

THE UNIVERSITY OF HULL

Social Dysfunction in Chronic Schizophrenia:
Nature, Treatment and Generalization

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By

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Abstract

Social Dysfunction in Chronic Schizophrenia:

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The present research explores the impact of neurocognitive status on generalization of social skills training and how these difficulties are further compounded by the difficulty of inadequate matching of problems to treatments. The generalization problem is addressed in two phases. In the first phase, a suggestion that a subgroup of chronic schizophrenia patients may have normal abstract problem solving was investigated by comparing paranoid and non-paranoid chronic schizophrenic in-patients (n= 11 per group) with assessed social dysfunction. Only the paranoid group had profiles comparable to matched normal controls. The non-paranoid group had neuropsychological deficits (executive dysfunction) on the Wisconsin Card Sorting Test (WCST).

In the second phase, a longitudinal study compared the differential efficacy of behavioural versus cognitive-behavioural social skills training (SST), and monitored the effects on maintenance and generalization, focusing on social anxiety.

Concurrently, the treatment validity of a multidimensional assessment of social problem solving was assessed using an alternating treatments design with a multiple baseline across participants from three groups: skill deficits (n=3), cognitive blocks (n=3) and a control group (n=3) with both problems. All participants received four randomized sessions each of Behavioural SST and Cognitive-Behavioural SST. The group SST used a 'whisper in the ear' game format and included self-instructional training and social problem solving to facilitate generalization.

The findings demonstrated the treatment validity of the multidimensional assessment and offered preliminary evidence for the differential efficacy, maintenance and generalization of Behavioural and Cognitive-Behavioural SST which occurred for untrained behaviours and was maintained at the 3- and 9-month follow-ups but only for those not impaired on the WCST.

It is concluded that it is more productive for assessment to focus on social anxiety and the practice of mixing schizophrenia patients in SST, without taking a neurocognitive baseline, may be responsible for confounding generalization efforts. A limitation of the research is that gender differences were not testable as there were insufficient numbers

Contents

	Page
Acknowledgements	i
Abstract	ii
Contents	iii
List of Tables	viii
List of Figures	x
OVERVIEW	1
CHAPTER ONE: THE CONCEPT AND NATURE OF SCHIZOPHRENIA	4
1.1 Psychiatric conceptualizations of schizophrenia	
1.2 Critiques of the validity of schizophrenia	
1.3 Abandoning schizophrenia research?	
1.4 “Are ‘paranoids’ schizophrenic”?	
1.5 Cognitive and attentional deficits	
1.6 Problem solving deficits and executive dysfunction	15
CHAPTER TWO: SELECTIVE REVIEW AND CRITIQUE OF ISSUES IN SOCIAL DYSFUNCTION	
2.1 MODELS OF SOCIAL DYSFUNCTION	25
2.1.1 Argyle’s Motor Skill Model of Social Skills	
2.1.2 Trower’s Cognitive-Behavioural Agency Model	
2.1.3 Towards A Multidimensional Conceptualization of Social Dysfunction ?	32
2.2 THE CONCEPT OF SOCIAL SKILL	33
2.2.1 A critical appraisal of the social skills concept	
2.2.2 Cognitive correlates of social anxiety	

2.2.3	Models of the development of social anxiety	37
2.3	GENERALIZATION OF SOCIAL SKILLS IN SCHIZOPHRENIA PATIENTS	41
2.3.1	Methodological and clinical research issues	
2.3.2	Strengths and problems with the meta-analysis of Benton & Schroeder (1990).	
2.3.3	Strengths and problems with the meta-analysis of Pilling et al.(2002).	48
2.4	THE GENERALIZATION PROBLEM	50
2.4.1	The concept of generalization	
2.4.2	Strategies for promoting generalization	
2.4.3	Radical behaviourist contributions to generalization	53
2.5	RULE- GOVERNED BEHAVIOUR AND VERBAL SELF-REGULATION: THE ROLE OF SELF TALK	54
2.5.1	Problems of rule control	
2.5.2	Radical behavioural analyses of cognitive therapies	
2.5.3	Rule-governed behaviour: clinical implications	
2.5.4	Self-instructional training.	
2.5.5	Verbal self-regulation in cognitive-behavioural therapies	
2.5.6	Methodological problems in studying covert speech	65
CHAPTER THREE: METHODOLOGICAL AND STATISTICAL ISSUES IN SOCIAL SKILLS RESEARCH		
3.1	Assessing treatment validity	66

3.2	The problem of the individual in group studies	
3.3	Statistical issues in time- series designs and criteria for evaluating clinical significance	71

CHAPTER FOUR: STUDY ONE

THE ASSESSMENT OF PROBLEM SOLVING DEFICITS IN CHRONIC SCHIZOPHRENIA

4.1	Introduction	73
4.2	Research questions and main hypotheses	
4.3	Method	78
4.3.1	Participants	
4.3.2	Measures	
4.3.3	Apparatus	
4.3.4	Procedure	
4.4	Results	87
4.4.1	Overall problem solving ability	
4.4.2	Latency of rule discovery	
4.4.3	Number of perseverative responses	
4.4.4	Number of perseverative errors	
4.4.5	'Think aloud' procedure: spontaneous overt self-verbalizations during problem solving	
4.4.6	Participants' self-report about what the test was about and the strategies adopted.	
4.5	Discussion	103
4.5.1	The naturalistic 'think-aloud' procedure- a methodological advance?	
4.5.2	Excluding alternative explanations	
4.5.3	Methodological improvements	
4.5.4	Limitations of Study One	111

CHAPTER FIVE: STUDY TWO

THE TREATMENT VALIDITY OF A MULTIDIMENSIONAL ASSESSMENT OF SOCIAL PROBLEM SOLVING: EFFICACY, MAINTENANCE AND GENERALIZATION

5.1	Rationale and Theoretical Models	114
5.2	Aims of the study	
5.3	Research Hypotheses	

5.4. Method	119
5.4.1. Research Design	
5.4.2. Participants	
5.4.3. Measures	
5.4.4. Interventions	
5.4.5. Procedure	
5.4.6. Phase 1: Preliminary Screening	
5.4.7. Phase 2: Baseline	
5.4.8. Phase 3: Training	
5.4.9. Phase 4: Maintenance and Generalization Plus Independent Social Validation	
5.5. Treatment Integrity	144
5.6 Results	145
5.6.1 Graphical and Statistical Analysis	
5.6.2 Social Anxiety Levels	
5.6.3 Depression Levels.	
5.6.4 Skill deficits group	
5.6.5 Cognitive blocks group	
5.6.6 Control Group: Skill deficits & Cognitive blocks	
5.6.7 Maintenance and Generalization	174
CHAPTER SIX: DISCUSSION	183
6.1 Study One	
6.2. Study Two	
6.2.1 Controlling methodological flaws	
6.2.2 Changes in the secondary measures	
6.2.3 Demand characteristics or social validation?	
6.2.4 Treatment interference and carry over effects	
6.2.5 Process of change	
6.2.6 Less training is just as effective as more?	
6.2.7 Is cognitive remediation a pre-requisite for successful maintenance and generalization of social problem solving skills?	
6.2.8 The question of cost-effectiveness	
6.2.9 Listening to their voices: the participants' views	
6.3 Functional analysis for a more thorough initial assessment	
6.3.1 A case for the re-introduction of self-instructional training?	
6.3.2 Moving away from a unitary model of social dysfunction: "Is it true that everyone has won and all must have prizes?"	
6.3.3 The generalization problem reconsidered: the role of abstraction	
6.3.4 Generalization from a radical behavioural perspective	
6.3.5 Treatment fidelity	

6.3.6	Limitations of study two	
6.3.7	Implications for clinical practice	
6.3.8	Recommendations for further research	
6.3.9	Conclusions	215
REFERENCES		217
RELATED PUBLICATION		247
APPENDICES		253

<u>List of Tables</u>		<u>Page</u>
Table 1.1	DSM IV diagnostic criteria for schizophrenia	7
Table 1.2	'Defect' symptoms of schizophrenia suggestive of frontal lobe dysfunction (Weinberger, 1988)	18
Table 2.1	A multidimensional conceptualization of social dysfunction (Alladin,1988)	40
Table 2.2	Findings from research on social skills training for schizophrenia (Vaccaro & Roberts,1992)	43
Table 2.3	Summary of reviews of research on SST for schizophrenia(Bellack et al. 2004)	46
Table 3.1.	Some common rules in evaluating time-series data	72
Table 4. 1	Demographic characteristics of the experimental (n =11) & psychiatric control (n =11) groups.	80
Table 4.2	Total number of categories achieved by the paranoid and non-paranoid schizophrenia participants (n=22).	87
Table 4.3	Selected results from the normative study across two educational groups.	90
Table 4.4	Number of trials taken to record a sequence of ten correct sorts according to the first category: colour.	91
Table 4.5	Percentage of perseverative responses (% PR)	95
Table 4.6	Percentage of perseverative errors	97
Table 4.7	Participants with raw perseverative response (PR) scores >18(expressed as percentages*) with categories achieved and number of failures to maintain set.	99
Table 4.8	Total number of failures to maintain set across all trials by the paranoid (Paranoid Group, N =11) and non-paranoid schizophrenia (Non-Paranoid Group, N =11) participants.	100

Table 4.9	Participants spontaneous verbal reports during actual problem solving from the ‘think aloud’ procedure classified as (+) : facilitative, or (-) : inhibitory, in relation to number of failures to maintain set.	101
Table 5.1	Wisconsin Card Sorting Test Profiles of the Nine Participants divided into WCST impaired (n=3) and WCST normal (n= 6).	124
Table 5.2	Examples of the Personal Questionnaire Measures	127
Table 5.3	Procedural differences of Study Two from traditional SST.	130
Table 5.4	An episode from the ‘whisper-in-the-ear’ technique	132
Table 5.5	Wasik’s (1984) Simplified Version of the Social Problem Solving Model	135
Table 5.6	The process of each session (adapted from Alladin, 1988).	138
Table 5.7	SST Group – 8 Week Programme Outline	139
Table 5.7	(continued)	140
Table 5.8	Protocol for Cognitive Behavioural SST	142
Table 5.9	Binomial test results across test variables.	155

<u>List of Figures</u>		<u>Page</u>
Figure 2.1	The Argyle motor skills model of social skills	27
Figure 4.1	Summary of data collection	80
Figure 4.2	Graphical representation of the Wisconsin Card Sorting Test categories achieved by paranoid and non-paranoid schizophrenia participants.	88
Figure 4.3	Participants paired in ascending order of percentage of perseverative responses (% PR)	94
Figure 4.4	Percentage perseverative errors	96
Figure 5.1	How participants were selected for the SST groups	122
Figure 5.2	Summary of data collection from pre-screening, baseline to follow-up.	125
Figure 5.3	Protocol for Self-Instructional Training	133
Figure 5.4	Self-instructional training steps	134
Figure 5.5a	Longitudinal scores for social anxiety from baseline to follow-up Participants P1-P3.	147
Figure 5.5b	Longitudinal scores for social anxiety from baseline to follow-up Participants P4-P6.	148
Figure 5.5c	Longitudinal scores for social anxiety from baseline to follow-up Participants P7-P9	149
Figure 5.6a	Longitudinal scores for depression from baseline to follow-up Participants P1-P3.	151
Figure 5.6b	Longitudinal scores for depression from baseline to follow-up Participants P4-P6	152
Figure 5.6c	Longitudinal scores for depression from baseline to follow-up Participants P7-P9	153
Figure 5.7	Behavioural & Cognitive-Behavioural SST effects on skill level across participants with skills deficit	158
Figure 5.8	Behavioural & Cognitive-Behavioural SST effects on social anxiety across participants with skills deficit	159

Figure 5.9	Behavioural & Cognitive-Behavioural SST effects on depression across participants with skills deficit	160
Figure 5.10	Behavioural & Cognitive-Behavioural SST effects on self-esteem across participants with skills deficit	161
Figure 5.11	Behavioural & Cognitive-Behavioural SST effects on skill level across participants with cognitive blocks	163
Figure 5.12	Behavioural & Cognitive-Behavioural SST effects on social anxiety across participants with cognitive blocks	164
Figure 5.13	Behavioural & Cognitive-Behavioural SST effects on depression across participants with cognitive blocks	165
Figure 5.14	Behavioural & Cognitive-Behavioural SST effects on self-esteem across participants with cognitive blocks	166
Figure 5.15	Behavioural & Cognitive-Behavioural SST effects on skill level across participants with skills deficit & cognitive blocks	169
Figure 5.16	Behavioural & Cognitive-Behavioural SST effects on social anxiety across participants with skills deficit & cognitive blocks	170
Figure 5.17	Behavioural & Cognitive-Behavioural SST effects on depression across participants with skills deficit & cognitive blocks	171
Figure 5.18	Behavioural & Cognitive-Behavioural SST effects on self-esteem across participants with skills deficit & cognitive blocks	172
Figure 5.19	Behavioural & Cognitive-Behavioural SST effects on skill level across participants with skills deficit Maintenance & Generalization	175
Figure 5.20	Behavioural & Cognitive-Behavioural SST effects on skill level across participants with cognitive blocks Maintenance & Generalization	176
Figure 5.21	Behavioural & Cognitive-Behavioural SST effects on skill level across participants with skills deficit & cognitive blocks Maintenance & Generalization	177

OVERVIEW

SOCIAL DYSFUNCTION IN CHRONIC SCHIZOPHRENIA: NATURE, TREATMENT & GENERALIZATION

This investigation addresses the problem of generalization of social skill in chronic schizophrenia by focusing attention on the nature of social dysfunction and how this is assessed, the treatments that are offered and the strategies of generalization underlying the treatments. The literature review that follows is organized into three chapters.

Chapter One , THE CONCEPT AND NATURE OF SCHIZOPHRENIA, begins with an introduction to psychiatric conceptualizations of schizophrenia. Whilst some progress has been achieved in diagnostic reliability, the construct validity of schizophrenia remains in dispute. Next, calls to abandon schizophrenia research in the light of serious doubt about the validity of the diagnosis of schizophrenia are considered. It has been suggested that a subgroup of patients with paranoid schizophrenia may be quite normal in their cognitive functioning. More recent neurocognitive evidence linking problem solving deficits to executive dysfunction is a promising avenue to pursue.

Chapter Two, ISSUES IN SOCIAL DYSFUNCTION: A SELECTIVE REVIEW & CRITIQUE, is divided into five major sections.

2.1 MODELS OF SOCIAL DYSFUNCTION. Since different models of social skills training(SST) [eg. Behavioural SST and Cognitive-Behavioural SST] have different underlying assumptions which can impede or enhance treatment, these need to be made explicit and taken into account. The focus will be on Argyle's (1967) motor skill model of social skills and Trower's (1984) radical cognitive behavioural model of social skill. A combination of the strengths of more than one model may be necessary for some individuals. Further, a more comprehensive multidimensional conceptualization of social dysfunction can help in individually determining which approach is most suitable.

2.2 THE CONCEPT OF SOCIAL SKILL. A critical re-appraisal of the concept of social skill and the literature on the cognitive correlates of social anxiety suggest that it would be more appropriate to move the focus from social skills to social anxiety in the assessment and treatment of social dysfunction. This could result in a better understanding of social dysfunction especially if social anxiety is integrated into a multidimensional model of social dysfunction.

2.3 GENERALIZATION OF SOCIAL SKILLS IN SCHIZOPHRENIA PATIENTS considers the methodological and clinical research issues in generalization of social skills in schizophrenia patients. After discussing a paradigmatic study, the strengths and problems with two major meta-analytic studies will be briefly examined.

2.4 THE GENERALIZATION PROBLEM. This section begins by considering the concept of generalization which may help identify gaps in our understanding of the complexities underlying failure of treatment gains to generalize in extra-therapeutic settings. Some strategies for generalization are outlined and then radical behaviourist contributions to generalization are highlighted. SST generalization failures in

schizophrenia patients may be confounded by neurocognitive deficits which need to be taken into account.

2.5 RULE-GOVERNED BEHAVIOUR AND VERBAL SELF-REGULATION. The first half of this section focuses on the radical behaviourist literature on rule-governed behaviour which appears to provide a more robust foundation for a deeper understanding of how people learn social skills and its relevance to people with schizophrenia is elaborated. The second half of this section notes that in past decades, self-instructional training (SIT) had produced dramatic improvements in social dysfunction amongst those with chronic schizophrenia but its promise seems to have been lost. The relevance of the Vygotskyian literature on private thought and verbal self-regulation to cognitive-behavioural therapies is made explicit by focusing on SIT.

Chapter Three, METHODOLOGICAL AND STATISTICAL ISSUES IN SOCIAL SKILLS

RESEARCH , observes that researchers frequently note large individual variations in group studies but do not often employ research designs which will allow a fine-grained analysis of the data. The methodological and statistical issues in social skills research need special attention so that a promising methodology is adopted.

Chapter Four, STUDY ONE, is about THE ASSESSMENT OF PROBLEM SOLVING DEFICITS IN CHRONIC SCHIZOPHRENIA, investigating the feasibility of the Wisconsin Card Sorting Test as a possible screening measure for Social Skills Training.

Chapter Five, STUDY TWO, is about THE TREATMENT VALIDITY OF A MULTIDIMENSIONAL ASSESSMENT OF SOCIAL PROBLEM SOLVING , focusing on the differential efficacy of Behavioural and Cognitive Behavioural SST in maintenance and generalization.

Chapter Six, DISCUSSION, concludes with a full discussion of the main findings and issues.

CHAPTER ONE

THE CONCEPT AND NATURE OF SCHIZOPHRENIA

- 1.1 Psychiatric conceptualizations of schizophrenia
- 1.2 Critiques of the validity of schizophrenia
- 1.3 Abandoning schizophrenia research ?
- 1.4 “Are ‘paranoids’ schizophrenic” ?
- 1.5 Cognitive and attentional deficits
- 1.6 Problem solving deficits and executive dysfunction

Introduction

This chapter begins with an introduction to psychiatric conceptualizations of schizophrenia. Whilst some progress has been achieved in diagnostic reliability, the construct validity of schizophrenia remains in dispute. Next, calls to abandon schizophrenia research in the light of serious doubt about the validity of the diagnosis of schizophrenia are considered. The search for cognitive deficits specific to schizophrenia remains elusive. It has been suggested that a subgroup of patients with paranoid schizophrenia may be quite normal in their cognitive functioning and some have even questioned whether they suffer from schizophrenia. It is concluded that more recent neurocognitive evidence linking problem solving deficits to executive dysfunction is a promising avenue to pursue.

1.1 Psychiatric conceptualizations of schizophrenia

The complex literature on schizophrenia is too voluminous to summarize here but a recent critical appraisal of the psychological, social and biological approaches can be found in Read, Mosher & Bentall (2004) but see also Bentall (2004). For an update on the aetiology and course of schizophrenia see Walker, Kestler, Bollini & Hochman (2004). Historically, the diagnosis of schizophrenia has been problematic. According to Bleuler (1911) the essential feature of schizophrenia is the loosening of associations, delusions and hallucinations being of secondary importance.

For Schneider (1959), delusions and hallucinations were primary. Bentall et al. (1988) implicate these different conceptualizations for schizophrenia remaining a disjunctive category: any two patients may have no symptoms in common. There is also overlap between schizophrenia and affective disorders making differential diagnosis problematic. To complicate matters, schizo-affective disorder involves a combination of schizophrenia and affective symptoms.

Europeans have tended to follow an atheoretical, narrow view of schizophrenia applying it to patients with a poor prognosis. North Americans have favoured Bleuler's broader conceptualisation but a narrower definition is apparent with the *Diagnostic and Statistical Manual of Mental Disorders (DSM III)* (American Psychiatric Association, 1980) and subsequent revisions. Kraepelin's term *dementia praecox* conveys what he regarded as two major features of schizophrenia: early onset (*praecox*) and a progressive intellectual deterioration (*dementia*). Bleuler recognised that this applied only to a subgroup, with others having only one or two episodes and achieving a good recovery. Perhaps the prognostic variability observed may be due to

differences in the definition of schizophrenia? However, attempts to link the diagnosis of schizophrenia to prognosis have not produced consistent results. Prior hospitalization and premorbid history are more predictive of outcome. The process-reactive dimension has been used to describe the variability in the course of schizophrenia. “Process schizophrenia” indicates a poor premorbid history and a slow developmental deterioration. Those with “reactive schizophrenia” have a good premorbid history but with a rapid onset, usually triggered by environmental stress. Hence the debate over whether schizophrenia is one disorder, a group of disorders, or a syndrome with multiple aetiologies. Thus, expecting a single ‘typical’ course for schizophrenia would be simplistic.

Another popular distinction is that made between positive and negative symptoms. Positive symptoms, regarded as the principal markers for schizophrenia, include delusions, hallucinations, and formal thought disorder. Negative symptoms include social isolation, withdrawal, impairment of role functioning, deterioration of personal hygiene and grooming. However, Andreasen (1985) noted that there was some confusion about the existence of an identifiable negative syndrome and suggested that, at best, it should be regarded as a tentative hypothesis.

The discovery of neuroleptic medication, the phenothiazines, revolutionized the treatment in dealing with positive symptoms. However, they were not curative and some patients were non-responsive and for others negative side effects resulted in non-compliance. Further, of those who comply, about 50 per cent relapse within two years. Medication was not very effective with the negative symptoms and contributed to serious negative symptomatology. The newer ‘atypical antipsychotics’ are better tolerated and may slightly improve cognitive functions but they do not in themselves insure against relapse.

Kirk and Kutchins (1994) assert that the proclaimed reliability of DSM III is a myth. They challenge the claim that it was guided by scientific principles and evidence and that it greatly ameliorated the problem of the unreliability of psychiatric diagnosis. By re-analyzing the data gathered in the original DSM-III field trials, Kirk and Kutchins (1992) showed how standards for interpreting reliability were dramatically shifted over time, making it easier to claim success with DSM III when the data were equivocal. Since then DSM IV (APA,1994) has revised the criteria for schizophrenia.

Table 1.1 DSM-IV diagnostic criteria for schizophrenia (APA,1994)

<p>A</p> <p>Characteristic symptoms: Two or more of the following, each present for a significant portion of time during a one-month period:</p> <ul style="list-style-type: none"> ▪ delusions ▪ hallucinations ▪ disorganised speech (eg, frequent derailment or incoherence) ▪ grossly disorganised or catatonic behaviour ▪ negative symptoms (ie, affective flattening, alogia, or avolition). <p>Note Only one Criterion A symptom is required if delusions are bizarre or hallucinations consist of a voice keeping up a running commentary on the person's behaviour or thoughts, or two or more voices conversing with each other.</p> <p>B</p> <p>Social/occupational dysfunction: Since the onset of the disturbance, one or more major areas of functioning, such as work, interpersonal relations, or self-care, are markedly below the level previously achieved.</p> <p>C</p> <p>Duration: Continuous signs of the disturbance persist for at least six months. This six-month period must include at least one month of symptoms (or less if successfully treated) that meet Criterion A.</p> <p>D</p> <p>Exclusion of schizoaffective disorder and mood disorder with psychotic features.</p> <p>E</p> <p>Substance/general medical condition exclusion: the disturbance is not due to the direct physiological effects of a substance (eg, a drug of abuse, a medication) or a general medical condition.</p> <p>F</p> <p>Relationship to a pervasive developmental disorder: If there is a history of autistic disorder or another pervasive development disorder, the diagnosis of schizophrenia is made only if prominent delusions or hallucinations are also present for at least a month (or less if successfully treated).</p>
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A major problem with DSM IV criteria for schizophrenia is that it is still too focused on signs and symptoms which are not specific to schizophrenia. As Corrigan and Penn (2001) have noted, from its earliest conceptions schizophrenia has been viewed as both a cognitive and a social disorder:

Schizophrenia is an especially troublesome disorder because it causes disabilities across most social functioning domains-disabilities that prevent people from achieving their life goals. People with schizophrenia have difficulty attaining good jobs, earning a meaningful income, living in comfortable housing, finding a mate, and generally enjoying life. p.3

Further, Lewis (2004) for example, observes that the presence of cognitive impairment has never been included in any of the major diagnostic criteria systems applied to schizophrenia. This anomaly is surprising given that in the last decade cognitive deficits have become increasingly accepted as a remarkably robust and core characteristic of schizophrenia both in the acute and chronic phases. Similar deficits have been found in children and adolescents with schizophrenia and in children before they exhibit the signs and symptoms of schizophrenia.

Lewis (2004) has suggested the addition of the following criteria to DSM IV for schizophrenia:

B. Social/occupational/*cognitive dysfunction**. For a significant proportion of the time since the onset of the disturbance, one or more major areas of functioning such as work, interpersonal relations, self-care, or cognitive functioning are markedly below the level achieved prior to the onset)(or when the onset is in childhood or adolescence, failure to achieve expected level of interpersonal, academic, or occupational achievement). In adults, if cognitive impairment was present premorbidly and has not deteriorated since the onset of the disturbance, then cognitive function should be markedly below normal or expected levels.

Cognitive impairment in schizophrenia is defined as marked impairment of 2 or more of the following 3 domains of cognitive function:

1. *attention or vigilance(sustained attention)*
2. *memory(ability to learn new information or to recall previously learned information)*
3. *executive functioning(abstract reasoning, problem solving, planning, initiating, organizing, response inhibition, ability to shift cognitive set, sequencing, evaluating, or working memory, i.e., ability to manipulate information held in immediate memory).These deficits may occur against a background of generalised or global intellectual impairment(eg. subaverage IQ) and reduced capacity for information processing.*

From Lewis (2004) p.109

****Italicised text is the proposed addition to the DSM IV.***

Finally, Tsuang, Stone & Faraone (2002) have suggested that the diagnostic criteria for schizophrenia be reconsidered because there is an over-reliance on psychotic symptoms which are not specific to schizophrenia. They propose including a new category of “schizotaxia” which they define as a state of vulnerability or predisposition to develop schizophrenia. This should incorporate biological and neuropsychological abnormalities since such abnormalities may be more “proximal” to the disorder’s cause and pathophysiology than are the “distal” psychotic signs and symptoms presently used to make a diagnosis. Perhaps this is one reason why schizophrenia research has been led down so many a *cul-de-sac*.

1.2 Critiques of the validity of schizophrenia

Critiques of schizophrenia have appeared frequently for decades (see for example, Szasz, 1961). More recently, some clinical psychologists have challenged the validity

of schizophrenia as a scientific concept. Foremost amongst these are Bentall et al. (1988) and Boyle (1990) [See also Bentall, (2004), Boyle (2004) and Read (2004)].

Bentall et al. (1988) challenge the validity of the concept of schizophrenia on three grounds: first, if valid the syndrome should manifest a number of traits that go together. Second, the diagnosis should have predictive validity in terms of outcome and a characteristic response to treatment. Third, the diagnosis should bear some relation to aetiology.

1.3 Abandoning schizophrenia research ?

In spite of the recognition that it may perhaps be more appropriate to talk about “the schizophrenias” or the spectrum of psychoses, there is a tendency to regard schizophrenia as a unitary condition. Further, notwithstanding failures to establish a robust differential deficit specific to schizophrenia, some researchers continue in the manner of the proverbial blind men and the elephant in searching for *the* cause of schizophrenia. Bentall, Jackson & Pilgrim(1988) have pointedly called for abandoning research into schizophrenia as a syndrome and Boyle (1990, 2004) asserts that schizophrenia is not a valid category for scientific study. In particular, she claims that no set of regularities in the experiences and behaviours of individuals diagnosed as “schizophrenic” have been consistently and reliably observed.

However, Boyle’s criticism can be answered if the proposal that cognitive deficits are the core symptoms of schizophrenia, for which there is increasing reliable evidence, is taken into account. The popular and psychiatric views of hallucinations and delusions which placed psychotic behaviour as the core feature of schizophrenia have, in some measure, misled researchers and critics. Since it is these dramatic positive symptoms which often bring the person to the attention of psychiatric services, it seems that (like

the proverbial drunk person who looks for the lost key, not where it was lost but where the light is) the focus should be re-directed to neurocognitive or social dysfunction for which there is more robust evidence (see Green, 1998, 2001 for in-depth reviews) rather than delusions and hallucinations which are difficult to independently verify and are often inferred on the basis of self-report.

Bentall et al.(1988), Bentall (2004) and Boyle (1990, 2004) support an alternative symptom-based approach which has already yielded some encouraging results, for example, in the cognitive-behavioural treatment of delusions (eg. Chadwick, Birchwood & Trower, 1996). Further, Bentall(2004) produced a persuasive body of evidence in articulating a cognitive bias theory of persecutory delusions focusing on attributional style and self-esteem without recourse to schizophrenia.

The symptom based approach is not without its critics (see Mojtabai & Rieder ,1998, and Bentall, 2004, for a rebuttal). Costello (1993a) accepts that our currently defined syndromes of schizophrenia are unsatisfactory. However, he asserts that clinical observation and research using multivariate statistical procedures strongly suggest that symptoms of schizophrenia do occur in clusters. He cites the factor-analytic work of Liddle (eg. Liddle, 1987a) and a list of several studies (published after the Bentall et al. 1988 critique appeared) which demonstrate symptom clustering. What is absent, at present, is a validated and well-developed robust theory of how these experiences and behaviours are related and how they developed. Not that there have been no attempts to do so. For example Gray et al. (1991) proposed a neuropsychological model of schizophrenia but its complexity has made it difficult to research. Frith (1982, 1992,1994) has proposed and revised versions of his neuropsychological theory of schizophrenia which seems more promising but (i) it is

focused primarily on positive symptoms and has not led to any significant breakthroughs in treatment and, (ii) more recently has been severely criticised by Gallagher (2004) who has found it wanting and instead proposed a more plausible neurophenomenological theory to account for delusions. Andreasen, Paradiso & O’Leary (1998) have proposed an intriguing ‘theory of cognitive dysmetria’ which has yet to be adequately empirically tested. However, a detailed consideration of these theories is beyond the scope of the present research.

Hemsley (1988) suggests a pragmatic resolution to the vexed issue of the use of schizophrenia as a diagnostic category in research: ultimately the important question is whether the resultant classification schemes possess utility at either the practical or theoretical level. The position adopted here is that ‘the jury are still out’. Thus, the use of the term ‘schizophrenia’ in the present work is not to be taken as uncritical endorsement of the diagnostic validity of schizophrenia or to regard it as a unitary entity or syndrome. The present work is not concerned with the cause(s) of schizophrenia(s). It attempts to reduce the heterogeneity of groups of patients with a schizophrenia diagnosis by focusing on a symptom-based approach, social anxiety in particular, in the hope that it may result in an identifiable subgroup for whom social skills training may be more effectively applied on an empirical basis.

1.4 “Are ‘paranoids’ schizophrenic?”

Bentall (1990) observes that within the psychiatric literature there has been considerable debate about the extent to which paranoid disorders are related to other forms of schizophrenia. Others, for example, Foulds & Owen (1963) finding that patients with paranoid schizophrenia tend to show normal cognitive functioning on psychological tests, have even questioned in their provocatively entitled paper: “Are

paranoids schizophrenics? ” However, more recent evidence is mixed, with some studies(eg. Chadwick, 1989,Rosse et al. 1991) finding that those with paranoid schizophrenia perform normally on the WCST, whilst others (eg. Braff, Heaton, Kuck, Cullum, Moranville, Grant & Zisook (1991) find that they are also impaired and indistinguishable in their performance from people with other subtypes of chronic schizophrenia. More recently, Goldstein, Shemansky & Allen (2005) in a well-controlled study of 82 patients, used cluster analysis to demonstrate that a relatively high percentage of schizoaffective and paranoid schizophrenia patients fall in a “neuropsychologically normal” cluster. Of relevance here is the implication that within a group of paranoid schizophrenia patients, a high percentage will perform normally on the WCST(as they found) and this could explain the mixed findings in previous studies which failed to obtain a baseline neuropsychological status.

1.5 Cognitive and attentional deficits.

My concentration is very poor, I jump from one thing to another. If I am talking to someone they only need to cross their legs or scratch their heads and I am distracted and forget what I was saying. I think I could concentrate better with my eyes shut. P.104

My thoughts get all jumbled up. I start thinking or talking about something but I never get there. Instead, I wander off in the wrong direction and get caught up with all sorts of different things that may be connected with things I want to say but in a way I can't explain. People listening to me get more lost than I do.

P. 108

McGhie & Chapman, 1961

Nuechterlein & Asarnow (1989) in their somewhat dated review of perceptual and cognitive impairments in schizophrenia aptly sum up the contemporary position when they state that

it is well documented that schizophrenic patients have impairments in certain aspects of perception, cognition, and attention, some of which have been tied to symptom clusters or subtypes of schizophrenic disorders.[However] ...the diversity of tasks that elicit impaired performance in schizophrenic individuals makes it difficult to isolate a specific underlying dysfunctional process. p. 246.

Thus, it is well established that certain aspects of cognitive processes are impaired in schizophrenia, though this is by no means universal.

Heinrichs (2005), in his empirical review, asserts primacy for cognition in schizophrenia:

Recent meta-analyses show that across a spectrum of research domains only cognitive measures distinguish a majority of schizophrenia patients from healthy people...[with] average effect sizes derived from common clinical [cognitive] tests being twice as large as those obtained from MRI and PET studies. p.229.

He observes that impaired cognition is now seen as a feature of schizophrenia that precedes, accompanies and then outlasts a patient's symptoms and medical regimen. It is recognised that cognitive abilities influence quality of life and long-term adjustment and underpin learning and skills-based therapy and interventions (Green,

Kern, Braff & Mintz, 2000). Hence cognitive remediation programmes have been developed to modify the deficits observed (Reeder, Newton, Frangou & Wykes, 2004) and interest in cognitive approaches has been rekindled (see Bellack, 2004).

1.6 Problem Solving Deficits and Executive Dysfunction

In recent years there has been a growing interest in frontal lobe or (more accurately) executive dysfunction in schizophrenia. This view is not new. Kraepelin, attributed the illness he labelled *dementia praecox* to damage of the frontal lobes (Kraepelin, 1971). For him, the weakening of volition, not hallucinations and delusions, was the fundamental problem in schizophrenia whose clinical characteristics were impaired judgement, inability to plan, emotional flattening, and loss of a ‘critical faculty’. A fascinating re-examination by Zec (1995) of the “neuropsychology of schizophrenia according to Kraepelin” clarifies that disorders of volition and impairments of executive functioning contributed largely to what Kraepelin meant by the “dementia” in *dementia praecox* and the “chronicity” in chronic schizophrenia.. Decker (2004) in her review of the works of Emil Kraepelin notes that Zec (1995) explained Kraepelin’s pronounced use of “volition” and “will” by arguing that the modern terms “executive functioning” and “metacognition” are synonymous as Kraepelin’s will. Thus, *dementia praecox* patients have impairments in executive or metacognitive functions, that is, in their judgement and application of knowledge to new situations.

Interestingly, Bleuler who coined the term ‘schizophrenia’ took the view that psychotic symptoms such as hallucinations and delusions were non-specific accessory features of the disorder. Weinberger (1988) suggests that Kraepelin’s neuropathological assumptions eventually fell into disfavour mainly because

convincing evidence of frontal lobe pathology in schizophrenia did not emerge then and the more recent development of antipsychotic drugs focused attention elsewhere.

Decades of treatment with antipsychotic drugs for schizophrenia demonstrated that they were not 'antischizophrenic'. By and large these drugs failed to ameliorate the deficits in cognitive function, social role performance, poor motivation, anhedonia, reduced drive, loss of a sense of adult responsibility, impaired judgement, emotional flattening, and lack of insight. These negative or 'defect' symptoms correlate with chronic disability and have a striking resemblance to the clinical manifestations of frontal lobe disease.

In other words, impairment of frontal/executive functions reflects a disruption of the planning and organisation of goal-directed behaviours aptly captured by the stages of the WCST, widely regarded as the prototype executive dysfunction test.

On the other hand, Healy (1990), has called for the recognition of the multidimensionality of schizophrenia syndromes. These syndromes, he suggests, are constituted by underlying basic, release, reactive and defect processes. Of relevance here is his postulation that basic and release processes stem from frontal lobe dysfunction. He notes that, for example, the basic complaints which constitute the major morbidity in schizophrenia are commonly dismissed as neurotic complaints. He suggests that the common and persistent complaints in schizophrenia of cognitive, affective and volitional disturbances, should be interpreted as reliable reports of neuropsychological malfunctioning by affected participants. Remarkably, this view is upheld by the neurophenomenological critique of Gallagher (2004) who suggests that 'delusional' statements by patients are reliable accounts of their disturbed experiences.

Healy (1990) further raises the question of schizophrenia as a possible frontal lobe disorder and reviews evidence consistent with this proposition.

Of particular relevance here is the observation that impaired performance on the WCST has been widely replicated (see Fey, 1951, Goldberg et al. 1987, Malmö, 1974). This impairment seems to be independent of medication status, length of hospitalization, symptom severity, institutionalization effects or the presence or absence of overt psychosis (see Green, 2001, Goldberg et al., 1987).

Tyson, Laws, Roberts & Mortimer (2004) in a controlled study of 29 schizophrenia patients provide robust evidence that executive processing deficits in schizophrenia are stable across time, consistent with most long term studies that have used the WCST including the 10 year follow-up by Heaton, Gladsjo, Palmer, Kuck, Marcotte & Jeste (2001).

Interestingly, Healy (1990) notes that Schneider (1959) did not view the reports of disturbances of thought, affect and volition embodied in his first rank symptoms as being delusions.

Weinberger (1988) makes the pertinent observation that during the first few years of the disorder, many schizophrenia patients manifest 'defect' symptoms (Table 1.2 next page).

Table 1.2 'Defect' symptoms of schizophrenia suggestive of frontal lobe dysfunction

Emotional dullness
Impaired judgement
Poor initiative, motivation, drive
Lack of insight
Difficulty in planning
Impaired problem solving and abstract reasoning
Decreased concern for personal hygiene
Social withdrawal

From Weinberger (1988)

Weinberger (1988) acknowledges that these features tend to be more constant throughout the course of schizophrenia than are hallucinations and delusions which are more episodic. These 'defect' symptoms are more reliable predictors of poor prognosis.

The question of intellectual impairment in schizophrenia is complex and controversial. It is not uncommon for severely ill patients with schizophrenia to perform within the normal range on standard intelligence tests. However, their performance on neurocognitive tests involving mental flexibility, abstraction and set shifting, and novel non-routinized problem solving is often markedly impaired (Goldberg & Weinberger, 1986) often by some two standard deviations from the norm and there is more recent evidence to confirm that this impairment is present even in remission (see Ancill, Holliday & Higenbottam, 1994, Corrigan & Penn,

2001). This is not to suggest that it is not remediable (see Nisbet, Siegert, Hunt & Fairley, 1996).

This differential pattern of neurocognitive dysfunction is also typical of patients with dorsolateral prefrontal cortical damage. In both conditions, patients tend to have surprising difficulty using experience to guide their behaviour. This difficulty can be formally tested with a cognitive task such as the Wisconsin Card Sorting Test (WCST) - a reasoning task widely regarded as an 'acid test' of prefrontal cognitive function. The test itself is normally quite simple: participants must match cards on the basis of the colour, shape, or number of objects displayed on each card. The matching category is deduced from feedback provided by the examiner indicating whether the choice is correct or incorrect after each card. Once a particular abstract sorting principle is established, the rule shifts without warning. Patients with damage to the prefrontal cortex are unable to change their response sets and thus make perseverative errors in spite of feedback. They appear to manifest an 'imperviousness to error information'. Many (but not all) patients with schizophrenia have surprising difficulty with the WCST but their poor performance has traditionally been attributed to inattention or uncooperativeness, that is, unwillingness rather than incapacity.

