 1993; Horan, Kern, Green, &
Penn, 2008; Kern, Green, & Satz, 1992; Kern, Green, & Spaulding, 1994; Morrison
et al., 2012). In recent years, the work of researchers in the field of social cognition
and schizophrenia has advanced our understanding of the disorder, informed the
development of treatment programs than can potentially improve social functioning,
and provided supportive evidence that, as Bleuler said, this notorious condition is
potentially changeable. It is hoped that the preliminary findings of this current
project further endorses the capacity for social cognitive training to improve the
social functioning of people with schizophrenia as already demonstrated by research
in this area. It is hoped that in time, further research in this area will continue to
refine this mode of training with a view to perhaps establishing social cognitive
training as conventional practice in the treatment of schizophrenia.
References


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Tas, C., Danaci, A., Cubukcuoglu, Z., & Brüne, M. (2012). Impact of family involvement on social cognition training in clinically stable outpatients with


Suppl 2S80-S90.


APPENDICES
APPENDIX A

Eastern Access Community Health Recruitment Flier
IMPROVE YOUR SOCIAL SKILLS

Do you find social situations a little difficult?

Do you sometimes find it hard to understand what others are thinking?

Our fun sessions may help you become more confident in social situations!

Begins February 2011 at

Lifeworks

9 Greenwood Avenue, Ringwood

Sign up with your case manager today

Program is designed for research purposes. Approved by Eastern Access Community Health and Deakin University.
APPENDIX B

Eastern Health Recruitment Flier
IMPROVE YOUR SOCIAL SKILLS

DO YOU FIND SOCIAL SITUATIONS A LITTLE DIFFICULT?

Do you sometimes find it hard to understand what others are thinking?

OUR FUN SESSIONS MAY HELP YOU BECOME MORE CONFIDENT IN SOCIAL SITUATIONS

BEGINNS JULY 2010 AT MAROONDAH COMMUNITY CARE UNIT

4 BONA STREET, RINGWOOD EAST

SIGN UP WITH YOUR CASE MANAGER TODAY

PROGRAM IS DESIGNED FOR RESEARCH PURPOSES & IS APPROVED BY EASTERN
APPENDIX C

Plain Language Statement and Consent Form
DEAKIN UNIVERSITY
PARTICIPANT INFORMATION AND CONSENT FORM
EASTERN MENTAL HEALTH SERVICE

TO: Participants

<table>
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<th>Participant Information and Consent Form</th>
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Date:

Full Project Title: Improving Social Functioning in Schizophrenia through Social Cognitive Remediation

Principal Researcher: Dr Linda Byrne

Student Researcher: Jerome Caspersz

This Participant Information and Consent Form is 7 pages long. Please make sure you have all the pages.

1. Introduction

You are invited to take part in this research project. You are invited to participate in this research project because you are over the age of 18 years of age and have presented to the Maroondah Community Care Unit for treatment of schizophrenia. The research project aims to test how well a new program assists in improving social functioning and social thinking skills for individuals with schizophrenia.

This Participant Information and Consent Form will tell you about the research project. It explains the procedures involved. Knowing what is involved will help you decide if you want to take part in the research.

Please read this information carefully. Ask questions about anything that you don't understand or want to know more about. Before deciding whether or not to take part, you might want to talk about it with a relative, friend or healthcare worker.

Participation in this research is voluntary. If you don't wish to take part, you don't have to. You will receive the best possible care whether you take part or not.
If you decide you want to take part in the research project, you will be asked to sign the consent section. By signing it you are telling the researchers that you:

- understand what you have read;
- consent to take part in the research project;
- consent to participate in the research processes that are described;
- consent to the use of your personal and health information as described

You will be given a copy of this Participant Information and Consent Form to keep.

2. What is the purpose of this research project?

Social cognition refers to how people think about themselves and others in the social world. This project seeks to develop this skill using a training program which targets these abilities. The aim of the project is to investigate the effectiveness of this type of program as a treatment for symptoms associated with schizophrenia and as a way to improve social functioning. Such programs have shown promising results in studies conducted in Europe and America. However, to date there has been no published research in this field within Australia.

The program uses a new design in which the program is tailored to suit each participant for the best possible benefits in training. This research is being conducted by Dr Linda Byrne of Deakin University. The results of this research may be used to help the student researcher Jerome Caspersz to obtain a Doctorate in Psychology (Clinical) degree.

The project will be conducted at the Maroondah Community Care Unit and the Canterbury Community Care Unit.

3. What does participation in this research involve?

A maximum of 40 individuals will participate in this project. If you meet certain criteria, you will be assigned to one of two groups, both which target symptom management in schizophrenia.

Participants will be either assigned to the “Treatment as Usual group” or to the “Training group”. (Note: If you are not selected for participation in either group for whatever reason, your existing case manager will be able to discuss possible alternate options for you.)

Those in the Treatment as Usual group will simply continue with their current treatment as per normal and not be involved in the training sessions.

Those in the Training Group will be asked to attend 1 hour group training sessions once a week for 13 weeks. If you are allocated to the Training group you will be asked to attend a 1 hour session each week for 13 weeks. Training will involve a series of learning and computer-based activities which you
can do at your own pace and are fun and interactive. Additionally, some homework tasks may be included as part of the training.

**ALL** participants (i.e. both groups) will be asked to take part in assessment stages. This assessment will involve the completion of questionnaires and computer-based activities and will be conducted one week prior and one week following completion of the training sessions. These questionnaires include items relating to social abilities and interpersonal behaviour. Participants will also be asked to take part in a final assessment stage to be conducted six months after the training sessions are completed.

You will not be paid for your participation in this project but **ALL** participants of both groups will be entitled to receive Coles-Myer gift vouchers if they fulfil their participation requirements.

4. **What are the possible Benefits?**

The researchers cannot guarantee or promise that you will receive any benefits from this research; however, it is hoped that following the intervention - participants will develop an increased ability to function socially. Other possible benefits may include increasing the understanding of the nature of effective treatments for individuals with schizophrenia.

5. **What are the possible risks?**

Possible risks, side-effects and discomforts are unlikely given the nature of the test items. If you become upset or distressed as a result of your participation in the research, the researcher is able to arrange for counselling or other appropriate support. Any counselling or support will be provided by staff who are not members of the research team. In addition, you may prefer to suspend or end your participation in the research if distress occurs. There may be additional risks that the researchers do not expect or do not know about. Tell a member of the research team immediately about any new or unusual symptoms that you get.

6. **What if new information arises during this research project?**

During the research project, new information about the risks and benefits of the project may become known to the researchers. If this occurs, you will be told about this new information and the researcher will discuss whether this new information affects you.

7. **Can I have other treatments during this research?**

Participants of both groups are asked to continue whatever treatment they are currently receiving such as medication and counselling whilst involved in this project. It is important to tell your doctor and the research staff about any treatments or medications you may be taking, including over-the-counter medications, vitamins or herbal remedies, acupuncture or other alternative treatments. You should also tell your doctor about any changes to these during your participation in the research. You will be asked to maintain any medication you are prescribed for the course of the program.
8. Are there alternatives to participation?

Participation in this research is not your only option. Discuss other possible options with your mental-health care worker before deciding whether or not to take part in this research project.

9. Do I have to take part in this research?

Participation in any research project is voluntary. If you do not wish to take part you don't have to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your routine treatment or your relationship with those treating you or your relationship with Eastern Mental Health Service and Deakin University.

10. What if I withdraw from this project?

If you decide to withdraw, please notify a member of the research team before you withdraw. This notice will allow that person or the research supervisor to inform you if there are any health risks or special requirements linked to withdrawing.

If you decide to leave the project, the researchers would like to keep the information about you that have been collected. This is to help them make sure that the results of the research can be measured properly. If you do not want them to do this, you must tell them before you join the research project.

11. Could this research project be stopped unexpectedly?

Whilst we believe there will be no reason for the early termination of this program, there may be reasons which the researchers are unaware of at this time which make termination necessary.

12. How will I be informed of the results of the research project?

You will be provided with a written summary of the group results of the research project approximately three months after the project is completed. You will be informed in writing of any publication that arises from this research project.

13. What else do I need to know?

What will happen to information about me?

Any information obtained in connection with this research project that can identify you will remain confidential and will only be used for the purpose of this research project. It will only be disclosed with your permission, except as required by law.
All information collected about you will be de-identified using a coding system, where each participant is given a code number. There will be a list that provides information of which code number belongs to which person. All information for this research project will be stored in a locked filing cabinet at the School of Psychology, Deakin University. Only the principal researcher (Dr Linda Byrne) and the associate researchers will have access to this data. This data may be provided to your existing mental health worker with your permission. All data will be stored for a period of five years after final publication, after which time the data will be destroyed.