A paradigmatic study by Goldberg, Weinberger, Berman, Pliskin & Podd (1987) refutes this traditional interpretation. Three groups of patients with prominent defect symptoms were given the WCST six consecutive times. One group received only the standard instructions and showed no improvement over the six trials. The other two groups received incremental instructions in how to do the test, culminating in card-by-card, explicit teaching. Patients who could not do the test could not learn it, and continued to make frequent perseverative errors regardless of the degree of

instruction. During card-by-card teaching, the patients performed perfectly; they followed directions, displayed motivation, and comprehended the instructions. However, immediately after the teaching ceased, their performance returned to the pre-teaching baseline level of perseveration. The same patients were able to learn word lists, indicating that their failure on the WCST was not because of a general inability or unwillingness to learn cognitive tasks. These results implicate a deficit in the cognitive processes in using stored information (experience) to guide behaviour, in associating knowledge with appropriate action, and in maintaining executive control over behaviour. These cognitive processes are considered hallmarks of executive dysfunction.

Braff, Heaton, Kuck, Cullum, Moranville, Grant & Zisook (1991) found a generalized pattern of neuropsychological deficits in outpatients with chronic schizophrenia with heterogeneous WCST results. They used extensive clinical and neuropsychological measures in a group of 40 schizophrenia outpatients. They hoped that by using symptomatic but non-hospitalised neuroleptic-treated outpatients, any stable trait-linked cognitive disturbances would be detected. They found that the chronic patients with schizophrenia had multiple neuropsychological deficits.

However, a subgroup of these patients were particularly impaired on the WCST. Of particular relevance is their suggestion that while some patients with schizophrenia may have stable frontal dysfunctions, they may be most prominent in patients who would today be sub-typed as 'disorganised' by DSM-IV criteria.

Liddle (1987a) found that the symptoms of chronic patients with schizophrenia segregated into three syndromes: psychomotor poverty; disorganisation and reality

distortion. These syndromes were confirmed in a different set of patients by Liddle & Barnes (1990). Liddle (1987b) proposed that both psychomotor poverty and disorganisation are associated with impaired performance on neuropsychological tests sensitive to frontal lobe damage to a group of 43 “seriously disabled” chronic patients with schizophrenia meeting DSM III criteria for schizophrenia. Liddle & Morris (1991) administered a battery of neuropsychological tests sensitive to frontal lobe impairment. They were able to demonstrate that the observed impairment in frontal dysfunction tests were not due to a generalised cognitive deficit, chronicity or to neuroleptic medication. Of relevance here is that they found evidence which confirmed that the disorganisation syndrome was associated with an inability in inhibiting established but inappropriate responses. Their study adds to the substantial body of evidence of impaired frontal/executive function in schizophrenia.

Executive dysfunction in schizophrenia. Loring (1999) defines executive function as:

Cognitive abilities necessary for complex goal-directed behavior and adaptation to a range of environmental changes and demands. Executive function includes the ability to plan and anticipate outcomes(cognitive flexibility) and to direct attentional resources to meet the demands of nonroutine events. Many conceptualizations of executive function also include self-monitoring and self-awareness since these are necessary for behavioural flexibility and ‘appropriateness’.

..... Cerebral localization also remains elusive and controversial. Regions of the prefrontal cortex may play a special role in recruiting other brain areas in a

series of distributed networks that handle different components of executive functions, depending on the processing demands of the specific task. p.64

INS Dictionary of Neuropsychology

Elliott (2003) cautions that executive dysfunction is an umbrella term which defines complex cognitive processing requiring the co-ordination of several sub-processes to achieve a particular goal. Neuropsychological evidence suggests that executive processing is intimately connected with the intact functioning of the frontal cortices. However, the emerging view suggests that executive functioning is mediated by dynamic and flexible networks of neural circuitry and connectivity.

Heinrichs (2005) suggests that

if deficits in specific cerebral systems underlie schizophrenia, then tasks mediated by those systems will be impaired. However, compensatory brain regions may take over and normalize performance if part of a neural system is rendered inoperative by disease....It follows, therefore, that the sensitivity of a cognitive task depends on its overall difficulty level, on whether operations required by the task are compromised in schizophrenia and on whether these operations lend themselves to compensation through recruitment of preserved brain systems. p. 237.

Could this be the reason why, at one time or another, nearly every brain area has been implicated as the source of dysfunction in schizophrenia? In other words, attempts to

localise executive dysfunction to a particular region of the brain are simplistic and should be avoided.

Palmer & Heaton (2000) observe a continuing explosion in the literature (over 500 publications from their Medline search of 'schizophrenia' and 'frontal lobe' in the past 8 years). In their review of executive dysfunction in schizophrenia they suggest that executive deficits are quite common among schizophrenia patients.

In his recent reviews regarding the neurocognitive correlates of functional status among schizophrenia patients, Green (1996, 1998) notes that WCST performance is associated consistently with global measures of community functioning and with skill acquisition in psychosocial training programmes and may also be related to social problem solving. Palmer & Heaton (2000) confirm that though the newer 'atypical' neuroleptics may produce some improvement in cognitive functioning this has not been observed with WCST performance. Further, as noted, executive dysfunction in schizophrenia has not been found to be associated with length of hospitalization, or severity of symptoms and remains stable even when patients are in remission. Taken together, these make the WCST an ideal choice as both a measure of executive function and a pre-screening instrument for social skills training. Green (2001) has observed that the clinical neuropsychological approach to schizophrenia may initially have bolted in the wrong direction by aiming for differential diagnosis. He concludes his review by suggesting that neuropsychological assessments of schizophrenia patients may provide valuable *prognostic* data, even if they provide poor *diagnostic* information.

Bellack et al.'s (2004) summary of higher level or complex information processing captures the various stages involved in performance on the WCST:

People with schizophrenia have trouble in problem solving, in part because they have difficulty in drawing abstractions or deducing relationships between events. A related problem involves the ability to draw connections between current and past experience. Whether it is because they cannot recall past experience, cannot determine when past experience is relevant, or because they simply cannot integrate the diverse processes of memory, attention, and analysis of multiple pieces of information, these individuals have difficulty in learning from experience. They are also unable to effectively organize mental efforts, such as initiating and maintaining a plan of action. As a result, their reasoning and problem solving often seem to be disorganized or even random.

p.8

However, more recently, there has been accumulating evidence [see Goldstein, Shemansky & Allen, 2005, Rosse et. al. 1991,] to suggest that a subgroup of patients with paranoid schizophrenia may perform normally on the WCST. A neurocognitive approach may help in understanding this paradox and provide important data in this respect and it is this approach that is adopted in the first study reported in Chapter Four. In the next chapter, a selective review and critique of relevant issues in social dysfunction will be considered.

CHAPTER TWO

SELECTIVE REVIEW & CRITIQUE OF ISSUES IN SOCIAL DYSFUNCTION

Chapter Two is divided into five sections. The first section is on models of social dysfunction, the second is on the concept of social skill. The third section is on the generalization of social skills in schizophrenia patients and this is followed by the fourth section, which is on the generalization problem. The fifth section is on rule-governed behaviour and verbal self-regulation: the role of self talk. The relevance of these issues will hopefully become apparent when the rationale for the studies of the present research are discussed in chapters four and five.

2.1 MODELS OF SOCIAL DYSFUNCTION

2.1.1 Argyle's Motor Skill Model of Social Skills

2.1.2 Trower's Cognitive-Behavioural Agency Model

2.1.3 Towards A Multidimensional Conceptualization of Social Dysfunction ?

Introduction

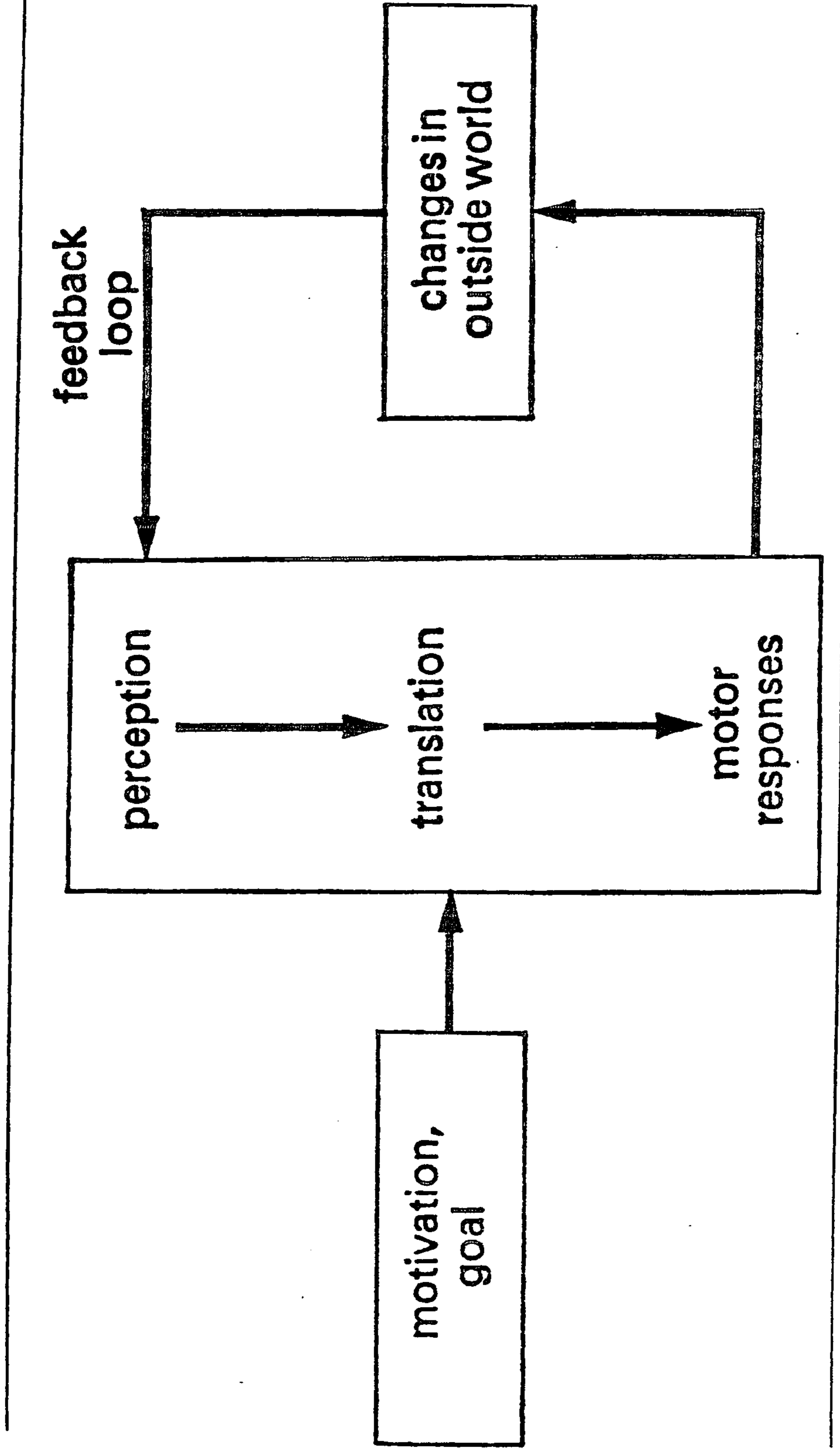
The major focus of this section is on Argyle's Motor Skills Model and Trower's Cognitive-Behavioural Agency Model since they form the basis for the alternating treatments comparison in the major study reported in Chapter Five. It is suggested that it may not be productive to search for the best model since a combination of the

strengths of more than one model may be necessary for some individuals. A case is made for a multidimensional conceptualization of social dysfunction which could help in individually determining which approach is most suitable, for which person, with which particular problem, in which particular situation.

2.1.1 Argyle's Motor Skills Model of Social Skills

Social skills training (SST) in Britain is based largely on Argyle's model (see Argyle & Kendon, 1967) illustrated in Figure 2.1 on the next page.

FIGURE 2.1 The Argyle motor skill model of social skills.



This approach assumes that a skilled social performance facilitates the successful achievement of personal goals, and that the specific skills required in any given situation can be identified and taught prior to their performance. Social skills are viewed as analogous to motor skills such as driving a car or playing tennis. The model emphasises the importance of goals that motivate behaviour and the role of reinforcement and feedback.

Argyle (1981) proposes that social and motor skills are distinct in two ways. Firstly, social behaviour is rule governed. Secondly, social skill requires an ability to construct and use a cognitive model of the social world, and in particular the world of the other. In contemporary terms, a Theory of Mind (see Baron-Cohen, 1995). This mentalizing ability involves trying to see things through the other person's eyes. Further details of Argyle's model will be considered in section 2.2 where criticisms of the concept of social skill are discussed.

2.1.2 Trower's Cognitive-Behavioural Agency Model

Trower (1984) cites a number of problems associated with conventional SST and the Argyle model in particular, as evidence for a radical reformulation. These include the frequent observation that social skill is difficult to define, assess or select target behaviours for. He cites previous reviews that demonstrate poor maintenance and generalization of trained social skills and is concerned that cognitive interventions that might facilitate SST are rarely employed.

The agency approach essentially takes the power to determine thoughts and behaviour away from the environment and places it in the hands of the individual. Cognitions are the central determinants of behaviour and Trower (1984) claims that this internal

locus of control lends itself to an entirely different kind of SST. He distinguishes between 'skills' which are the behavioural components such as posture, gaze and facial expression emphasised and taught by the Argyle micro-skill approach, and 'skill' which is the cognitive generative process that governs behaviour.

Trower (1984) rejects the 'organism' approach of the Argyle model. He replaces it with the concept of agency and couples it with cognitive intervention to form a radical approach to Cognitive-Behavioural SST. He comments that many psychiatric patients see themselves, and behave as the controlled passive organisms described by the Argyle social skills model. SST should renew the individual's agency, not reinforce passivity.

Trower (1984) summarises the main features of the agency model:

..... as agents we have the power of action. We monitor our actions, but because we are also aware of our monitoring and "have the power of speech" we can provide commentaries upon and accounts of our performances and plan ahead of them as well. The "power" to plan and give accounts and commentaries is the feature around which the science of psychology must turn.we not only have the person as agent but the person as watcher, commentator and critic as well. ...[Thus] the most characteristic form of human behaviour is the conscious following of rules and the intentional carrying out of plans.
p. 62.

The central feature of the agency approach is the internal generation of cognition and behaviour and the role of cognition and intuition in the study and training of social

skills. As it involves training in generative skills (such as acquiring positive cognitions) that have wider application than situationally specific micro-skills, the agency approach should result in better generalization across situations. This is another reason why the present research has chosen to include Trower's promising approach to SST. Trower (1984) suggests that SST should teach people not *what* to do, but *how* to learn what to do. In the case of generalization of skill, a process approach makes better sense. The present research takes the view that it is necessary to teach a problem solving schema (the '*how* to learn what to do') and therefore a social problem solving approach should be included in SST.

Trower (1984) asserts that most of the research and practice conducted in the 1970s & 1980s has erroneously limited itself to the competence or components aspect of social skill, a concern noted earlier by Alladin (1982a). As a result of reflective monitoring or metacognition, which includes the monitoring of the individual's own perception, interpretation and behavioural response to feedback, the individual has the power to plan, initiate, choose, evaluate, and reformulate his/her behaviour. [This description aptly captures the essence of the task requirements of problem solving with the Wisconsin Card Sorting Test, reviewed in Chapter One].

However, Trower (1984) recognizes that a simple deficiency in skills is rarely if ever the cause of behaviour seen as unskilled: the reflective agency is also dysfunctional. He suggests that skills are impossible to define if a dualist view is adopted. Behavioural descriptions, stripped of their social meanings are insufficient. Cognitive and behavioural aspects must be examined in conjunction and skills may be definable only with reference to agreed social meanings. He appears to suggest that the use of intuitive judgement is the best method of defining social skills. Hence the observation

by Curran (1979a): “everybody seems to know what good and poor social skills are [but] no one can define them adequately.” p. 321.

Trower’s (1984) view has a striking resemblance to the work of Azrin & Hayes (1984) who have provided evidence consistent with it but from a radical behaviourist perspective (see also Rosenfarb, Hayes & Linehan, 1989).

Generalization. Trower (1984) criticises Argyle’s approach for neglecting the possibility (a) that individuals will perceive apparently similar situations differently and (b) that their goals, intentions and expectations might be different from those assumed or imposed by the training. Such discrepancies could account for the failure to generalize new skills. The agency approach solves these difficulties by training people to generate skilled behaviour in response to situational demands rather than to apply a learned skill to a new situation. An agency approach would be aimed at cognitively mediated change. In radical behaviourism terms, this is a plea for recognising the role of verbal self-regulation in guiding behaviour (see Section 2.5).

Applying the agency approach to SST. For Trower (1984), the problem is to recover the individual's ability to reflect on their behaviour and to consciously change. This could be achieved by training clients to monitor situations and their actions, set realistic goals, believe in their attainment, and attribute failure appropriately, as well as by teaching lost skills. Negative self concept (eg. worthlessness) can become continuously reinforced in self fulfilling cycles that block intentional action and prevent the development of agency. Thus successful SST should bolster self-esteem. A more positive cycle can be initiated by using 'agency' [empowering] cognitions in systematic self-instruction.

2.1.3 Towards a Multidimensional Conceptualization of Social Dysfunction ?

The Argyle behavioural motor skills model dominated the first phase of SST in Britain, but more recently a cognitive perspective has been suggested as necessary to SST (eg. Lucock & Salkovskis, 1988). Trower (1984) upholds a cognitive-behavioural model of social skill as the way forward.

A critical appraisal of the Argyle model suggests that a more comprehensive model should address the following concerns: Can it account for the varieties of social dysfunction? Can it integrate different theoretical perspectives or models? Does the assessment of skills flow from such a conceptualization? Can its treatment validity be demonstrated? Can it explain the possible mechanism(s) by which change occurs in SST?

It is suggested that it may not be productive to search for the best SST model applicable for all clients. It is even possible that a combination of the strengths of more than one model may be necessary for some individuals as Alladin (1989) discovered from feedback of participants in a pilot study. After a critique of the social skills concept in Section 2.2, a case is made for a multidimensional conceptualization of social dysfunction which could help in individually determining which particular approach or model is most suitable for which person, with which particular problem in which particular situation.

2.2 THE CONCEPT OF SOCIAL SKILL

2.2.1 A critical appraisal of the social skills concept

2.2.2 Cognitive correlates of social anxiety

2.2.3. Models of the development of social anxiety

This section begins with a critique of the concept of social skill. The ambiguity of interpersonal perception and the value judgements inherent in labelling a particular set of behaviours as socially skilful is problematic for the concept of social skill.

Whilst it is often acknowledged that social skill is situationally specific, there is a tendency in the literature to refer to social skill as if it were a fixed personality trait as in references to the “socially skilled person” and “social inadequates”. Further, social skilfulness is often assumed to be synonymous with social effectiveness. The cognitive correlates of social anxiety suggest that it would be more productive to move the focus from social skill to social anxiety in the assessment and treatment of social dysfunction. Finally, models of the development of social anxiety are integrated into a single multidimensional model which, it is argued, provides a better fit for the available evidence and offers an improved understanding of social dysfunction.

2.2.1 A critical appraisal of the social skills concept

The Argyle (1967) motor skill model which underpins most of the SST literature, runs into difficulties because empirical research has demonstrated that it is not often possible to discriminate the socially skilled from the unskilled in terms of micro-skills (e.g. Trower, 1980). Further, Morrison & Bellack (1987) point out that the judges

who made the ratings for a group of schizophrenia patients deemed to have social deficits were unable to identify behavioural indicators to back up their judgements.

The social skills concept assumes that a person exhibiting apparently unskilled behaviour simply lacks a commodity that can be learned or re-learned, that is, it is a skill deficit model. Yardley (1979) suggests that the perceived inappropriate or maladaptive behaviour of some patients may not be all that unskilled. Instead, such behaviour may reflect a goal or attitude, an act of communicational intent persisting in the face of strong negative feedback. Further, strategically, to persevere with maladaptive behaviour may sometimes payoff. Also, some people with schizophrenia may find social contact (or more precisely, the high expressed emotion in some of their interactions) aversive and may want to be left alone to stave off the risk of relapse. It would thus be a mistake to dismiss these instances as reflecting “unskilled” social behaviour.

Alladin’s (1988) synthesis of models of social anxiety includes an account of unskilled behaviour that results from a rational choice not to use existing skills. Social anxiety can occur for a variety of reasons: an inability to use skills (response inhibition) or because the misperception or misinterpretation of cues produces inappropriately applied skills (faulty discrimination). Thus, other possible aetiological pathways to social dysfunction (see Alladin, 1988, Hughes, 2003, Leary, 2001, Stravynski & Amado, 2001,) may give rise to problems that would benefit from a more adequate and comprehensive model. Argyle (1981) appears to share this intuition but comes no closer to an adequate definition by his admission that social *skills* are clearly not the whole story.

Social skills, situational specificity and generalization. In SST, trained behaviours do not transfer well (see Section 2.4), questioning the validity of the specific micro-skill training approach. Argyle's approach relies on the assumption that trained behaviour will generalize to similar real-life interactions. This "train and hope" approach has been sharply criticised (see Stokes and Baer, 1977). Also, Argyle's definition of social skills is problematic:

"By socially skilled behaviour, I mean social behaviour which is effective in realising the goals of the interactor". (Argyle, 1981, p.12.)

"A large part of most social skill lies in putting together utterances that are tactful, persuasive or *whatever is required*". (Argyle, 1967, p.58). [emphasis added]

As operational definitions they tell us very little about the nature of socially skilled behaviour. If we need to assess whether behaviour is skilled or unskilled, how do we find evidence for "whatever is required" of the individual? Similarly, a behaviour may either be appropriate or bizarre, depending on the goal it related to. How do we know what the goals and intentions of the interactor are? Thus, Argyle's definition of social skills as goal directed behaviour is circular and unfalsifiable.

Plum's (1981) critique of "communication as skill" approaches highlights the shortcomings in relying solely on the concept of "skilfulness":

When skill training focuses on personal communicative behavior and pre-judges some of it as skilful or inept, it overlooks the essential nature of the personal. The essence of personal communication is the understanding and

expression of meaning, not behavioral skilfulness, Behaviour *per se* can express diverse, ambiguous, or conflicting meanings. (p. 7).

He explains a crucial difference between motor skills and social skills: the meaning of 'good' tennis playing, for example, is straight-forwardly measured by commonly agreed-upon yardsticks such as accuracy and points scored. For Plum (1981), the meanings of personal acts, fluid and always changing, are known and evaluated primarily by those who experience them. He asserts that they cannot be easily judged right or wrong, effective or ineffective, skilful or botched, by widely agreed-upon criteria. They will often be judged by different people in widely disparate ways. Hence using independent (uninvolved or outside) judges to assess role plays in SST is problematic and it would seem more ecologically valid to use people from a peer group.

2.2.2 The Cognitive Correlates of Social Anxiety

Hartman (1984) suggests that the socially anxious person engages in too much self-focused metacognition. She defines metacognition as the self-monitoring of one's own cognitive activity and "involves the direct awareness of one's behavioral intentions and inputs to motor systems and thus allows the person to edit the production of his or her behavior." p. 440.

She suggests that these executive functions (Chapter 1 made reference to the importance of intact 'executive functions' for problem solving on the WCST) are essential to the fluid integration of social behaviour. Excessive metacognitive activity results in social anxiety and impaired performance. To compound matters,

schizophrenia patients with executive dysfunction also have deficits in metacognition rather than just an excess.

Earlier, Hartman (1983) explained why high social anxiety disrupts attention and impairs social performance. In any social interaction, the socially anxious individual, attends to three “conversations” rather than one- the conversation with the other person, his or her own internal dialogue, and his or her own metacognitive monologue.

Beck & Emery (1985) suggest that the socially anxious individual’s concern with social threat is understandable and shares similarities with social phobia. Their fears are largely plausible and may even be realized. However, it is in social phobia that the individual knows their fears are ‘irrational’ but is still hypervigilant to social threat and in constant metacognitive evaluation. Thus, though social anxiety and social phobia share some similarities, they are conceptually different and better treated separately (see Heimberg et al. 1994) and this separate approach is adopted in the present research.

2.2.3. Models of the Development of Social Anxiety

Safran, Alden & Davidson (1980) found that client anxiety functioned as a moderator variable on treatment effectiveness in assertion training. They suggest supplementing behavioural skills training with cognitive restructuring techniques for high social anxiety participants. Further, Halford & Foddy (1982) contend that the observed failures of anxiety management procedures to improve severe social anxiety suggest that the response inhibition model also is inadequate.

Wolfe & Fodor (1977) demonstrated that just two sessions of cognitive restructuring can dramatically reduce social anxiety. This confirms the radical behaviourist contention that attention to covert verbal behaviour and verbal self-regulation (which underpin cognitive restructuring) has powerful effects (as discussed in Section 2.5).

Curran (1979a) identified the complexity of assessment in social skills training:

The presumed etiological bases for poor social skills performance are multiple and not mutually exclusive... Improvements in our ability to assess these etiological factors should lead to innovations in treatment so that programs could be altered to address the specific factors responsible for an individual's inadequate social performance. p.319-320.

He has also cautioned that the behaviour to be taught in SST as well as the situational context in which they are presented should be chosen after careful assessment of each individual participant's situational specific skill deficit to achieve maximum effectiveness and efficiency. In many studies, he notes, this is not the case.

In a small pilot study, Alladin (1982a) discovered that a multidimensional conceptualization of social skills using social anxiety as a moderator explained the apparently submissive behaviours of student nurses and undergraduates better than a unidimensional approach which used a bipolar assertive-submissive (i.e. skill present, skill absent) categorisation. Alladin (1982a, 1982b, 1982c) found empirical evidence that multiple factors were implicated for self-reported poor social performance for both nurses and undergraduates. Further, he was able to use the Gambrill & Richey (1975) Assertion Inventory to develop individual profiles and obtained a degree of specificity in isolating the possible dysfunction(s) involved.

Alladin (1988) observed that traditional behavioural skills training alone has been found to be inadequate because it assumed a primarily skill-deficit model: clients were deemed to be lacking skills, a case of not knowing what to do. Further, Cartwright-Hatton, Tschernitz & Gomersall (2005) provided empirical evidence that children with social anxiety may not necessarily have social skills deficit but believe that they may appear nervous in social encounters, as do adults. They recommend cognitive behavioural techniques rather than skill deficit remediation. However, a client may know what to do, but fearing negative consequences may simply feel too anxious to perform (response inhibition). Others, 'anxious performers', may feel compelled to engage in assertive behaviour but feel guilty about it and experience high anxiety.

On the other hand, in some circumstances we may endure negative criticism as a matter of principle when we refuse to compromise our personal beliefs. Behaving assertively all the time is, of course, inappropriate and the client should choose to behave assertively after considering the costs and benefits of doing so. In other words, the situational demands must be taken into account.

Consequently, Alladin (1988) synthesized the diverse models of the development of social anxiety into a multidimensional conceptualization of social dysfunction to help in the practical assessment of social skills (see Table 2.1 on the next page).

These, it is suggested, are more usefully conceptualized as different dimensions of a cognitive-behavioural model of social dysfunction rather than being treated as separate models. These models, Alladin (1982c) has found are not orthogonal, that is, they are not mutually exclusive. Furthermore, a person may have a skill deficit in one

**Table 2.1 A Multidimensional Conceptualization of Social Dysfunction
(Alladin, 1988)**

<i>Model</i>	<i>Assumptions</i>		<i>Possible interventions</i>
	<i>Social skills</i>	<i>Problem areas</i>	
Skill-deficit	Absent	Lack of appropriate learning experience or role models	Arrange opportunities, teach skills, provide modelling
Response-inhibition	Present but person-inhibited	Conditioned anxiety from past experiences, maladaptive beliefs, fear of negative consequences	Counter-conditioning (e.g. relaxation), cognitive restructuring, minimize negative consequences, encourage occasional risk-taking
Faulty-discrimination	Present but used inappropriately	Misperceives situational cues, misinterprets verbal and/or non-verbal cues	Teach role rehearsal, help client consider multiple interpretations of behaviour, discourage mind-reading, encourage testing assumptions
Rational choice	Present but person chooses not to use skills	None	

particular situation and faulty discrimination in another situation. The same person may be perfectly able to exhibit appropriate social behaviour with a subordinate but not with a superior. Thus social skill may not only be situation-specific but varies as a function of the person-situation interaction.

The next section 2.3 , will review the generalization of SST in schizophrenia patients.

2.3 GENERALIZATION OF SOCIAL SKILLS IN SCHIZOPHRENIA PATIENTS

2.3.1 Methodological and clinical research issues.

2.3.2 Strengths and problems with the meta-analysis of Benton & Schroeder (1990).

2.3.3 Strengths and problems with the meta-analysis of Pilling et al. (2002).

This section considers the methodological and clinical research issues in generalization of social skills in schizophrenia patients. After briefly mentioning a paradigmatic study, the strengths and problems with two major meta-analytic studies will be briefly examined.

Bellack, Hersen & Turner (1976) conducted the first published experimental analysis of generalization of social skills training using a multiple baseline design with a group of chronic schizophrenia patients. However, this pioneering study was based on micro-skills training and is noted here as a matter of historical recognition but will not be discussed further. Suffice to say that the multiple baseline methodology is to be commended since, as Kazdin (1982) notes, its potency resides in the fact that because the participants act as their own controls, clear and predicted changes in the dependent variables may be confidently attributed to the intervention(s) applied.

Now, to consider some of the issues raised in the literature. Donahoe & Dreisenga (1988) confirm that SST does not have an exact definition, but encompasses a set of common techniques that varies from study to study. In summary, SST components typically are as follows:

- (a) problem or skill specification
- (b) didactic instruction
- (c) modelling
- (d) behavioural rehearsal or role play
- (e) coaching
- (f) feedback
- (g) verbal reinforcement.

This makes it difficult to compare treatment across studies because there is a risk of 'comparing apples with oranges'. One study's modelling component may be another study's coaching technique. This makes it important to base treatment, whenever possible, on a training manual to help efforts to attain treatment fidelity and replication of studies. The main suggestion for promoting generalization in SST is homework. This is not to be under-rated but perhaps puts too much emphasis on a single technique.

Rakos (1991) states that research has consistently demonstrated that assertion training improves interpersonal functioning of psychiatric patients and that Monti, Corriveau and Curran (1982) reported significant generalization and maintenance effects. Further, literature reviews of SST and assertiveness training programs conclude that

these interventions produce clinically significant, durable, and generalizable gains (eg. Donahoe & Driesenga, 1988).

Further, Vaccaro & Roberts (1992) observe that during the 1980s, SST became increasingly popular for individuals with schizophrenia. There is evidence that the effects of SST can extend to the prevention of relapse, with some suggesting as much as a halving of relapse rates (Hogarty, 1984). These findings are promising, but caution should be exercised in generalizing these data to the general population of individuals with schizophrenia, partly due to the variability of SST interventions (Benton & Schroeder, 1990), and to the early stage of those research findings.

Vaccaro & Roberts (1992) identify the factors in Table 2.2 as important for generalization on the basis of controlled studies:

Table 2.2 Findings from research on SST for schizophrenia patients (Vaccaro & Roberts, 1992).

1. A wide variety of instrumental and affiliative skills can be learned in specific training situations.
2. Moderate generalization of acquired skills to similar situations outside training site can be expected, but generalization is less with more complex social relationship skills.
3. When patients are encouraged to use the skills they have learned in training sessions in their natural environments, and when they are reinforced by their peers, relatives and caregivers for employing their skills, generalization is enhanced.
4. Skills are learned tediously or little at all by patients who are floridly symptomatic and highly distractible.
5. Patients consistently report decreases in social anxiety after training.
6. Durability of acquired skills depends upon duration of training and retention is unlikely to occur if training is less than 2-3 months of at least twice-weekly sessions.
7. Social skills training, when provided for 3 months to a year and integrated with other needed psychiatric services (eg. medication) reduces relapse and improves social functioning.

2.3.1 Methodological and clinical research issues

A further problem in assessing the SST generalization literature relates to methodological and clinical research issues identified by Morrison and Bellack (1987):

(i) SST researchers have often failed to recognize the heterogeneity of schizophrenia patients and the impact this may have on attempts to implement psychosocial interventions.

(ii) there are few data available that identify specific deficits in interpersonal skills of adult patients with schizophrenia. The specific nature of social dysfunction in a given person may or may not include social anxiety, or low self-esteem and may include unassertive, overassertive or challenging behaviour.

(iii) the limited data available regarding the interpersonal response skills of patients with schizophrenia are equivocal with no clear pattern of typical response deficits.

(iv) there are several major methodological shortcomings in the literature: the validity of the most commonly used assessment technique - role play- has not been clearly demonstrated, is inadequate or even no diagnostic information is given and the social skills assessments used have been incomplete.

(v) Most studies have relied on cross-sectional methodology instead of a longitudinal perspective.

(vi) Variability in premorbid function may relate to particular symptom dimensions (e.g. paranoid/non-paranoid) and it is not clear whether the social skills of patients with paranoia differ from those of other schizophrenia subtypes.

Current research in SST has improved somewhat since Morrison and Bellack's (1987) review but many of their concerns still need addressing. Also, more recently the field has developed increasing sophistication (see Spaulding, 1994, Bellack, 2004).

Frequent in-depth reviews of SST for psychiatric patients in general and schizophrenia in particular, have appeared. [See for example Wallace, Nelson, Liberman, Aitchison, Lukoff, Elder & Ferris (1980), Scott, Himadi & Keane (1983) Brady (1984a,b), Donahoe & Driesenga (1988), Hollin & Trower (1988), Halford & Hayes (1991), Smith, Bellack & Liberman (1996) Heinssen et al. (2000)]. More recent meta-analytic reviews have also appeared (see Corrigan, 1991, Dilk & Bond, 1996, Pilling, Bebbington, Kuipers, Garety, Geddes, Martindale, Orbach, Orbach & Morgan, 2002) but see Bellack (2004) and Bellack, Mueser, Gingerich & Agresta (2004) for an update and critique of Pilling et al. (2002).

Table 2.3 (on the next page) from Bellack et al. (2004) summarises reviews of research on SST for schizophrenia.

2.3.2 Strengths and potential problems with the meta-analysis of Benton and Schroeder (1990).

Benton and Schroeder's (1990) meta-analysis of 27 studies of SST for schizophrenia patients concluded that SST reduced length of hospital stay, relapse rates, resulted in significant acquisition, maintenance and generalization of skills and improve social adaptive functioning. Outcome was unaffected by numerous moderator variables,

Table 2.3 (from Bellack et al. 2004) summarises reviews of research on SST for schizophrenia.

Reviewer	Method of review	Number of studies	Focus of review	Conclusions
Donahoe & Driesenga (1988)	Narrative	39	Chronic mental patients	<ul style="list-style-type: none"> • Clients learn new social skills, retain them over time, and generalize them to other situations • Unclear effects on stress reduction, quality of life, symptoms, hospitalization
Benton & Schroeder (1990)	Meta-analysis	27	Schizophrenia 1972–1988	<ul style="list-style-type: none"> • Clients learn, maintain, and generalize new skills • SST improves assertiveness, hospital discharge, relapse rate • Marginal benefits of SST on symptoms and functioning
Corrigan (1992)	Meta-analysis	73	Adult psychiatric patients 1970–1988	<ul style="list-style-type: none"> • Clients can learn and maintain skills • SST reduces symptoms • SST effects stronger in outpatient than inpatient settings
Dilk & Bond (1996)	Meta-analysis	68	Severe mental illness 1970–1992	<ul style="list-style-type: none"> • SST has moderate effects on skill acquisition, reduced symptoms, improved personal adjustment • Limited research on effects of SST on role functioning
Smith et al. (1996)	Narrative	9	Controlled studies of schizophrenia 1983–1995	<ul style="list-style-type: none"> • Clients learn and retain new social skills • Some evidence that skills generalize to improved social functioning
Wallace (1998)	Narrative	6	Recent controlled research on schizophrenia	<ul style="list-style-type: none"> • Specific and highly structured SST improves social functioning and quality of life
Heinssen et al. (2000)	Narrative	27	Schizophrenia 1994–1999	<ul style="list-style-type: none"> • Clients learn, retain, and generalize new social skills
Pilling et al. (2002)	Meta-analysis	9	Randomized controlled trials for schizophrenia	<ul style="list-style-type: none"> • No effects of SST on relapse, treatment adherence, global adjustment (2 studies), social functioning (1 study), quality of life (1 study)

including sex, chronicity, setting (in-or out-patient), number of training techniques, training format, or hours of training. Benton and Schroeder's (1990) meta-analysis suggested few additional benefits from longer training. Meta-analysis is essentially a methodology which designates a research synthesis that uses formal statistical procedures to retrieve, select, and combine results from independent studies. The careful methodology adopted by Benton and Schroeder is commendable. Meta-analysis is increasingly used for a quantitative review of studies but is not without its critics. For example, Eysenck (1978) dismissed it as "an exercise in mega-silliness" because apples were being compared with oranges, a case of putting "garbage in... garbage out".

Since then meta-analysis techniques have grown in sophistication and there is now a growing consensus that a properly conducted meta-analysis can summarise and evaluate the empirical evidence in a particular field and inform us about the relative magnitude of effects. Further, it can help determine whether inconsistent findings reflect small effects which are undetected because of inadequate statistical power in individual studies, sampling error, or differences between studies. Nevertheless, a spurious validity should not be conferred on meta-analysis simply because data are quantified (see Wood 2000 for a critical appraisal of meta-analysis).

However, the perception of British clinicians and researchers about the status of generalization is not as optimistic (see Hollin & Trower, 1988). Benton and Schroeder's meta-analysis included no British or European studies. Further, several studies that were included were from leading authorities in the field who have devoted huge amounts of resources in time and personnel for SST. Nevertheless,

several others were unpublished studies from doctoral dissertations which overcome positive finding bias likely in published studies.

More recent studies of SST generalization appear more positive. Liberman, Wallace, Blackwell, Eckman & Kuehnel (1994) assert that to justify the labour-intensive requirements of SST, the skills acquired should last at least for six months. Liberman et al. (1994) in their review of “skills training for the seriously mentally ill”, found that skills were maintained and generalised to other settings and improved social functioning and quality of life. They point to a number of their studies (viz., Wallace, Liberman, MacKain, Blackwell, & Eckman, 1992; Eckman, Wirshing, Marder, Liberman, Johnston-Cronk, Zimmerman & Mintz, 1992; Vaccaro, Liberman, Blackwell and Wallace, 1992).

These studies are encouraging but are not without problems. Firstly, it is difficult to know whether these effects are due to the potency of the treatment *per se* or the prestige in being associated with leading authorities in the field or a combination of the two. Secondly, everyday living skills like food preparation –the focus of some of these studies- are undoubtedly important to schizophrenia patients but to treat them as synonymous with (interpersonal) social skills which are contingent on the presence of others appears to confound instrumental and affiliative skills.

2.3.3 Strengths and problems with the meta-analysis of Pilling et al. (2002).

Pilling et al. (2002) focused only on randomized controlled trials of SST and only 9 out of 21 such studies met their strict criteria. They found no effects of SST on relapse, treatment compliance, global adjustment (2 studies), social functioning (1

study), quality of life (1 study). They acknowledged that “assessment of particular outcomes sometimes had to be based on single studies”(p.783). In spite of this serious limitation, they asserted that there was “no clear evidence for any benefits of social skills training on relapse rate, global adjustment, social functioning, quality of life or treatment compliance”(p.783). They concluded that SST did not “appear to confer reliable benefits for patients with schizophrenia and cannot be recommended for clinical practice.”(p.783) However, they acknowledge that reviews which have drawn from both randomised and non-randomized controlled trials (eg. Corrigan, 1991 and Heinsen et al. 2000) have been more positive, concluding that SST is generally well validated.

Pilling et al.’s (2002) meta-analysis, however, seems to assume that SST studies ought to reduce relapse or ensure treatment compliance when they may not have been designed to do so. It is well known, for example, that non-compliance with medication (owing to negative side effects) can lead to relapse, just as high expressed emotion (Leff & Vaughn, 1981) in the interpersonal environment of people with schizophrenia puts them at higher risk of relapse.

Bellack (2004), on the other hand, concludes his review asserting that SST has the strongest empirical support and is an evidence-based treatment. He cautions that SST is appropriate as a target treatment for social impairment, but is not a broad based treatment for schizophrenia.

Elsewhere, Bellack et al. (2004) assert that the methods used and the conclusions reached by Pilling et al.(2002) are flawed in many ways. Suffice to point out here that Pilling et al. “reach the untenable conclusion that skills training was ineffective at

improving social adjustment, quality of life, or general adjustment based on a mere one or two studies.” p.22.

They also note that by combining studies comparing SST to standard care with studies comparing SST to another effective intervention, the erroneous conclusion was reached that SST had no impact when the comparison treatment was effective. Pilling et al. (2002) fail to recognise that experienced clinicians and researchers do not offer SST as a stand alone treatment – people with schizophrenia need a comprehensive integrated package, for example, family therapy, community case management and cognitive behavioural therapy. In a multi-faceted disorder such as schizophrenia, individually tailored treatments taking into account neurocognitive impairments would stand a better chance of more positive outcomes. This contrasts with a ‘one size fits all’ approach which randomised clinical trials tend to assume. However, Pilling et al. (2002) do make a call for SST to be redeveloped- a view also adopted by the present research.

2.4 THE GENERALIZATION PROBLEM

Instances of this kind are so plentiful everywhere... It is of a young gentleman, who, having learnt to dance, and that to great perfection, there happened to stand an old trunk in the room where he learnt. The idea of this remarkable piece of household stuff had so mixed itself with the turns and steps of all his dances, that though in that chamber he could dance excellently well, yet it was only whilst the trunk was there; nor could he perform well in any other place, unless that or some other trunk had its due position in the room. Locke (1690) p.250.

This section begins by considering the concept of generalization which may help identify gaps in our understanding of the complexities underlying failure of treatment gains to generalize to extra-therapeutic settings. Next, some strategies for generalization are outlined. Then, radical behaviourist contributions to generalization are highlighted. It is concluded that SST generalization failures in schizophrenia patients may be confounded by neurocognitive deficits which need to be taken into account.

The fact that SST works is widely accepted (but for an exception, see Pilling et al. 2002). The concern is that the effects are often not durable and when they are, the benefits often only apply to settings in which the training took place. This describes the generalization problem.

2.4.1 The concept of generalization

According to Stokes & Baer (1977) the term generalization may be defined as:

the occurrence of relevant behaviour under different non-training conditions (ie., across participants, settings, people, behaviours, and/or time) without the scheduling of the same events in those conditions.
p.350.

Stokes & Baer (1977) reviewed 270 published studies and concluded that generalization has primarily been treated as a passive concept and regarded as a failure to practice discrimination technology adequately. The absence of

generalization was often merely lamented and specific techniques were seldom used to produce it. Finally, generalization should be actively programmed for.

Baer (1981) asserts that we need to plan for generalization:

Teaching one example never automatically instils a concept, a rule, or a habit.
Learning one aspect of anything never means that you know the rest of it.
Doing something skilfully now never means that you will always do it well...
Thus, it is not the learner who is dull, learning disabled, concretized, or immature, because all learners are alike in this: no one learns a generalized lesson *unless a generalized lesson is taught*. p.1-2.

2.4.2 Strategies for promoting generalization

Stokes & Osnes' (1989) recommendations are summarized below:

1. Aim for natural contingencies of reinforcement which will be maintained by the natural environment after training is over.
2. Teach enough examples.
3. Program common stimuli.
4. Train loosely not rigidly.
5. Use indiscriminate contingencies to facilitate maintenance when reinforcement is no longer available.
6. Teach self-management techniques which focus on the learner.

Stokes & Osnes (1989) suggest that we should attend to issues of generalization programming from the outset of treatment, not as an adjunct near the end of therapy.

Alladin (1982c) speculated that since social skills are recognised to be situationally specific, the expectation that they will necessarily generalize to other situations is perhaps unrealistic. Further, some approaches to SST are highly prescriptive, where the trainer acts like a choreographer, in effect telling the client what to do, when and how, and may unwittingly rob clients of their initiative and their agency. Thus it may convey the unintended impression that there is a right way to respond, making a ritual out of interpersonal relationships, when a range of responses would be acceptable and appropriate.

2.4.3 Radical behaviourist contributions to generalization

Hayes (1990) asserts that verbal rules can produce a marked insensitivity to direct contingencies of reinforcement. Thus clients own self-verbalizations about what a situation requires may produce an insensitivity to what the situation really requires. Their premature “solution” has made them insensitive to a real (that is, more adaptive) solution. There is no reason to suppose that people with schizophrenia are immune from this process. Although Hayes (1990) does not make the connection, perhaps another reason why generalization may not even begin to occur is if self-rules clash with natural contingencies.

According to Kanfer (1979) among the possible strategies for avoiding excessively narrow stimulus control is to increase self-generated stimulus control. When a participant can be helped to greater reliance on self-generated rather than on externally provided stimuli, their behaviour can become increasingly independent of fluctuations in the natural environment. This self-generative approach focusing on the

person, not their pathology, is entirely compatible with Trower's (1984) agency approach.

Kendall (1989) acknowledges that whilst the principles derived from operant procedures are beneficial for improving generalization skills acquired by one cluster of patient types, it should not be assumed that they will necessarily generalize across different clusters of patients. There is evidence that a significant proportion (estimated at 25%- 50%, see Goldstein, Shemansky & Allen, 2005) of people with schizophrenia are neurocognitively impaired. For this subgroup, we need to consider not only the generalization problem but more importantly, the crucial stage of skill acquisition in the first place. For example, Smith et al. (1999) have identified neurocognitive impairment as "rate limiters" in social skill acquisition.

In conclusion then, the concept of generalization is more complex than commonly appreciated but is often treated as a unitary concept. The concept of generalization is multi-faceted, with a range of techniques being proposed as useful in generalization and maintenance. Techniques are important. However, there is a risk that too much emphasis may be placed on a single generalization or maintenance technique, instead of actively programming for generalization from the beginning of SST. In Study Two (Chapter Five) of the present research, some of the insights from the literature review will be used to facilitate the generalization of SST.

2.5 RULE-GOVERNED BEHAVIOUR AND VERBAL SELF-REGULATION: THE ROLE OF SELF TALK

2.5.1 Problems of rule control

2.5.2 Radical behavioural analyses of cognitive therapies

- 2.5.3 Rule-governed behaviour: clinical implications
- 2.5.4 Self-instructional training
- 2.5.5 Verbal self-regulation in cognitive-behavioural therapies
- 2.5.6 Some methodological problems in studying covert speech

This section begins with the view that the empirical foundations and conceptual robustness of cognitive-behavioural therapies may be strengthened using rule-governed behaviour as a theoretical framework. The dispute in some quarters about the relative superiority of cognitive therapy over behavioural therapy may be counter-productive and is addressed briefly. Understanding rule-governed behaviour can highlight parallels between rule formation, failure to abandon a rule, rule alteration and general problem solving strategies. This mirrors performance on the WCST and has considerable relevance to social problem solving particularly in chronic schizophrenia. The second half of this section then focuses on self-instructional training and the role of verbal self-regulation in guiding behaviour.

2.5.1 Problems of Rule Control

Hayes, Kohlenberg & Melancon (1989) suggest that many clinical disorders involve problems in verbal control. Disorders of self-rule formation can occur when a person fails to formulate rules when it is worthwhile to do so, for example, during the WCST. A person could also formulate inaccurate or unrealistic rules [cf. tendency of people with paranoid schizophrenia to jump to conclusions (see Bentall, 2004)]. Cognitive behavioural therapy (CBT) can thus be viewed as training individuals in proper rule-formulation (Poppen, 1989, Zettle & Hayes, 1982).

Hayes et al. (1989) focus on new techniques being developed by radical behaviourists that are sensitive to the rule-governed/contingency-shaped distinction. Their discussion of social skills training shows how they apply avoiding rule-control by the strategy of direct shaping (see also Rosenfarb, Hayes & Linehan, 1989). Suffice it to state their conclusion here:

This line of research is still in its early stages. It does show, however that instructional approaches are not necessary in behaviour therapy [social skills training in particular]..... so much effort has been placed, in this case unsuccessfully, into the generation of rules of conduct for clinical use (SST). The literature on rule-governance undermines the rationale for the effort; work such as that reported here undermines its need. p.335.

In other words, it is more productive to let people learn more from experiential feedback without being told what to do by therapist instructions. However, the empirical research presented in Chapter Five will help assess the applicability of this approach to people with schizophrenia.

2.5.2 Radical behavioural analyses of cognitive therapies

Zettle & Hayes (1982) provide a new framework for CBT within rule-governed behaviour. One advantage is that it can identify several mechanisms of change as yet under investigated in the field. They define rule-governed behaviour as “behaviour in contact with two sets of contingencies, one of which includes a verbal antecedent. These verbal antecedents are rules.” (p.78).

Zettle & Hayes (1982) offer a more robust and detailed recasting of Beck's cognitive therapy.

Rules and Cognitive Distortions. For example, they reformulate Beck's thinking errors as disorders of rule formulation and rule following which suggest a tendency by depressed clients to formulate inaccurate and untestable rules. Clients 'track' them *as if* they specified relationships among events in the environment. The rule following which is generated is insensitive to the natural consequences which are produced.

Zettle & Hayes (1982) suggest that Beck's cognitive therapy replaces inaccurate and untestable rules contributing to a client's depression with rules that are controlled by real events which clients now have direct contact with. Behaviour subsequently controlled by such rules may be viewed as tracking. It is relatively sensitive to the natural contingencies. Thus Beck requires clients to "distance" themselves from their beliefs. That is to say, to observe their own verbal behaviour from the perspective of a listener.

Zettle & Hayes (1982) conclude :

Given that the skills of tact formulation and tracking that clients acquire through cognitive therapy are likely to be sensitive to and be maintained by the natural contingencies surrounding important behaviour, it is not surprising that any treatment gains would generalize and be maintained across time. p.108.

In other words, Beck's CBT not only appears more consistent with the rule-governed approach but also has a built-in mechanism to facilitate generalization and maintenance.

2.5.3 Rule-Governed Behaviour: Clinical Implications

Poppen (1989) explains how self-rules control behaviour. Repeating rules to oneself results in internalized self-rules and much training is provided to facilitate such self-instruction. For example, parents ask children to rehearse a rule ("What are you supposed to do if a stranger wants you to get into his car?") to increase its effect (generalization) in the absence of the parent (cf. relapse prevention strategies for people with schizophrenia).

Donald Meichenbaum observed chronic schizophrenia patients spontaneously repeating rules given to them in training sessions and developed a "self-control" programme based on echoing teacher instruction (Meichenbaum & Cameron, 1974). We may derive rules about people ("It's no use talking to her") leading to inaction or situations perceived as helpless ("I can't resist chocolate") based on one's idiosyncratic experiences. These rules then serve to guide one's own behaviour in similar situations. Thus we can understand the inaction in the former case and the perception of helplessness in the latter. Of course, it could also be seen as excusing one's inaction and casting oneself in the role of a helpless victim, respectively.

Skinner (1969) conceptualized rule-governed behaviour in the context of his analysis of problem solving. His description captures the essence of the problem that some schizophrenia patients with impaired executive functions have in problem solving: they seem unable to stop and think or to re-view their options, being locked into perseverating with a no longer functional rule. For Skinner (1969), a “problem” is said to exist when environmental contingencies call for a course of action that an individual is ill-equipped to perform or when high-probability behaviour results in aversive consequences, extinction, or response cost. In these situations a person is likely to “stop and think” and “re-view” the available contingencies and the behavioural options and then formulate a plan of action, a rule. However, such rules may be faulty, or short-sighted or in conflict with long term consequences, leading to further problems.

According to Skinner (1984), when contingencies change and the rules do not, rules may become troublesome. This is the hallmark of cognitive flexibility: the need to adapt rules to the changing contingencies of social situations, something necessary for both adaptive social functioning and accurate performance on the WCST. For Poppen (1989) the dysfunctional beliefs and expectancies described by cognitive behaviour therapists may be formulated as self-rules that conflict with a person’s contingencies. Put simply, cognitive behavioural therapies can be included in the radical behaviourist framework as analyses of, and programs for, changing the rules that govern behaviour.

He concludes that cognitive approaches emphasize the central importance of rules as mediators among various modalities of behaviour, whereas behavioural approaches have focused on teaching specific skills and constructing more congenial

contingencies. Thus, it would seem more productive to regard both approaches as complementary rather than as competing. Hence, the dispute about the relative superiority of cognitive therapy over behavioural therapy (and vice-versa) may be counterproductive.

2.5.4 Self-instructional training

One of the powerful effects of language is its self-regulatory function. It is therefore significant that psychotherapies are generically referred to as “talking” therapies and most potent therapies can be conceptualized as attempts to change the client’s verbalizations.

Birchwood, Hallett & Preston (1989) highlight a fascinating study entitled “Training schizophrenics to talk to themselves” by Meichenbaum & Cameron (1973) who attempted to teach schizophrenia patients self-control techniques. The aim was to use self-instructional training (SIT) so that they could monitor and regulate their own thinking and cognitive processes. Participants were trained over eight sessions to be sensitive to the interpersonal signals of others that showed that they were emitting bizarre, irrelevant or incoherent speech and to utilize self instructions (eg. ‘be relevant and coherent, make myself understood’). The self-instructional statements were used to attend and behave in a task relevant manner. The researchers modelled the techniques first overtly and then faded the SIT to a whisper and then covertly.

Meichenbaum & Cameron (1973) observed:

The schizophrenic was trained to 'listen to himself', to monitor his own thinking and if his cognitions were maladaptive, to produce incompatible self-statements and behaviours. The focus of therapy shifted from manipulating external environmental consequences to directly influencing how the client perceives, evaluates and reacts to the environment. p.531

In other words, the shift was from an organism approach to an agency approach (cf Trower, 1984). The results were superior to placebo-control on measures of distractibility and thought disorder but unfortunately, generalization was not assessed. Using similar SIT procedures, Meyers, Mercatoris & Sirota (1976) trained a 47 year old in-patient with chronic schizophrenia to emit covert instructions such as "I must talk slowly; remember to pause after a sentence; I must stay on the topic; relax, take a few deep breaths'. They reported improvements which generalized spontaneously, the patient was discharged and therapeutic gains were maintained at the follow up, six months later. Apart from the study by Bentall et al. (1987), there has been little by way of replication or extension. Perhaps this is because of the methodological difficulties of studying private thought.

Meichenbaum & Goodman (1971) used a multi-faceted treatment programme including overt and covert rehearsal to train hyperactive children to "think before they act" and found dramatic results. However, Bornstein (1985) attempted to reconcile the inconsistent and inconclusive findings on self-instructional training (SIT). He confesses that initially he doubted the credibility of the findings of Meichenbaum & Goodman (1971) and set out to examine and extend the Meichenbaum & Goodman procedures hoping to prove them wrong. Using the SIT procedure in a multiple baseline design across participants, Bornstein & Quevillon (1976) found immediate

and dramatic increases in on-task behaviour. Further, these behavioural improvements generalized to the classroom and were maintained after treatment ended. They were amazed at the success of SIT and this astonishment was shared by an independent journal reviewer who commented : “Our readership will not believe these results!”

However, Billings & Wasik (1985) failed to replicate Bornstein & Quevillon (1976). Bornstein (1985) concluded that it appears that SIT can be effective, although not invariably so and reached the obvious conclusion: “Different strokes for different folk,” that is, SIT will probably benefit some greatly, moderately benefit others and have minimal or no benefit to yet a final grouping of individuals. The task is to identify the relevant variables.

Three important issues may underlie failure to replicate the dramatic findings in the SIT literature. First, it is important to ensure that overt verbalization has been internalized before designating it as ‘covert’.

Second, whatever the true mechanisms underlying the potency of self-verbalizations, it would seem necessary that participants should actually believe in their verbalizations. The mere parroting of self-statements is unlikely to have the same functional effect as saying it with some degree of conviction.

Finally, in the case of schizophrenia patients where SIT has failed to work, (eg. Bentall et al. 1987) it is possible that neurocognitive deficits arising from possible executive dysfunction may abolish any possible benefits of the training. In other words, possible damage to the neural networks underlying the executive functions (discussed in Chapter One) may result in failure to benefit and thus learning will

remain or return to pre-training levels. Attention to these possible confounding “rate limiting factors” may result in better outcomes and obviate the need to conclusively demonstrate that covert self-verbalizations are indeed responsible for the improvement in SIT. The research that will be reported in the present work will also endeavour to incorporate some of these suggestions in the SIT component of the SST programme to be described in Chapter Five.

2.5.5 Verbal self-regulation in cognitive-behavioural therapies

The important role of self-talk has long been recognized in the cognitive therapies and especially by Albert Ellis and Aaron Beck. For Vygotsky (1962), inner speech serves a cognitive self-guiding function.

Riegler & Baer (1989) cite Fjellstrom’s (1986) demonstration that self-instructions taught and used overtly could be taught to be used covertly. However, in that study, participants were assigned a match-to-sample task that required them to use a particular problem-solving strategy. After learning to instruct themselves in that strategy, they performed the task almost perfectly when overtly using the relevant self-instructions, and after more training, presumably used the same self-instructions covertly. When they were asked not to use their self-instructions, overtly or covertly, their performance usually fell immediately to pre-instructions levels. [This is reminiscent of attempts to train schizophrenia patients on the WCST with performance dropping to baseline when instructions are withdrawn].

2.5.6 Methodological problems in studying covert speech

Riegler & Baer (1989) note that it will be problematic to design a demonstration to show that a now *covert* self-instruction is occasioning appropriate behaviour in any setting. Repeated demonstrations across numerous instructions and settings, each systematically transformed from overt to covert, would only be suggestive. Repeated demonstration, they suggest, involving the experimenter's instructions to "use your self instructions" and "don't use your self-instructions" without specifying the content of those previously trained self-instructions, would be more suggestive but not conclusive if they produced the theoretically specified behaviour changes. They are a stimulus from the training setting, and thus discriminative in that setting, not only for self-instruction, but also, perhaps for correct performance of the task that the self-instruction relates to. In training, they have set the occasion for both. Therefore, when present in the generalization setting, they might conceivably evoke overt or covert self-instruction leading to correct performance.

More recently, Grote & Baer (2000) have replicated this with an adult with mild learning disabilities in an elegant demonstration. The participant was asked to perform a complex visual sorting task (not dissimilar to the WCST) following self-instructions. She not only self-instructed correctly, but spontaneously showed generalization to new untrained problems. Thereafter, when she was asked not to self-instruct, she sorted incorrectly but when asked to self-instruct, she resumed sorting accurately. Thus, some SIT research suggests that self-instructions may function as discriminative stimuli for the performance of described behaviours and may facilitate not only skill acquisition but also generalization.

Perhaps simply *encouraging* people with schizophrenia to use overt self talk may overcome the problem of impeding spontaneity which is involved in stopping and starting the use of self instructions and, if successful, may be a methodological advance. This approach will be adopted in Study One (Chapter Four) and discussed further in Chapter Six. In Chapter Three which follows, the methodological and statistical issues in social skills research will be considered.

CHAPTER THREE

METHODOLOGICAL AND STATISTICAL ISSUES

IN SOCIAL SKILLS RESEARCH

- 3.1 Assessing treatment validity
- 3.2 The problem of the individual in group studies
- 3.3 Statistical issues in time-series designs and criteria for evaluating clinical significance

Introduction

This chapter introduces treatment validity methodology and focuses on the problem of individual differences. Next, statistical issues in times series designs are considered and criteria for evaluating clinical significance are outlined.

There are numerous assessment instruments in the field of social skills and even more are devised every few years (see for example, Donahoe, Carter, Bloem, Hirsch, Laasi & Wallace , 1990, Sayers, Bellack, Walle, Bennett, & Fong, 1995) many of which appear to have demonstrated their reliability and validity for the particular purpose for which they were devised. However, these developments have not necessarily led to better outcomes in SST. Further, SST researchers frequently note large individual variations in group studies but do not often employ research designs which will allow a fine-grained analyses of the data.

One alternative approach would be to directly assess the treatment validity of an assessment procedure within the same study. This relatively new treatment validity

methodology is particularly suited for this purpose since logically treatment should flow from assessment. The rationale for this methodology is discussed below.

3.1 Assessing treatment validity

Hayes, Nelson & Jarrett (1987) observe that in practical terms, the *sine qua non* of the methods, and theories of clinical assessment is their contribution to treatment outcome. Assessment should aid the planning, execution and evaluation of treatment and as noted by Lowe, Grant, Morrell, Alladin & Ellis (1988), is just as important in the psychiatric rehabilitation of schizophrenia patients.

Hayes et al. (1987) propose the term “treatment validity” or utility of assessment to refer to the impact of assessment on treatment outcome, that is, the degree to which assessment is demonstrated to contribute to positive outcomes. In commending this approach, they use as a key illustrative example, a seminal study in social skills by Trower, Yardley, Bryant & Shaw, 1978):

Research on the treatment validity of assessment can address which target behaviours should be the focus of treatment in specific patient subtypes. In one empirical example, patients with social skills problems were divided into two groups: those with apparent skills deficits and those with apparent suppression (response inhibition) of skills because of social anxiety (Trower, Yardley, Bryant & Shaw, 1978). This has been a popular distinction in the social skills literature (e.g. Hersen & Bellack, 1977), but the relationship between identifying skills deficits or social anxiety and finding differential treatment outcomes had not been shown. Trower et al. (1978) showed that socially deficient patients showed greater improvement with social skills

training than with systematic desensitization, whereas socially anxious patients showed equal improvement under either treatment. p 965.

Thus, Hayes et al. (1987) argue that the assessment distinction between skills deficits and social anxiety has a degree of treatment validity, but only for the skills deficit group.

In the field of interpersonal anxiety, some studies have attempted to follow a treatment validity type study and failed to find any differential effects. For example, a social phobia study by Ost, Jerremalm & Johanson (1981) divided participants into somatic or behavioural reactors and Jerremalm, Janssen & Ost (1986) using somatic complaints and cognitions, yielding somatic versus behavioural reactors and somatic versus cognitive reactors, respectively. Treatments consisted of applied relaxation and cognitive therapy or SST, respectively. Patients were all treated individually. The first study partly supported the hypothesis that individual response patterns have treatment validity. The second study did not. Merish, Emmelkamp, Bogels & van der Sleen (1989) divided patients into groups of “behavioural versus cognitive reactors.” Again, no differences between treatment groups were found.

However, there are a number of possible flaws in these studies. First, the use of too broad a typology such as the three systems model of behaviour, cognition and physiology to distinguish anxiety dimensions may be misleading. This is because desynchrony of these systemic responses is not uncommon (see Rachman & Hodgson, 1974) and therefore they may not be correlated.

Second, the above investigators *assumed* (instead of checking if) there was a functional relationship between the specific complaint, that is, the target problem and the theoretical model. For example, Alladin (1984) has suggested that it is important

to distinguish between a lack of competence or skill deficit (“I don’t know how to”) and an inhibition (“I can’t bring myself to”). It may also be the case that some people mean “won’t” (“I refuse to”) when they say “can’t”. Thus a functional analysis of problem statements seems necessary otherwise treatment strategies may be inappropriately applied since such participants may then incorrectly be assigned to a skill deficits or dysfunctional cognitions group.

Third, though treating individuals, these studies did not adopt an individual time-series design. As Emmelkamp, Bouman & Scholing (1992) admit, it is impossible to find between group differences if the within group differences are too large. Thus, if this was the case, then a conclusion of ‘no differential effects’ is misleading.

3. 2. The problem of the individual in group studies

Hayes et al. (1987) suggest that to identify treatment responsiveness at the level of the individual we need to use individual time-series designs. An understanding of a further type of study-that of manipulated use- is essential to avoid methodological pitfalls. They observe that in these studies, the researcher manipulates the way in which the assessment information is used. A study conducted by Jarrett, Nelson & Hayes (1981) is an example but with an instructive flaw. This involved comparison of an idiographically based treatment of depression with a nomothetic approach. In the idiographic group, participants received treatment modules matched for their specific problems. Thus, a cognitive module, was offered to participants with frequent irrational thoughts and a social skills module for participants with poor social skills, and so on. In the nomothetic group, participants received modules yoked to the idiographic participants. The results showed no differential effect for treatment matching.

However, an important methodological flaw went unnoticed. By chance, many in the yoked treatment group also received needed treatment, as indicated by their pre-treatment assessment. A manipulated use study can avoid this problem by adopting rules for the use of assessment data in one group and adopting contrary rules for their use in the other. For example, in one group treatment can be matched to assessment, and in the other treatment can be deliberately cross-matched with assessment. A seminal study by McKnight, Nelson, Hayes & Jarrett (1984), under these conditions, has confirmed the value of idiographic treatment matching for depression and for social dysfunction. It is this promising methodology that is adopted in the main Study Two (Chapter Five).

However, a further potential problem which Hayes et al. (1987) overlooked is the possibility that a particular treatment had not been “matched adequately” since the target problem or the therapy may not have been adequately operationalized. Thus, for example, when a participant with social dysfunction is (inadequately) assessed and offered a social skill module there may still be a mismatch. More specifically, say the participant has problems in response inhibition as reflected in high social anxiety and the inability to emit a response (cf. Alladin, 1988) but the social skills module provided may be based on a unitary skills deficit model of social skill. This participant would predictably fail to benefit and mislead the researcher by the absence of differential treatment effects. In short, a functional analysis needs to be conducted on every target problem(or response class) before it can be decided whether a particular problem is due to, for example, skill deficit or response inhibition or faulty discrimination. The importance of this is underscored when it is recognised that sometimes a client may protest that s(he) “can’t” do a particular task in the hope that

the therapist (or their loved ones) will step in and do it for them. Thus self-reports in research should be checked out by observation and not taken uncritically at face value.

3.3 Statistical issues in time- series designs and criteria for evaluating clinical significance

The statistical analysis of single participant studies remains a controversial issue (see, for example, Barlow & Hersen, 1984). Baer (1977), championing the virtues of visual analysis of data, argues that if there is an [clinically significant] effect it will be very obvious and in applied settings only marked effects have utility. However, visual analysis of graphical data in multiple baseline studies should not be confused with mere eyeballing of data. The three components of baseline logic necessary for experimental analysis - prediction, verification, and replication - are found in the alternating treatments design used in Study Two, providing an experimentally sound and efficient method of comparing two or more treatments:

Each succeeding data point plotted for a specific treatment plays all three roles, that is, i) it serves as a basis for the prediction of future levels of behaviour under that treatment, (ii) it provides verification of previous predictions of performance under that treatment, and (iii) it is a replication of the differential effect produced by the other treatment that is part of the design (see Cooper, Heron & Heward, 1987).

Furthermore, Barlow, Hayes & Nelson (1984) have offered criteria (see Table 3.1) by which the clinical significance of findings from time-series data may be evaluated.

These considerations will be taken into account when interpreting the findings of Study Two in the next chapter.

Table 3.1 **Some Common Rules in Evaluating Time-Series Data**

1. Evaluate effects relative to background variability.
2. Replicated effects are more believable.
3. The more applications the more believable are the data.
4. The more consistent the effects, the more believable.
5. The larger the magnitude of change (given background variability and previous knowledge about the behaviour), the more believable
6. Immediate effects are more believable.
7. Large changes in level, or level and trend, are more believable.
8. Effects which rule out alternative explanations are more believable.

From Barlow, Hayes & Nelson (1984).

Chapter Four

STUDY ONE

THE ASSESSMENT OF PROBLEM SOLVING DEFICITS

IN CHRONIC SCHIZOPHRENIA

4.1 Introduction

4.2 Research questions and main hypotheses

4.3 Method

4.3.1 Participants

4.3.2 Measures

4.3.3 Apparatus

4.3.4 Procedure

4.4 Results

4.4.1 Overall problem solving ability

4.4.2 Latency of rule discovery

4.4.3 Number of perseverative responses

4.4.4 Number of perseverative errors

4.4.5 'Think aloud' procedure: spontaneous overt self-verbalizations during problem solving

4.4.6 Participants' self-report about what the test was about and the strategies adopted.

4.5 Discussion

4.5.1 The naturalistic 'think-aloud' procedure- a methodological advance?

4.5.2 Excluding alternative explanations

4.5.3 Methodological improvements

4.5.4 Limitations of Study One

4.1 Introduction

The principal comparison in the present study was the general problem solving behaviours on the Wisconsin Card Sorting Test (WCST) of hospitalized chronic schizophrenia in-patients and the normative data. A secondary concern was to identify the full range of problem solving behaviours between the experimental and control group since few studies report details other than the categories sorted and percentage perseverative errors (Tisdelle & St. Lawrence, 1986). For example, in addition to overall general problem solving ability (i.e. total categories achieved) it would be of interest to obtain

measures reflecting latency of rule discovery (number of trials to learn the first category) and whether having learned the rule, participants had difficulty sticking to it ("failure to maintain set"). This would allow a more fine-grained analysis of which stage(s) of the problem solving process is impaired.

If the performance of both paranoid and non-paranoid chronic schizophrenia participants are similarly impaired then (i) a general problem solving neurocognitive deficit would be identified; and (ii) the practice of mixing schizophrenia patients in SST may be defensible.

On the other hand, if only participants in the non-paranoid chronic schizophrenia control group show impaired problem solving, then a first step could be made in offering an empirically based rationale for a separate SST group for the paranoid schizophrenia participants. Furthermore, if generalization of social skills of these participants is subsequently not demonstrated in such a group, then one possible reason for this- a general problem solving neurocognitive deficit- can be excluded.

The use of the WCST has a number of advantages: (i) it avoids the problem of making value judgements or ratings of social skills, is objective and denuded of emotion since it is an impersonal task; (ii) objective assessment on the WCST is not socially threatening and imposes no pressure of time constraints or social anxiety as no role play is required; (iii) can have heuristic value in excluding a possible basic neurocognitive deficit: executive dysfunction and (iv) Smith et al. (1999) have demonstrated that neurocognitive deficits are learning rate limiting factors in

skills training and Bellack (2004) has assigned a mediational role to neurocognitive deficits in his model of social skills and functional outcomes.

The aims of the present study are three-fold:

1. To identify those with normal and those with impaired WCST performance in preparation for SST.
2. To identify more precisely problem solving profiles of schizophrenia participants by monitoring performance across all stages of the WCST.
3. To encourage a 'think-aloud' approach during actual problem solving on the WCST and monitor any effects of positive self-verbalizations.

4.2 Research questions and main hypotheses

Research Question 1

Do socially dysfunctional paranoid schizophrenia participants have normal problem solving on the WCST?

Hypothesis 1: Socially dysfunctional paranoid schizophrenia participants will have normal problem solving on the WCST as reflected in the number of categories achieved.

Null Hypothesis 1: Socially dysfunctional paranoid schizophrenia participants will not have normal problem solving on the WCST, that is, they will be impaired on all stages of the WCST.

(**Hypothesis 1** will be also be clarified by four secondary hypotheses since performance across the stages of the WCST are also relevant)

Hypothesis 1a: Socially dysfunctional paranoid schizophrenia participants will learn the rule (as measured by the number of trials taken to attain the first category of colour) faster than the non-paranoid schizophrenia participants.

Null Hypothesis 1a: Socially dysfunctional paranoid schizophrenia participants will not learn the rule any faster than the non-paranoid schizophrenia participants.

Hypothesis 1b: Socially dysfunctional paranoid schizophrenia participants will have significantly less perseverative responses than the non-paranoid schizophrenia participants.

Null Hypothesis 1b: Socially dysfunctional paranoid schizophrenia participants will not have perseverative responses significantly different from that of the non-paranoid schizophrenia participants.

Hypothesis 1c: Socially dysfunctional paranoid schizophrenia participants will make significantly less perseverative errors than the non-paranoid schizophrenia participants.

Null Hypothesis 1c: Socially dysfunctional paranoid schizophrenia participants will not make significantly less perseverative errors than the non-paranoid schizophrenia participants.

Hypothesis 1d: Socially dysfunctional paranoid schizophrenia participants will make significantly less failures to maintain set than the non-paranoid schizophrenia participants.

Null Hypothesis 1d: Socially dysfunctional paranoid schizophrenia participants will not make significantly less failures to maintain set than the non-paranoid schizophrenia participants.

Research Question 2

Do socially dysfunctional non-paranoid schizophrenia participants have impaired problem solving on the WCST?

Hypothesis 2: Socially dysfunctional non-paranoid schizophrenia participants will have impaired problem solving across all stages of the WCST

Null Hypothesis 2: Socially dysfunctional non-paranoid schizophrenia participants will not have impaired problem solving across all stages of the WCST.

Research Question 3

What would be the effect of overt self-verbalizations on performance on the WCST?

Hypothesis 3: Schizophrenia participants who overtly verbalize positive self-instructions during the WCST will show normal or enhanced performance.

Null Hypothesis 3: Schizophrenia participants who overtly verbalize positive self-instructions during the WCST will not show normal or enhanced performance.

4.3 **METHOD**

4.3.1 **Participants**

Participants were drawn from the three rehabilitation wards (total of 51 patients) of a large psychiatric hospital with the support of their key worker (nursing staff) and psychiatrists. All 51 patients were given the Assertion Inventory but only 24 patients who met criteria were approached and they all volunteered to participate (and gave informed consent) as part of a pre-assessment for possible inclusion in an SST group as part of the larger research study two. All participants were on a stable regime of maintenance psychotropic medication and were tested when they were clinically stable. A further requirement for inclusion was the presence of both self-reported and observer (staff) rated social dysfunction.

Eleven in-patients with delusional beliefs meeting DSM IV (APA, 1994) for paranoid schizophrenia formed the experimental group (Paranoid Group). A further 11 in-patients not suffering from delusional beliefs but meeting a DSM IV diagnosis of chronic schizophrenia 'disorganized' subtype served as the psychiatric control group (Non-Paranoid Group).

The rationale for using the non-paranoid group as a control was that they: (i) shared the same milieu as the experimental group and lived together as people with chronic schizophrenia in the same hospital and were looked after by the

same group of psychiatrists and nurses; and (ii) would form a good contrast to the paranoid group as they are more likely to be impaired on the WCST and therefore least likely to benefit from conventional SST.

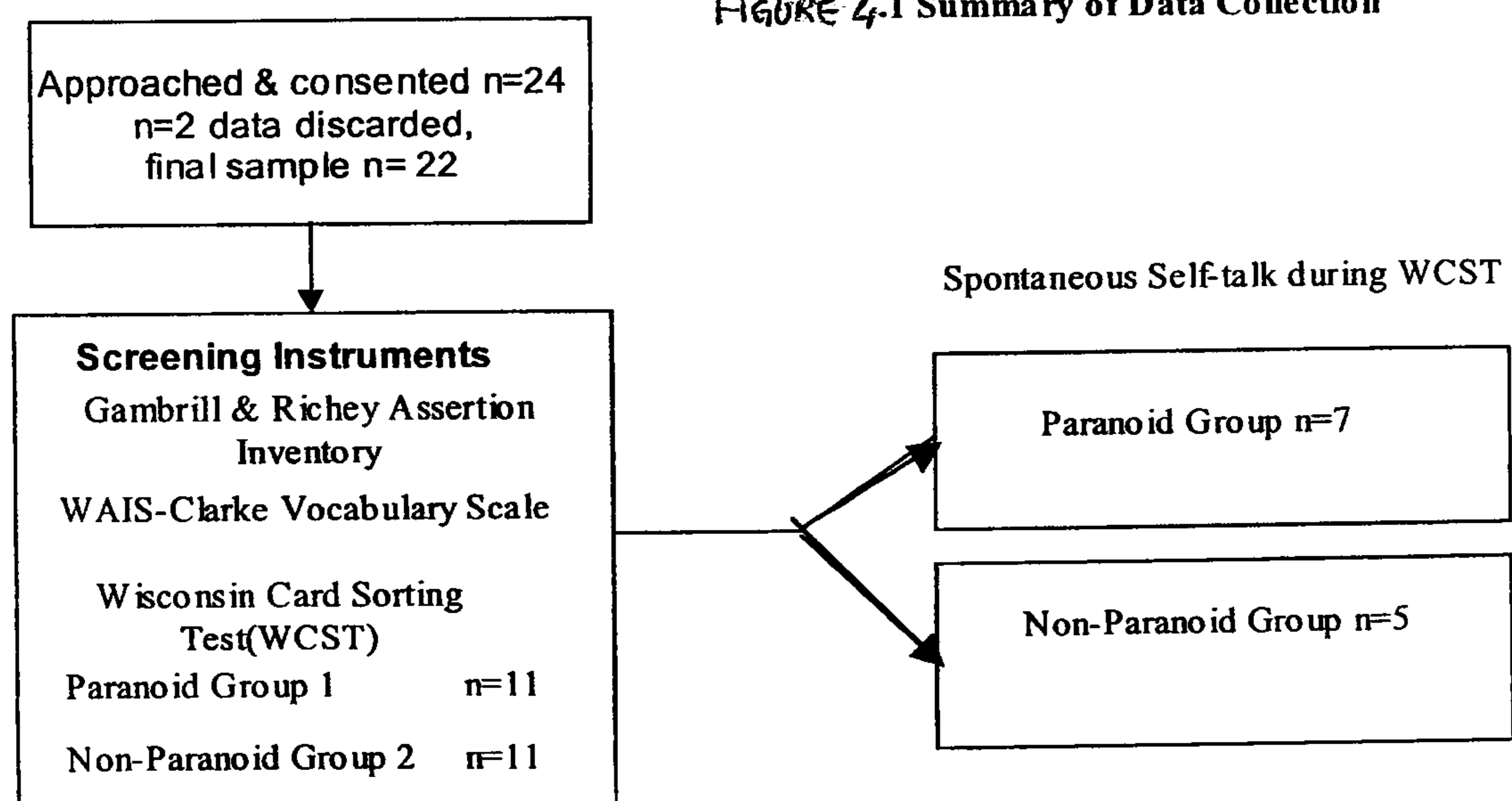
Diagnosis was assessed by reference to data from case notes and current symptoms by the researcher and confirmed independently by a psychiatrist or clinical assistant during attendance at case conferences. To facilitate interpretation of results and to reduce possible confounding factors, using the case notes, patients with tardive dyskinesia, co-existing thought disorder, affective disorders (major depression, mania), known cerebral impairment, drug misuse, alcoholism, a history of ECT within the past six months, and those over 45 years of age were excluded to control for possible age-related cognitive decline.