In any publication and/or presentation, information will be provided in such a way that you cannot be identified, except with your permission. Only group data will be presented in any publication.

How Can I access my information?

In accordance with relevant Australian and/or Victorian privacy and other relevant laws, you have the right to access the information collected and stored by the researchers about you. You also have the right to request that any information, with which you disagree, be corrected. Please contact one of the researchers named at the end of this document if you would like to access your information.

What happens if I am injured as a result of participating in this research?

If you suffer an injury as a result of participating in this research project, hospital care and treatment will be provided by the public health service at no extra cost to you if you elect to be treated as a public patient.

Is this research project approved?

The ethical aspects of this research project have been approved by the Human Research Ethics Committees of Deakin University and Eastern Health. This project will be carried out according to the National Statement on Ethical Conduct In Human Research (2007) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.
14. Consent

DEAKIN UNIVERSITY

PARTICIPANT INFORMATION AND CONSENT FORM

EASTERN MENTAL HEALTH SERVICES

TO: Participants

---

Participant Consent Form

Date:

Full Project Title: Improving Social Functioning in Schizophrenia through Social Cognitive Remediation

I have read, or have had read to me in a language that I understand, this document and I understand the purposes, procedures and risks of this research project as described within it.

I give permission for my existing case manager to release information concerning my treatment that is needed for this project. I understand that such information will remain confidential.

I have had an opportunity to ask questions and I am satisfied with the answers I have received.

I freely agree to participate in this research project as described.

I understand that I will be given a signed copy of this document to keep.

Participant's name (printed) .................................................................

Signature                                      Date

Name of witness to participant's signature (printed) ........................................

Signature                                      Date

Declaration by researcher*: I have given a verbal explanation of the research project, its procedures and risks and I believe that the participant has understood that explanation.

Researcher's name (printed) .................................................................

Signature                                      Date

---

Participant Information and Consent Form, Version 5, Date 13/04/2010
15. Who can I contact?

Who you may need to contact will depend on the nature of your query, therefore, please note the following:

For further information or appointments:

If you want any further information concerning this project or if you have any medical problems which may be related to your involvement in the project (for example, any side effects), you can contact the principal researcher.

Dr Linda Byrne  
School of Psychology,  
Deakin University (Burwood Campus)  
221 Burwood Hwy, Burwood, Victoria, 3125  
Phone: (03) 92446424

For complaints:

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about being a research participant in general, then you may contact:

The Manager, Office of Research Integrity,  
Human Ethics Office, Research Services Division  
221 Burwood Hwy, Burwood, Victoria, 3125  
Telephone: 9251 7129, Facsimile: 9244 6581  
research-ethics@deakin.edu.au

Or

Ethics Chair  
Eastern Health Research and Ethics Committee  
Phone: (03) 9895 3398  
Email: ethics@easternhealth.org.au

If you require further information, wish to withdraw your participation or if you have any problems concerning this project, you can contact the principal researchers.
APPENDIX D

Demographic Information Sheet
DEAKIN UNIVERSITY

Full project title: Improving Social Functioning in Schizophrenia through Social Cognitive Remediation

Principal Researchers: Dr. Linda Byrne & Jerome Caspersz

Name: ...........................................................

1. Age: .............

2. Gender (please circle):  Male     Female

3. Medical history:

   Total number of years with schizophrenia ..................................

   Number of previous hospitalisations ......................................

   Total time spent hospitalised .............................................

4. Medication:

   Please specify the name of your medication: ............................

   What is your current daily dosage?: .................................
5. Please indicate the highest level of education you have completed (please circle):

Year 7 to 9 High School
Year 10 High School
Year 11 High School
Year 12 High School
University degree

6. Employment:

Are you currently employed? (please circle): Yes No

If so, what is your occupation?: .................................................................

If not currently employed what was your last occupation?: ...........................................

7. Residence:

Do you live in (please circle):

Community Care Unit

Private Home

Other (please specify): .................................................................
APPENDIX E

Deakin University Ethics Approval
Memorandum

To: Dr Linda Byrne
School of Psychology

From: Deakin University Human Research Ethics Committee (DU-HREC)
Date: 21 May, 2010
Subject: Improving Social Functioning in Schizophrenia through Social Cognitive Remediation

Approval granted by the Eastern Health HREC for this project will be noted at the DU-HREC meeting to be held on 29/06/2010.

It will be noted that approval has been granted for Dr Linda Byrne and Mr Jerome Caspersz (student researcher), School of Psychology, to undertake this project for the life of the project, as stipulated in Eastern Health HREC approval documentation.

The approval noted by the Deakin University Human Research Ethics Committee is given only for the project and for the period as stated in the memo. It is your responsibility to contact the Human Research Ethics Unit immediately should any of the following occur:

- Serious or unexpected adverse effects on the participants
- Any proposed changes in the protocol, including extensions of time.
- Any events which might affect the continuing ethical acceptability of the project.
- The project is discontinued before the expected date of completion.
- Modifications are requested by other HREC’s.

In addition you will be required to report on the progress of your project at least once every year and at the conclusion of the project. Failure to report as required will result in suspension of your approval to proceed with the project.

DU-HREC may need to audit this project as part of the requirements for monitoring set out in the National Statement on Ethical Conduct in Human Research (2007).

Human Research Ethics Unit
research-ethics@deakin.edu.au
Telephone: 03 9251 7123
APPENDIX F

Eastern Health Ethics Approval
06 May 2010

Dr Linda Byrne
Principal Investigator
School of Psychology
Faculty of Medicine, Nursing and Behavioural Sciences
Deakin University
221 Burwood Highway
Burwood VIC 3125

Dr Karen Bird
Principal Investigator
Outer East Community Care Unit
PO Box 125
Ringwood East VIC 3135

Dear Dr Linda Byrne & Dr Karen Bird

Study title: Improving Social Functioning in Schizophrenia through Social Cognitive Remediation
HREC Reference Number: E86/0910
Protocol number: N/A
Protocol version: N/A

Principal Investigators: Dr Linda Byrne & Dr Karen Bird (Eastern Health Researcher)

Associate Investigator: Mr Jerome Caspersz

Eastern Health Sites: Maroondah Hospital Community Care Unit & Canterbury Community Care Unit

The above study was considered by the Eastern Health Research and Ethics Committee at its meeting on 18 March 2010 and was approved subject to the amendments and clarifications. Following receipt of amended documents and additional information, final approval can now be given for the study to proceed.

The following documents have been approved:
- National Ethics Application Form
  - Revised sections 1.2, 6.5.2, 6.5.4 and 9.2.3
- Victorian Specific Module dated 23 February 2010
- Participant Information and Consent Form Version5 dated 13 April 2010
- Appendix 1 - Emotion Recognition Training Task – Baron-Cohen’s Mind Reading Interactive Guide to Emotion (dated 29/10/2008)
- Appendix 2 – Emotion Recognition Assessment Measure – DANVA (dated 29/10/2008)
- Appendix 3 – Diagnosis Assessment Measure – SCID-Psychotic Component (dated JAN 2007)
- Appendix 4 – Attributional Style Assessment Measure – AHIQ (un-dated)
- Appendix 5 – Attributional Style Assessment Measure – IPSAQ (un-dated)
Appendix 6 – Emotion Recognition & Theory of Mind Assessment Measure – TASIT (un-dated)
Appendix 7 – Social Functioning Assessment Measure – SFS
Appendix 8 – Functional Outcome Assessment Measure – Personal Wellbeing Index –
Adult (PWI-A) English 4th Edition (un-dated)
Appendix 9 – Demographic Survey (un-dated)
Appendix 10 – Deakin University Budget Statement
Appendix 11 – Project Protocol Summary

Other documents submitted for review:
Curriculum vitae (for external researchers)
Confidentiality Agreements (for external researchers)

Please note, an annual progress report is due May 2011: continuing approval is subject to the timely submission of a satisfactory progress report.

Please submit details of trial registration with a clinical trials register that is publicly accessible before beginning the clinical phase of the study. (Section 3.3.12, National Statement.) The study fits the criteria for registration.

The Eastern Health Research and Ethics Committee is constituted and functions in accordance with the National Health and Medical Research Council Guidelines (National Statement on Ethical Conduct in Human Research 2007). No member of the Committee adjudicates on research in which that member has any conflict of interest including any personal involvement or participation in the research, any financial interest in the outcome or any involvement in competing research.

Please refer to the National Statement on Ethical Conduct in Human Research (2007) http://www.nhmrc.gov.au/publications/synopses/e35syn.htm and Module 1.36 for researchers’ obligations. Continuing approval is subject to the adherence of these guidelines and the fulfillment of researchers’ obligations.

Please quote our reference number E86/0910 in all future correspondence.

Yours Sincerely,

Dr Patricia Molloy
Chair
Eastern Health Research and Ethics

Encl: Committee Composition letter

Copy: Mr Jerome Caspersz
APPENDIX G

Eastern Access Community Health Ethics Approval
Hi Jerome,

I've read through the research proposal and agree with Sharon that it sounds like an interesting and potentially promising piece of research—particularly as indicated the current interventions are successful within a limited range.

My reading of the proposal did not trigger any ethical issues that weren't already and adequately addressed in your proposal. On that basis I am authorised by the EACH Ethics Committee to expedite approval to your request.

The conditions from our end are:

- All practical implications are negotiated satisfactorily with Sharon O'Boyle, Manager of Lifeworks/Halcyon and that
- Any support role or expectations on staff, and disruptions to the programs be managed within what is reasonable.
- An executive summary of the findings be provided to EACH.

I hope the research goes well and best of luck in your doctoral thesis.

Peter
APPENDIX H

Growth In Social Thinking (GIST) Program Manual
Growth in Social Thinking (GIST)

Jerome Caspersz

This manual was designed and utilised for the purposes of conducting a postgraduate thesis project conducted by the author, Jerome Caspersz at Deakin University, Burwood, Australia. All information and materials in this manual reproduced from external sources have been acknowledged within this publication.

The manual remains the property of Deakin University and may be made available by contacting: Jerome Caspersz, jcas@deakin.edu.au or Dr. Linda Byrne, linda.byrne@deakin.edu.au.
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GROWING IN SOCIAL THINKING - GIST
Program Information

Overview

This manual provides the mental health practitioner with a structured, however flexible approach to the training of social cognitive skills and knowledge in individuals with significant mental health issues. The manual is inclusive of all materials and directions assuming use by mental health practitioners of varying levels of clinical experience. The facilitator however is responsible for providing appropriate use of positive and corrective feedback; support and ultimately encouraging a social atmosphere that promotes trust and safety.

The Growth in Social Thinking program is strongly influenced by the design of the most successful social cognitive training program in the extant research, the Social cognitive and interaction training program (SCIT: Roberts et al., 2006), Some tasks and training materials utilised in the program have also been reproduced or modified from other eclectic sources with permission.

The program consists of various material and information designed to educate and improve on participants social cognitive abilities and includes psycho-education; discussion of social cognition principles; learning specific social cognition strategies; utilising specific social cognition strategies to analyse social stimuli and various problem-solving exercises.

The program is designed to be delivered by one or more facilitators in a group format (maximum of six participants), administered over 13 one hour weekly sessions.

The content of this social cognitive remediation program is divided into four stages, with each stage consisting of 3-4 sessions: Recognising Feelings; Looking at the Big Picture; Connecting with Others and Putting it All Together.

• Stage 1: Recognising Feelings (4 sessions incl. introduction session)
• Stage 2: Looking at the Big Picture (3 sessions)
• Stage 3: Connecting with Others (3 sessions)
• Stage 4: Putting It All Together (3 sessions)
  Total = 13 sessions
Materials required for delivery of program

Whiteboard; computer projector; laptop or desktop computers (2 minimum); exercise books for each participant; Mindreading Interactive Training software program (Version 1.3); MediaLab software program (Version 2012); MMI Facial Expression Database; handouts and worksheets provided in manual.

Learning methods used

- Formal (didactic) presentation
- Group discussion
- Whiteboard
- Small group/dyad discussions
- Brainstorming
- Work-shopping personal examples from participants
- Take home tasks/activities
- Demonstrations/Role-plays

Take-home tasks

Practice between sessions is an essential part of this program. Often in therapy it is referred to as ‘homework’ but it in the context of this program it is referred to as take home tasks, practice tasks, between-session practice, etc. Clinicians should use whatever term appeals to them and/or their client.

At beginning of each session a review of previous session content is essential to reinforcing learnt information/skills and to inform facilitator of participant’s understanding of concepts and progress. Take-home tasks are to be reviewed also.

At end of each session, take-home tasks are to be given to participants each week, which are to be related to the content of the daily session. This homework is to be defined by the facilitator at the end of each session and must remain flexible, as the tasks must be considered realistically achievable, yet present a challenge for participants. A focus on personal experiences during the week between sessions is considered crucial to learning and understanding of social cognitive concepts. The facilitator may gauge take-home tasks by evaluating participant’s understandings within each session or difficulties they have demonstrated with previous practice tasks. The facilitator can also encourage participants to have collaborative input into generating take-home tasks. Furthermore, it is important to re-iterate the ‘practice or lose it’ policy of this program to participants. i.e. reinforce the importance of utilising learnt skills and information in real-life situations between sessions.

GROWING IN SOCIAL THINKING - GIST
SESSION 1
Introduction

Objectives

- To provide general overview of the remediation approach
- To provide a general course structure
- Familiarise participants to group context
- Establish safe and respectful environment
- Gather participants expectations of program
SESSION 1 PLAN

➢ Greeting and introduction to program

Facilitator to introduce self and provide an overview of the program including (rationale; social cognitive principles, program structure and format; aims and further relevant details.)

➢ Get to know each other

Encourage participants to introduce themselves to the group, including their reasons for attending the program and expectations of program.

Structure (Skills taught as separate blocks, then later come together and be integrated)
Content (Three areas covered and types of activities)

Talk about what makes people good at SS/ how did they become this way (practice leads to confidence). Re-iterated the step-by-step progression of the course and the need to be patient and learning these skills take time.

➢ Group guidelines

Establish group rules and expectations (from facilitator and participants) in collaborative discussion.

Suggested Group Rules:

• Confidentiality
• Respect and helpfulness
• Commitment
• Breaks
• Arrival time
• Protocol if cant attend
• Homework completion
• Mobile phones

GROWING IN SOCIAL THINKING - GIST
SESSIONS 2 – 4
Recognising Feelings

Objectives

- Illustrate complications in accurately recognising emotions
- Recognising importance of identifying and understanding emotions and relevance to social functioning
- Encourage participants to pay attention to emotional expression
- To practice identifying and discriminating between emotions of differing levels of subtlety
- Familiarise participants with various cues which are available to assist in recognising other people’s emotions
SESSIONS 2-4 PLAN

➢ Introduce “Recognising Feelings” topic.

➢ Provide rationale for topic and outline upcoming training/tasks

➢ Present and work through “Recognising Feelings” presentation and subsequent exercises/tasks.

➢ Facilitate participant’s use of ‘Mind Reading’ software in pairs or two groups of three. Go through set learning activities, exercises, games and quizzes:
  
  o Work through “Emotions Groups” or “Learning Centre” (changing difficulty level up or down if necessary)
  o Work through ”Games” section – (the last two: Real World Faces and Famous Face)
  o Group exercises (exploring areas of the program of their choice) with discussion of different emotions and ones that they identified as confusing for them

➢ Summary, review and group discussion of ‘Recognising Feelings’ stage

Materials/Handouts required

• “Recognising Feelings” presentation and following materials:
  o Exercise 2 – ‘Emotions List’
  o Exercise 4 – ‘Face Naming Task’ docs (3 parts with answer sheets)
• Mind Reading Interactive training computer software program (Version 1.3) (Baron-Cohen, Golan, Wheelwright, & Hill, 2004),
Recognising Feelings
Emotions

- Nobody can help having feelings - they are part of everyone. We feel different things all day long as different things happen to us.
- When we are feeling a strong emotion, it's because chemicals are released into our brains. These can make us feel happy, sad, angry etc.
- When you watch TV or movies you can usually work out what the character is feeling by looking at the face. Are you good at 'reading' faces?
Emotions

- Everyday we feel many different emotions.
- We all experience positive emotions and negative emotions (such as happiness and sadness).

- We can share how we are feeling through the:
  - the tone in our voices
  - the expressions on our faces,
  - our body language

Growth in Social Thinking (GIST)
Why do we need to know this?

- How we feel is important
- We like our feelings to be understood
- Brings us closer to other people
- Feel cared about
- Shows the other person that you care about them
- Things make more sense

Growth in Social Thinking (GIST)
Identifying Emotions

有时候很难识别或理解别人的感觉。

人们在相同的情况下会有不同的感受。

例如，你可能因为看电影而兴奋，但你的朋友可能会因为不喜欢人多而感到焦虑。
Confusing Emotions

- Sometimes, you may think another person is feeling a particular emotion when they are actually feeling something completely different.