It is well known that the performance of chronic schizophrenia patients on cognitive tasks is highly variable given their heterogeneity. Thus, by imposing strict exclusion criteria the characteristics of the patient control group would be more closely identifiable and, hopefully, the heterogeneity of the control group may also thereby be reduced. More importantly, potential confounding factors may be excluded or minimized. A normal control group with similar high levels of social dysfunction as the patient groups was difficult to recruit. However, it was not regarded as essential since the WCST has been standardised for a range of educational levels, with normative data in Heaton (1981) available for comparison- a procedure successfully utilized

Table 4. 1 Demographic characteristics of the experimental (n =11) and psychiatric control (n =11) groups.

	Paranoid Group	Non Paranoid Group
AGE		
Mean (SD) age (years)	33.91 (7.29)	36.18 (6.49)
Range	23-45	25-43
GENDER DISTRIBUTION		
	3 women, 8 men	11 men
EDUCATION		
[YEARS OF SCHOOLING]		
Mean (SD)	7.36 (3.08)	6.81 (2.40)
Range	5-15	4-10
YEARS OF HOSPITALIZATION		
Mean (SD)	5.73 (5.06)	7.18 (6.42)
Range	2-21	2-19
WAIS-CLARKE VOCABULARY SCALE		
[CURRENT ESTIMATED VERBAL IQ]		
Mean (SD)	100.46 (7.55)	95.46 (7.23)
Range	85-119	85-107

FIGURE 4.1 Summary of Data Collection



with schizophrenia patients by Chadwick (1989) and Rosse et al. (1991), amongst others. [See Spreen & Strauss, 1991, for details of further norms and commentary on the WCST pp 71- 76]. In line with the recommendations by Chapman & Chapman (1973) the experimental and patient control groups were found to be comparable in terms of number of years schooling, that is, on pre-morbid level of education and did not differ significantly (Test for one mean, $t = 0.592$, $DF = 10$, $p = 0.5668$ not significant since p is > 0.05 , two-tailed test, using the MedCalc for Windows Version 8.1.0.0 (MedCalc Software, Mariakerke, Belgium). Similarly, the differences between both groups on length of hospitalization ($t = 0.95$, $DF = 10$, $p = 0.3643$) and current estimated verbal IQ ($t = 2.196$, $DF = 10$, $p = 0.0528$) are both not significant since the p in each case is greater than 0.05 (two-tailed test).

4.3.2 Measures

The Assertion Inventory (Gambrill & Richey, 1975).

Participants were screened on the Assertion Inventory which has been validated for use in research and clinical practice (see Gambrill & Richey, 1975). This is unique as a measure of assertiveness in that it taps eight common response categories, assesses skill level in terms of response probability and discomfort (social anxiety) experienced in each situation. This measure was used in combination with observer ratings to assess social dysfunction. It requires respondents to indicate areas in which they would like to improve, thereby increasing its validity. Further, it enables the construction of individual profiles which can fit the multidimensional conceptualization of social dysfunction proposed by Alladin (1988). There are no published British norms but the Assertion Inventory has been used by Alladin (1982a, 1982b,

1982c, 1989) and found to be clinically meaningful in the construction of social dysfunction profiles and for assertiveness and job interview training groups.

The criteria for cut-off points was the mid-point on each subscale. The rationale for this was that it is common in the general population to have some problem with assertiveness and anxiety and items from the mid-point onwards are often indicated by participants as the ones which they feel need changing. Thus for inclusion, participants had to (i) score ≥ 3 [scoring indicating moderate (“a fair amount”) to severe social anxiety (“very much”) in emitting an assertive response] on the Discomfort (Anxiety) Subscale and (ii) ≥ 3 [scoring indicating moderate (“do it about half the time”) to severe difficulty in emitting an assertive response (“never do it”) on the Response Probability Subscale on at least each item covering four of the eight response classes [see Table 1, Appendix ~~II~~ ^{p. 259} and (iii) indicate, by circling around the item number, situations the participant would like to handle more assertively. These stringent criteria were adopted since total scores on their own can be misleading and also to overcome demand characteristics.

The WAIS-Clarke Verbal (Vocabulary) Scale (Paitich & Crawford,

1971) - a multiple choice version of the WAIS Vocabulary subtest was used [after Williams, Alagaratnam & Hemsley, 1984] to screen for general verbal ability since poor performance could be confounded by impaired intellectual functioning. The WAIS-Clarke consists of 40 vocabulary words from the Weschler Adult Intelligence Scale, each with four alternatives from which participants are required to choose a synonym. Paitich & Crawford (1971)

report that it correlates .92 with the WAIS Vocabulary Scale. It was chosen to reduce the memory load on schizophrenia participants. The WAIS-Clarke scores were converted following instructions in the manual (Wechsler, 1955) to obtain estimated Verbal IQ equivalent scores.

The Wisconsin Card Sorting Test (Heaton, 1981)

The WCST is a well-established neuropsychological test originally devised by Berg (1948) and first tested on people with schizophrenia by Fey (1951). There are many versions of this test (see Van der Does & Van den Bosch, 1992, for a review) but the most widely used and accepted standardized version with established norms is that by Heaton (1981). The construct validity of the WCST has been established recently for schizophrenia patients and it has been confirmed that performance of schizophrenia patients on the WCST is not largely determined by poor motivation, failure to cooperate or a generalized cognitive deficit (see Allen, Aldarondo, Goldstein, Huegel & Gilbertson & van Kammen, 1998). The latent structure of the WCST has been established by numerous factor analytic studies but the first large scale confirmatory factor analysis is that by Greve, Stickle, Love, Bianchini & Sandford (2005). They confirmed that only the first factor, general executive functioning, is statistically sound. The WCST is used to assess abstract problem solving behaviours and as a test of possible frontal dysfunction and/or executive dysfunction. The manual version of the WCST by Heaton (1981) used in the present study included: four stimulus cards, two identical decks of 64 response cards, and standard recording forms. All stimulus and response cards have systematic figure configurations, and are numbered to indicate the standard order so that no two successive response cards in succession have

the same colour, form or number. This reduces any learning due solely to practice effects.

4.3.3 Apparatus

A Sanyo Pocket Tape Recorder [Model TRC 2600] with a sensitive built-in microphone was used to unobtrusively audio tape any spontaneous verbalizations by participants for which prior consent was obtained, with the assurance that the tape would be erased after transcription.

4.3.4 Procedure

Ethical approval for the present research was sought and obtained from the Clwyd (North) Ethics Committee. All patients who were approached volunteered to participate as part of a pre-assessment for possible inclusion in an SST group as part of the larger research study two. They gave their written informed consent and were made aware that they could withdraw from the research at any time (see Appendix ~~E~~^{p 253-258}). Participants were individually interviewed either in a quiet room in one of the hospital wards or in the clinical psychology department by the researcher.

The WCST uses stimulus cards that display varying forms (crosses, circles, stars or triangles), colours (red, green, blue or yellow), and numbers (one, two, three or four). Four stimulus cards with the following characteristics were placed in front of the participant: one red triangle, two green stars, three green crosses and four blue circles. The participant was then handed a deck of 64 response cards and instructed to place each consecutive card from the deck in

front of one of the four stimulus cards, wherever he or she thought it ought to go. The participant was informed only whether each response was right or wrong; participants were not told the correct sorting principle. Once the participant made ten sorts according to colour – the initial correct principle – without warning the criterion principle was changed from colour to form. Following ten sorts made according to form the criterion was changed again, this time to number. Following ten consecutive sorts according to number, the criterion was changed to colour once again and the cycle was repeated. The test proceeded in this manner until either the specified cycle (colour, form, number, colour, form, number) was completed successfully, or until all 128 response cards were used. Alternatively, the test was stopped if a participant completed 64 trials (i.e. went through one entire deck of cards) without achieving the initial category.

The participants were given the following standard instructions:

“This test is a little unusual, because I am not allowed to tell you very much about how to do it. You will be asked to match each of the cards in these decks to one of four cards.¹ You must always take the top card from the deck, and place it below the key card you think it matches.² I can't tell you how to match the cards, but I will tell you each time whether you are right or wrong. If you are wrong, leave the card where you've placed it, and try to get the next card correct. Use this deck first and then continue with the second deck.³ There is no time limit on this test.” Heaton (1981) p.19

¹ Researcher indicates the four stimulus cards laid out in standard order

² Researcher identifies the stimulus cards

³ The first deck is handed to the participant and the second deck is placed to the side

In addition, participants were explicitly encouraged (but not pressured) to think aloud, if they wished to do so, whilst doing the task to control for the concern expressed by Lowe (1979) that verbal self-reports after an experimental task could simply be *post hoc* rationalisations.

Thus the following instructions were also read out:

“People sometimes find it helpful talking to themselves when performing a task. You may, if you so wish, think aloud as you are performing the task I am about to ask you to do. On the other hand, you may wish to do the task silently. Do whatever comes naturally-whatever you find comfortable.”

In keeping with the test protocol, the researcher was careful to make no mention of colour, form, or number; nor was any mention made of category changing. Participants' responses were manually recorded on the standard forms provided. To ensure greater consistency, the scoring of the results was done using the computerized WCST version 1.0 developed by Harris (1990). This software has the advantage of (i) ensuring a completely objective and reliable scoring adhering to the complex scoring procedures of the WCST; and (ii) serving as a double check for any possible inadvertent mistakes since the program “knows” the position and configuration of every card and will alert invalid responses at data input stage.

Finally, a possible threat to the validity of the WCST results was taken into account: the possibility of fortuitous guessing or random responding by a bored participant. This was controlled by careful monitoring during testing and subsequent scanning of response sheets. The data from two non-paranoid schizophrenia participants from the original sample of 24, both in the first

category, were discarded, making the final sample of 11 participants in each group.

4.4 RESULTS

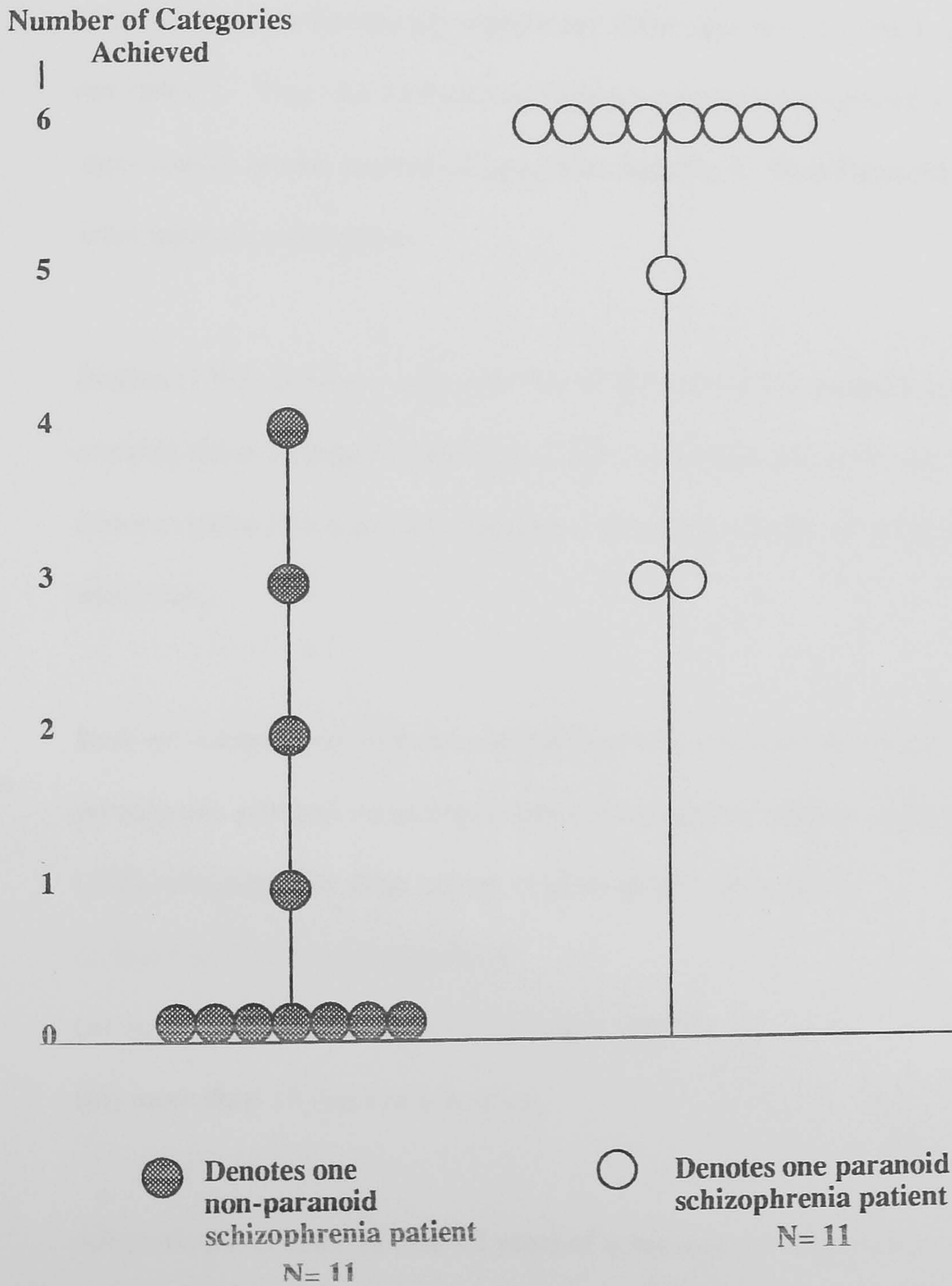
Descriptive analysis of the data will be presented, followed by statistical analysis. The data were analyzed using the MedCalc for Windows Version 8.1.0.0 (MedCalc Software, Mariakerke, Belgium). As the groups were matched for social dysfunction levels and fortuitously ended up with equal numbers (n=11) and the data were repeated 'composite' measures, the Wilcoxon Test was appropriate (see King & Minium, 2003).

4.4.1 Overall problem solving ability: number of correct categories.

Table 4.2 Total number of categories achieved by the paranoid and non-paranoid schizophrenia participants (N=22).

Paranoid Group 1 (N =11)		Non-Paranoid Group 2 (N=11)	
Categories	Achieved	Categories	Achieved
	(Range= 0-6)		(Range= 0-6)
P1	6	P12	0
P2	3	P13	1
P3	6	P14	0
P4	5	P15	3
P5	6	P16	2
P6	6	P17	0
P7	6	P18	4
P8	6	P19	0
P9	3	P20	0
P10	6	P21	0
P11	6	P22	1
Mean	5.36		1.00
SD	(1.14)		(1.34)

Figure 4.2 Graphical representation of the Wisconsin Card Sorting Test categories achieved by paranoid and non-paranoid schizophrenia participants.



Eight Paranoid Group participants completed all six categories. However, no Non-Paranoid Group participant achieved all six categories. The mean number of categories completed by the Paranoid Group participants was 5.36 categories. However, Non-Paranoid Group participants had a mean of 1.00. This difference is statistically significant [*Wilcoxon test*, $T = 66.0$, $p = 0.05$, one tailed]. Thus, the 11 Paranoid Group participants completed a significantly greater number of categories than the 11 Non-Paranoid Group schizophrenia participants.

Heaton (1981) presents normative WCST data (N= 150), drawn from normal controls (from a range of educational and intellectual abilities) with a break down in terms of a number of variables, including number of years in education.

Here all comparisons with the normative scores are based on normal participants grouped according to number of years of education. Heaton (1981) distinguishes three groups of participants: those with

- (i) less than 12 years of schooling,
- (ii) between 12 and 15 years of schooling and
- (iii) more than 15 years of schooling.

All participants had less than 12 years of schooling, with one exception: Participant P1 in the Paranoid Group had reached university but failed to complete his course. Thus Table 4.3 summarizes the normative data used to make comparisons with the Paranoid Group and Non-Paranoid Group participants in the present study according to two bands of education only.

Table 4.3 Selected results from the normative study across two educational groups.

Years of Schooling	< 12 years	12-15 years
No. of categories	5.1 (1.4)	5.2 (1.5)
Trials to 1st Category	16.1 (9.3)	14 (13.8)
Perseverative errors (%)	15.1 (7.8)	12.5 (7.4)

From Heaton (1981) p.38

Non-Paranoid Group participants' performance fell well below that predicted by the normative data. Not one single participant achieved 5 or more categories. In other words, none of the non-paranoid chronic schizophrenia participants was able to complete the WCST.

4.4.2 Latency of Rule Discovery: number of trials to complete the first category.

Table 4.4 shows the number of trials each participant took to complete the first category - that is, the number of trials that elapsed before the patient recorded ten consecutive correct sorts according to colour. Since the data are skewed, medians rather than means are displayed.

Table 4.4 Number of trials taken to record a sequence of ten correct sorts according to the first category: colour.

Paranoid Group (N=11)		Non-Paranoid Group (N=11)	
Trials to 1st Category		Trials to 1st Category	
P1	12	P12	*64
P2	11	P13	12
P3	12	P14	*64
P4	11	P15	12
P5	11	P16	11
P6	11	P17	*64
P7	40	P18	41
P8	12	P19	*64
P9	11	P20	*64
P10	37	P21	*64
P11	66	P22	60
Median	12		64
95% Confidence Interval for the Median	11.00 to 39.36		12.00 to 64.00

However, in accordance with the WCST manual, the test was discontinued for six Non-Paranoid Group participants following 64 trials (i.e. when one complete deck of cards was exhausted) without ten consecutive correct sorts according to colour.

For statistical purposes (so as not to exaggerate the difference between Paranoid Group and Non-Paranoid Group participants) the comparison of

*These participants did not attain the first category even after 64 trials and the test was terminated.

Paranoid Group and Non-Paranoid Group scores was based on the conservative estimate that these six participants had taken 64 trials to complete the first category - the minimum number of trials required had the test been continued. As the data were ordinal and from a skewed distribution, the statistical analysis was more appropriately done using the *Mann-Whitney Test* (see King & Minium, 2003) [$U = 161.50, p = 0.011, one-tailed$]. Thus there is a statistically significant difference between the Paranoid Group participants and those in the Non-Paranoid Group in the number of trials in which they took to learn the first category.

In other words, the number of trials the paranoid and non-paranoid chronic schizophrenia participants took to achieve the first category was, on the whole, not comparable. Thus, during the first stage which reinforced colour, the majority of participants in the non-paranoid group were unable to achieve the first category, having difficulty in rule discovery. However, a minority of the participants in the non-paranoid group performed as well as the paranoid group as reflected by comparable latencies with the paranoid group. Taken on its own, this could be misleading since this pattern of performance is not sustained throughout the stages of the WCST. The total number of categories achieved suggests that other aspects of the performance of the two groups are far from equivalent.

The normative data from Heaton (1981) [see Table 4.3] for the 20 participants with less than 12 years schooling had a mean of 16.1 trials (standard deviation = 9.3) to complete the first category. The mean number of trials taken by the ten Paranoid Group participants of comparable schooling was 22.2 trials

(standard deviation = 9.12). The number of trials taken by the one Paranoid Group participant with an undergraduate education (12-15 years schooling band) was 12. The corresponding normative data indicated a mean of 14 trials (standard deviation = 13.8) to complete the first category. As with the total number of categories completed, the performance of the paranoid schizophrenia participants falls within the limits of the normative data. However, the Non-Paranoid Group participants, with few exceptions, performed well below this level.

4.4.3 Number of perseverative responses

Percentage scores were used instead of raw scores so as to control for the different number of trials the participants completed. A *Wilcoxon test* yielded a highly significant difference ($T = 3, p = 0.001$, one-tailed), confirming that the group of paranoid participants made significantly fewer perseverative responses than the non-paranoid group.

Figure 4.3 graphs the percentage of responses made by each participant that were perseverative (% PR) and Table 4.5 displays the numerical data (see next two pages).

FIGURE 4-3 Participants (n= 11 per group) Paired in Ascending Order of Perseverative Responses (%)

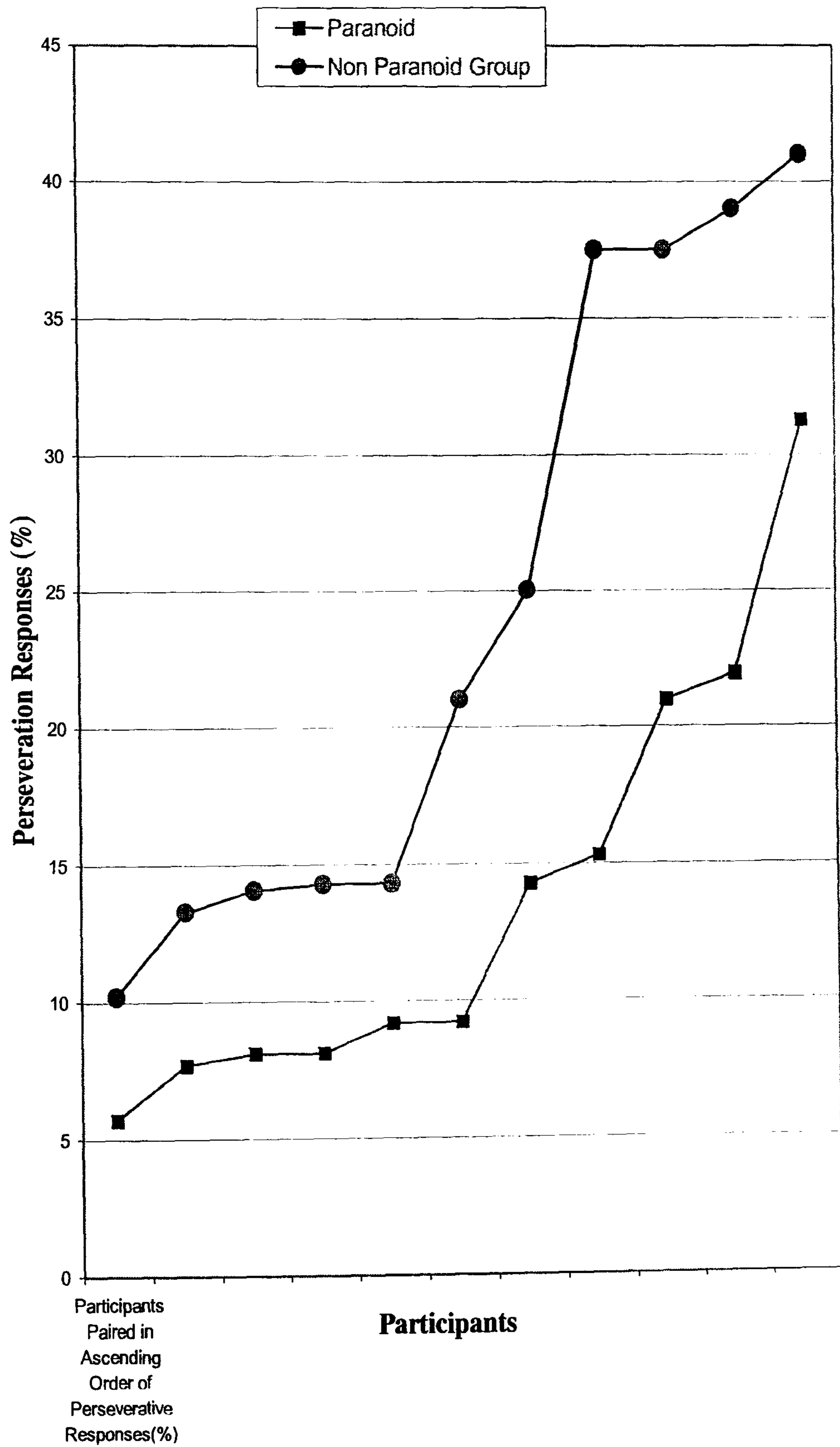


Table 4.5 Percentage of perseverative responses (% PR)

Paranoid Group: % PR		Non-Paranoid Group: % PR	
P1	8.10	P12	10.20
P2	21.00	P13	14.06
P3	8.10	P14	25.00*
P4	9.21	P15	37.50*
P5	5.71	P16	13.28
P6	9.18	P17	14.93
P7	14.29	P18	14.29
P8	7.69	P19	37.50*
P9	21.95	P20	21.00
P10	15.31	P21	41.00*
P11	31.25*	P22	39.00*
Mean	13.80		24.34
SD	7.60		11.55

* Indicates based on a raw PR score >18 which, according to Heaton (1981), is the best predictor of the presence of brain damage and the presence of frontal impairment in focal cases. These scores were derived by dividing the total number of trials taken by the number of perseverative responses. These were not provided in the computerized report and were manually calculated.

4.4.4 Number of perseverative errors.

Figure 4.4 graphs the percentage of perseverative responses that were errors (% PE) and Table 4.6 displays the numerical data.

Figure 4.4 Percentage Perseverative Errors

Data Rearranged in Ascending Order for Paranoid and Non-Paranoid Participants (n= 11 per group)

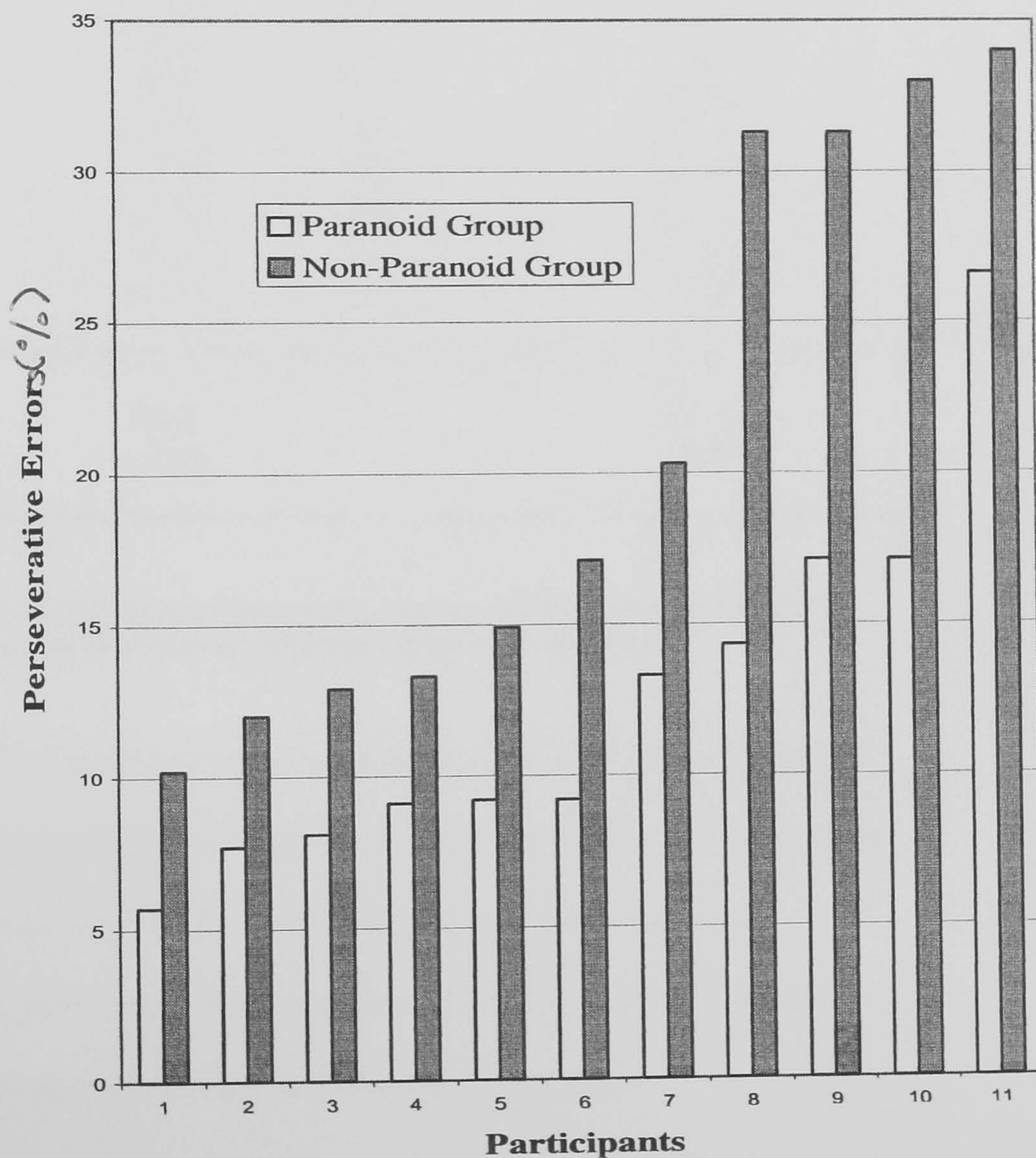


Table 4.6 Percentage of perseverative errors* (% PE)

Paranoid Group	% PE	Non-Paranoid Group	% PE
P1	8.10	P12	10.20
P2	17.10	P13	12.00
P3	8.10	P14	20.30
P4	9.20	P15	31.30
P5	5.70	P16	13.30
P6	9.20	P17	14.90
P7	13.30	P18	12.90
P8	7.70	P19	31.30
P9	17.10	P20	17.10
P10	14.30	P21	34.00
P11	26.60	P22	33.00
Mean	12.40		20.94
SD	5.84		9.05

*These scores (automatically calculated by the computerized program) were derived by dividing the total number of trials by the number of perseverative errors.

A one-tailed *Wilcoxon test* on the percentage number of perseverative errors made by the Paranoid Group and Non-Paranoid Group participants was also highly significant ($T = 3$), $p = 0.001$). That is, the eleven paranoid schizophrenia participants made significantly fewer perseverative errors than the eleven non-paranoid chronic schizophrenia participants.

The normative data from the WCST manual provided both the raw and percentage number of perseverative errors. However, only the raw number of perseverative responses is provided here since, neurocognitively speaking, the perseverative responses have diagnostic significance. However, for statistical purposes the raw number of perseverative responses confounds inter-participant variability in terms of total number of trials. Thus, when comparing with the normative data only percentage perseverative error scores will be considered.

In Table 4.3 the mean percentage perseverative errors for the 20 normal participants in the lowest educational bracket was 15.1(standard deviation = 7.8).

The mean percentage errors for the ten Paranoid Group participants with less than 12 years schooling was 12.83(standard deviation = 6.28) which is broadly comparable with the normative data.

However, the mean percentage perseverative errors for the eleven Non-Paranoid Group participants (all of whom had less than 12 years schooling) was 20.94 (standard deviation = 9.05). Thus, only the performance of the Paranoid Group participants was consistent with the normative data. The Non-Paranoid Group data are mostly outside the range of scores for the normal control group. This is further corroborated by the data in Table 4.7 which represents all participants scoring perseverative responses in the impaired range.

Table 4.7 Participants with raw perseverative response (PR) scores >18(expressed here as percentages*) with categories achieved and number of failures to maintain set.

Group/ PR%	Categories achieved	No. of Failures to Maintain Set
Paranoid/ P11 31.25*	6	4
Non-Paranoid/ P14 25.0*	3	5
P15 37.5*	0	3
P19 37.5*	0	2
P21 41.0*	0	3
P22 39.0*	1	3

If the one paranoid participant (P11) is discarded as an ‘outlier’, then a clear pattern emerges with the categories achieved on the WCST and the failures to maintain set: the impairment is overwhelmingly with the non-paranoid group.

Table 4.8 (see next page) displays the number of occasions when participants failed to maintain set, that is, having apparently discovered the rule, they failed to stick to it long enough to get all ten trials correct. Inspection of the data shows that seven paranoid patients had no problems at all in maintaining set throughout the test and this compares very favourably with the normative data presented by Heaton (1981). However, only two of the non-paranoid participants were able to maintain set throughout. Nine of the non-paranoid patients had failed to maintain set for between 2-5 occasions. The difference between the Paranoid Group and Non-Paranoid Group is highly significant using the *Wilcoxon* test ($T = 10, p = 0.001$, one tailed).

Table 4.8 Total number of failures to maintain set across all trials by the paranoid and non-paranoid schizophrenia participants (N = 11 per group).

Paranoid Group		Non-Paranoid Group	
P1	0	P12	0
P2	2	P13	0
P3	0	P14	5
P4	0	P15	3
P5	0	P16	3
P6	2	P17	0
P7	0	P18	2
P8	0	P19	2
P9	2	P20	3
P10	0	P21	3
P11	4	P22	3

4.4.5 ‘Think aloud’ procedure: spontaneous overt self-verbalizations during problem solving

The encouragement of participants to think aloud, if they so wished, resulted in twelve participants spontaneously verbalizing their strategies (see Table 4.9 next page) during the task but this production was intermittent. These were reproduced from the audiotape and coded as positive (facilitative, i.e. they were task relevant), or negative (inhibitory, i.e. they were task irrelevant) or neutral. There were no neutral items. The data were analyzed following the procedure described by Cohen & Holliday (1982) using the *Fisher exact probability test* [$C < 0, p = 0.01$]. Thus, there is a statistically significant difference between the paranoid group participants using positive self

Table 4.9 Participants spontaneous verbal reports during actual problem solving from the ‘think aloud’ procedure classified as (+) : facilitative, or (-) : inhibitory, in relation to number of failures to maintain set.

		Paranoid Group (n = 7)	Non-Paranoid Group (n = 5)	
		Failure to maintain set	Failure to maintain set	
P1	(+)	0	P14*	(-) 5
P3	(+)	0	P19*	(-) 2
P4	(+)	0	P20	(-) 3
P5	(+)	0	P21*	(-) 3
P8	(+)	0	P22*	(-) 3
P10	(+)	0		
P11	(-)	4		

- (+) Facilitative self-talk
 (-) Inhibitory self-talk
 * Impaired on the Wisconsin Card Sorting Test

verbalizations and those in the non-paranoid group using negative self-verbalizations. These spontaneous verbal reports further corroborate the statistical results. Thus, six out of the seven paranoid schizophrenia participants appeared to have used verbal self-regulation positively. Participant P11’s behaviour would seem inconsistent with this pattern. However, although he failed to maintain set four times, he achieved all six categories. [Failure to maintain set occasionally occurs with normal WCST participants too, but it does not necessarily preclude achievement of all six categories]. Participant P11 took 66 trials to achieve the first category (the longest latency in the Paranoid Group) and his raw perseverative response is suggestive of executive dysfunction.

4.4.6 Participants' self-report about what the test was about and the strategies adopted.

Every one of the participants in the Paranoid Group recognized that the sorting categories were colour, form and number and that the categories were switched after a particular number of correct responses were made. However, two participants (P2, P9) failed to progress beyond three categories and each had two failures to maintain set. Both report being confused and discouraged, even though they presented as overconfident during testing. Perhaps this is partly explicable by the fact that both achieved the first category within eleven trials- the shortest latency in their group.

On the other hand, the non-paranoid participants' self-reports are more varied and consistently confused as the following examples indicate:

P12 *"I know it was about the numbers, shapes and colours..... but I can't explain it and don't know how to do it."*

P15 *"I knew straightaway it was to do with colours, patterns or shapes and how many things on the card..... but it was difficult..... to hold in my mind..... and respond. I couldn't stop myself getting it wrong...and.....you kept mixing me up!"*

P16 *"Could get the colours and patterns ok but didn't get very far, did I? You changing those numbers..... lost me."*

4.5 DISCUSSION

Study One's main aim assessed if the Wisconsin Card Sorting Test (WCST) could be used as a social problem solving analogue and neuropsychological screening instrument for social skills training. More specifically, as research hypothesis one predicted, problem solving deficits on an objective experimental task (WCST) were not found in socially dysfunctional paranoid schizophrenia participants. All the secondary research hypotheses (1a – 1d) were supported. A methodological point to stress here is that the use of multiple statistical tests increases the probability of a type I error and the consequent identification of chance relationships. Thus, for a 5% significance level, 1 in 20 of these relationships may be erroneously evaluated. Given that there were only four secondary hypotheses and the significance levels were better than at the 5% level, this is unlikely to be a serious concern.

Statistically significant impaired performance was found only in the non-paranoid schizophrenia participants, as predicted by research hypothesis two.

Research hypothesis three which predicted that schizophrenia participants who overtly verbalize positive self-instructions during the WCST will show normal or enhanced performance was also supported.

By encouraging a 'think-aloud' approach during the actual problem solving process and monitoring the effects of this, a possible mechanism (verbal self-regulation using positive or negative self-talk) was discovered by which performance on the WCST was facilitated or inhibited. Although the number of participants in the present study is small, two other more recent studies

suggest confidence can be placed in the potency of verbal self-regulation: a larger study by Nisbet, Siegert, Hunt, & Fairley (1996) reinforces the view that providing feedback *and* getting schizophrenia patients to verbalize their understanding of the WCST, results in improved performance. An even more robust study by Perry, Poterat & Braff (2001) recommends that simply asking schizophrenia patients to verbalize the sorting strategy (which encourages focused metacognition: self-monitoring) results in significant improvement on the WCST. Thus there is much hope for cognitive remediation of people with schizophrenia who are impaired on the WCST.

The WCST was selected as a possible screening device as impaired performance on the WCST may also correlate with impaired generalization of social problem solving. Though there were suggestions in the literature that hinted that this may be so (see Green, 1998) there were no published empirical studies that directly addressed this question.

Further, since there are no commonly agreed criteria for the assessment of social skills (given the inherent and unavoidable value judgements necessary in judging social skill), it seemed necessary to find an objective experimental problem solving task which could also serve as an analogue for social problem solving. Furthermore, the literature review confirmed that performance on the WCST for people with schizophrenia is not substantially correlated with IQ, education, symptom severity, negative symptoms or generalized cognitive deficits which can be particularly problematic in confounding studies of neurocognitive deficits in people with schizophrenia.

The literature review (Chapter One) confirmed that for some schizophrenia patients with 'defect symptoms', a hypothesized executive dysfunction may be linked to impaired problem solving as reflected in their performance on the WCST and this is precisely what was found in a subgroup of the participants from the Non-Paranoid Group.

4.5.1 The naturalistic 'think-aloud' procedure- a methodological advance?

A clinical hunch was included in the study design: tape recording self-reports during the actual performance of schizophrenia participants on the WCST could be a rich source for planning interventions in SST. Thus, the decision to encourage participants to engage in self-talk whilst problem solving was illuminating in that every single non-paranoid schizophrenia participant who engaged in spontaneous self-talk had inhibitory negative self-talk. In contrast, those participants with paranoid schizophrenia who did spontaneously verbalize, overwhelmingly engaged in facilitative positive self-talk. The way they approached the task suggested confidence.

It is tempting to speculate that when the task is perceived to be easy, overt verbalization (that is verbal self regulation) is not necessary (perhaps because it involves automatic cognitive processing) but only when it is difficult (presumably requiring more information processing resources in effortful cognitive processing). This view is consistent with Granholm (1992) who implicated processing resource allocation as problematic in schizophrenia.

The spontaneous verbalizations suggested that the potent effects of verbal self-regulation in encouraging meta-cognitive self-monitoring should be exploited in SST. Thus, self-instructional training was chosen for Study Two but suitably modified to form part of the SST package.

4.5.2 Excluding alternative explanations

Before accepting the validity of the current findings, however, possible alternative explanations need to be considered.

First, the differential performance between the paranoid and non-paranoid patient groups in terms of differences in years of schooling can be discounted since they did not differ significantly on this dimension.

Second, perhaps the two groups differed on general intellectual ability. In other words, they were starting from different baselines and so can be expected to perform differentially. This too can be discounted since the current Verbal IQ for the two groups did not differ significantly and yet the non-paranoid chronic group of participants were impaired on the WCST. Thus a claim in the literature (eg. the meta-analysis by Laws, 1999) that impaired

WCST performance may simply be generalized intellectual decline in disguise is not supported in the present study and, more recently, has been refuted by Tyson et al. (2004) in a larger study.

Third, it cannot be ruled out that there may have been pre-morbid differences between the groups and some participants had deteriorated more than others in intellectual functioning. However, this possibility does not invalidate the present findings since the concern here is with *current* and not pre-morbid functioning.