- For example; you might think your friend is also EXCITED about the movies even though they are actually ANXIOUS.
Sometimes we misread or confuse body signals, facial expressions, voice tone and think another person is feeling something they are not.

For example, Mary avoids eye contact, has slumped shoulders and almost speaks in a whisper. We might think she is SCARED. However, she might also be feeling really sad.
Sometimes, a person may deliberately show an emotion on their face/voice/body which is not really how they are feeling.

For example; Your friend is in trouble at work, they had a car accident and someone broke into their house! You decide to take this friend for coffee- expecting them to be feeling pretty upset after all this. Instead they a smiling and laughing. When you comment, your friend confides that he is putting on a ‘brave face’ and really he is feeling pretty horrible.

Growth in Social Thinking (GIST)
Exercise 1

- Think of a situation from your own life where you have misunderstood/confused the emotion of someone else (Friend or Family Member);
  - What emotion did you think this person showed?
  - What was the feeling this person was wanting to communicate?
Exercise 1 Example

David and Tom are friends. Tom has had the flu so he has not seen David recently. Tom goes to visit David. Tom arrives at David’s house and knocks on the door. When David opens the door, he smiles slightly but doesn’t say hello. Tom worries David is ANGRY with him because it has been a long time since Tom last came to visit. However, David is actually very HAPPY to see his friend but has been eating his breakfast and has a mouth full of food preventing him from saying hello to Tom.
• What did Tom think that David was feeling?
• What was David actually feeling when he saw Tom?
• What signals did Dave give that he was happy to see Tom?
• What signals did Dave give that made Tom think he was angry?
Knowing Emotions

Exercise 2

- List as many emotions and feelings as possible
- We will use these to create a large group list of all the emotions that we know
- We need to list positive and negative emotions. Try and list an equal amount of both

Growth in Social Thinking (GIST)
How do we identify emotions?

- We must be **AWARE** of and **observe**:
  - Facial expression
  - Tone of Voice
  - Body language

Growth in Social Thinking (GIST)
Emotions and Facial Expressions

Exercise 3

Using our list of emotions, we need to name the emotion shown on the faces of the people in the following videos.

Remember, sometimes there may be more than one emotion the person in the photo might be feeling.
Exercise 4

Quiz!

- Name the emotion shown in the facial expression of the people in these photos
- Pair up with the person next to you and make sure you write down the answers for each of the photos
What have we learnt today?

- Recognising emotions is important
- When with others try to consider what they may be feeling
- Be aware that things are not always as they seem
- EVERYONE finds it difficult to identify other peoples emotions – but we ALL need to work at it!
- Observe different clues to identify the emotion/s that people that are feeling:
  - Facial Expression
  - Tone of Voice
  - Body language
Emotions List

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affection</td>
<td>Adoration, fondness, liking, attraction, caring, tenderness, compassion, sentimentality</td>
</tr>
<tr>
<td>Lust/Sexual desire</td>
<td>Arousal, desire, lust, passion, infatuation</td>
</tr>
<tr>
<td>Longing</td>
<td>Longing</td>
</tr>
<tr>
<td>Cheerfulness</td>
<td>Amusement, bliss, cheerfulness, gaiety, glee, jolliness, joviality, joy, delight, enjoyment, gladness, happiness, jubilation, elation, satisfaction, ecstasy, euphoria</td>
</tr>
<tr>
<td>Zest</td>
<td>Enthusiasm, zeal, zest, excitement, thrill, exhilaration</td>
</tr>
<tr>
<td>Contentment</td>
<td>Contentment, pleasure</td>
</tr>
<tr>
<td>Pride</td>
<td>Pride, triumph</td>
</tr>
<tr>
<td>Optimism</td>
<td>Eagerness, hope, optimism</td>
</tr>
<tr>
<td>Enthrallment</td>
<td>Enthrallment, rapture</td>
</tr>
<tr>
<td>Relief</td>
<td>Relief</td>
</tr>
<tr>
<td>Surprise</td>
<td>Amazement, surprise, astonishment</td>
</tr>
<tr>
<td>Irritation</td>
<td>Aggravation, irritation, agitation, annoyance, grouchiness, grumpiness, crosspatch</td>
</tr>
<tr>
<td>Exasperation</td>
<td>Exasperation, frustration</td>
</tr>
<tr>
<td>Anger</td>
<td>Anger, rage, outrage, fury, wrath, hostility, ferocity, bitterness, hate, scorn, spite, vengefulness, dislike, resentment</td>
</tr>
<tr>
<td>Envy</td>
<td>Envy, jealousy</td>
</tr>
<tr>
<td>Torment</td>
<td>Torment</td>
</tr>
<tr>
<td>Suffering</td>
<td>Agony, suffering, hurt, anguish</td>
</tr>
<tr>
<td>Sadness</td>
<td>Depression, despair, hopelessness, gloom, glumness, sadness, unhappiness, grief, sorrow, woe, misery, melancholy</td>
</tr>
<tr>
<td>Disappointment</td>
<td>Dismay, disappointment, displeasure</td>
</tr>
<tr>
<td>Shame</td>
<td>Guilt, shame, regret, remorse</td>
</tr>
<tr>
<td>Neglect</td>
<td>Alienation, isolation, neglect, loneliness, rejection, homesickness, defeat, dejection, insecurity, embarrassment, humiliation, insult</td>
</tr>
<tr>
<td>Sympathy</td>
<td>Pity, sympathy</td>
</tr>
<tr>
<td>Horror</td>
<td>Alarm, shock, fear, fright, horror, terror, panic, hysteria, mortification</td>
</tr>
<tr>
<td>Nervousness</td>
<td>Anxiety, nervousness, tenseness, uneasiness, apprehension, worry, distress, dread</td>
</tr>
</tbody>
</table>
Face Naming Task (Part 1)
Face Naming Task (Part 1 cont.)

Face Naming Task (Part 1) Answer Sheet

DISGUSTED

SAD

HAPPY

ANXIOUS
Face Naming Task (Part 2)
Face Naming Task (Part 2 cont.)

Face Naming Task (Part 2) Answer Sheet

......ANGRY.......................  .................CONFUSED...........

................ANXIOUS...................  ................HAPPY...................
Face Naming Task (Part 2) Answer Sheet (cont.)

SAD

SURPRISED

ANGRY

Face Naming Task (Part 3)
Face Naming Task (Part 3 cont.)

Face Naming Task (Part 3) Answer Sheet

........ANGRY.............. 

............ANGRY.............

...........ANXIOUS.............

............FEARFUL.............

GROWING IN SOCIAL THINKING - GIST
Face Naming Task (Part 3) Answer Sheet (cont.)

..........HAPPY.........................

..........SAD.........................

..........SURPRISED....................

..........DISGUSTED....................

Screenshots from ‘Mind Reading’ Interactive Training Program

**Screenshot of Video from MMI Facial Expression Database**

MMI Facial Expression Database, Imperial College London, http://www.mmifacedb.com

GROWING IN SOCIAL THINKING - GIST
SESSIONS 5-7
Looking at the Big Picture

Objectives

- Introduction to attribution style and why it is important to social functioning
- Psychoeducate about unhelpful attribution styles often held by people with mental illness/schizophrenia
- Broadening participants awareness of social information available to them
- Increasing participant’s ability to look at multiple causes for social events/reactions, etc.
- Encouraging participants to consider alternative views and additional information before making decisions based on social information
- Increasing awareness of how our emotions influence our perceptions
SESSIONS 5-7 PLAN

- Introduce “Looking at the Big Picture” topic.

- Provide rationale for topic and outline upcoming training/tasks

- Present and work through “Looking at the Big Picture” presentation and subsequent exercises/tasks.

- Present and discuss “Changing Beliefs” presentation *

- Present and discuss ‘Blaming & Taking Credit’ presentation *

- Present and discuss ‘Thinking About the Context’ presentation *

- Summary, review and group discussion of ‘Looking at the Big Picture’ stage

Note: Changing Beliefs, Blaming & Taking Credit and Thinking about the Context presentations contains content derived from a selection of examples and tasks from edited versions of MCTplus_Training Modules (1, 3 & 4) sourced from: Metacognitive Training for Patients with Schizophrenia (MCT) - second volume, version 3.1 Steffen Moritz & Todd S. Woodward. VanHam Campus Press 2007.

Materials/Handouts required

- As referred to in “Looking at the Big Picture” presentation:
  - Exercise 4 – Refer to ‘Scenarios Worksheet’ doc.
  - Exercise 5 – Refer to ‘Guessing Game’ doc.
  - Question wallet card to take home
    Refer to ‘3 Questions for wallet’ doc. (Source: MCTplus_Training Module_3, Metacognitive Training for Patients with Schizophrenia (MCT))

- Participants Exercise Book/Workbook
Looking at the Big Picture
We all experience both positive and negative events throughout our lives.

For example, getting a new job might be considered a positive event whilst being fired from our job might be a negative event.
Exercise 1

- Write down two situations/events in your life:
  1/ something that you feel was a **positive** &
  2/ something that you consider was **negative**

For each – What caused it and what happened as a result of your understanding?
There can be many causes of the experiences & events in our lives.

- **Attribute** = figuring out what caused something.

- We sometimes fail to see that most events can have very different causes.
For example – If a bird pooped on our shoulder!

Possible causes for this:

- “It’s my fault! I walked right under the tree which had heaps of birds in it”
  
or

- “The people in front of me were walking too slowly, it’s their fault!”
  
or

- “It was just bad luck or a coincidence”
So we can attribute things happening to us in 3 different ways

- This .......... happened BECAUSE of ourselves or another person/s or something about the situation

- e.g. We got a job because of ........

  - OURSELF – “we have the right personality”
  - OTHER/s – “our friend is the boss”
  - SITUATION – “it was pure luck or a coincidence”
Exercise 2

- Using the positive and negative events written down in exercise 1:

Identify if it was your self or someone else or something about the situation that CAUSED those events.

- If you attribute the cause of the event to yourself, can you also think of a way in which someone else might have contributed to it?

- If you attribute responsibility for the event to someone else, can you also think of a way in which you might have contributed to it?
Why are we talking about this?

- Research has shown that many people with some form of mental illness:
  - Tend to blame *themselves* for failure
  - Tend to give credit to *other* people or the *circumstances* for any successes
  - This can lead to low self-esteem!


Growth In Social Thinking (GIST)
Research has shown that many people with schizophrenia:

- Tend to blame other people or the situation for failure and negative events
- Tend to think that most events are beyond their control

None of these "attributional styles" are helpful and actually make their lives much harder


Growth In Social Thinking (GIST)
How incorrect attributions lead to misinterpretations – examples

<table>
<thead>
<tr>
<th>Event</th>
<th>Explanation during psychosis</th>
<th>Other explanations</th>
</tr>
</thead>
<tbody>
<tr>
<td>People laugh while you are speaking.</td>
<td>People don’t actually care what I say, they’re just making fun of me.</td>
<td>Pure coincidence—someone else has made a joke at the same time; people are amused by your black humour.</td>
</tr>
<tr>
<td>You have gained weight.</td>
<td>A cheapskate doctor has prescribed me cheap medication.</td>
<td>Side effects of medication are possible, but inactivity and poor nutrition are also possible causes.</td>
</tr>
<tr>
<td>Your bike tyre is flat.</td>
<td>Vandals are about; I’m being targeted.</td>
<td>You forgot to pump up your tyres; there could be a nail in the tyre.</td>
</tr>
</tbody>
</table>

Sometimes we may take credit for success we have – without giving credit to others

For example; taking all the glory for a team result

On the other hand, we may sometimes attribute a failure to others, rather than take responsibility ourselves

For example; using someone else as a ‘scapegoat’
Exercise 3

Let's discuss:

- How might another person feel if we blame them for failures we may have?
- How might another person feel if we don't give them due credit when we succeed?
Exercise 4

- List as many explanations as you can for the following scenarios

- For each scenario, try and identify multiple causes:
  - OURSELF - caused by us
  - OTHER/S - caused by someone else
  - SITUATION - caused by something about the situation (i.e. not by anyone)
Scenarios (see ‘scenarios worksheet’)

1. Your friend invites you to dinner
   (why did your friend invite you?)

2. Your boss requests a meeting with you
   (why did your boss call a meeting with you?)

3. Your friend has not returned your calls
   (why has your friend not returned your calls?)

4. Your neighbour buys you a present
   (why did your neighbour buy you a present?)

5. Your friends newborn baby starts crying when you are given it to hold
   (why has the baby started crying?)
Scenarios (cont.)

6. Your team won the football game and you kicked the winning goal
   (why did the team win the game?)

7. Your friend is talking secretly to others about you
   (why is your friend talking secretly about you?)

8. A co-worker offers to drive you home
   (why did your co-worker offer to drive you home?)

9. The bus drives off without you
   (why did the bus drive off without you?)

10. A fellow student comments that you are smart
    (why did they comment that you are smart?)
Jumping to Conclusions

- When an event has an **AMBIGUOUS** cause (i.e. it is not obvious what the cause is) we can either:

  - Guess – make a decision based on our initial impressions

  OR

  - We can become ‘social investigators’ and gather more evidence or facts before making a decision
Example: As we walk past the pub a group of men out the front start laughing. We worry that they are laughing at us.

- Guess – we might feel they are laughing at something about us – such as our new haircut, or our clothes, etc.

- Informed decision – after investigating, we notice a sign on the pub that reads ‘Comedy Night’ and a guy on stage with a microphone. We realise the men are probably laughing at the comedian – not us.
• How might you feel if you GUESSED the men at the pub were laughing at you?

• How might you feel if you used the FACTS (the poster/stage) and realised the men might be laughing at the comedian?

• Indeed, guessing in an ambiguous situation may lead us to feel negative emotions and perhaps respond in a negative way when we really shouldn’t.
GUESSING is when we try and figure out what another person's feelings, motivations or plans are without really knowing for sure.

FACTS are when we use 'objective' information; including what was actually said, what the person was wearing, the location of the event.
Exercise 5 (refer to ‘Guessing game’ handout)

- In pairs we are going to play a guessing game!
- Each participant gets a picture card showing an ambiguous event (correct scenario descriptions are provided to non-guessing partner).
- You must ask questions of your partner to obtain information about the situation.
- Even if you think you know what is happening in the picture after only a few questions, write down your idea and keep asking questions to learn more information.
- Be aware of whether your answer changes after learning more information!
What have we learnt today?

We can avoid getting the cause of something wrong or jumping to conclusions by:

- Gathering evidence
- Considering different explanations for events happening (because of yourself, because of others, because of something about the situation.)
- Asking the person or others
Whenever you feel insulted/threatened: Ask yourself the 3 questions on the yellow card

<table>
<thead>
<tr>
<th>Metacognitive Training (MCT): 3 questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>...if you feel insulted, threatened or put down...?</td>
</tr>
<tr>
<td>1. <em>What is the evidence?</em>  How do I know this? Real evidence, hearsay, speculation? Do I know the whole truth?</td>
</tr>
<tr>
<td>2. <em>Alternative views?</em>  Would people who I trust interpret the situation differently? Am I jumping to conclusions? Am I evaluating the situation fairly &amp; objectively?</td>
</tr>
<tr>
<td>3. <em>Even if it's like that...am I over-reacting?</em>  Am I reacting appropriately? Will I spoil anything for the future if I over-react? Think first — then act!</td>
</tr>
</tbody>
</table>

Sourced from: Metacognitive Training for Patients with Schizophrenia (MCT) - second volume, version 3.1
Steffen Moritz & Todd S. Woodward - VanHam Campus Press 2007

Growth In Social Thinking (GIST)
Scenarios Worksheet

Name: __________________________

Group: __________________________

Date: __________________________

1. Your friend invites you to dinner – WHY?

Caused by ...

SELF:

OTHER/S:

SITUATION:

2. Your boss requests a meeting with you – WHY?

Caused by...

SELF:

OTHER/S:

SITUATION:

3. Your friend has not returned your calls – WHY?

Caused by...

SELF:

OTHER/S:

SITUATION:

GROWING IN SOCIAL THINKING - GIST
4. Your neighbour buys you a present – WHY?

Caused by...

SELF:

OTHER/S:

SITUATION:

5. Your friends’ newborn baby is crying when you are given it to hold – WHY?

Caused by...

SELF:

OTHER/S:

SITUATION:

6. Your team won the football game and you kicked the winning goal – WHY?

Caused by...

SELF:

OTHER/S:

SITUATION:

7. Your friend is talking about you behind your back – WHY?

Caused by...

SELF:

GROWING IN SOCIAL THINKING - GIST
OTHER/S:

SITUATION:

8. A co-worker offers to drive you home – WHY?

Caused by...

SELF:

OTHER/S:

SITUATION:

9. The bus drives off without you – WHY?

Caused by...

SELF:

OTHER/S:

SITUATION:

10. A fellow student comments that you are smart – WHY?

Caused by...

SELF:

OTHER/S:

SITUATION:

GROWING IN SOCIAL THINKING - GIST
Guessing Game

In pairs we are going to play a guessing game!