Fourth, it may be argued that perhaps length of hospitalization may be related to the deficits in problem solving observed. This possibility is unlikely in Study One since (i) length of hospitalization of both groups of participants was comparable and not significantly different; and (ii) van der Gaag et al. (1994), in a most comprehensive study with schizophrenia patients, using a range of 14 psychometric and neuropsychological tests [including the WCST] of cognitive functions confirmed that:

cognitive[neuropsychological] deficits were not found to be correlated with duration of illness. Transient deficits can be present at any moment. Persisting and stable deficits are thought to be present before the first psychotic breakdown. p. 153.

Van der Gaag et al. (1994) also note that the lack of association between neuropsychological deficit and the duration of illness is consistent with the findings of others(eg. Goldstein & Zubin, 1990). This is confirmed by Green

(2001) who noted that WCST impairment is also present in the acute phase and after remission and also in neuroleptic naïve schizophrenia patients.

To reiterate, in the present study, chronicity as in years of hospitalization and educational level were comparable. This may also explain the smaller standard deviations for these variables for the Non-Paranoid Group and suggests that the exclusion criteria had succeeded in reducing their heterogeneity.

Fifth, the poor performance of group two cannot be attributed to thought disorder because this possibility was explicitly controlled for. This was done so that the ‘deck was not stacked’ against the Non-Paranoid Group from the start, since it is known that a subgroup labeled “disorganized type” (Liddle & Barnes, 1990) suffer from thought disorder and poverty of speech and would be expected to perform badly on cognitive tasks. Nevertheless, neurocognitive deficits were present and would seem to support findings linking impaired WCST performance and frontal/executive dysfunction in a subgroup of patients with non-paranoid chronic schizophrenia.

The comparability of the paranoid schizophrenia participants WCST performance to normal performance suggests that these participants do not suffer from the apparent inability of the non-paranoid schizophrenia participants to succeed in objective abstract problem solving. Thus, it would be sensible to separate paranoid schizophrenia patients (if this finding holds in such groups) in SST from the non-paranoid schizophrenia patients who have problem solving deficits on the WCST. This is not to suggest that the latter group cannot learn problem solving skills. Suggestions by Kern &

Green (1994) for the cognitive prerequisites for skills acquisition in chronic schizophrenia appear to be directed at patients sharing the characteristics of the non-paranoid subgroup impaired on the WCST and for whom different strategies can prove helpful as Wykes & Reeder (2005, in press) have demonstrated.

The considerable effort expended in excluding other known confounding factors during participant selection was vindicated in that it facilitated clearer and more confident interpretation of the findings. This confidence is also boosted by the extension of the findings of Chadwick (1989) who studied out-patients, to a more chronic institutionalized in-patient population.

4.5.3 Methodological improvements

Study One appears to be unique in including a number of methodological improvements :

- (i) detailing performance across all the different stages of the WCST;
- (ii) encouraging a “naturalistic” think aloud procedure during the actual testing;
- (iii) using computerized scoring to obtain accurate sub-scores of the WCST results since manual scoring is complex and prone to error;
- (iv) using a social problem solving analogue which was objective and impersonal (since there are problems with the concept of social skills and consequently, with assessment procedures based on it). This also had the advantage of excluding emotional material which may be problematic for people with schizophrenia.

Study One also cross-validated self-reports of social dysfunction by actual observed behavioural ratings and controlled for several possible confounding factors by stringent exclusion criteria and providing as full demographic data as possible. Participants were also checked to ensure that they were not colour blind since colour was one important dimension on the WCST. This was done at the end of the test so as not to unwittingly cue the sorting principle or contaminate the findings. Manual inspection of the individual responses of all the 22 participants did not show any obvious random responding, so lack of motivation is unlikely to be a reason for poor performance on the WCST by those who were impaired.

However, it is important to caution that Study One does not claim to have demonstrated that the paranoid schizophrenia participants have normal *social* problem skills. The equivalence of objective abstract problem solving to social problem solving skills has not been demonstrated, and should not be assumed, though Corrigan & Penn (2001) suggest they correlate and that performance on the WCST is related to functional outcome in rehabilitation. Further, the individual stimulus attributes of the WCST were randomly interspersed by Heaton (1981) with a built-in ambiguity or redundancy. [This was precisely why Nelson (1976) in her Modified Card Sorting Test removed the ambiguities and made the test simpler but with some loss of ecological validity]. Interpersonal perception is, of course, often full of ambiguity and this compounds the interpersonal difficulties for people with schizophrenia. Thus, performance on the WCST is a more stringent test and more relevant than would be apparent.

A further caution is necessary. The fact that several of the non-paranoid schizophrenia participants showed impaired performance on the WCST does not necessarily mean that they are frontal lobe damaged. What can be concluded is that their performance topographically resembles those with known frontal/executive impairment but the underlying mechanisms may be different.

It is not being claimed that impaired WCST performance suggestive of frontal/executive dysfunction is *specific* to those with schizophrenia or that all paranoid schizophrenia patients are all necessarily normal in their WCST performance or that non-paranoid chronic schizophrenia patients are invariably WCST impaired. The latter propositions have to be established on a case by case basis since studies with larger samples have provided mixed findings in both groups (see Goldstein, Shemansky & Allen, 2005) and there is more recent evidence (see Zalla, Posada, Franck, Georgieff & Sirigu, 2001) to suggest that the underlying mechanisms/processes in schizophrenia are different from those with frontal lobe damage.

4.5.4 Limitations of Study One

One omission in Study One was the lack of any measure of working memory or attention span. It could be argued that perhaps it was not problem solving *per se* that was impaired but working memory or attention span. This is, of course, an empirical question worth pursuing but it does not detract from the practical use of the findings of impaired performance on the WCST as a

possible screening measure in SST since no claims of underlying causality are being made: the present research was not designed to address issues of causality. Further, it is difficult to disentangle the overlap in the processing involved in attention span, working memory and problem solving.

Furthermore, Harrop, Trower & Mitchell (1996) have cautioned that the biology can revolve around the psychology in schizophrenia, an important point sometimes lost in the somewhat premature and hasty tendency to assign primacy and unidirectional causality to biological/neurocognitive factors.

Another limitation is that there were no women in the non-paranoid schizophrenia group of in-patients. Thus, the effects of gender on outcome could not be ascertained in the present research and may well have systematically biased the findings. Malmo (1974) did not find any significant sex differences for psychiatric patient groups on the WCST and gender differences was not a focus of the present research but, of course, the present findings cannot be generalized to women with schizophrenia nor to ethnic minorities since all participants were Caucasian.

The small number of participants in Study One may have reduced the power to detect statistically significant differences between the paranoid and non-paranoid groups and thus limiting the generalizability of the findings. It is unlikely that this was a major problem in the present study since significant differences were found (consistent with larger studies) and in the predicted direction. However, it will be recalled that the main aim of Study One was to assess performance on the WCST as *a heuristic tool for screening purposes* in SST and this was based on a normative neuropsychological cut-off point.

In summary, the paranoid schizophrenia participants engaged in rule discovery during problem-solving, maintained set and were able to abandon previous rules in response to verbal feedback as competently as normal participants of comparable schooling, and with greater facility than the non-paranoid psychiatric control group. These data are consistent with findings which suggest that paranoid schizophrenia participants' problem solving behaviours on cognitive tasks such as the WCST are within normal limits. Thus their performance can reasonably be interpreted as better preserved in spite of psychiatric disability and any negative effects of long-term hospitalization or symptom severity. The way was thus paved for testing if an empirically based rationale can be justified for a separate SST group for these paranoid schizophrenia participants instead of mixing all schizophrenia patients together. Further, if generalization of social skills is not demonstrated in such a group, then one possible reason- impaired abstract problem solving (and by inference executive dysfunction) can be discounted and other more fruitful hypotheses pursued.

Chapter Five

STUDY TWO

THE TREATMENT VALIDITY OF A MULTIDIMENSIONAL ASSESSMENT OF SOCIAL PROBLEM SOLVING¹: EFFICACY, MAINTENANCE AND GENERALIZATION

5.1 Rationale and Theoretical Models

5.2 Aims of the study

5.3 Research Hypotheses

5.4 Method

5.4.1 Research Design

5.4.2 Participants

5.4.3 Measures

5.4.4 Interventions

5.4.5 Procedure

5.4.6 Phase 1: Preliminary Screening

5.4.7 Phase 2: Baseline

5.4.8 Phase 3: Training

5.4.9 Phase 4: Maintenance and Generalization Plus Independent Social Validation

5.5 Treatment Integrity

5.6 Results

5.6.1 Graphical and Statistical Analysis

5.6.2 Social Anxiety Levels

5.6.3 Depression Levels.

5.6.4 Skill deficits group

5.6.5 Cognitive blocks group

5.6.6 Control Group: Skill deficits & Cognitive blocks

5.6.7 Maintenance and Generalization

5.1 Rationale and Theoretical Models

The findings from Study One confirmed that a subgroup of schizophrenia patients have a neurocognitive problem solving deficit: executive dysfunction. It is therefore

¹The term social problem solving is used generically and interchangeably with social skill, though references will be made to the narrower sense used by D'Zurilla & Nezu (1982) to denote a specific model of problem solving.

important to exclude or control for the possibility that such deficits (Wallace et al. 1980) do not confound identification of the factors responsible for any failure of Social Skills Training (SST) generalization in chronic schizophrenia patients. There are several shortcomings in the SST literature. First, not all SST studies take baseline measures (eg. Bowen, Wallace, Glynn, Nuechterlein, Lutzker and Kuehnel, 1994) and most use a mixed group of psychiatric patients. These methodological inadequacies preclude deriving any firm conclusions regarding the specific outcomes and long-term benefits of group SST for schizophrenia patients in particular (Mueser, 2000). It is therefore unclear whether poor outcome is due to inadequacies in training procedures, cognitive deficits, diagnostic heterogeneity, individual differences or some combination thereof. A multiple baseline design will allow the monitoring of individual responses across all stages of SST.

It has yet to be established empirically (i) whether a unidimensional or multidimensional model of SST is more appropriate in the assessment of social dysfunction and (ii) whether behavioural or cognitive-behavioural SST or a combination of the two is more efficacious for particular problems.

In the first case, if different models of social dysfunction have treatment validity then differential treatment effectiveness should result when behavioural SST or cognitive-behavioural SST is applied to a client who has skill deficits or cognitive blocks. On the other hand, if both treatments are equally effective then perhaps a unidimensional model is functionally more parsimonious. An alternating treatments design will allow for the comparison of two treatments with the same participants.

The empirical validity of the multidimensional assessment of SST proposed by Alladin (1988) may be tested via its treatment efficacy (Hayes, Nelson & Jarrett, 1987), using the McKnight et al. (1984) methodology. This is a relatively new and promising methodology (the rationale was explained in Chapter Three) whose elegance has been commended by Barlow & Hersen, 1984 and sophistication noted by Morley (1989).

5.2 AIMS OF THE STUDY

The main aims of the present study were three-fold:

1. To assess the treatment validity of a multidimensional assessment of social problem solving focusing on individual response classes.
2. To demonstrate the possible heuristic value of the WCST as a problem solving neurocognitive screening instrument in SST and identify any differences in skill acquisition, maintenance and generalization between normal WCST and impaired WCST participants.
3. To assess the differential efficacy of Behavioural SST and Cognitive-Behavioural SST in skill acquisition, maintenance and generalization, by monitoring longitudinally the process of change using specific and global measures.

5.3 RESEARCH HYPOTHESES

Separate predictions were made for each of the three groups:

1. Behavioural skill deficits group

Hypothesis 1: Participants with behavioural skill deficits will improve more on social skill but not social anxiety level after receiving the relevant Behavioural SST in comparison to cognitive SST. On the more global measures of depression and self-esteem, no differential treatment effects were expected.

Null Hypothesis 1: Participants with behavioural skill deficits will not improve more on social skill after receiving the relevant Behavioural SST in comparison to Cognitive-Behavioural SST.

2. Cognitive blocks group

Hypothesis 2: Participants with cognitive blocks will improve more on social skill, social anxiety and depression levels after receiving the relevant Cognitive-Behavioural SST in comparison to Behavioural SST. On the more global measure of self-esteem, no differential treatment effects were expected.

Null Hypothesis 2: Participants with cognitive blocks will not improve more on social skill, social anxiety and depression levels after receiving the relevant Cognitive-Behavioural SST in comparison to Behavioural SST.

3. The control group: behavioural skill deficits and cognitive blocks

Hypothesis 3: Participants with behavioural skill deficits and cognitive blocks will improve more on mean skill levels after receiving the relevant Behavioural SST and show more improvement on the cognitive measure of social anxiety and depression after receiving the relevant Cognitive-Behavioural SST, respectively. On the more global measure of self-esteem, no differential treatment effects were predicted.

Null Hypothesis 3: Participants with behavioural skill deficits and cognitive blocks will not improve more on mean skill levels after receiving the relevant Behavioural SST and will not show more improvement on the cognitive measure of social anxiety and depression after receiving the relevant Cognitive-Behavioural SST, respectively.

If these predictions are supported, then:

- (i) the treatment validity of a multidimensional assessment of social problem solving would be supported;
- (ii) the value of assessing individual (behavioural) response classes would be demonstrated; and,
- (iii) a case would be made for adopting a multidimensional model of social dysfunction.

Impaired WCST participants

Hypothesis 4. It is predicted that the three impaired WCST participants will have difficulty in maintenance and generalization of problem solving skills. If this is supported, then:

- (i) it would constitute empirical support for *not* mixing impaired WCST participants with ‘normal’ WCST participants in SST groups; and,
- (ii) the heuristic value of the WCST as a problem solving neurocognitive screening instrument for use with schizophrenia patients in SST would be demonstrated.

Null Hypothesis 4: It is predicted that the three impaired WCST participants will not have difficulty in maintenance and generalization of problem solving skills

5.4 METHOD

5.4.1 Research Design. Following McKnight et al. (1984), an alternating treatments design (ATD) combined with a multiple baseline across participants, was used. Barlow & Hersen (1984) have commended this advanced methodology because of “the elegant experimental manipulations and the wealth of information available due to combining the ATD with a multiple baseline across subjects...” and affirm it “as a model in many ways...” (p.278) since it controls for potential confounds and allows for a determination of treatment effects. It allows for a within-participant comparison of results produced by a treatment that is directly related to the participant's identified target problem with those produced by a treatment that is unrelated to the participant's target problem. In the present study, an extension was added to the McKnight design by incorporating a continuous generalization probe, so that during baseline, treatment

and post-treatment (for three months and nine months follow-up, the continuous generalization probe was monitored by the community psychiatric nurse), any natural covariation could be observed and a more confident interpretation of any therapeutic changes in generalization and maintenance could be made. This is in line with the recommendation made by Barrios & Hartmann (1988) who observed that demonstrations of generalization which used single probes during treatment alone were inadequate since it is “nothing more than a post-test only design” – the weakest of all research designs. Given the complexity of the present study and the distractability of the schizophrenia participants, assessments were kept to the bare minimum to reduce the information load.

5.4.2 Participants

The participants in the present study were carefully selected and in particular, care was taken to exclude any participant who qualified for a diagnosis of social phobia to prevent confounding since the aetiological basis and therapeutic models for social phobia are different (see Heimberg, Liebowitz, Hope and Schneier, 1994).

Inclusion criteria:

Nine participants out of the 22 who participated in Study One served in the present study with the same inclusion and exclusion criteria as detailed in Study One. They were selected at random with the predominant criterion being their WCST performance. In addition they had to reflect the three subgroups as follows: three independent groups (n=3 per group) were selected using a multidimensional assessment approach to social dysfunction [Alladin, 1988: See Table 2.1, Chapter 2, p.40] and a thorough functional analysis in terms of antecedents, behaviour and consequences of the target problem areas (identified as difficult during role plays) as follows: one group with behavioural skill deficits (after Argyle & Kendon, 1967),

one group with cognitive blocks [negative self-evaluation, response inhibition, faulty discrimination] (after Trower & Dryden, 1989), and one group with both behavioural skill deficits and cognitive blocks. This third group served as a "control" to show the relative efficacy of the two treatments and to help support any claim that it is the relationship between assessment and treatment that is critical to successful outcome.

The nine participants who were selected (with the help of an independent psychologist so that the therapists and researcher would be blind as to their group status) also met the following criteria: Six chronic schizophrenia in-patients with delusional beliefs meeting DSM IV (APA, 1994) criteria for paranoid schizophrenia and with normal WCST profiles, were drawn from the eleven participants from the Paranoid Group (in Study One) so that each pair had skill deficits (n=2), cognitive blocks (n=2) or both problems (n=2), respectively. As far as was possible, they were chosen so as to reflect a range of 'normal' sub-scores on the WCST. A further three participants with impaired WCST profiles were drawn from the Non-Paranoid Group of eleven in-patients so that each of them had skill deficits (n=1), cognitive blocks (n=1) or both problems (n=1), respectively. Again, as far as was possible, they were selected to reflect a range of 'impaired' sub-scores on the WCST. However, care was taken to exclude those who were severely impaired so as not to 'stack the deck' against them. Thus, in total three groups were formed: those who had primarily skill deficits, those who had primarily cognitive blocks and for the control group, those who had problems in both domains. These proportions were required to accommodate the research design and be a fair test of the research hypotheses (see Figure 5.1).

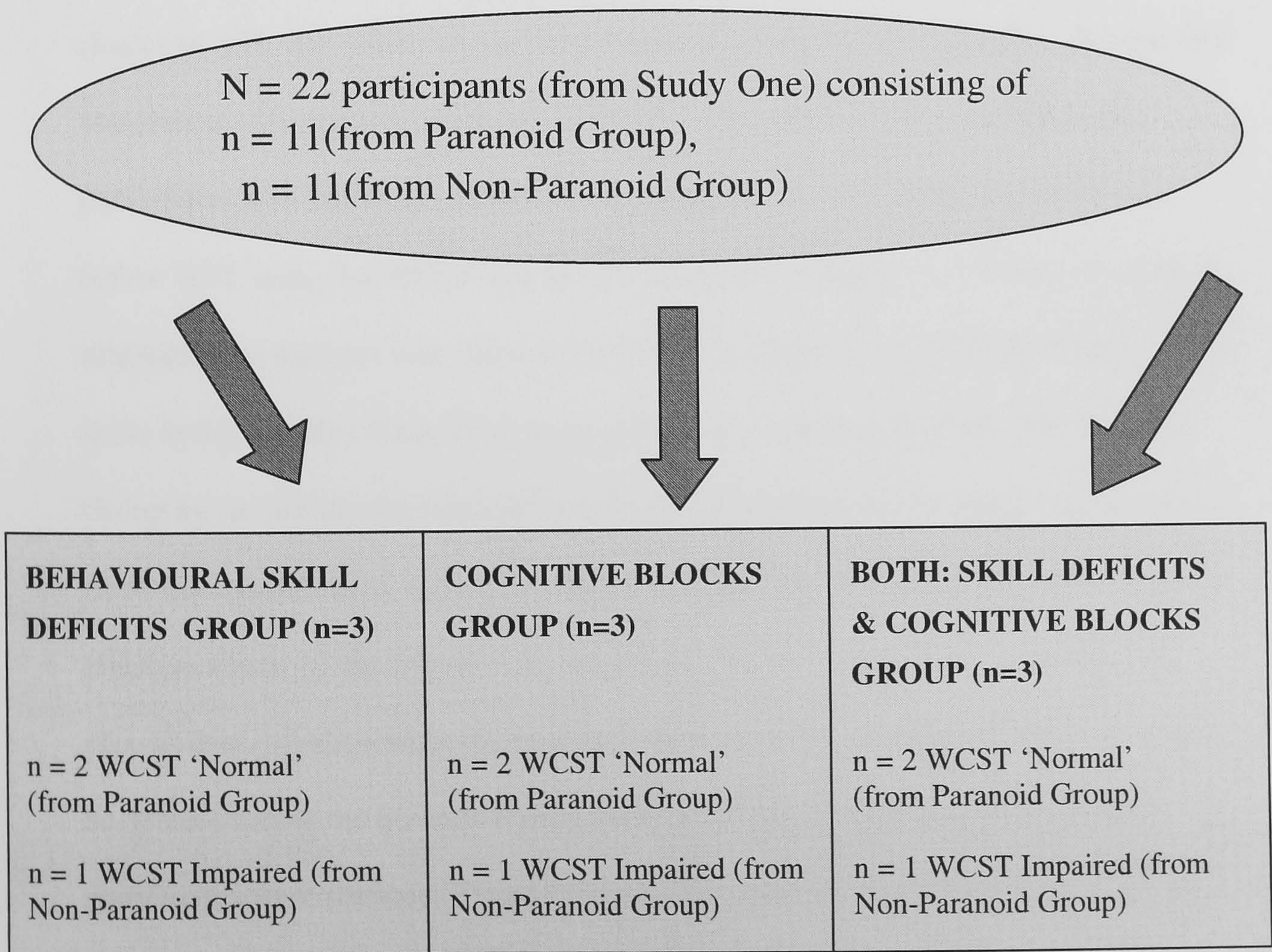
In addition to the exclusion criteria mentioned in Study One, all participants were required:

(i) not to have suffered from a diagnosed episode of panic disorder, agoraphobia, obsessive-compulsive disorder, or social phobia in the past year, as far as could be ascertained from clinical notes, and

(ii) not be currently on anxiolytic medication.

In terms of social dysfunction, they met the same criteria as in Study One. All participants were volunteers, gave informed consent and were aware that they could withdraw from this study too at any time (see Appendix I ^{p. 253}). Demographic characteristics did not differ significantly from those displayed in Table 4.1 (see Chapter 4 , p.80).

Figure 5.1 How participants were selected for the SST groups



The therapists and researcher were blind to the status of all participants until the completion of the entire study. [The researcher, of course, knew that six participants were WCST 'normal' and three were WCST impaired but not who they were, since numbers not names, were used in the data sheets]. Baseline assessments were conducted independently (with the support of an assistant psychologist) by key workers, all of whom were trained by the researcher. These particular staff were not involved in the SST group.

5.4.3 MEASURES

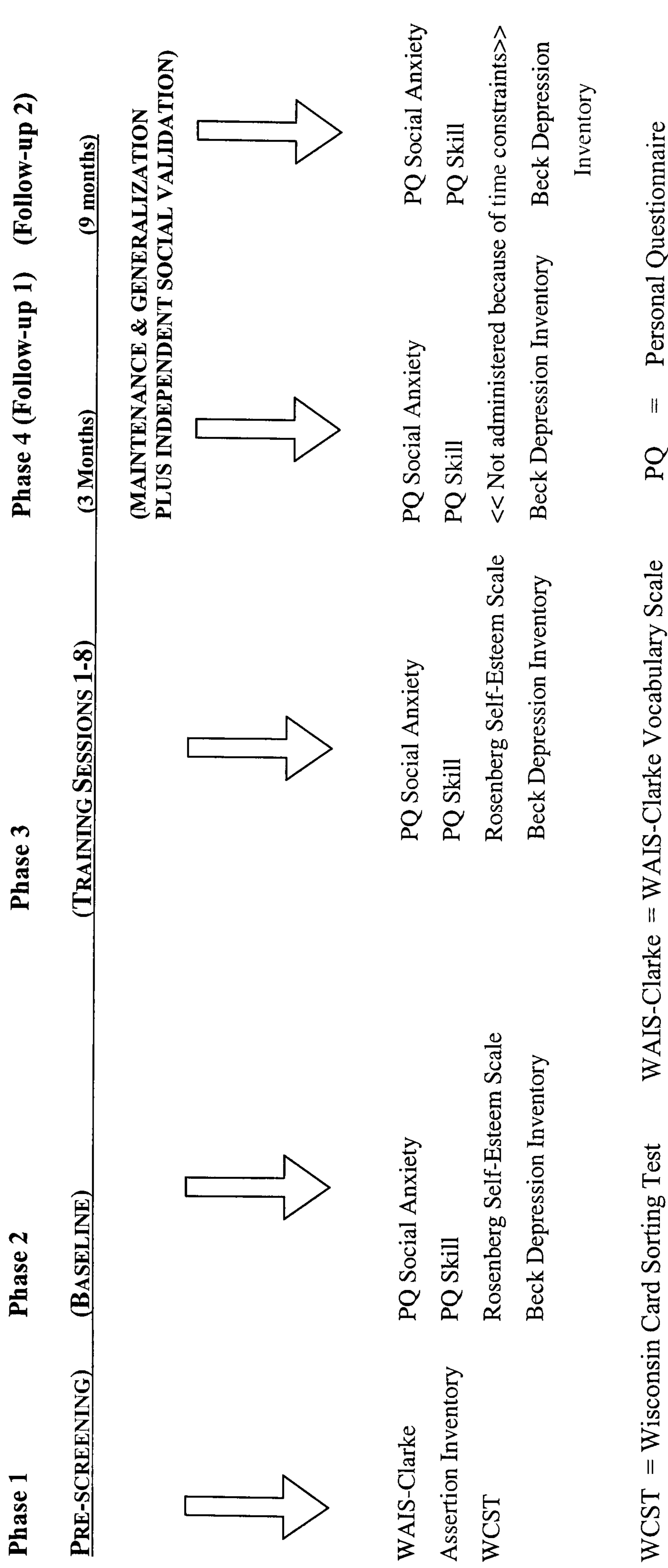
To identify individual differences and obtain a longitudinal picture of the process of change in SST, the following measures were administered individually . Pre-training assessment may enhance receptivity of SST. The present study therefore used participants who had been assessed on neurocognitive and intellectual functions *before* SST using the WCST and WAIS-Clarke(see Chapter 4). Further, to check if schizophrenia patients with impaired objective problem solving deficits could acquire skills and generalize them, three participants were selected from the Non-Paranoid Group by an independent assistant psychologist meeting the following requirements: From the hypothesized frontal /executive dysfunction viewpoint, the most important criterion would be the presence of perseverative responses. Thus all participants classified as impaired were required to have perseverative responses > 18. It would be demonstrating the obvious if only the most severely impaired WCST profile participants were selected. Thus to ensure a more stringent and fairer test, participants were selected from a range of performance profiles whilst fulfilling the "impaired" classification suggested by Heaton (1981).

Table 5.1. Wisconsin Card Sorting Test Profiles of the Nine Participants divided into WCST impaired (n=3) and WCST normal (n= 6).

Normal WCST Profiles	%Perseverative Responses	Categories Achieved	Trials to 1st Category	Number of Failures to Maintain Set
P2	21.00	3	11	2
P3	8.10	6	12	0
P5	9.21	5	11	0
P6	14.29	6	40	0
P7	15.31	6	37	0
P9	21.95	3	11	2
Impaired WCST Profiles				
P1	37.5*	3	12	3
P4	37.5*	0	64 ⁺	2
P8	39.0*	1	60	3

*Raw Perseverative Response > 18, expressed here as a percentage. ⁺ Failed to attain the first category even after 64 trials
P1- P9 = Participant numbers (order quasi-randomised from Study One but re-numbered for ease of reference in text)

Figure 5.2 Summary of data collection from baseline to follow-up.



Personal Questionnaire (PQ) Global Ratings of Social Anxiety. (Mean score) [Range 0-5, with '0' representing 'none' and '5' representing the maximum level of social anxiety]. This was computed from averaging the self-ratings of participants (displayed on cards and prepared prior to the study by the researcher) from 2 role play situations using Shapiro's Personal Questionnaire Technique. Participants were required to monitor their covert behaviours, that is internal dialogue and then rate how anxious they felt immediately before the role plays. Thus in the present study, following Shepherd (1984), Phillip's (1977) modification of Shapiro's (1961) Personal Questionnaire was used to assess social anxiety and skill level. In each case, five statements were constructed (see Table 5.2 on the next page) on separate index cards and prepared prior to baseline assessment by the researcher during pilot testing. These cards were presented two at a time and in random order. Participants were required to state whether their own response at that time was more or less than that described on the card. On each occasion the score was derived by the number of cards to which the participant responded that the skill or symptom intensity (social anxiety) was more than that described on the card. This produced a 6-point ordinal scale (0-5) which allowed comparisons across time for each participant. All nine participants (three required coaching and a couple of retrials) and the therapists were able to make selections which were internally consistent.

Personal Questionnaire Peer & Therapist Global Ratings of Skill. (Mean score).

[Range 0-5, with '0' representing the poorest performance and '5' being the best].

This was computed from averaging the two role play situations on a five point Likert-

Table 5.2 Examples of the Personal Questionnaire Measures

The Personal Questionnaire (PQ) Measure of Skill Level (Assertiveness)

Score	Skill Level Scale details
-------	---------------------------

0	I would judge the role play as very slightly skilful
1	...slightly skilful
2	...fairly skilful
3	...very skilful
4	...extremely skilful
5	

Note. PQ scores fall between two verbal descriptions; a participant may respond *more* to 'very skilful' but *less* to 'extremely skilful'. Judgements of skill were based on the appropriateness and effectiveness of the responses, not on skilfulness *per se*.

The Personal Questionnaire(PQ) Measure of Social Anxiety

Score	Social Anxiety Scale details
-------	------------------------------

0	Anticipating my role play I get very slightly anxious
1	...slightly anxious
2	...fairly anxious
3	...very anxious
4	...extremely anxious
5	

Note. PQ scores fall between two verbal descriptions; a participant may respond *more* to 'very anxious' but *less* to 'extremely anxious'.

type scale. Ratings were done by taking the means of the PQ scores given by the peer involved in the interaction after a consensus was reached, with support from the supervising therapist, if necessary. Skill level was rated in terms of the social *appropriateness* of a response and its *effectiveness* in terms of goal attainment. However, to prevent contamination by any idiosyncratic criteria, both therapists and participants were helped prior to the study by the researcher in reaching a consensus on a systematic basis in rating role plays and a mean score was taken. Instead of reliability ratings, all raters were required to reach agreement by assigning their ratings to within one point of each other, on the six-point scale (0-5). Thus, if a peer offered PQ cards scoring a rating of 5 and the therapist offered a rating scoring 4, this was accepted and a mean score taken. The final mean ratings (rounded to the nearest whole number) were the average of 2 role play situations per participant per session.

Rosenberg Self-Esteem Scale (RSES)(Total score) [Range 10-40 with high scores indicating low self-esteem]. This 10-item widely used test (see Rosenberg, 1956) monitors self esteem levels and was used as another secondary global measure. For details of reliability and validity, see Blaskovich & Tomaka (1991). Stravynski et al. (1987) have suggested that efficacious SST may reflect a general increase in social activities. This in turn may bolster self-esteem.

Beck Depression Inventory-Short form (BDI)(see Appendix III, p.262). (Total score) [Range 0-39]. This validated version of the BDI (see Beck and Beck, 1972) was used instead of the standard longer one to lessen the information processing load on the participants.

Beck & Beck (1972) suggest the following bands for clinical screening of *severity* level but caution that it should not be treated as diagnostic of clinical depression: 0-4 [none or minimal] , 5-7 [mild] , 8-15 [moderate], and 16+ [severe]. This secondary global measure assesses severity of depressed mood level. Depression coexists in a significant proportion of schizophrenia patients (Costello, 1993b), and therefore it seemed prudent to monitor depression level. Further, Bellack, Hersen, & Himmelhoch (1983) showed that depression can be ameliorated by SST.

Wisconsin Card Sorting Test. This neurocognitive test has been described in detail in Study One.

WAIS-Clarke. This is a multiple choice version of the WAIS Vocabulary Scale used as an estimate of verbal IQ and is detailed in Study One.

Assertion Inventory. This unique measure of assertiveness which taps eight common response categories, assesses skill level in terms of response probability and discomfort (social anxiety) experienced in each situation, was used in Study One in combination with observer ratings to assess social dysfunction.

5.4.4 Interventions

Selection of targets for training and generalization

In terms of assertive response classes, all nine participants reported difficulties in the following areas : (1) initiating social contacts; (2) expressing positive feelings, (3) handling criticism and (4) differing with others. These response classes were derived from the *Assertion Inventory* [see p. 260 , AppendixII]. Each response class had

five individual items which all participants reported having difficulty with and wished to improve.

However, it was decided to offer intensive coverage of only two response classes to allow every participant adequate time for role plays. *Expressing positive feelings* and *handling criticism* were the two response classes chosen for training. *Initiating social contacts* and *differing with others* were selected as untrained behaviours for the generalization probes. Participants were told that they may wish to use the expression of positive feelings to initiate social contacts. Similarly, it was suggested that learning to handle criticism assertively could help them in differing with others. Full details of the assertion training procedures used in the group, with detailed examples, can be found in Alladin (1988).

It was not expected that institutionalised chronic schizophrenia participants would be able to generalize skills to completely novel response classes. [This was confirmed from reports from key workers who were in daily interaction with the participants in the present study]. Thus, even though the response classes used for training and generalization were topographically different, they shared some attributes and could be conceptually linked. Yet they were sufficiently different to be a fairly stringent test of generalization, given the relatively short training period.

Table 5.3 Procedural differences of Study Two from traditional SST

1. Minimal therapist instructions and use of maximum experiential feedback
2. A 'whisper-in-the-ear' technique
3. Modified self-instructional training
4. Wasik's (1984) simplified version of social problem solving

1. *Minimal therapist instructions.*

Lowe & Higson (1983) note that the fewer instructions provided by the therapist the greater is the scope for the influence of the client's own self-instructions. Thus the instructions from therapists were kept to a bare minimum. Participants were encouraged to use positive self-verbalizations and experiential feedback during role plays to facilitate their performance.

A main treatment component common to both Behavioural SST and Cognitive-Behavioural SST was the use of:

2. A *'whisper -in- the- ear' technique.*

This was specifically devised for the group and made into a game (see Table 5.4 for a sample episode on the next page). This was based on a Vygotskyian rationale (see Vygotsky, 1962) and was inspired by Meichenbaum & Cameron's (1974) demonstration of the therapeutic potential of teaching patients to talk to themselves

3. *Modified self-instructional training.*

This technique was used because of its potential in facilitating generalization and also to (i) counteract the negative self-talk/dialogue the participants often expressed on the wards, and (ii) to ensure participants focused attention on the task in hand by requiring their active participation. This was similar to that described in Bentall et al. (1987) but fading out was not done until the penultimate session (see Figures 5.3 & 5.4 on pages 132 and 133) since pilot testing indicated that chronic schizophrenia patients seem better able to verbally self-regulate only after a sustained period of practice, when new skills have presumably been internalised.

Table 5.4. An episode from the 'whisper-in-the-ear' technique

SETTING: The male participant, "John," in a mixed dyad role play has chosen to focus on his problem with initiating social contact. The female participant "Helen" is told to respond naturally, as she would if the interaction was for real. One other participant, "Richard," forms the audience with a therapist. [All names used are pseudonyms].

STYLE: First one peer, then a therapist, and then the other peer, would exhort and whisper encouragement in each participant's ear. Any negative self-talk (often spontaneously verbalized) would be countered by the therapist and the non-participant peer urging the interactor with rules and reminders such as "be persistent... don't give in easily".... "it's only a practice"....

EXAMPLE SCENE: John:[verbalizes self-talk] "Oh...oh! she's going to say no. I can't go through with this..."

Therapist: [whispers encouragement in John's ear] "John, just make an effort. [Pause] Don't predict failure! [Pause] The results don't matter. [Pause] You're just practising. [Pause] Ignore negative self-talk."

Richard: Yeah. It's only a practice. Ignore negative self-talk. Go on, give it a try. We'll help you.

John : [reluctantly] Okay. ...Hallo Helen! I'd like to[gets tongue tied]

Helen: [remains quiet but smiles].

Richard: "Don't give up now. She's smiling at you already."

Therapist: Yes.[echoes Richard]: She's smiling already. Tell her what you'd like to do.

John : I'd...I'd like to ..I'd like to buy you... [pause]

Richard: "Good. Very good."

John: "I'd like to buy you a cup of tea."

Helen: "Hmm...ah...I don't know really."

John [to therapist] : "See, what did I tell you?!"

Therapist [whispers to John] "Helen is shy. She hasn't said no. Ask her again."

Richard [whispers to John]: "Yeah. Be persistent, John. Go on... Ask her again."

John : "Helen, I'd like your company... "

Helen: "Oh...really? Hmm..ah..."

John: " ...will you join me for a cup of tea?"

Helen : "Well.... yes... sure."

Richard [joins therapist and Helen in spontaneous applause]: You did it!

Therapist: Well done! You ignored negative self-talk and focused on the conversation. You were persistent and it paid off!