Each participant gets a picture card showing an ambiguous event (correct scenario descriptions are provided to non-guessing partner).

You must ask questions of your partner to obtain information about the situation.

Even if you think you know what is happening in the picture after only a few questions, write down your idea and keep asking questions to learn more information.

Be aware of whether your answer changes after learning more information!
The man gets drunk at a bar before driving his car.

Two Deer are on the road ahead of him and because he is drunk he reacts badly and drives off the road crashing into the tree.

The policeman attends the scene as is trying to figure out what happened but he doesn’t know that the man is drunk or that there were Deer on the road which both caused the crash.
I am very sorry!

How am I supposed to work now?

This is unacceptable.
The lady has been told by her doctor that she has a serious illness. She is very upset by this news and takes some time to cry on a park bench before heading to work. She arrives late for work as a result of this and her boss seems very angry.

Her boss is angry with her for coming to work late but he does not know that the lady has been to the doctor this morning and given some very bad news about her health.
Some children who do not understand English are attending a language school to learn English. After school they play soccer at the park. There is a sign on the lawn saying to “Keep of the grass” but the children do not understand English so they cannot read the sign.

The park ranger is standing near the lawn and is thinking that the children have just ignored the sign and are being naughty. He is unaware that the children do not understand English.
The man leaves his house and realises that he has left his key inside. He sees that a window is open so he decides to jump in the window to retrieve his key.

A stranger walks past just as the man is entering his own houses window but as the stranger has just arrived he doesn’t know that the man lives there and assumes that he is a burglar breaking in to someone’s house.

Growth In Social Thinking (GIST)
A little boy decides to play a joke and partly saws the leg of a chair at a cafe when nobody is there. A large man comes to the cafe and when he sits down on the chair he comes crashing down. The other customers and even perhaps the man himself think that the chair broke because he is overweight.

None of them know that the boy had earlier sawn the leg of the chair and it had nothing to do with the weight of the man.
...if you feel insulted, threatened or put down...?

1. **What is the evidence?**
   How do I know this? Real evidence, hearsay, speculation? Do I know the whole truth?

2. **Alternative views?**
   Would people who I trust interpret the situation differently? Am I jumping to conclusions? Am I evaluating the situation fairly & objectively?

3. **Even if it’s like that...am I over-reacting?**
   Am I reacting appropriately? Will I spoil anything for the future if I over-react? Think first – then act!

SECTIONS 8-10
Connecting With Others

Objectives

- Introduction to understanding what other people are thinking and feeling, and relevance to improving social functioning
- Psychoeducate about research on theory of mind and schizophrenia
- Improve participants willingness to appreciate others perspectives
- Improve ability to empathise with others
- Improve participants ability to identify and predict others intentions from observing social information and cues
SESSIONS 8-10 PLAN

➢ Introduce “Connecting with Others” topic.

➢ Provide rationale for topic and outline upcoming training/tasks

➢ Present and work through “Connecting with Others” presentation and subsequent exercises/tasks.

➢ Perform video-based group training:

Present multiple choice format video vignettes of various social situations (using MediaLab programs) along with group discussion and feedback to enhance learning potential

➢ Perform group role-plays with participants simulating social scenarios

➢ Summary, review and group discussion of ‘Connecting with Others’ stage

Materials/Handouts required

• As referred to in “Connecting with Others” presentation:
  o Exercise 1 – Refer to ‘Character Watch Activity Sheets’ doc.
  o Exercise 2 – Refer to ‘False Belief Picture Stories Task Practice Example (& Answers)’ Docs; ‘False Belief Picture Stories Task for participants’ PPT and docs & False Belief Picture Task: Information for Facilitator.

• Five short video clips from popular cinema

• MediaLab (Version 2012) programs designed and created by the researchers and linked video vignettes

• ‘Role-play Scripts’ doc adapted from - Faux Pas Recognition Test (Adult Version) – Valerie Stone & Simon Baron-Cohen
Connecting with Others

Growth In Social Thinking (GIST)
Perspective

- It is natural to have an ‘Individualised’ view of life and the events that we experience (i.e. We see things from our own point of view)

- Each person can have a different view of a situation

- If we don't try and understand other peoples point of view, we can sometimes misinterpret their motives or actions

- Understanding how another person may think and feel about a situation is called ‘empathy’.

- So if we can do this, i.e. Think about things from another persons perspective - we can empathise with them.

Growth In Social Thinking (GIST)
For example

• Jack and his brother are playing with a truck in his room when his mother yells out to him from the kitchen. The boy puts the truck in his toy box and goes to see what his mother wants.

His brother takes the truck out of Jack’s toy box and starts playing with it and when he is finished he puts it under the bed

Growth In Social Thinking (GIST)
Soon after, Jack comes back to his room to play with his truck.

Do you know where the truck is?
  Why?

Where will Jack look for his truck?
  Why?

A good trick is to imagine yourself as the other person – i.e.

PUT YOURSELF IN THEIR SHOES

Growth In Social Thinking (GIST)
How can I empathise with another person...?

Example: A person touches his/her temple.

Why? Indifference, concentration, tiredness, headache?

What may help to answer the question?


Growth In Social Thinking (GIST)
How can I empathise with another person...

Example: A person touches his/her temple. 

*Why?* Indifference, concentration, tiredness, headache?

**What may help to answer the question?**

- **Knowledge about the person** → Does the person suffer from migraines?
- **Environment/situation** → Did the person just have an all-night-party?
- **Self-observation** → On what occasions do I touch my temple? (Caution! Do not immediately infer from yourself to others!)
- **Facial expression:** → Does the person look tired, thoughtful, afflicted etc.?


GROWING IN SOCIAL THINKING - GIST
Why are we doing this?

Studies show that many [but not all!] people with psychiatric problems (especially psychosis) have problems with the following:

- Difficulties detecting and evaluating the facial expressions of others (e.g. sadness, happiness).

- Difficulties deducing the motives/future activities of other people from current behaviour.

Sourced from: Metacognitive Training for Patients with Schizophrenia (MCT) - second volume, version 3.1 Steffen Moritz & Todd S. Woodward. VanHarn Campus Press 2007

Growth In Social Thinking (GIST)
Exercise 1

- We will now watch 5 short scenes from popular cinema. For each scene please list:
  
  - Who was involved
  - What they were doing / what happened
  - What each character might think / feel / want

- A section for each of these questions is highlighted on your activity sheet (‘Character watch activity’)

Growth In Social Thinking (GIST)
Exercise 2 (Group)

- Working in pairs, we are now going to arrange some pictures to tell a story. Each story is made up of four pictures. The cards of each story are in a mixed-up order, you are to arrange the cards in the correct order so that they show a logical sequence of events.

- Write the correct sequence using the colours of each card (see practice items).

- If you find a set confusing, just do your best to put the cards in order to make the most sensible story.
Exercise 3

- Working in pairs, we are now going to look at some cartoon sketches.

- For each cartoon, we will discuss:
  
  - What is happening in the cartoon?
  - What is each character in the cartoon feeling/thinking/believing?
Growth In Social Thinking (GIST)
Growth In Social Thinking (GIST)

Gallagher et al., 2000
GROWING IN SOCIAL THINKING - GIST
GROWING IN SOCIAL THINKING - GIST
Growth In Social Thinking (GIST)
Growth In Social Thinking (GIST)
What have we learnt today?

- You should only draw firm conclusions about another person if you know the person well or if you have observed the person in different contexts.
- Facial expression and gesture are important clues for what a person feels but can be misleading at times.
- When evaluating complex situations, it is crucial to consider all available information.
- The more information is considered, the more likely you are to make a correct judgement.
Character Watch Activity Sheet

Who are the characters involved in this scene

What are the characters doing?

What happens in the scene?

What might the characters think / feel or want?

Character 1:
THINKS-

FEELS-

WANTS-

Character 2:
THINKS-

FEELS-

WANTS-
False Belief Picture Stories Task Handout (cut into squares)
False Belief Picture Stories Task Answers
False Belief Picture Stories Task Answers (cont.)
Faux Pas Recognition Test (Adult Version)

Created by Valerie Stone & Simon Baron-Cohen

GROWING IN SOCIAL THINKING - GIST
False Belief Picture Stories Task - Guidelines for Facilitator

Introduce task to participants:

“There are some picture stories. The pictures are in the wrong order. Put them in the right order so they tell a story that makes sense.

When you are happy that you have the pictures in the right order, or you have done your best to work out an order that makes most sense ......

We will go through the stories and there are some questions to answer about the stories.”