Figure 5.3 Protocol for Self-Instructional Training

MODIFIED SELF-INSTRUCTIONAL TRAINING

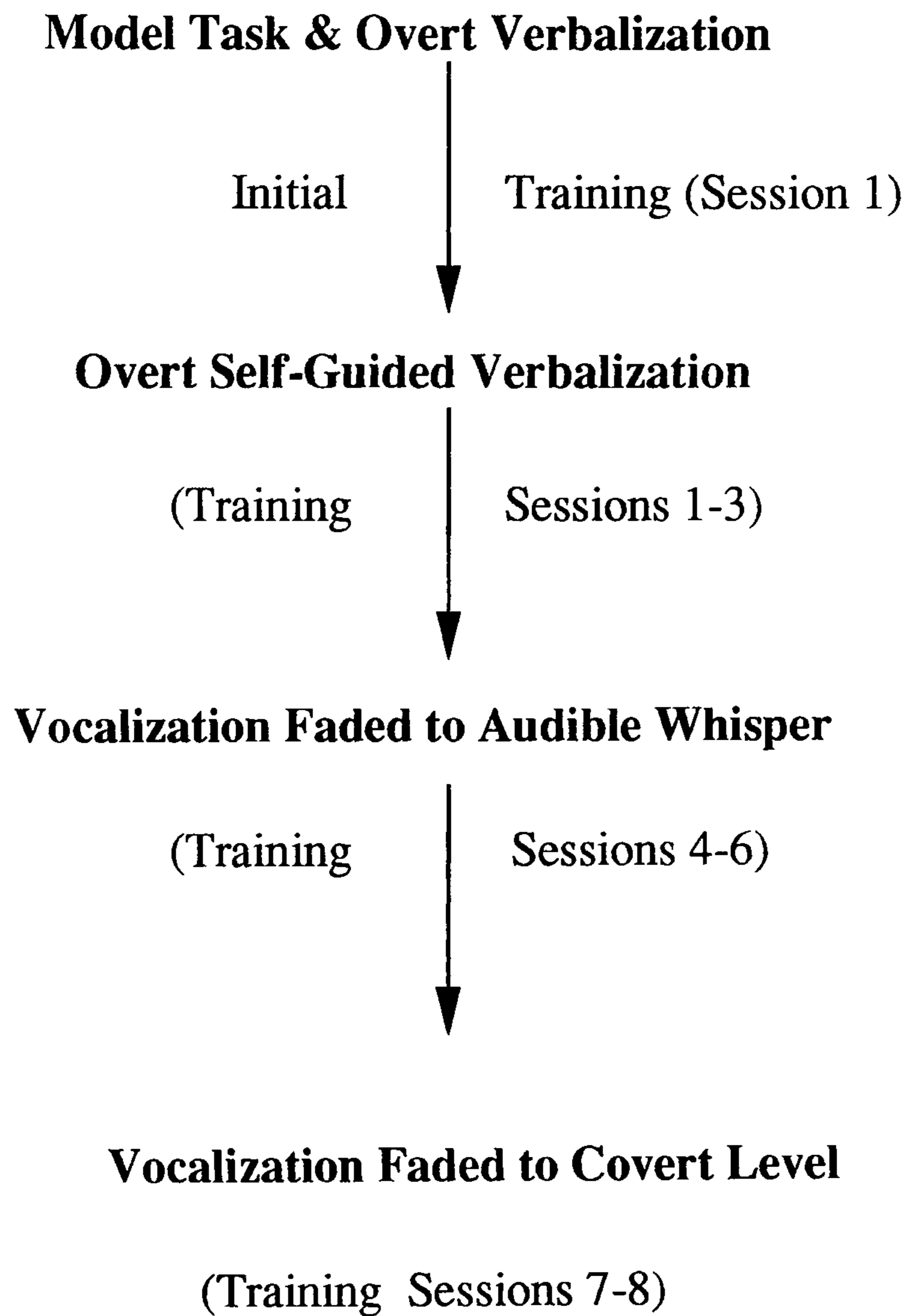
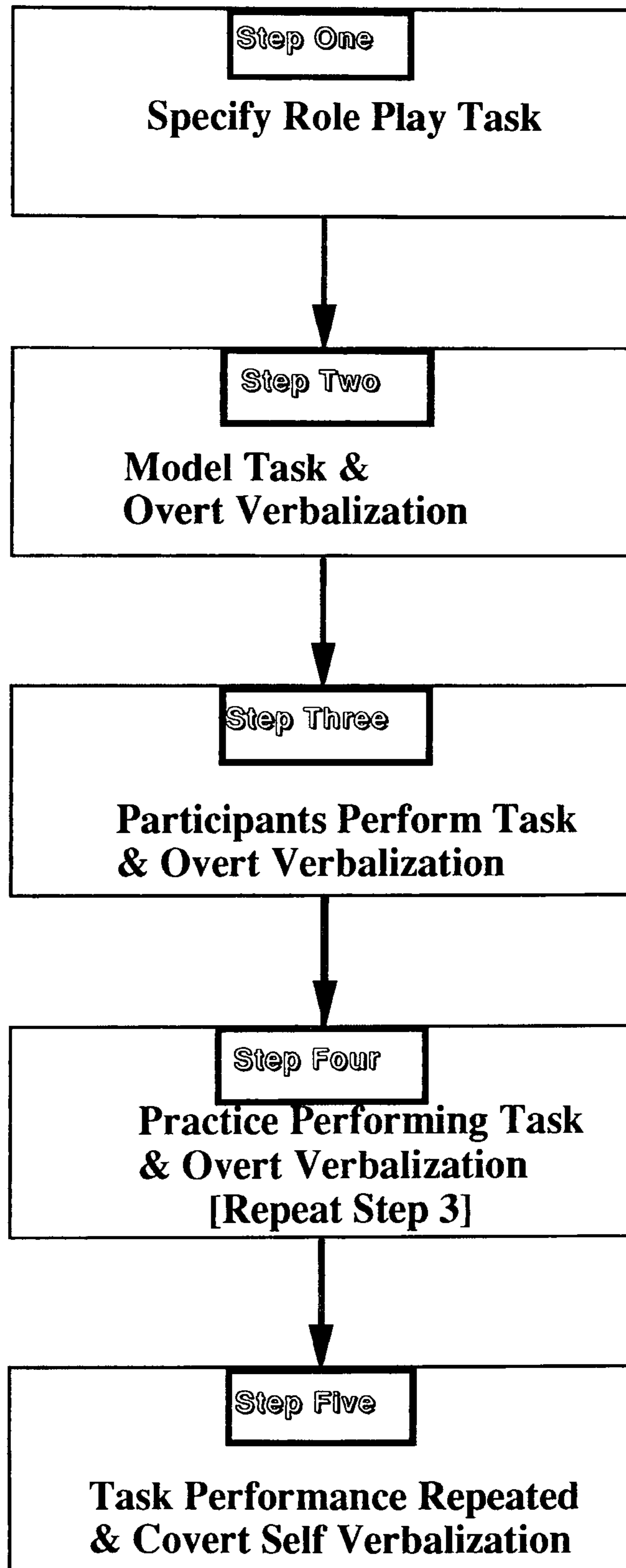


Figure 5.4 *Self-instructional training steps*



4. Interpersonal social problem solving.

Lieberman, Falloon & Aitchison (1984) recommended interpersonal social problem-solving therapy for schizophrenia patients. It would also give them a schema for problem solving. Thus it was decided to include interpersonal social problem solving as a component of the SST within which the assertion training was embedded.

However, pilot testing had shown that some of the participants in the present study had difficulty in understanding and implementing the D’Zurilla & Nezu (1982) social problem solving model. Instead it was decided to use Wasik’s (1984) translation of each of the problem solving steps into questions which participants were required to ask themselves during the problem solving exercises.

[See Table 5.5].

Table 5.5 Wasik’s (1984) Simplified Version of the Social Problem Solving Model

Steps	Questions/Actions
Problem identification	What is the concern?
Goal selection	What do I want?
Generation of alternatives	What can I do?
Consideration of consequences	What might happen?
Decision making	What is my decision?
Implementation	Now do it!
Evaluation	Did it work?

5.4.5 Procedure

Treatment sessions lasted about two hours and were scheduled once a week for eight weeks. The researcher who was responsible for the overall supervision and direction of the group, had several years experience running SST groups and received some training from Professors R.P. Liberman & Kim T. Mueser of the University of California, Los Angeles. The three nominated therapists received minimal training just half an hour before the start of each treatment session from the researcher. [They were provided with a copy of 'Cognitive-Behavioural Group Therapy' by Alladin (1988), before the training so that they all had a better understanding of conducting the group therapy and were enabled to contribute more fully to the group]. They were chosen because they had little or no specialised experience in SST so as to reflect the norm among hospital key workers and to make the training realistic and a stringent test. Handouts and extracts from the treatment manuals of Liberman, DeRisi & Mueser (1989) and Beidel, Bellack, Turner, Hersen & Luber (1981) were provided for both therapists and participants. The former manual is widely available but the latter manual (see p²⁶³, Appendix IV for details) is only available from the *JSAS Catalog of Selected Documents in Psychology*.

Participants were told that it was "okay to make mistakes in the safety of the group and you can participate as much or as little as you wish" as a way of defusing performance anxiety, and that the aims of the group were as follows. Firstly, to provide a safe social setting to facilitate disclosure of problems and engage in experimenting with different behaviour patterns. Secondly, to encourage social interaction so that they may have constructive experiential feedback from others to test their own impressions of themselves and recognize that we can all learn a lot from

mistakes. Thirdly, to help them learn methods of behavioural and cognitive change (eg. a problem solving method so that they may monitor their own behaviour and learn to be more efficient and systematic in problem solving). Finally, to help demedicalize the problems of living and introduce behavioural and cognitive-behavioural models of understanding maladaptive behavioural and cognitive patterns. With the help of three therapists, all nine participants received eight therapy sessions, scheduled once a week: four sessions of the motor skills based behavioural social skills training [Behavioural SST] and four sessions of the agency based cognitive SST [Cognitive-Behavioural SST]. The two kinds of treatment (independent variables) were randomly assigned to the eight weeks of therapy. The only constraints on random assignment of treatments to sessions were: (a) all three participants in each group could not receive the same treatment in Session 1, and (b) all participants in the first two groups, for ethical reasons, would receive the treatment appropriate for their identified problems in the final Session 8 (after McKnight et al. 1984).

5.4.6 Phase 1: Preliminary screening. This involved assessment of neurocognitive, intellectual functioning and social dysfunction which were completed in Study One.

5.4.7 Phase 2: Baseline. This involved assessment and monitoring of the current level of the patient's social functioning in terms of the target behaviours (skill level and social anxiety) with Personal Questionnaires, and depression and self-esteem with standardized questionnaires. Baseline behaviours were taken for the target behaviours over a four week period with a minimum of two data points, even though a stable baseline is not a requirement for an ATD (Barlow & Hersen, 1984).

Table 5.6 The process of each session (adapted from Alladin, 1988).

Introduction.

The group begins by welcoming participants. Then there is agenda-setting, which sets the structure for the sessions. This is done by the group therapists but suggestions from participants are also incorporated as appropriate. Next, all participants engage in warm-up exercises to break the ice and as a means of making the group less serious and more enjoyable.

Homework review (from second session onwards)

The homework given in the previous session is reviewed by the group leaders, participants are encouraged to share their successes and guidance is offered for any problems encountered. The aim is to encourage making the effort and experimenting with new behaviours and not to be too focused on goal-achievement.

Brief presentations (5 minutes at a time)

One of the group therapists (taking turns in random order) gives a talk on a particular area, eg. on defining problems and identifying short term achievable goals. A behavioural or a cognitive behavioural approach was adopted depending on whether the therapy provided was Behavioural SST or Cognitive-Behavioural SST. The points made are demonstrated and feedback is again elicited from participants. Then, an exercise is provided on the topic of the talk for participants to complete in the session and the group therapists offer positive reinforcement, guidance and clarification, as necessary.

Discussion of individual concerns: role plays & role reversals

Therapists provide modelling of any strategies suggested or to demonstrate a point. They then partner the participants in repeated role plays to test their understanding and acquire competence. Again, feedback is elicited. This is followed by another exercise – the assignment of homework – tailored to suit individual concerns.

Summary of session

The therapists summarize the session with the aid of a flip-chart. Participants comment briefly on “What I found helpful” in that session and offer suggestions of topics which they would like covered in the next session. The session ends with a positive self-statement exercise (to inculcate a ‘feel good’ factor) in which everyone says something positive about themselves to their neighbour, with the group ending on a positive note.

**Table 5.7 SOCIAL SKILLS TRAINING GROUP –
EIGHT WEEK PROGRAMME OUTLINE**

Week	Topics covered
1	Introduction to the group. Ground rules and confidentiality Getting to know you... Goal setting. Coping with anxiety & self-acceptance: “you are good enough as you are!” Self-instructional training: talk to yourself positively- 1
	Behavioural SST-1 or Cognitive-Behavioural SST-1 Expressing positive feelings Handling criticism
	Review: What I have learnt today... Homework.
2	The benefits of goal setting. Coping with anxiety & laughter: “don’t take yourself too seriously.” Self-instructional training: talk to yourself positively- 2
	Behavioural SST-2 or Cognitive-Behavioural SST-2 Expressing positive feelings Handling criticism
	Review: What I have learnt today... Homework
3	Vicious circles & self-fulfilling prophesies Self-instructional training: talk to yourself positively- 3
	Behavioural SST-3 or Cognitive-Behavioural SST-3 Expressing positive feelings Handling criticism
	Review: What I have learnt today... Homework
4	Let’s play : The ‘whisper- in-the ear’ game Social problem solving-1 Self-instructional training: talk to yourself positively- 4
	Behavioural SST-4 or Cognitive-Behavioural SST-4 Expressing positive feelings Handling criticism
	Review: What I have learnt today... Homework

**SOCIAL SKILLS TRAINING GROUP -
EIGHT WEEK PROGRAMME OUTLINE**

Week	Topics covered
5	Social problem solving-1 Self-instructional training: talk to yourself positively- 5
	Behavioural SST-1 or Cognitive-Behavioural SST-1 Expressing positive feelings Handling criticism
	Review: What I have learnt today... Homework
6	Social problem solving-2 Self-instructional training: talk to yourself positively- 6
	Behavioural SST-6 or Cognitive-Behavioural SST-6 Expressing positive feelings Handling criticism
	Review: What I have learnt today... Homework
7	Social problem solving-3 Self-instructional training: talk to yourself positively- 7
	Behavioural SST-7 or Cognitive-Behavioural SST-7 Expressing positive feelings Handling criticism
	Review: What I have learnt today... Homework Preparation for termination: "All good things....."
8	Social problem solving-4 Self-instructional training: talk to yourself positively- 8
	Behavioural SST-8 or Cognitive-Behavioural SST-8 Expressing positive feelings Handling criticism
	Review: What I have learnt today... Homework What to do when things go wrong.

NB. All topics were explained in simple language and presented at a slow pace.
Key points were repeated and reinforced in role-plays and role reversals.
Tea/coffee breaks were scheduled half-way though each session.

5.4.8 Phase 3: Training

Two different approaches to SST (the independent variables) were applied singly but alternated by random sequencing. Thus each participant received four sessions of Behavioural SST and four sessions of Cognitive-Behavioural SST. Since two treatments were alternated, different therapeutic rationales were provided to the participants. They were informed (after McKnight et al. 1984) that each treatment was directed at a different aspect of their problem and the researcher was trying to ascertain which of the two treatments would be best suited for them.

Behavioural SST [The Argyle behavioural motor skill approach]. This traditional "expert coach" model focuses on behavioural skills in which the trainer uses demonstration, imitation, feedback, practice and coaching. In a prototypical training session the patient role plays an interpersonal situation. The trainer then reviews the patient's performance, reinforces correct behaviours, and provides instructions to use certain other behaviours that will result in a more socially skilled performance. This performance is repeated until a specified criterion is met.

Cognitive-Behavioural SST (The cognitive therapy agency approach of Trower, 1984). The individual is trained to actively generate skilled behaviour in response to each situation. In this model the person is regarded as adopting the following roles: agent, watcher, commentator and critic as well. Trower's (1984) agency approach uses Beck's cognitive therapy and focuses on process skills. Table 5.8 describes the procedures suggested by Trower & Dryden (1989).

Table 5.8 Protocol for Cognitive-Behavioural SST

- i) a direct problem solving approach that lays bare the client's self-defeating tactics at a behavioural level

- ii) re-attribitional training using cognitive therapy for clients who make the faulty attributions that they cannot achieve goals, that it proves they are useless and that it is impossible to achieve goals

- iii) identification of negative self-fulfilling prophecies

- iv) getting the client into a goal-orientated rather than a problem-orientated attitude

- v) by asking 'what goals are you wanting to achieve here ? what are you doing to achieve the goal you want ?' clients are led to goal-plan re-orientation.

- vi) a shift from a categorical ["I can't" because of personality ("I'm useless") or task difficulty("it's impossible")] to a dimensional way of thinking and classifying events using the concepts of relative baselines and criteria, of incremental learning points, by plotting the client's assignments on graphs and the general principles used in cognitive therapy (see Beck et al. 1979)

From Trower & Dryden (1989)

In both treatment conditions, the techniques and training situations adopted closely followed the training manuals of Liberman, DeRisi & Mueser (1989) and Beidel et al. (1981) [from which extracts were taken] but adopted an underlying model of social skills based either on Argyle's model or Trower's approach. To ensure that a reasonably faithful execution of each approach was actually delivered, the three therapists and the researcher had index cards with the key steps identified and read from them during the training. In each session, each therapist and the researcher took turns to make brief presentations (these were randomly rotated for every session). The dependent variable measures were taken at weekly intervals during treatment sessions.

5.4.9 Phase 4: Maintenance and Generalization Plus Independent Social Validation

Follow-up meetings were held at 3- and 9- months' post treatment with the help of an independent experienced community rehabilitation nurse member who was blind to the hypotheses of the study and the groups to which the participants belonged. She fed back information and data by telephone and by post. A planned one month follow-up had to be abandoned, owing to the imminent transfer of several participants who had qualified for resettlement into the community. It was also hoped to collect data for all the dependent variables. However, this was not feasible. Data were collected for social anxiety, skill level and depression but not for self-esteem in the follow-ups. Generalization probe data were collected for skill levels only owing to time constraints. External validation of any therapeutic gains to real life was conducted concurrently during the maintenance and generalization phase by the independent community rehabilitation team nurse.

5.5 Treatment Integrity

Participants were required to engage in tasks which required that they had understood the rationale and actively participated in their own goal planning. Index cards and goal sheets were used by participants which were checked by their individual therapists and reviewed at each session. This was supplemented with a treatment protocol based on the detailed and comprehensive training manuals of Liberman, DeRisi & Mueser (1989) and Beidel, Bellack, Turner, Hersen & Luber (1981) from which extracts were taken, as mentioned earlier. The training sessions were tightly structured and briefly rehearsed by the therapists and researcher in the half hour *before* each session and reviewed *after* each session. This approach to treatment fidelity was adopted since a number of participants would not consent to videotaping.

[Results follow on page 145]

5.6 RESULTS

After presenting an overview of the results, in-depth presentation and analysis will follow.

5.6.1 *Graphical and Statistical Analysis*

Weekly Treatment Measures

Overview. Essentially, the weekly treatment measures supported the experimental hypotheses. In the case of participants having skills deficit, Behavioural SST produced better results for social skills deficit but not for social anxiety. In the case of participants with cognitive blocks [response inhibition, negative self-evaluation, faulty discrimination), Cognitive-Behavioural SST produced better results in removing the cognitive blocks and reducing social anxiety.

On a more global level, Behavioural SST and Cognitive-Behavioural SST were both effective in alleviating depression and improving self-esteem. For participants in the control group with problems in both skills deficit and cognitive blocks, there were no significant differential treatment results on skills deficit or cognitive blocks. A similar pattern of no significant differences emerged for global self-esteem and depression. In passing, it should be noted that most participants started with comparable baselines across the test variables.

Barlow & Hersen (1984) highlight a major source of controversy in stating that statistical analysis is seen by many proponents of single-case research as a violation of the rationale for conducting research with the individual participant. However, the following minimal non-parametric analyses were regarded as appropriate (after McKnight et al. 1984).

[Figures 5.5a, 5.5b 5.5c (on the next three pages) graphs the longitudinal scores for social anxiety, from baseline, treatment and the generalization and maintenance phases, for all nine participants].

5.6.2 PQ Social Anxiety Levels. The mean social anxiety scores for each participant in all three groups, on the whole, showed a downward trend from the time treatment was implemented. In each of the three groups (skills deficit, cognitive blocks and the control group) the scores selected for treatment targets described as sessions 1-4 represented the particular treatment (Behavioural SST or Cognitive-Behavioural SST) which was “superior”, that is, more effective in reducing social anxiety level for the participant. Pre-treatment scores were selected by choosing the final baseline score. A *Friedman’s two-way analysis of variance* (corrected for ties) showed this trend to be highly significant: $Xr^2(4, N=9) = 30.7, p < 0.001$.

Figure 5.5_a Social Anxiety Across Baseline, Treatment, Generalization & Maintenance

SKILLS DEFICIT GROUP (n=3) P = Participant

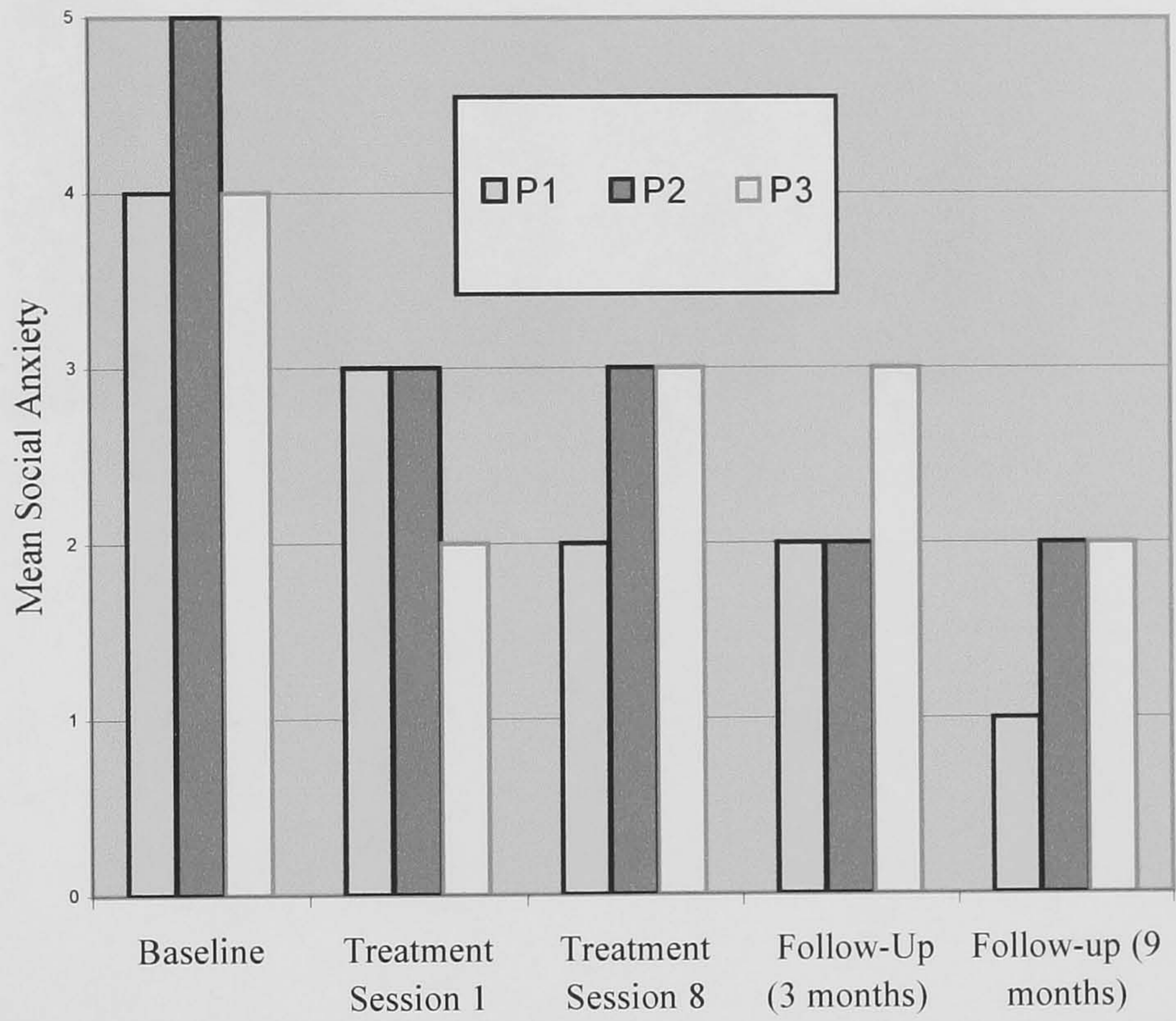


Figure 556 Social Anxiety Across Baseline, Treatment, Generalization & Maintenance

COGNITIVE BLOCKS DEFICIT GROUP (n=3) P = Participant

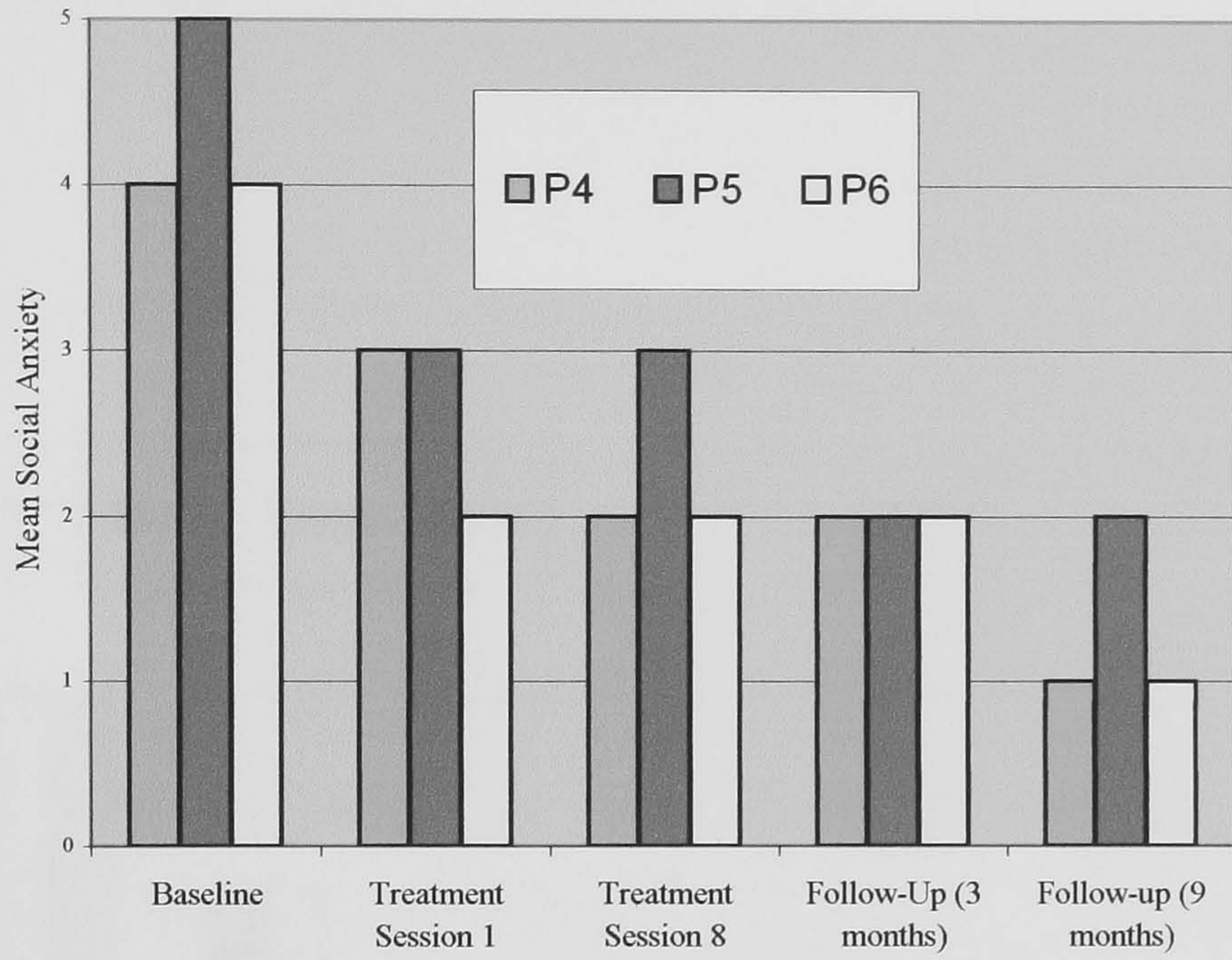
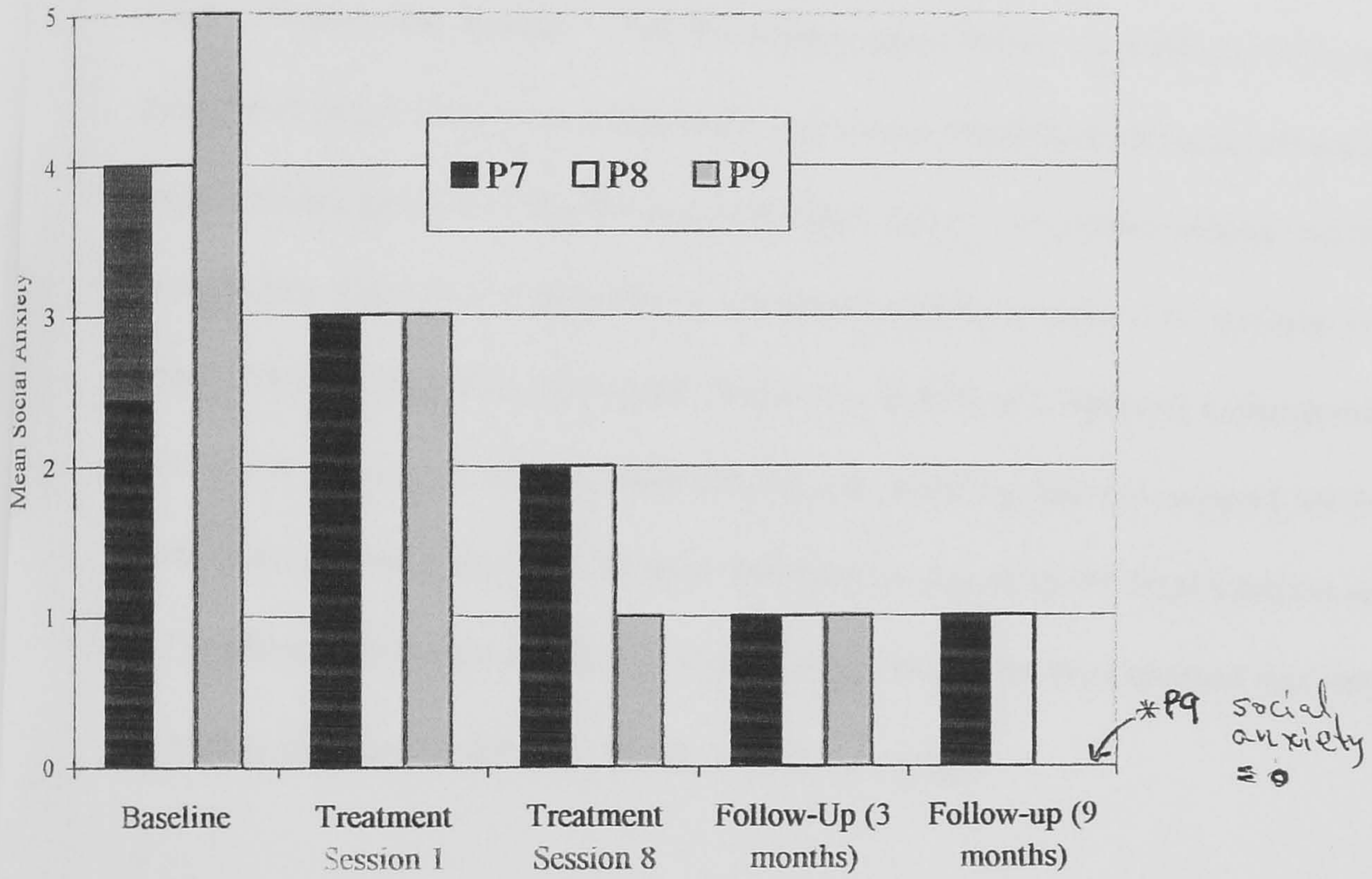


Figure 5-5C Social Anxiety Across Baseline, Treatment, Generalization & Maintenance

Skills Deficit & Cognitive Blocks (Control) Group (n=3) P = Participant



[Figures 5.6a, 5.6b, 5.6c (on the next three pages) graph the longitudinal scores for depression, from baseline, treatment and the generalization and maintenance phases, for all nine participants].

5.6.3 Depression Levels. The Beck Depression Inventory total scores for each participant in all three groups showed a downward trend from the time treatment was implemented. In each of the three groups (skill deficits, cognitive blocks and the control group) the scores selected for treatment targets described as sessions 1-4 represented the particular treatment (Behavioural SST or Cognitive-Behavioural SST) which was “superior”, that is, more effective in reducing depression level for the participant. Pre-treatment scores were selected by choosing the final baseline score. A *Friedman’s two-way analysis of variance* (corrected for ties) showed this trend to be highly significant: $\chi^2 (4, N= 9) = 33.1, p < 0.001$.

The weekly measures (apart from the role play derived measures of skill and social anxiety which were done during the role plays) were administered at the end of each session for Sessions 1 through 8. Thus the Behavioural SST treatment effect is represented by four repeat measurements for each participant for each dependent variable. Four further repeat measurements likewise constituted the Cognitive-Behavioural SST treatment effect.

The need here is to assess the differential effects of two treatments. In the case of the present study using an alternating treatments design, the *binomial test* is suitable since it tests the probability of one series of data points falling below or above the

FIGURE 5.6a Longitudinal Data from Baseline, Treatment, Generalization & Maintenance

Skills Deficit (n=3) P = Participant

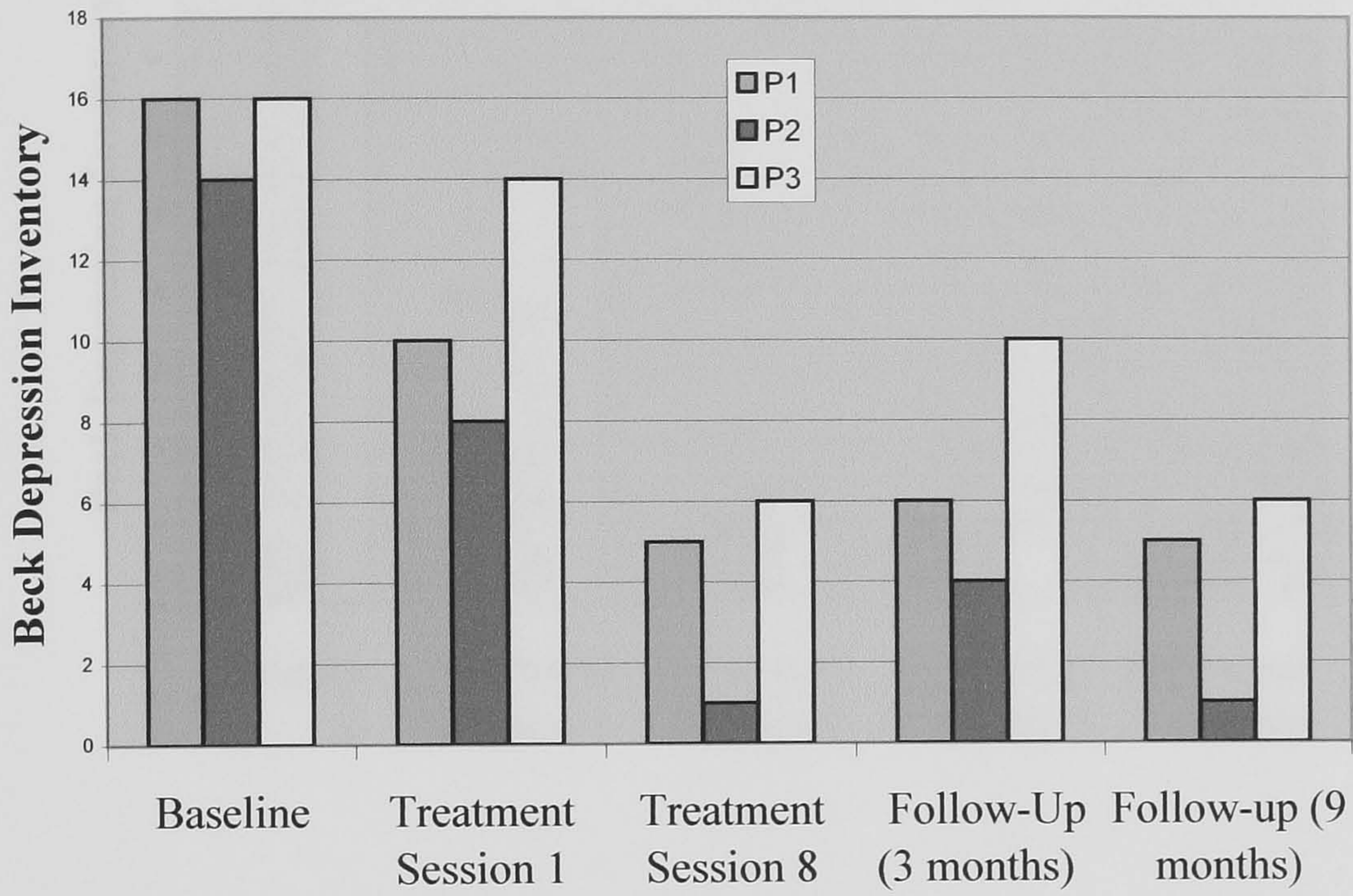


FIGURE 5-6b

Longitudinal Data BDI Across Baseline, Treatment, Generalization & Maintenance

Cognitive Blocks (n=3) Participant: = P

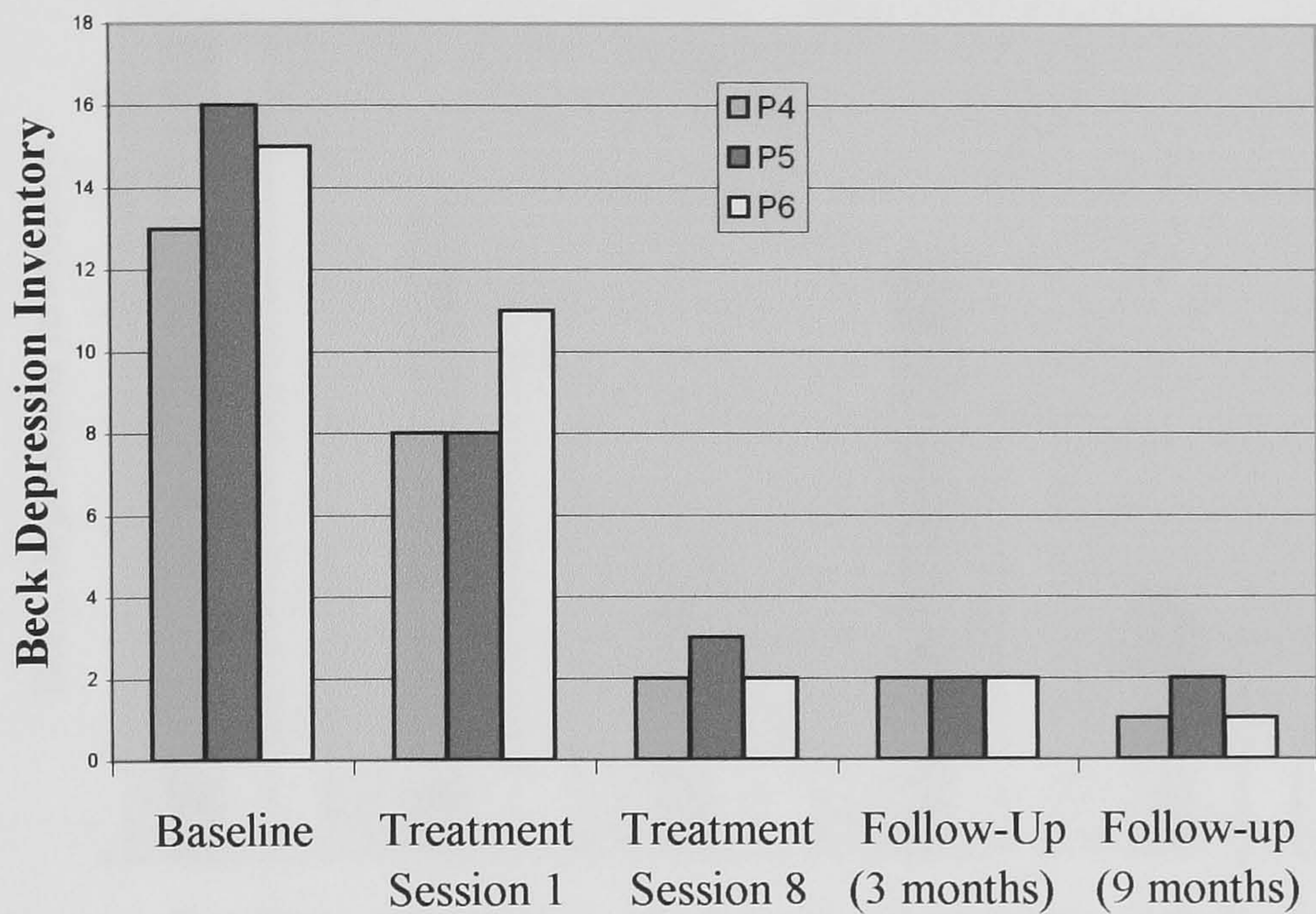
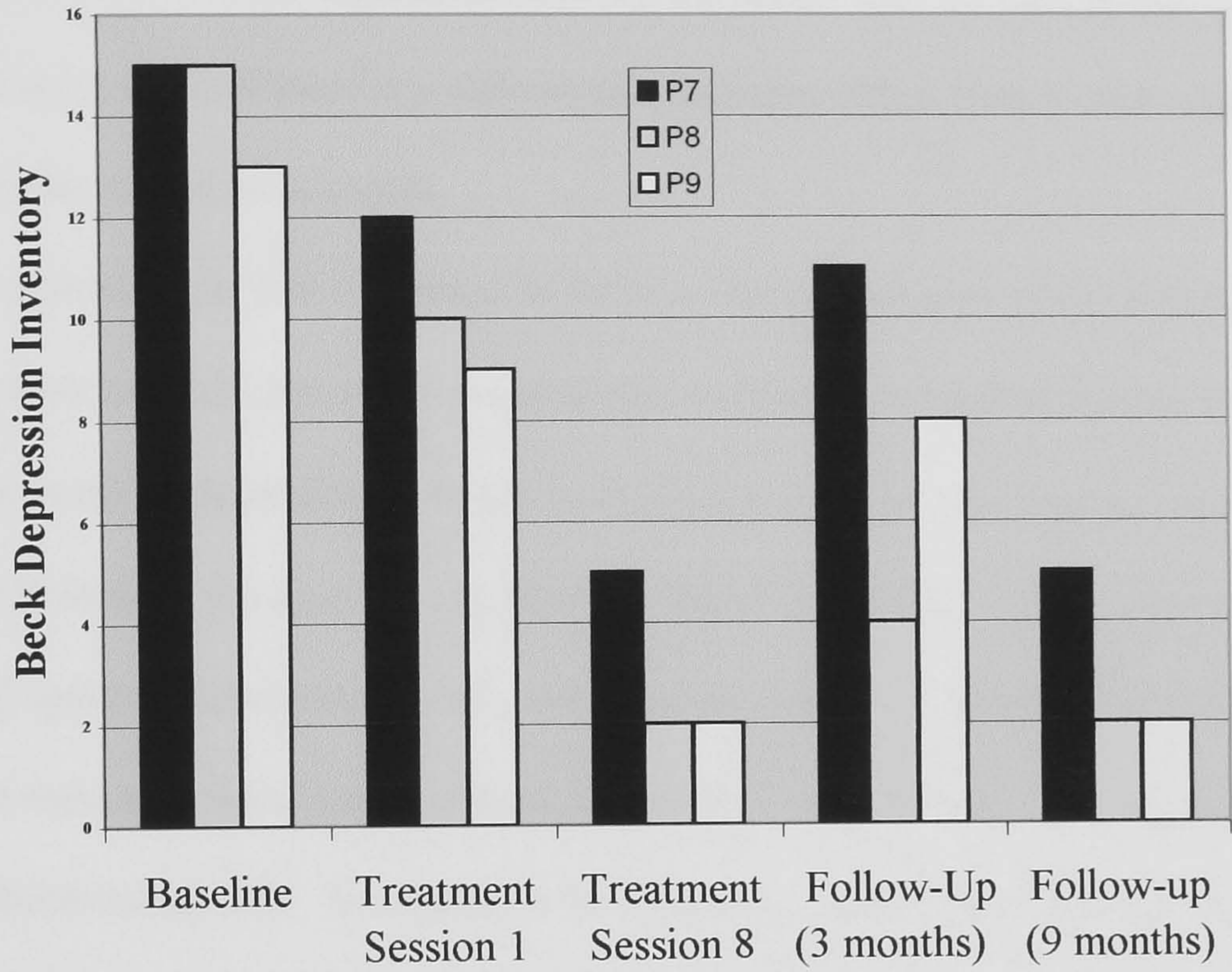


Figure 5.6c Longitudinal Data from Baseline, Treatment, Generalization & Maintenance

Skills Deficit & Cognitive Blocks (Control) Group (n=3) P = Participant



other series of data points. As the *binomial test* uses relative differences between data points, it is reasonable to assume that: (1) if there is no differential treatment effect, there will be no clear separation between the series with the data points distributed randomly; or (2) if there is a differential treatment effect, then a clear separation of the series would be apparent.

The *binomial test* was computed as follows: the first session of the Behavioural SST treatment on each dependent variable was compared to the first session of the corresponding dependent variable on the first session of the Cognitive-Behavioural SST treatment; the second session of the Behavioural SST on the second session of the Cognitive-Behavioural SST ; the third session of the Behavioural SST on the third session of the Cognitive-Behavioural SST, and finally, the fourth session of the Behavioural SST treatment on the fourth session of the Cognitive-Behavioural SST. For each particular session, frequencies were computed to assess which of the two treatments was more effective for a particular session. Thus, four pairs of sessions were considered for each participant. Then, for each dependent variable, the frequencies for the *binomial test* were combined across the three participants for each of the groups: (1) skill deficits; (2) cognitive blocks; (3) the control group with both skill deficits & cognitive blocks. Thus, for each analysis of a group, 12 pairs of sessions were compared. In keeping with the *binomial test* procedure, ties were excluded from analyses . A summary of the *binomial test* results* are presented in Table 5.9).

*A methodological point, stressed before, is that the use of multiple statistical tests increases the probability of a type I error. Thus, for a 5% significance level, 1 in 20 of these relationships may be erroneously evaluated. As there were four dependent variables and three groups, following McKnight et al. (1984), probability levels above 0.05 were rejected as not statistically significant. Since the significant findings are well below the 0.05 probability level, this is less likely to be a problem.

Table 5.9 Summary of binomial test results for skill, social anxiety, depression and self-esteem across the three groups.

	skill level	social anxiety	depression	self-esteem
SKILL DEFICITS GROUP 1				
Behavioural SST >	$p = 0.006$	$p = 0.500$ NS	$p = 0.019$	$p = 0.038^a$
Cognitive-Behavioural SST				
COGNITIVE BLOCKS GROUP 2				
Cognitive-Behavioural SST >	$p = 0.003$	$p = 0.006$	$p = 0.003$	$p = 0.002^a$
Behavioural SST				
SKILL DEFICITS &				
COGNITIVE BLOCKS GROUP 3				
Behavioural SST =	$p = 0.254$ NS	$p = 0.500$ NS	$p = 0.254$ NS	$p = 0.180^a$ NS
Cognitive-Behavioural SST				

Unless stated otherwise, all probabilities are one-tailed. Probability levels above 0.05 were rejected as not statistically significant.

> more effective than = equivalent to ^a two-tailed probabilities NS: not significant

5.6.4 SOCIAL SKILL DEFICITS GROUP. Inspection of the multiple baseline of the three participants across the four dependent variables (see Figures 5.7 – 5.10) confirms that there is a clear separation of data points with very little overlap. This indicates that differential treatment effects were in operation. Since the visual inspection of graphical data can sometimes be misleading (see Morley & Adams, 1991), the significance of any such effects can be confirmed or rejected by statistical analysis. Unless stated otherwise, all probabilities which follow are one-tailed. Probability levels above *0.05* were rejected as not statistically significant.

Inspecting the findings across the three participants with skill deficits, for the mean skill level, Behavioural SST produced a frequency of 10 out of 11 measurement occasions that were better than the Cognitive-Behavioural SST. This was as predicted and is statistically significant, $p = 0.006$ [Figure 5.8].

Inspection of the multiple baseline shows that in session 1 Behavioural SST, compared to Cognitive-Behavioural SST, produced immediate improvements in the following dependent variables for all three participants: (i) higher mean skill levels and (ii) lower total depression scores, and (iii) lower total self-esteem scores (reflecting higher self-esteem). However, Behavioural SST did not change mean social anxiety from baseline levels for which Cognitive-Behavioural SST was largely more effective in reducing social anxiety across the sessions as expected.

For this group of participants, broadly speaking, Behavioural SST proved more effective than Cognitive-Behavioural SST across the sessions in effecting change in skill levels, depression and self-esteem. It is worth pointing out that 2 out of the 3

participants achieved dramatic improvements of skill levels from baseline. For the social anxiety measure, Behavioural SST produced a frequency of 6 out of 11 pairs that were lower (better) than the Cognitive-Behavioural SST. As predicted, this was not statistically significant [$p = 0.500$]. Behavioural SST produced a frequency of 10 out of 12 measurement occasions that were lower (better) than the Cognitive-Behavioural SST resulting in a dramatic improvement in depression as predicted ($p = 0.003$). For self-esteem levels Behavioural SST produced the same frequency (10/12) significant at $p = 0.038$ (two tailed).

The impaired WCST participant profile. Participant P1 was impaired on the WCST during pre-screening. His multiple baseline profile shows some improvement in skill level with Behavioural SST but a rapid decline after a plateau. Of significance is that there was no improvement from baseline until half way through treatment with Cognitive-Behavioural SST but again this declined. It is noteworthy that this was about 50% lower than the best performance [under the Behavioural SST] of his peers (P2 & P3) but still above baseline. However, his depression levels, self-esteem and social anxiety improved to similar levels as his peers and appeared unaffected by the WCST impairment.

Figure 5.7 Behavioural & Cognitive-Behavioural SST effects on skill level across participants with skills deficit

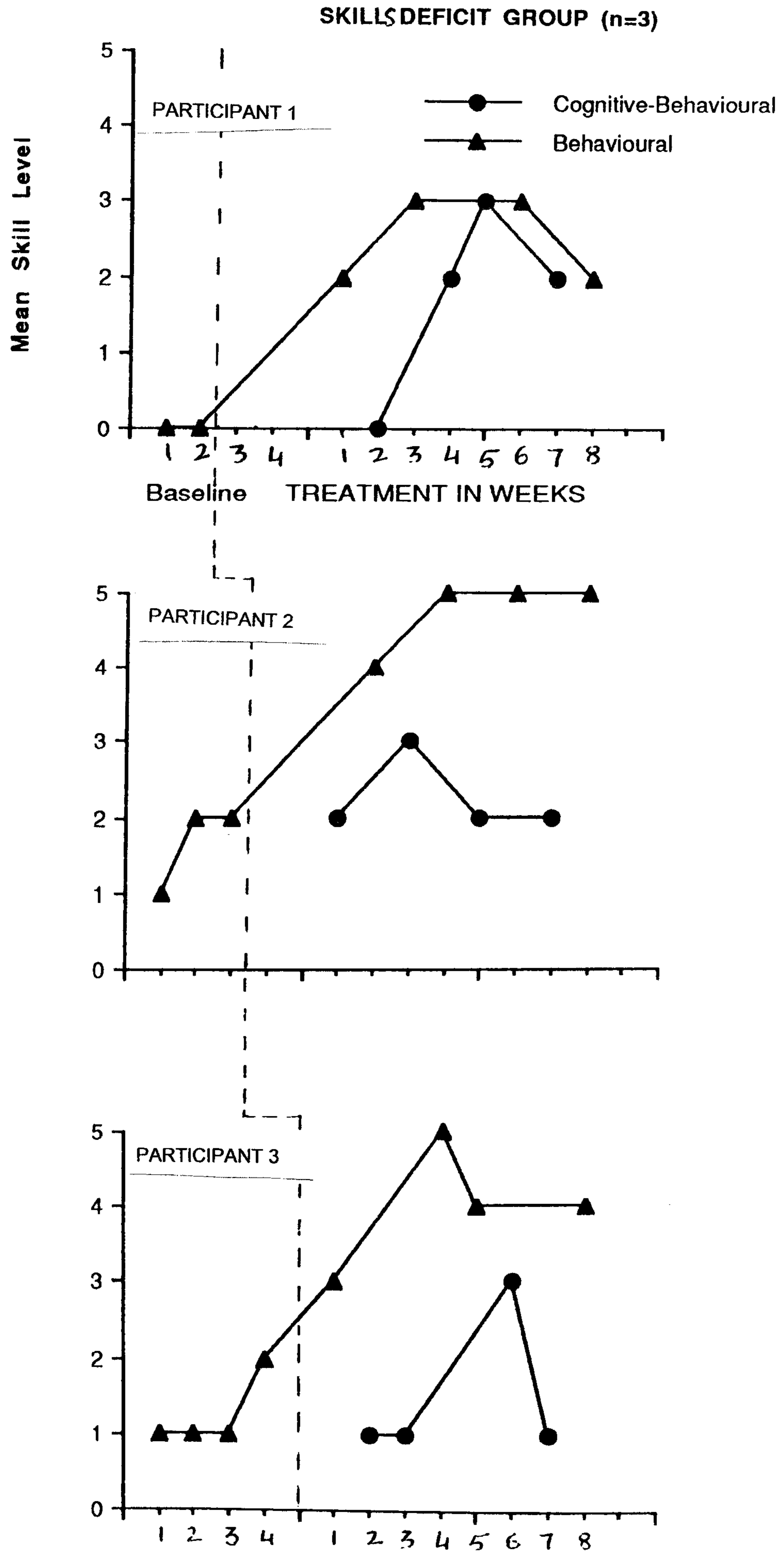


Figure 5.8 Behavioural & Cognitive-Behavioural SST effects on social anxiety across participants with skills deficit

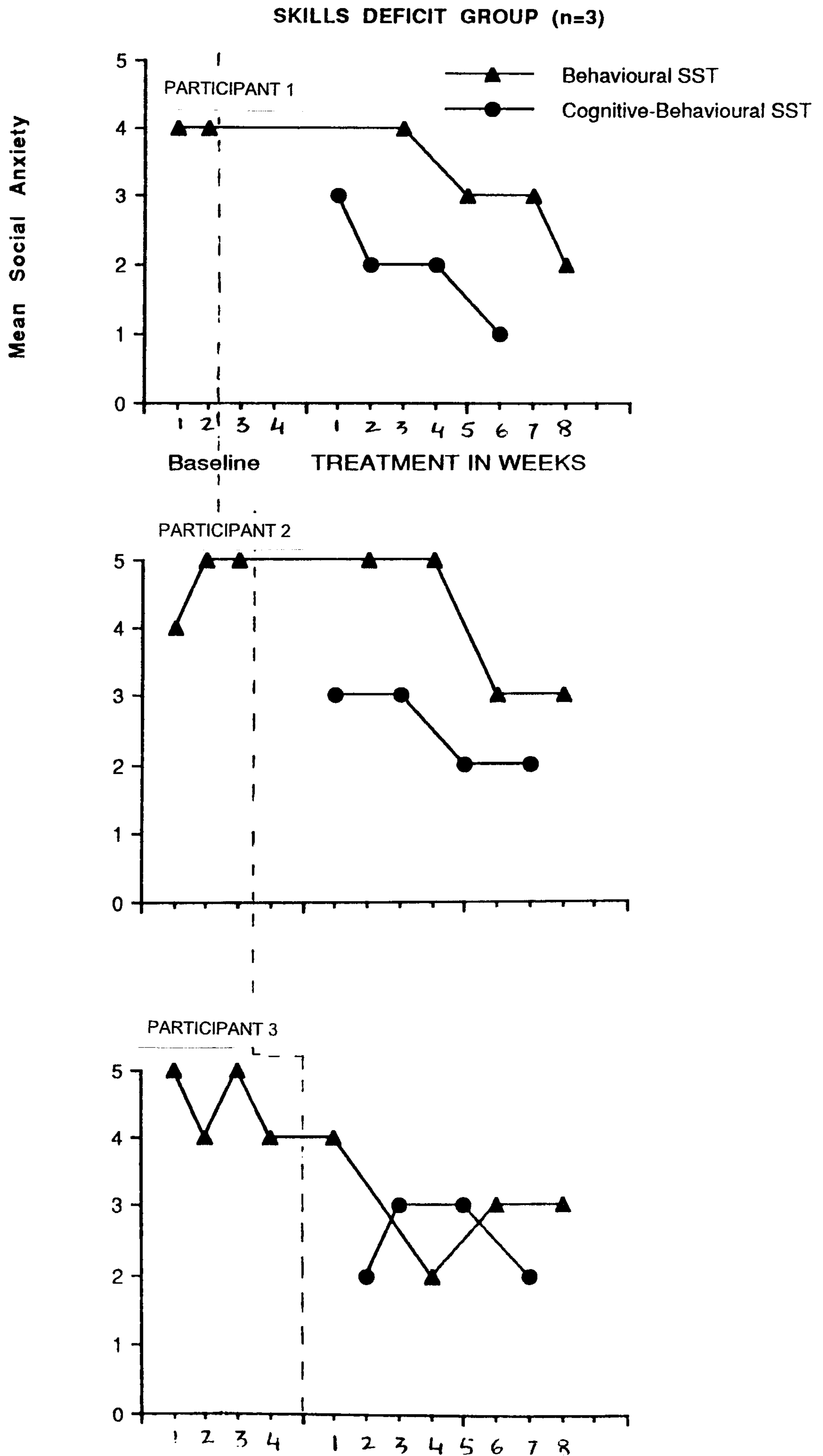


Figure 5.9 Behavioural & Cognitive-Behavioural SST effects on depression across participants with skills deficit

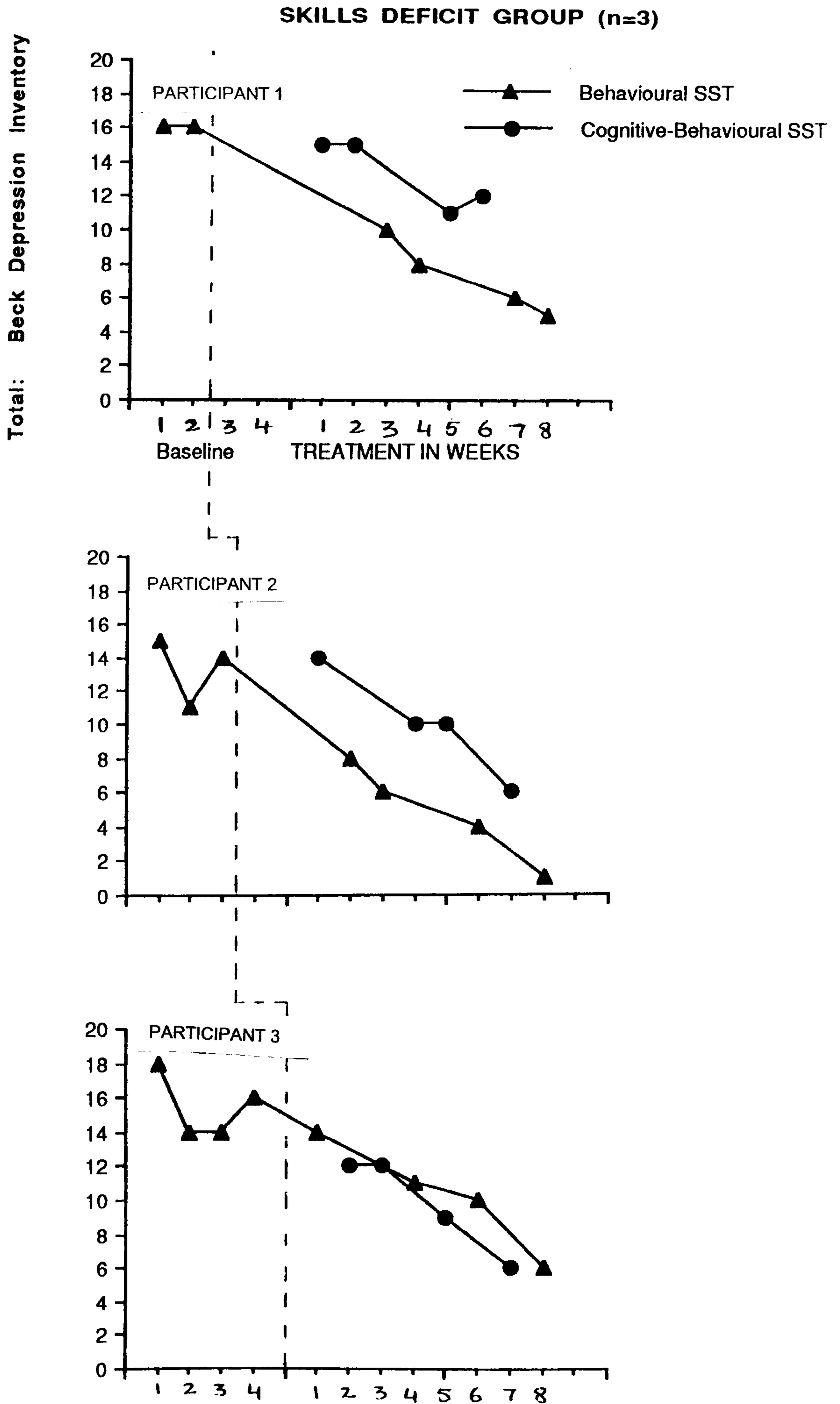
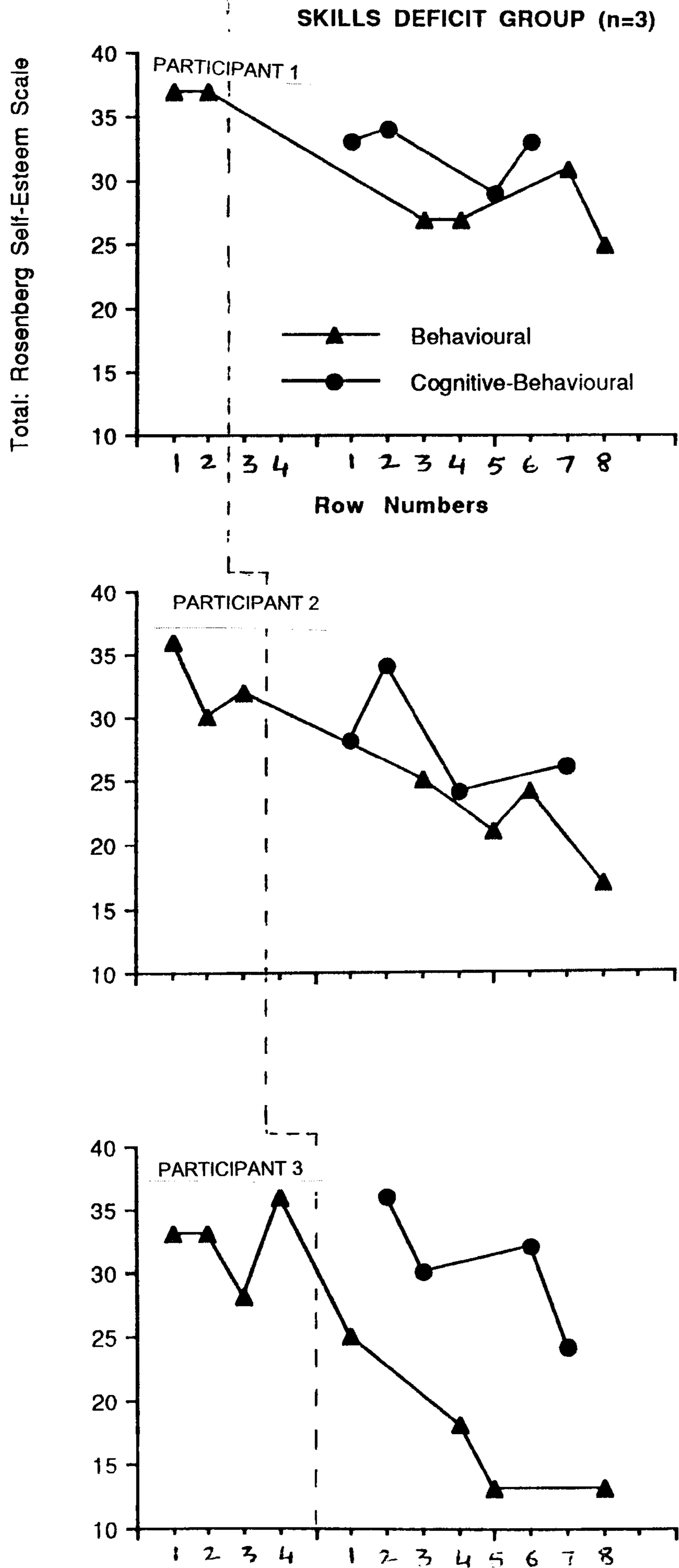


Figure 5.10 Behavioural & Cognitive-Behavioural SST effects on self-esteem across participants with skills deficit



5.6.5 COGNITIVE BLOCKS GROUP. Inspection of the multiple baseline of the three participants across the four dependent variables (Figures 5.11 – 5.14) confirms that there is a clear separation of data points with very little overlap. This confirms that differential treatment effects were again in operation. Cognitive-Behavioural SST produced immediate improvements in the following dependent variables for all three participants : (i) higher skill levels and (ii) lower depression scores (iii) lower self-esteem scores (indicating improved self-esteem) and (iv) lower social anxiety.

The findings for skill level across the three participants with cognitive blocks, shows Cognitive-Behavioural SST produced a frequency of 11 out of 12 measurement occasions that were higher (better) than the Behavioural SST. This was as predicted and statistically significant ($p = 0.003$). In other words, Cognitive-Behavioural SST was the more potent treatment than Behavioural SST for the participants with assessed cognitive blocks in effecting dramatic changes in skill levels.

For the cognitive measure of social anxiety, Cognitive-Behavioural SST produced a frequency of 11 out of 11 pairs that were lower (better) than the Behavioural SST. This was as predicted and statistically significant [$p = 0.006$]. For this group, Behavioural SST did not improve skill level which remained at baseline for participants P5 & P6, after the first session and even by the end of treatment remained relatively low. For the global measure of depression, Cognitive-Behavioural SST produced a frequency of 11 out of 12 measurement occasions that were lower (better) than the Behavioural SST. This was statistically significant as predicted [$p = 0.006$]. All three participants moved from one band (eg. ‘moderate’ depression) to another (eg. ‘mild or none’) which is clinically significant. For the global measure of self esteem, Cognitive-Behavioural SST produced a frequency of 11 out of 11

Figure 5.11 Behavioural & Cognitive-Behavioural SST effects on skill level across participants with cognitive blocks

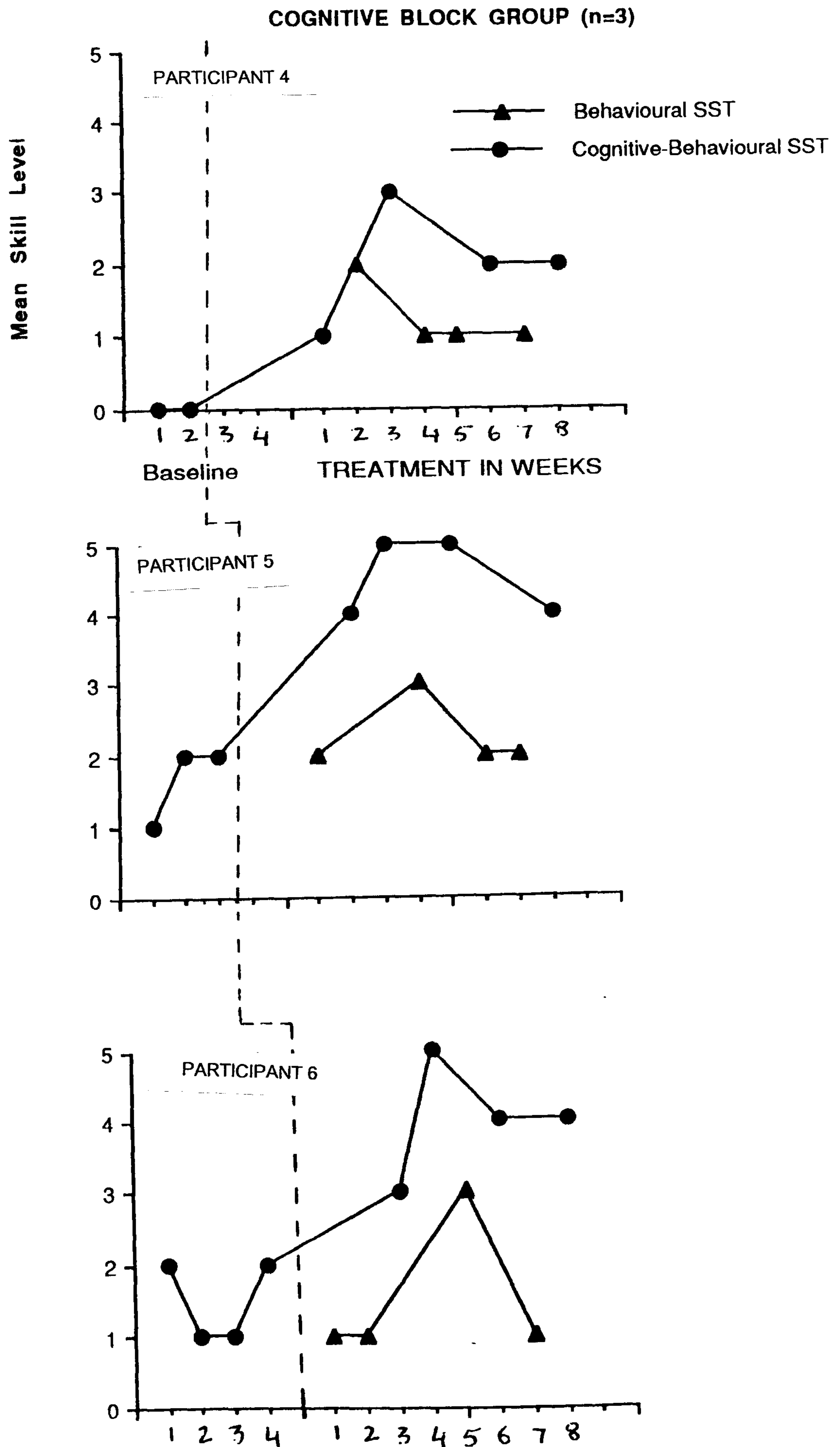


Figure 5.12 Behavioural & Cognitive-Behavioural SST effects on social anxiety across participants with cognitive blocks

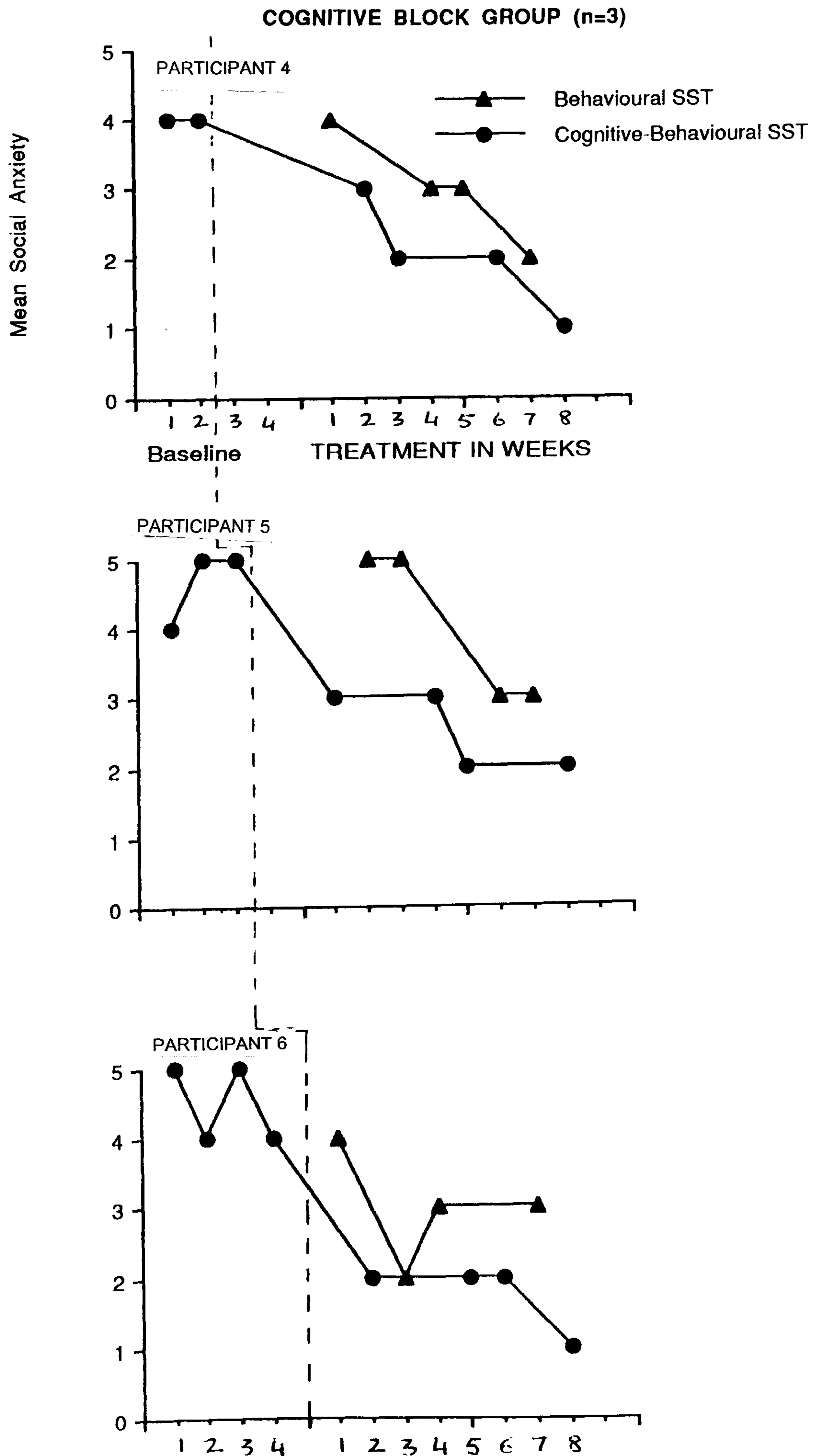


Figure 5.13 Behavioural & Cognitive-Behavioural SST effects on depression across participants with cognitive blocks

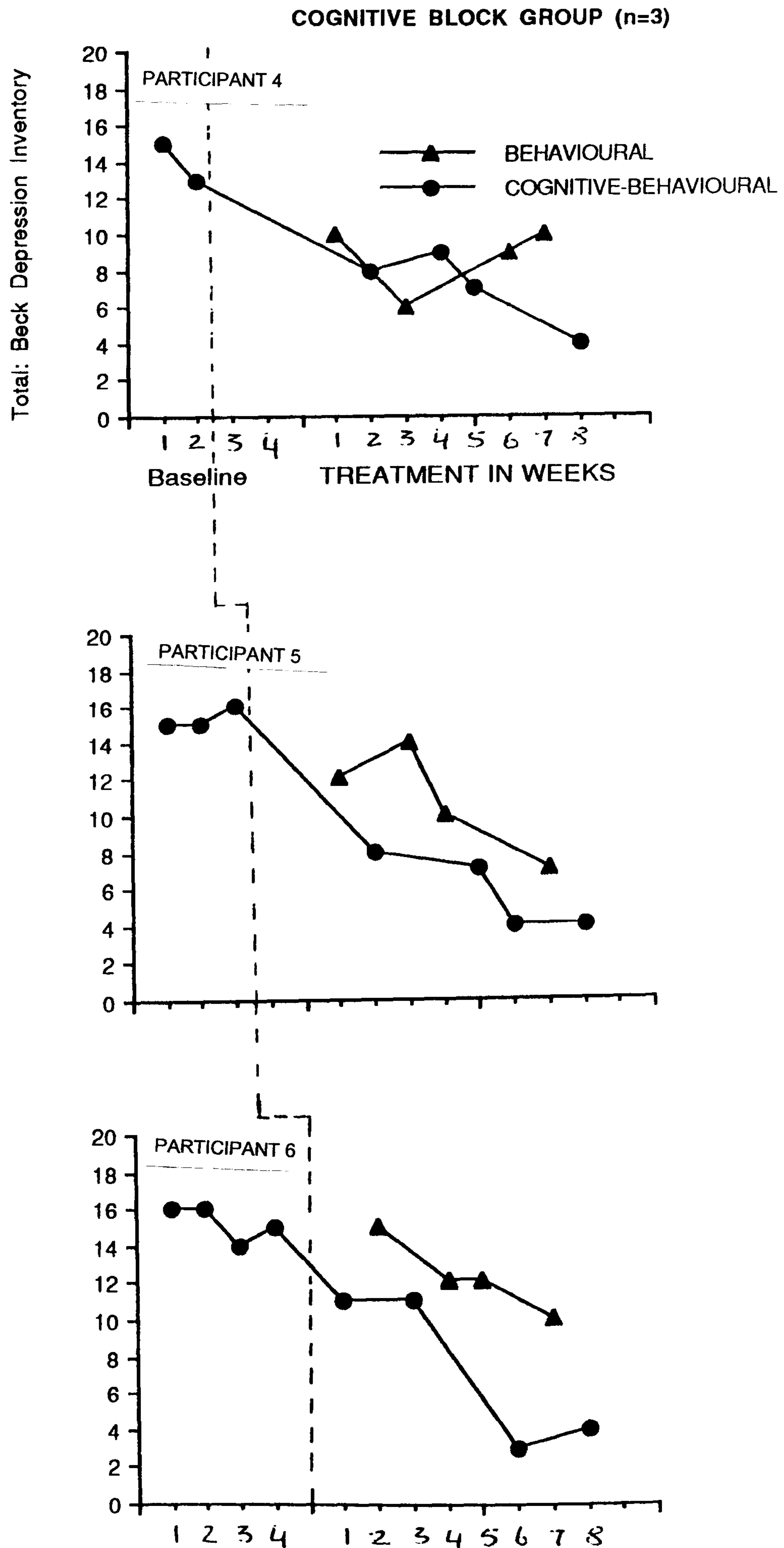
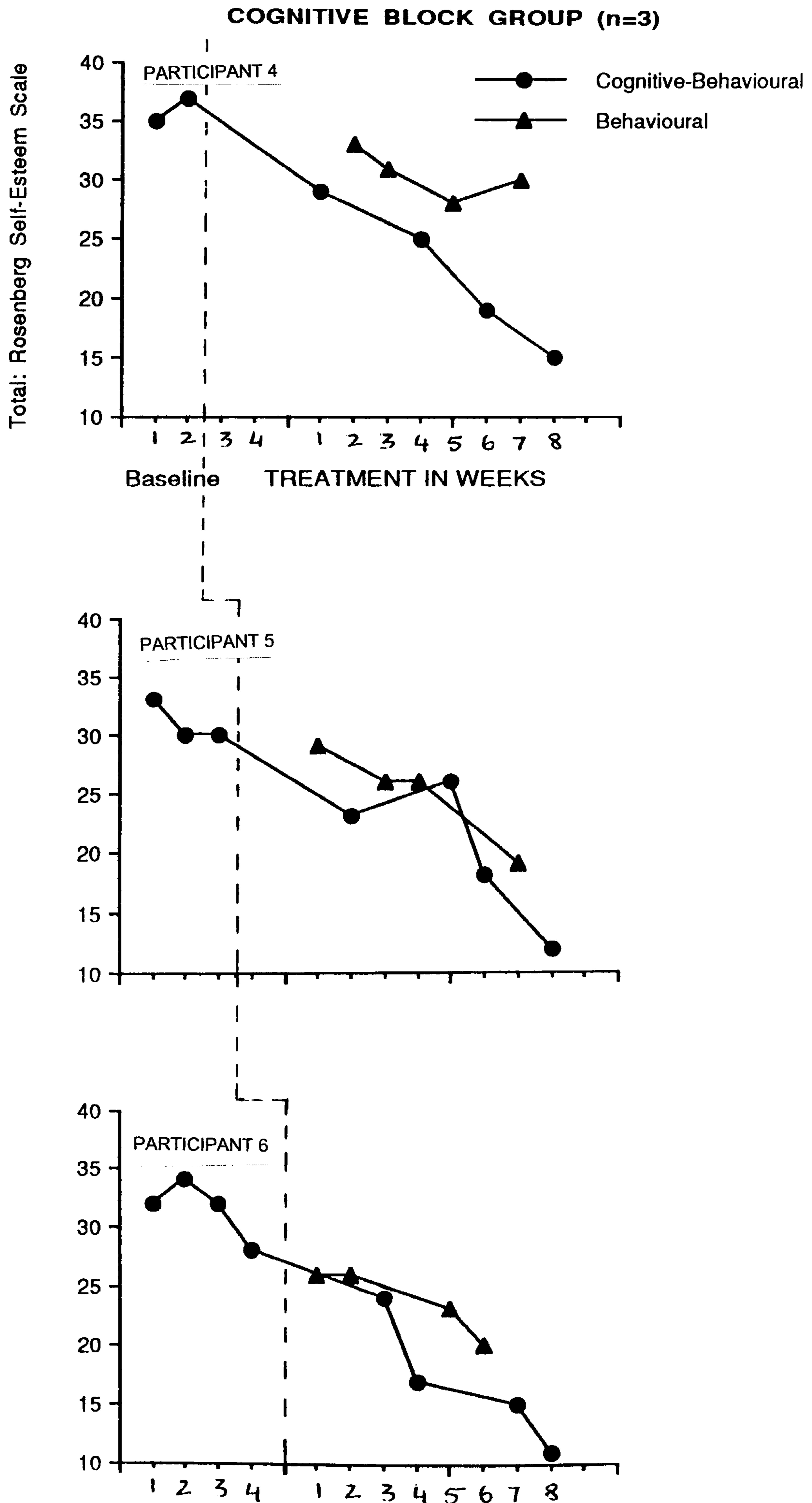


Figure 5.14 Behavioural & Cognitive-Behavioural SST effects on self-esteem across participants with cognitive blocks



measurement occasions that were lower(better) than the Behavioural SST, statistically significant at the two tailed level [$p = 0.002$]. For this group of participants, broadly speaking, Cognitive-Behavioural SST proved more effective than Behavioural SST across sessions in effecting change in skill levels, self esteem and social anxiety. It is worth noting that for all three participants the improvements in self-esteem and depression were largely rapid and of such magnitude as to bring the clinical status of the participants into the “normal” range. Of particular relevance here is that Behavioural SST was unable to reduce social anxiety below baseline for all three participants immediately after the first session, though around mid-treatment there was some improvement particularly for participants P5 and P6.