Questions to ask participants when they’re formulating the correct order for pictures:

1 – 1,4,3,2

3a) What does the person in the red jumper think the others intend to do? (3rd picture)

3b) What do the two people want the one in the red jumper to believe they intend to do? (3rd picture) (cheating)

3c) What do they intend to do? (whole story) (deception)

3d) What does the person in the red jumper now think the other two people intended to do? (4th picture) (cheating detection)

2 – 1,4,3,2

5a) What does the person with blonde hair think is in the box? (3rd picture) (false belief)

5b) What's in the box? (3rd picture) (reality)

5c) What does the person with blonde hair think the other person intends to do? (3rd picture)

5d) What does the person with dark hair expect the person with blonde hair, is thinking that he (the person with dark hair) intends to do? (2nd picture) (3rd order false belief)

5e) What do you think the person with dark hair intended to do? (whole story) (deception)

3 – 1,4,3,2

2a) What does the person in the blue jumper think is in the bag? (2nd picture) (false belief)

2b) What's in the bag? (2nd picture) (reality)

2c) What does the person in the blue jumper think the person in the red jumper is about to do? (2nd picture) (2nd order false belief)

2d) What does the person in the red jumper expect the person in the blue jumper, is thinking

GROWING IN SOCIAL THINKING - GIST
that he (the one in red jumper) intends to do? (2nd picture) (3rd order false belief)

2e) What do you think the person in the red jumper intended to do? (whole story) (deception)

4 – 1,4,3,2

1a) What does the person in the red jumper think the one in the blue jumper intends to do? (2nd picture) (2nd order belief – e.g. get an apple from the tree)

1b) What does the person in the red jumper expect from the person in the blue jumper? (4th picture) (reciprocity – e.g. help him up or lift him up)

5 – 1,4,3,2

4a) What does the bald person think the other person intends to do? (1st picture)

4b) What does the bald person expect from the other person? (3rd picture) (reciprocity)

6 – 1,4,3,2

6a) What does the person in the blue jumper intend to do? (1st picture) (intention)

6b) What does the shop assistant think has happened? (3rd picture) (false belief)

6c) What does the person in the blue jumper and the one in the red jumper intend to do? (2nd picture) (cheating)

6d) What does the person in the red jumper expect from the person in the blue jumper? (4th picture) (reciprocity)

6e) What does the shop assistant now think the boys intended to do? (4th picture) (cheating detection)
Faux Pas Story Role-Plays

Facilitating the role-plays of the faux pas task:

Print out a version of the test that has just the stories, not the questions you ask (next 12 pages of manual, pgs 210-222).

Ask Participants to role-play these stories (character’s and scripts provided).

Following the role-plays, ask the questions relevant for each story (see Facilitator Sheet of Faux Pas Story Role Plays pgs 223-236).

If participants say ‘no’ to the first question, (e.g. no one said anything they shouldn’t have said, or that was not awkward), skip to the control questions for that story.

Note: Make sure you ask the control questions, whether or not they say “yes or no” about someone saying something awkward.

Stories and questions for this role-play task have been reproduced from:

Faux Pas Recognition Test (Adult Version)
Created by Valerie Stone & Simon Baron-Cohen

Correct citations for use of this test:
1.

Vicky
Oliver
Maria

Vicky was at a party at her friend Oliver's house. She was talking to Oliver when another woman came up to them. She was one of Oliver’s neighbours.

MARIA: To Oliver says, "Hello,"

then Maria turns to Vicky and says,

MARIA: "I don't think we've met. I'm Maria, what's your name?"

VICKY: "I'm Vicky."

OLIVER: "Would anyone like something to drink?"
2.

Mark
Helen
Sarah

Helen's husband Mark was throwing a surprise party for her birthday.

He bumped into Sarah, a friend of Helen's, and invited her.

Mark: "Don't tell anyone about the party, especially Helen."

The day before the party, Helen was over at Sarah's and Sarah spilled some coffee on a new dress that was hanging over her chair.

Sarah: "Oh!", "I was going to wear this to your party!"

Helen: "What party?"

Sarah: "Come on", "Let's go see if we can get the stain out."
4.

Jill
Lisa

Jill had just moved into a new apartment. Jill went shopping and bought some new curtains for her bedroom. When she had just finished decorating the apartment, her best friend, Lisa, came over. Jill was giving her a tour of the apartment.

JILL: "How do you like my bedroom?"

LISA: "Those curtains are horrible," "I hope you're going to get some new ones!"
7.

Sally
Aunt Carol
Mary

Sally is a three-year-old girl with a round face and short blonde hair. She was at her Aunt Carol’s house. The doorbell rang and her Aunt Carol answered it. It was Mary, a neighbour.

AUNT CAROL: "Hi", "Nice of you to stop by."

MARY: "Hello,"

Mary then looked at Sally and said,

MARY: "Oh, I don’t think I’ve met this little boy. What’s your name?"
Joan took her dog, Zack, out to the park. She threw a stick for him to chase. When they had been there a while, Pam, a neighbour of hers, passed by. They chatted for a few minutes.

PAM: "Are you heading home? Would you like to walk together?"

JOAN: "Sure,"

JOAN: calls her dog, "Zack come here boy"

he was busy chasing pigeons and didn't come.

JOAN: "It looks like he's not ready to go," "I think we'll stay."

PAM: "OK," "I'll see you later."
Kylie
Robert

Kylie, a manager in Abco Software Design, called a meeting for all of the staff.

KYLIE: "I have something to tell you," "John Morehouse, one of our accountants, is very sick with cancer and he's in the hospital."

Everyone was quiet, absorbing the news, when Robert, an engineer, arrived late.

ROBERT: "Hey, I heard this great joke last night!". "What did the terminally ill patient say to his doctor?"

KYLIE: "Okay, let's get down to business in the meeting."
12.

Mike
Joe
Peter

Mike, a nine-year-old boy, just started at a new school. He was in one of the stalls in the restroom at school.

Joe and Peter, two other boys, came in and were standing at the sinks talking.

JOE: "You know that new guy in the class?

PETER: "His name's Mike. Doesn't he look weird?"

JOE: "And he's so short!"

Mike came out of the stall and Joe and Peter saw him.

PETER: "Oh hi, Mike! Are you going out to play football now?"
13.

Kim
Scott

Kim's cousin, Scott, was coming to visit and Kim made an Apple pie especially for him. After dinner, she said

KIM: "I made a pie just for you. It's in the kitchen."

SCOTT: "Mmmm," "It smells great! I love pies, except for apple, of course."
Jeanette bought her friend, Anne, a crystal bowl for a wedding gift. Anne had a big wedding and there were a lot of presents to keep track of. About a year later, Jeanette was over one night at Anne’s for dinner. Jeanette dropped a wine bottle by accident on the crystal bowl and the bowl shattered.

JEANETTE: "I'm really sorry. I've broken the bowl".

ANNE: Don't worry," "I never liked it anyway. Someone gave it to me for my wedding."
15.

Jake
Christine

At Fernhaven Elementary School, there was a story competition. Everyone was invited to enter. Several of the fifth graders did so. Christine, a fifth grader, loved the story she had entered in the competition. A few days later, the results of the competition were announced: Christine’s story had not won anything and a classmate, Jake, had won first prize. The following day, Christine was sitting on a bench with Jake. They were looking at his first prize trophy.

JAKE: "It was so easy to win that contest. All of the other stories in the competition were terrible."

CHRISTINE: "Where are you going to put your trophy?"
16.

Tim
Waiter
Jack

Tim was in a restaurant. He spilled some coffee on the floor by accident. "I'll get you another cup of coffee," said the waiter. The waiter was gone for a while. Jack was another customer in the restaurant, standing by the cashier waiting to pay. Tim went up to Jack and said,

TIM: "I spilled coffee over by my table. Can you mop it up?"
18.

Roger
Andrew
Claire

Roger had just started work at a new office. One day, in the coffee room, he was talking to a new friend, Andrew.

ANDREW: "What does your wife do?"

ROGER: "She's a lawyer."

A few minutes later, Claire came into the coffee room looking irritated.

CLAIRE: "I just had the worst phone call. Lawyers are all so arrogant and greedy. I can't stand them."

ANDREW: "Claire, do you want to come look over these reports?"

CLAIRE: "Not now," "I need my coffee."
1. Vicky was at a party at her friend Oliver’s house. She was talking to Oliver when another woman came up to them. She was one of Oliver’s neighbors. The woman said, "Hello," then turned to Vicky and said, "I don't think we've met. I'm Maria, what's your name?" "I'm Vicky." "Would anyone like something to drink?" Oliver asked.

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

Did Oliver know that Vicky and Maria did not know each other?

How do you think Vicky felt?

Control questions:

In the story, where was Vicky?

Did Vicky and Maria know each other?
2. Helen's husband was throwing a surprise party for her birthday. He invited Sarah, a friend of Helen's, and said, "Don't tell anyone, especially Helen." The day before the party, Helen was over at Sarah's and Sarah spilled some coffee on a new dress that was hanging over her chair. "Oh!" said Sarah, "I was going to wear this to your party!" "What party?" said Helen. "Come on," said Sarah, "Let's go see if we can get the stain out."

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

Did Sarah remember that the party was a surprise party?

How do you think Helen felt?

Control question:

In the story, who was the surprise party for?

What got spilled on the dress?
4. Jill had just moved into a new apartment. Jill went shopping and bought some new curtains for her bedroom. When she had just finished decorating the apartment, her best friend, Lisa, came over. Jill gave her a tour of the apartment and asked, "How do you like my bedroom?" "Those curtains are horrible," Lisa said. "I hope you're going to get some new ones!"

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

Did Lisa know who had bought the curtains?

How do you think Jill felt?

Control question:

In the story, what had Jill just bought?

How long had Jill lived in this apartment?
7. Sally is a three-year-old girl with a round face and short blonde hair. She was at her Aunt Carol's house. The doorbell rang and her Aunt Carol answered it. It was Mary, a neighbor. "Hi," Aunt Carol said, "Nice of you to stop by." Mary said, "Hello," then looked at Sally and said, "Oh, I don't think I've met this little boy. What's your name?"

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

Did Mary know that Sally was a girl?

How do you think Sally felt?

Control question:

In the story, where was Sally?

Who came to visit?
8. Joan took her dog, Zack, out to the park. She threw a stick for him to chase. When they had been there a while, Pam, a neighbor of hers, passed by. They chatted for a few minutes. Then Pam asked, "Are you heading home? Would you like to walk together?" "Sure," Joan said. She called Zack, but he was busy chasing pigeons and didn't come. "It looks like he's not ready to go," she said. "I think we'll stay." "OK," Pam said. "I'll see you later."

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

When she invited her, did Pam know that Joan wouldn’t be able to walk home with her?

How do you think Pam felt?

Control question:

In the story, where had Joan taken Zack?

Why didn’t she walk with her friend Pam?
11. Jean West, a manager in Abco Software Design, called a meeting for all of the staff. "I have something to tell you," she said. "John Morehouse, one of our accountants, is very sick with cancer and he's in the hospital." Everyone was quiet, absorbing the news, when Robert, a software engineer, arrived late. "Hey, I heard this great joke last night!" Robert said. "What did the terminally ill patient say to his doctor?" Jean said, "Okay, let's get down to business in the meeting."

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

When he came in, did Robert know that the accountant was sick with cancer?

How do you think Jean, the manager, felt?

Control question:

In the story, what did Jean, the manager, tell the people in the meeting?

Who arrived late to the meeting?
12. Mike, a nine-year-old boy, just started at a new school. He was in one of the stalls in the restroom at school. Joe and Peter, two other boys, came in and were standing at the sinks talking. Joe said, "You know that new guy in the class? His name's Mike. Doesn't he look weird? And he's so short!" Mike came out of the stall and Joe and Peter saw him. Peter said, "Oh hi, Mike! Are you going out to play football now?"

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

When Joe was talking to Peter, did he know that Mike was in one of the stalls?

How do you think Mike felt?

Control question:

In the story, where was Mike while Joe and Peter were talking?

What did Joe say about Mike?
13. Kim's cousin, Scott, was coming to visit and Kim made an apple pie especially for him. After dinner, she said, "I made a pie just for you. It's in the kitchen." "Mmmm," replied Scott, "It smells great! I love pies, except for apple, of course."

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

When he smelled the pie, did Scott know it was an apple pie?

How do you think Kim felt?

Control question:

In the story, what kind of pie did Kim make?

How did Kim and Scott know each other?
14. Jeanette bought her friend, Anne, a crystal bowl for a wedding gift. Anne had a big wedding and there were a lot of presents to keep track of. About a year later, Jeanette was over one night at Anne's for dinner. Jeanette dropped a wine bottle by accident on the crystal bowl and the bowl shattered. "I'm really sorry. I've broken the bowl," said Jeanette. "Don't worry," said Anne. "I never liked it anyway. Someone gave it to me for my wedding."

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

Did Anne remember that Jeannette had given her the bowl?

How do you think Jeanette felt?

Control question:

In the story, what did Jeanette give Anne for her wedding?

How did the bowl get broken?
15. At Fernhaven Elementary School, there was a story competition. Everyone was invited to enter. Several of the fifth graders did so. Christine, a fifth grader, loved the story she had entered in the competition. A few days later, the results of the competition were announced: Christine’s story had not won anything and a classmate, Jake, had won first prize. The following day, Christine was sitting on a bench with Jake. They were looking at his first prize trophy. Jake said, "It was so easy to win that contest. All of the other stories in the competition were terrible." "Where are you going to put your trophy?" asked Christine.

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

Did Jake know that Christine had entered a story in the contest?

How do you think Christine felt?

Control question:

In the story, who won the contest?

Did Christine’s story win anything?
16. Tim was in a restaurant. He spilled some coffee on the floor by accident. "I'll get you another cup of coffee," said the waiter. The waiter was gone for a while. Jack was another customer in the restaurant, standing by the cashier waiting to pay. Tim went up to Jack and said, "I spilled coffee over by my table. Can you mop it up?"

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

Did Tim know that Jack was another customer?

How do you think Jack felt?

Control question:

In the story, why was Jack standing by the cashier?

What did Tim spill?
18. Roger had just started work at a new office. One day, in the coffee room, he was talking to a new friend, Andrew. "What does your wife do?" Andrew asked. "She's a lawyer," answered Roger. A few minutes later, Claire came into the coffee room looking irritated. "I just had the worst phone call," she told them. "Lawyers are all so arrogant and greedy. I can't stand them." "Do you want to come look over these reports?" Andrew asked Claire. "Not now," she replied, "I need my coffee."

Did anyone say something they shouldn't have said or something awkward?

If yes, ask:

Who said something they shouldn't have said or something awkward?

Why shouldn't he/she have said it or why was it awkward?

Why do you think he/she said it?

Did Claire know that Roger’s wife was a lawyer?

How do you think Roger felt?

Control question:

In the story, what does Roger's wife do for a living?

Where were Roger and Andrew talking?
John, in this exercise you will be shown a number of short video clips showing different situations that people encounter. Please watch each clip and after the clip is finished a question will pop up asking you something about the scene you have just watched. You then need to choose ONE answer that you think is the BEST answer to the question. After you answer - you may be told that your answer was correct and to move on or if you choose an incorrect answer - a clue will be given and you will have one more chance to choose the correct answer before moving on to the next clip.
What is the lady thinking when the man asks for milk?

- Mmm..... that's an unusual drink to ask for in an office
- I wander if I could have some milk too...
- Ok no problem...
Try again John - Think about how you would feel or think if you were this person. Put yourself in their shoes! - PRESS GO BACK on bottom left of screen

Well done John!! That is correct!!
SESSIONS 11-13
Putting it All Together

Objectives

- Integrate social cognitive concepts learnt and apply these learnt skills in a consolidated manner
- Improve participants ability to use learnt skills to more accurately identify, evaluate and predict the feelings, causes and intentions of others
- Apply learnt skills and knowledge in an integrative fashion from available social information
SESSIONS 11-13 PLAN

- Discuss consolidation of learnt social cognitive skills with focus on integrating these skills in forthcoming weeks.

- Complete group video-based training:
  
  Present multiple choice format video vignettes of various social situations (from MediaLab programs and MCT videos) along with group discussion and feedback to enhance learning potential.

- Perform group role-plays with participants simulating social scenarios (personal examples) followed by interactive analysis and feedback.

- Group discussion and use of real situations that participants have experienced in their own lives to apply learnt social cognitive knowledge and skills.

- Brief summary, review and group discussion of entire program. This will be informed by the accomplishments and difficulties reported by group members.

- Set aside time for participants to provide feedback about their experience of the program and to organise any future post-assessment duties (if applicable).

Materials/Handouts required:

- Cognitive Biases Videos (sourced from MCT) *
- MediaLab programs and linked video clips
- Optional: Provide all participants with a folder containing hardcopies of the three core presentations covered in the program (i.e. ‘Recognising Feelings’; ‘Looking at the Big Picture’ and ‘Connecting With Others’).

* Metacognitive Training for Patients with Schizophrenia (MCT) - second volume, version 3.1  Steffen Moritz & Todd S. Woodward. VanHam Campus Press 2007.)
References


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