The impaired WCST participant profile. P4 was the impaired WCST participant. His multiple baseline profile showed a rapid improvement in skill levels in *both* Cognitive-Behavioural SST & Behavioural SST in the first three sessions, but then declined to a plateau from mid-treatment onwards, moving closer to baseline with Behavioural SST but was somewhat better with Cognitive-Behavioural SST. This plateau performance *per se*, cannot at this stage, be attributed to his impaired WCST profile since his peers (P5, P6) also showed a plateau but only with Behavioural SST and Cognitive-Behavioural SST, respectively. Thus, there is a need to consider and exclude alternative explanations.

It will be recalled that in the skills deficit group, P1 was the impaired WCST participant. Participant P1 showed considerable improvement during the first half of the treatment sessions but again there was a ‘plateau effect’ with a decline closer to baseline in skill level. Comparison with the normal WCST participants P5 & P6 shows that Behavioural SST significantly improved mean skill level although these

participants started with a higher baseline than participant P1. However, as in the case of the cognitive blocks group, the ‘inappropriate treatment’ Cognitive-Behavioural SST in this case, on the whole produced little change from baseline, both at the beginning and end of treatment.

In the control group (skills deficit and cognitive blocks), P8 was the impaired WCST participant. However, comparison with his peers (P7 & P9) who both started at the same baseline of maximum social anxiety suggests a possible alternative hypothesis other than one of executive impairment.

First, all three participants show a plateau effect with Cognitive-Behavioural SST around mid-treatment. Second, it could simply be a reflection of floor effects- it is not reasonable to assume that all participants will continue to improve. A more parsimonious interpretation could be that perhaps a single treatment (either Cognitive-Behavioural SST or Behavioural SST depending on the individual’s particular problem) may be more effective than a combination in reducing social anxiety. This view would seem to be supported from a comparison with the data from the first (skills deficit) and second groups (cognitive blocks), respectively. However, the data from the maintenance and generalization phase (discussed later in this chapter) suggests that the original interpretation of executive impairment is more parsimonious, after all.

5.6.6 THE CONTROL GROUP WITH SKILLS DEFICIT AND COGNITIVE BLOCKS.

Inspection of the findings across the three participants with both skills deficit and cognitive blocks (Figures 5.15- 5.18), show that Behavioural SST produced a frequency of 6 out of 9 measurement occasions on the skill level that were higher than the Cognitive SST, which was not statistically significant as predicted [$p = 0.254$].

Figure 5.15 Behavioural & Cognitive-Behavioural SST effects on skill level across participants with skills deficit & cognitive blocks

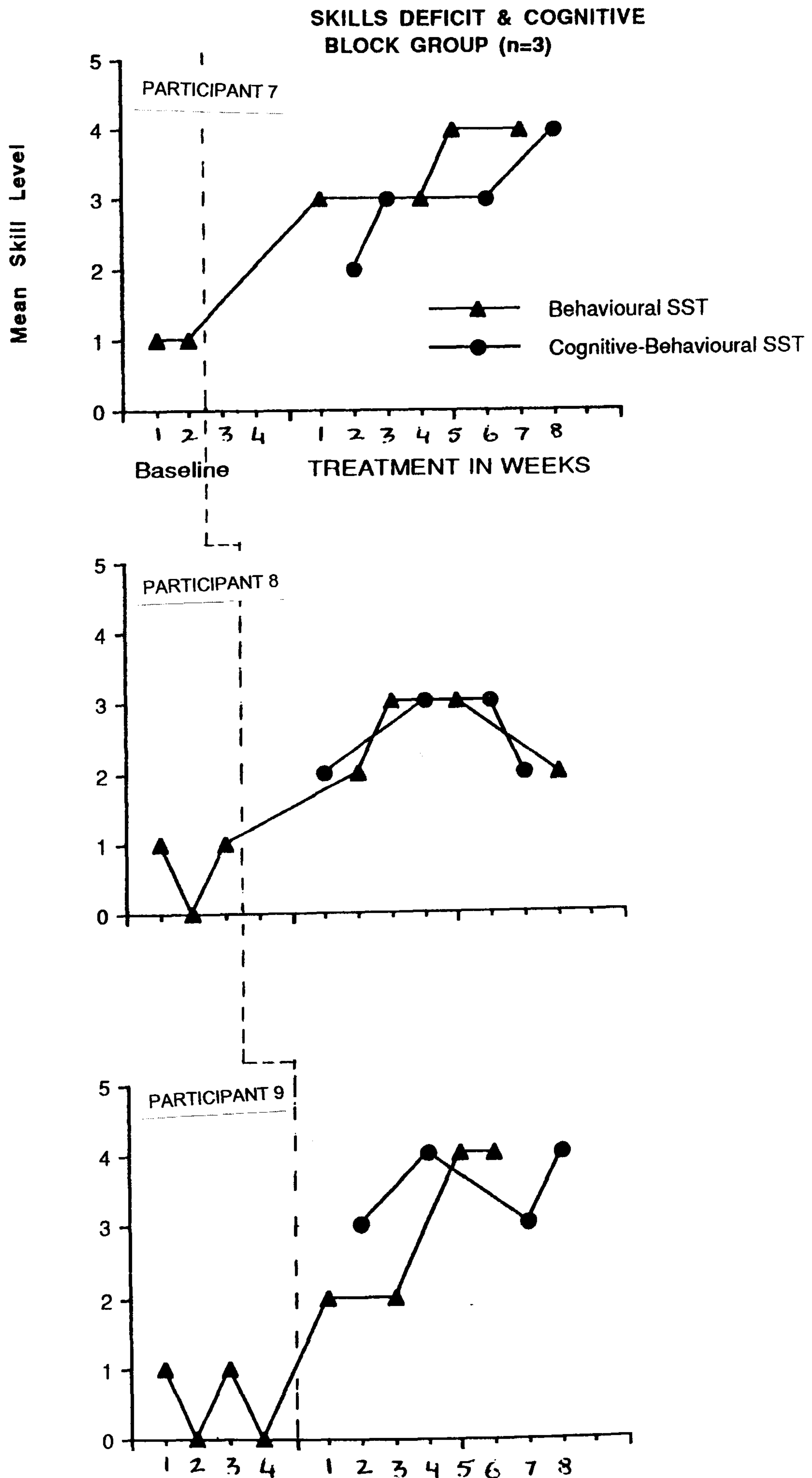


Figure 5.16 Behavioural & Cognitive-Behavioural SST effects on social anxiety across participants with skills deficit & cognitive blocks

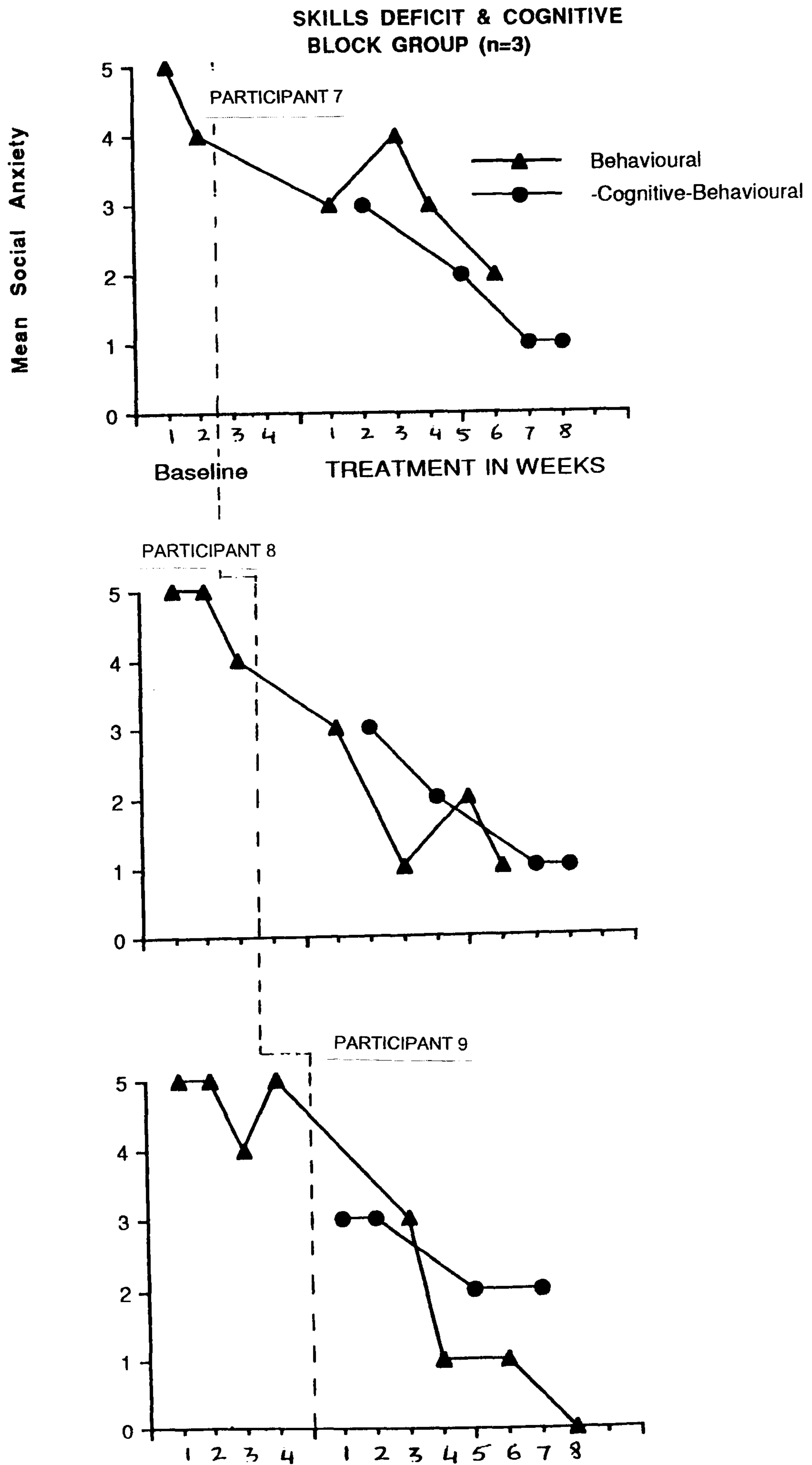


Figure 5.17 Behavioural & Cognitive-Behavioural SST effects on depression across participants with skills deficit & cognitive blocks

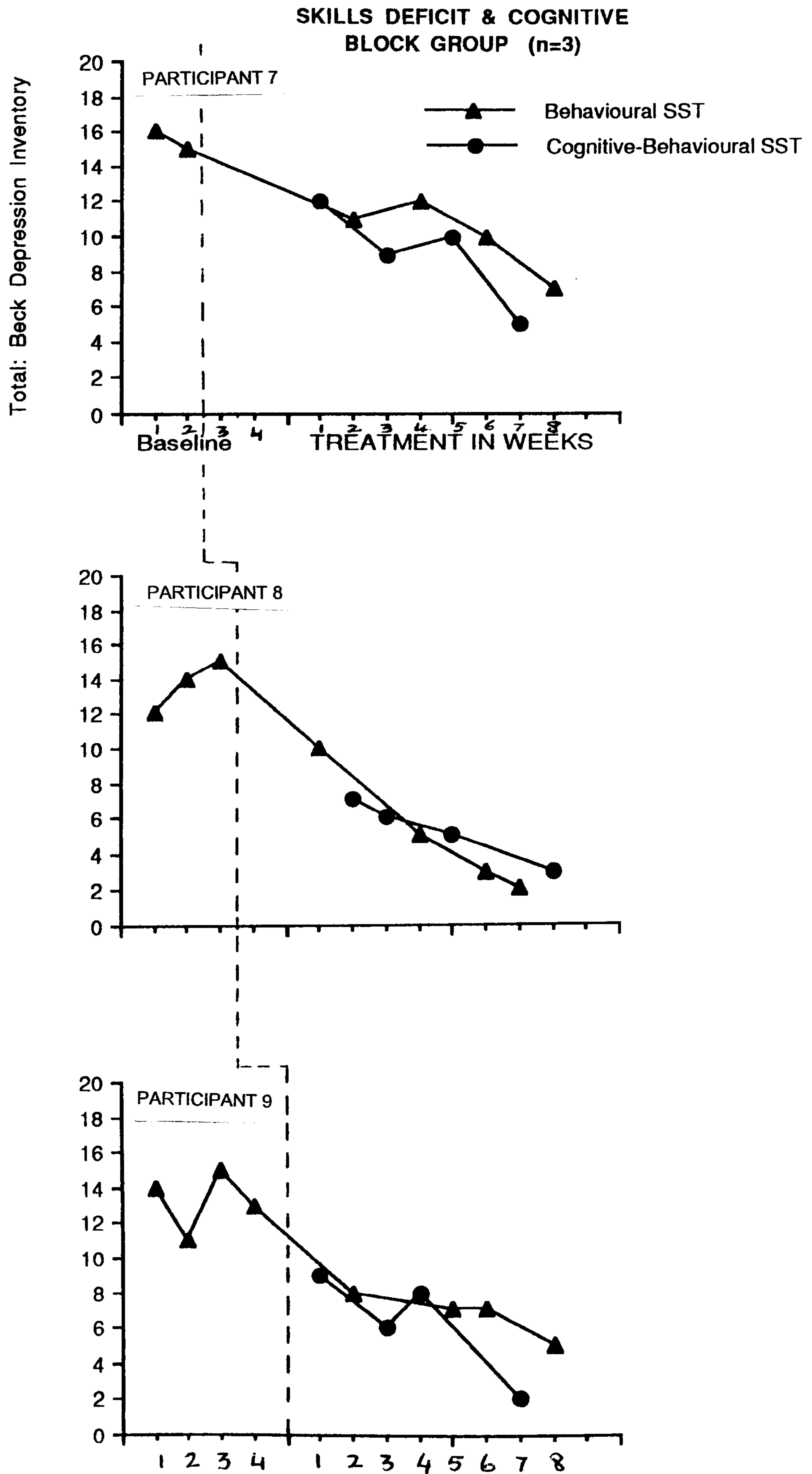
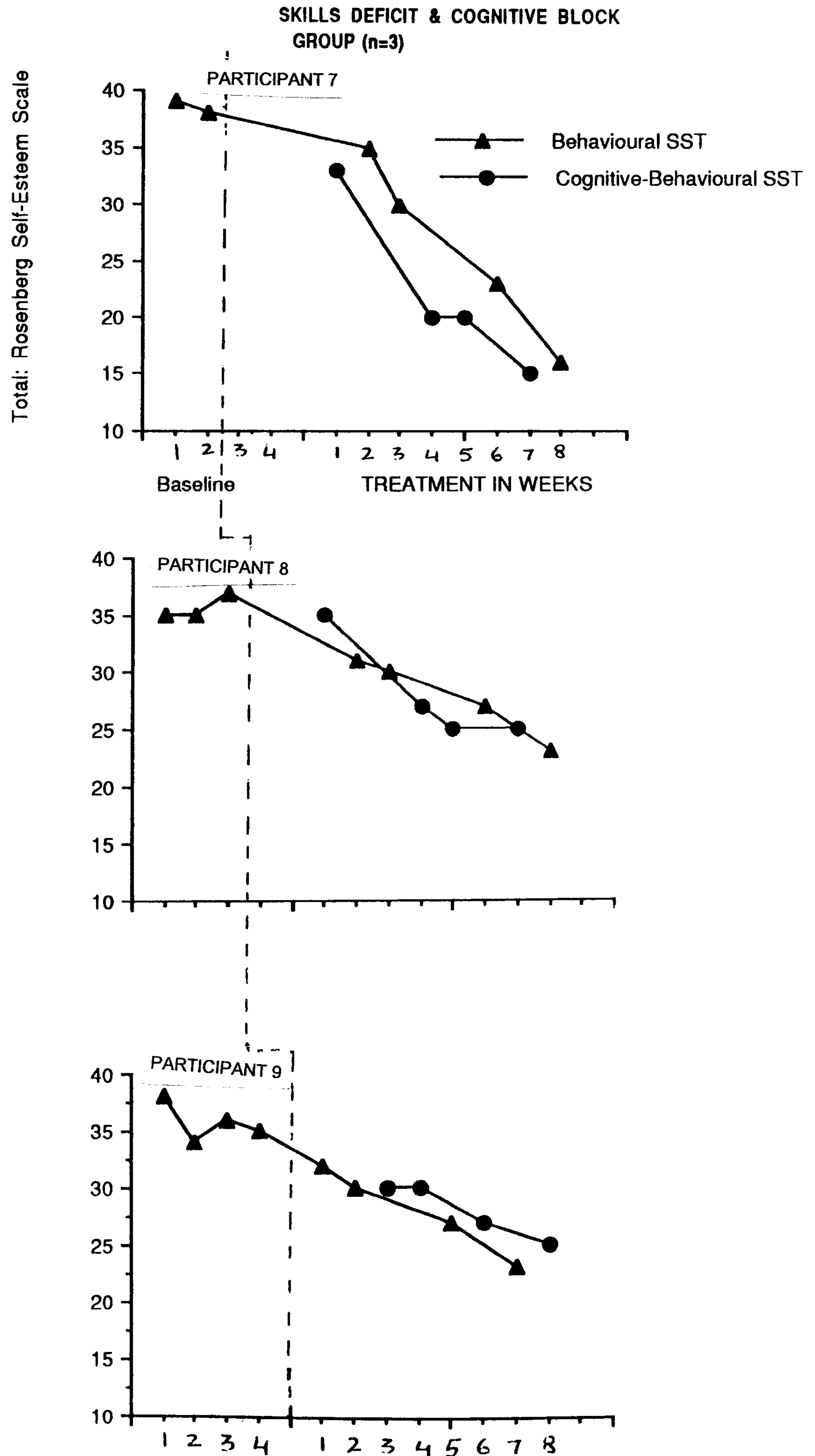


Figure 5.18 Behavioural & Cognitive-Behavioural SST effects on self-esteem across participants with skills deficit & cognitive blocks



Data points from the two treatments overlapped for all three participants.

On the cognitive measure of social anxiety, Cognitive-Behavioural SST produced a frequency of 4 out of 7 measurement occasions that were lower (better) than the Behavioural SST but contrary to prediction, was not statistically significant [$p = 0.500$]. However, there were 5 ties. For the global measure of depression, Cognitive-Behavioural SST produced a frequency of 6 out of 9 measurement occasions that were lower (better) than the Behavioural SST. However, this was not statistically significant [$p = 0.254$], contrary to prediction. Nevertheless, on the clinical front, the picture was very different. Clinically significant changes in depression levels from 'moderate' to 'mild or none' were a consistent pattern. The introduction of treatment produced a gradual decline in depression levels. Turning to the global measure of self esteem, Cognitive-Behavioural SST produced a frequency of 7 out of 9 measurement occasions that were lower (better) than the Behavioural SST, but this was not statistically significant at the two tailed level [$p = 0.180$].

Inspection of the multiple baseline of the three participants (P7, P8, P9) across the four dependent variables confirms that there was, on the whole, more overlap and less separation between the data points of the two alternating treatments across sessions.

Both Behavioural SST and Cognitive-Behavioural SST were more or less equally potent in effecting improvements in mean skill levels, resulting in equivalent means at the end of treatment. In the case of participant P7, Behavioural SST was marginally more effective at the beginning of therapy whereas for participant P9, the opposite was true, ie., Cognitive-Behavioural SST was marginally more effective. However, both Behavioural SST and Cognitive-Behavioural SST were equally effective both at the beginning, middle and end of treatment in improving skill levels. The pattern of more or less equivalent treatment effects was repeated for self-esteem. The pattern for

skill acquisition was repeated for the social anxiety measure. Again, both Behavioural SST and Cognitive-Behavioural SST were more or less equally effective in reducing mean social anxiety, resulting in equivalent means at the end of treatment for each of the three participants, P7, P8 and P9. In the case of participant P7, Cognitive-Behavioural SST was more effective across sessions whereas for participant P9, Behavioural SST was more potent. For participant P8, the effects of Behavioural SST and Cognitive-Behavioural SST in reducing social anxiety were more or less equivalent.

The impaired WCST participant profile. In the skills deficit and cognitive blocks group, P7 was the impaired WCST participant. His multiple baseline profile showed some improvement on mean skill level for both the Behavioural SST and Cognitive-Behavioural SST at the beginning of treatment but then reached a plateau from the 3rd to 6th sessions and then dropped closer to baseline to the level it was at the beginning of the first two sessions. It is noteworthy that Cognitive-Behavioural SST did not produce a change from baseline at the first session for self-esteem level whereas Behavioural SST did. From then on, both Behavioural SST and Cognitive-Behavioural SST were about equivalent in improving self-esteem, with considerable overlap of data points. A similar pattern was repeated for the reduction of social anxiety by both Behavioural SST and Cognitive-Behavioural SST. Again a “plateau effect” was observed in that there was no further improvement in the last three sessions.

5.6.7 MAINTENANCE AND GENERALIZATION PLUS INDEPENDENT

SOCIAL VALIDATION.

It was felt important to get a comprehensive picture of the longitudinal patterns of change in the participants. Accordingly, Figures 5.19 – 5.21 (on next three pages) display the generalization and maintenance data together with the baseline, pre-treatment and post-treatment data.

Figure 5.19 Behavioural & Cognitive-Behavioural SST effects on skill level across participants with skills deficit

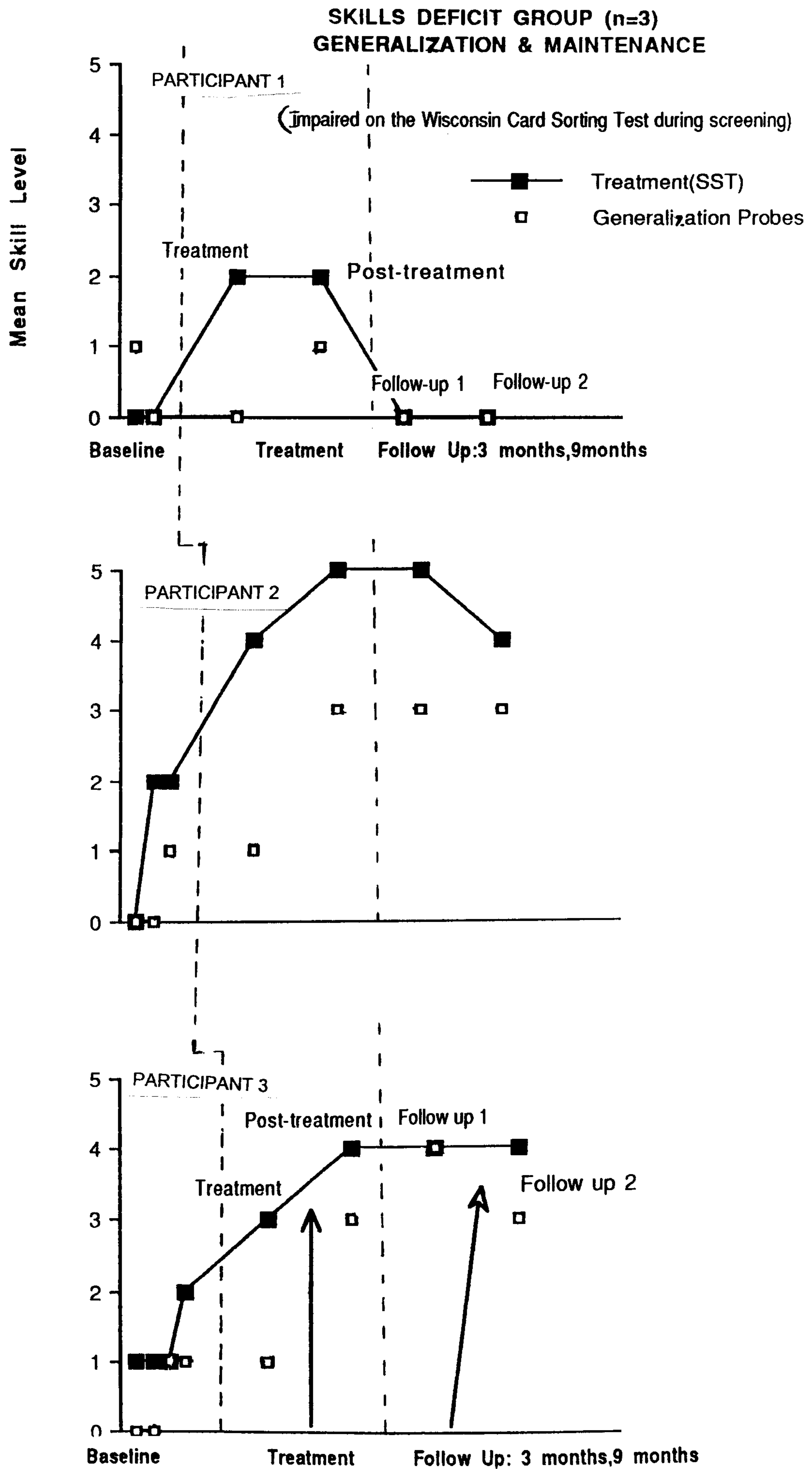


Figure 5.20 Behavioural & Cognitive-Behavioural SST effects on skill level across participants with cognitive blocks

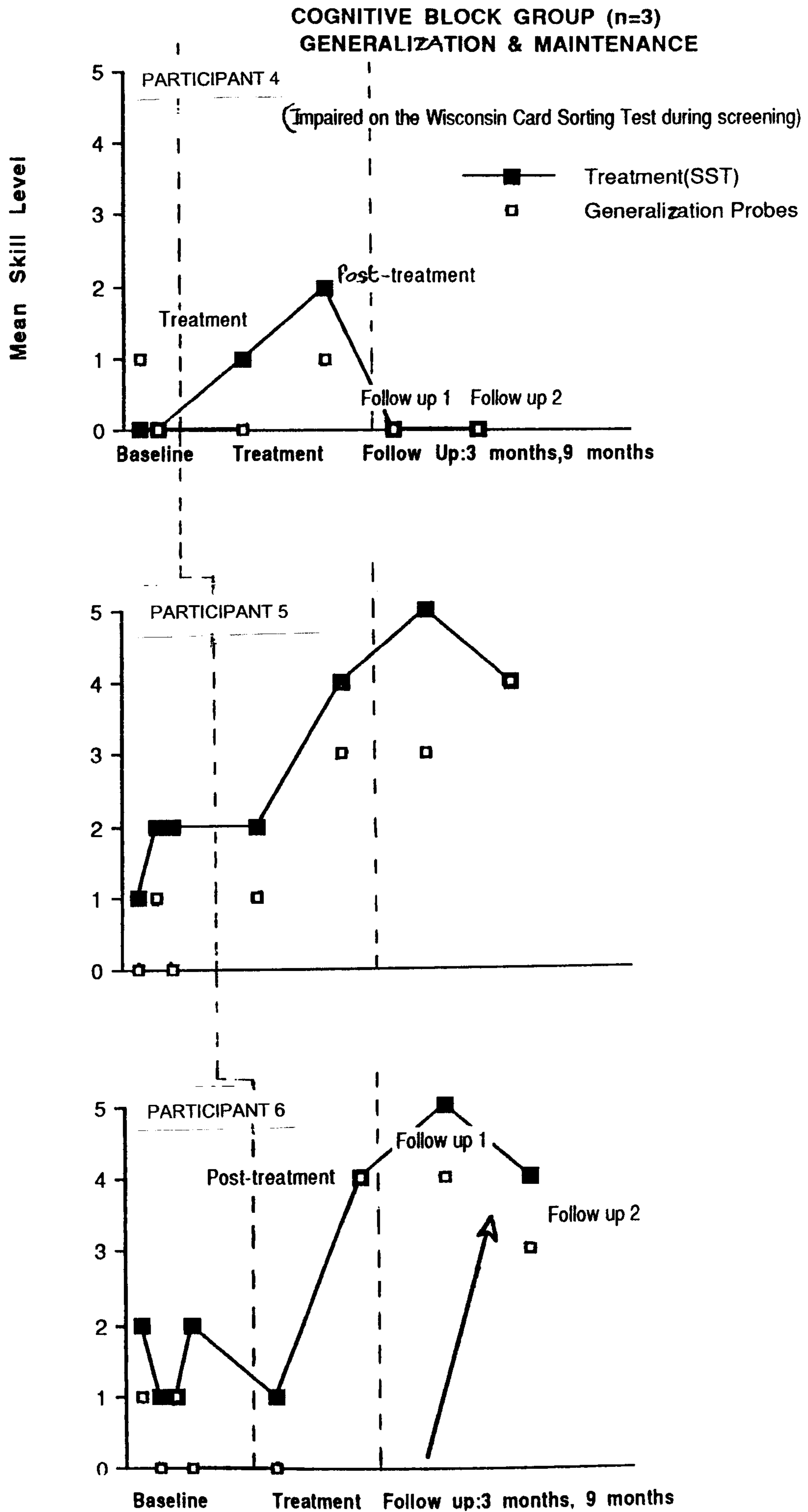
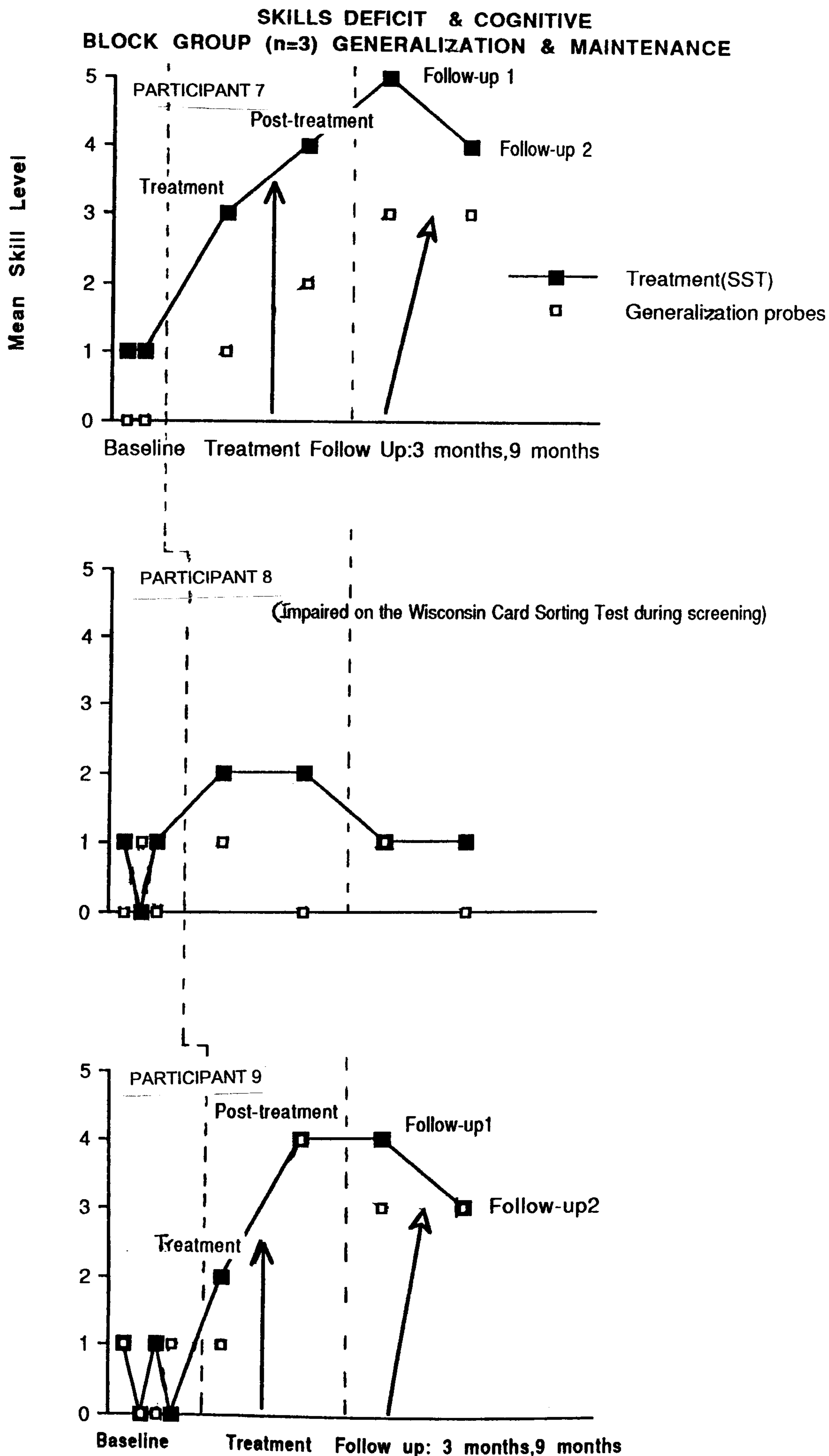


Figure 5.21 Behavioural & Cognitive-Behavioural SST effects on skill level across participants with skills deficit & cognitive blocks



SKILL DEFICITS GROUP. Figure 5.19 shows that participant P2 had maintained the excellent progress in mean skill at the first 3-month follow-up. This declined slightly but was still maintained at a high level of a mean of 4 out of a maximum of 5. The generalization probe assessing two untrained behaviours which the participant had reported difficulty with during baseline, did not improve at all until the end of treatment when it reached a mean of 3. At the 3- and 9-month follow-ups, the progress of a mean of 3 was maintained, confirming that the change was stable. This participant spontaneously volunteered that the ‘whisper- in-the ear’ exercise during treatment had brought home the importance of using positive self-talk to improve his performance by verbally self-regulating his behaviour.

Participant P3 had maintained the good progress in mean skill at the first 3-month follow-up. This stabilised at a high level of a mean of 4 at the 9-month follow-up. The generalization probe showed no improvement at all in untrained behaviours until the end of treatment when it reached a mean of 3. At the 3- and 9-month follow-ups, the progress of a mean of 3 was improved upon to a mean of 4 and then declined to a mean of 3. This participant reported securing a part-time job, the first in years, and expressed appreciation for the improvement in self-esteem, which the SST group provided. This is confirmed by the dramatic improvement in self-esteem reported during treatment.

Figure 5.19 also shows that participant P1 was unable to maintain the progress in mean skill of 2 achieved at post-treatment. Unfortunately, this declined to baseline and remained at baseline at the 3- and 9-month follow-ups. This is not surprising given participant P1’s impaired performance on the WCST. This is the first

demonstration with longitudinal data that impaired *abstract* problem solving on the WCST appears to inhibit maintenance of *social* problem solving skills trained in the present study. The generalization probe showed no improvement at all in untrained behaviours which fluctuated slightly at the end of treatment but consistently remained at baseline throughout treatment and the two follow-up periods. This confirms that, for this participant also, failure of generalization was associated with impaired WCST performance. This participant was still in hospital, being regarded as not yet ready for community living and expected eventually to be placed in a 24-hour supervised facility.

COGNITIVE BLOCKS GROUP. Figure 5.20 shows that participant P5 had progressed in stepwise fashion from baseline to the 3-month follow-up with a maximum mean skill of 5. However, this declined slightly at the 9-month follow-up, but was still maintained at a high level of a mean of 4. The generalization probe results remained at or below baseline in comparison to the trained behaviours and did not improve at all until the end of treatment, when it reached a mean of 3 and remained there at the 3-month follow-up. At the 9-month follow-up, it improved further and coincided with the mean skill level of 4 for the trained behaviours. This participant had successfully developed a relationship with a member of the opposite sex at the local day centre and felt encouraged to “practise rules about mixing with people” learned at the group. It is not unreasonable to infer that this participant had learned verbal self-regulation by bringing aspects of social behaviour under the control of appropriate rules.

Participant P6 had improved upon the excellent progress in mean skill at the first 3-month follow-up. This declined slightly to a mean of 4 but is still remarkable progress

from baseline. The generalization probe showed no improvement in untrained behaviours until the end of treatment when it reached a mean of 4. At the 3-month follow-up it remained stable and then declined to a mean of 3 at the 9-month follow-up, a significant improvement from a baseline of zero. This participant was, unfortunately, not in a very communicative mood and declined to volunteer any changes in social life events.

Figure 5.20 shows that participant P₄ was unable to maintain the progress of a mean skill of 2 achieved at post-treatment. Unfortunately, this declined to baseline and remained at baseline at the 3- and 9-month follow-ups. This is not surprising given participant P₄'s impaired performance on the WCST. This is a further demonstration (replication) with longitudinal data that impaired *abstract* problem solving on the WCST appears to inhibit maintenance of *social* problem solving skills trained in the present study. The generalization probe results showed no improvement at all in untrained behaviours which fluctuated slightly at the end of treatment but consistently remained at baseline throughout treatment and the two follow-up periods. This confirms that, for this participant, failure of generalization was indeed associated with impaired WCST and mixing with a group of normal WCST schizophrenia participants was not appropriate. Nevertheless, this participant was also living in the community but in a 24-hour supervised facility.

THE CONTROL GROUP: SKILLS DEFICIT AND COGNITIVE BLOCKS. Figure 5.21 shows that Participant P7 had progressed in stepwise fashion from baseline to the 3-month follow-up with a mean skill of 5-the maximum attainable. This, however, declined slightly at the 9-month follow-up but was still maintained at a high level of a mean of

4. The generalization probe results more or less reflected the progress on trained behaviours. The untrained behaviours started improving just after treatment started and continued to do so at post-treatment and the first 3-month follow-up. It then levelled off at a mean of 3 during the 9-month follow-up. This is remarkable given a baseline of zero. This participant was still occasionally troubled with hallucinatory voices but, after some gentle encouragement, revealed that she frequently “imagined the whispering ear [‘whisper- in- the- ear’] technique” which she was “sometimes able to pay attention to” and implement. The initial reluctance of the participant to talk about this would appear to suggest that this was not a case of trying to please the staff by favourable self-reports. Thus, it would appear that this participant too was able to internalise and bring the ‘whisper-in-the-ear’ technique instructions (from the training group) under verbal self-regulation in the absence of the therapists (cf. Woods & Lowe, 1986).

Participant P9 had maintained the excellent progress in mean skill at the first 3-month follow-up. This declined slightly to a mean of 3, but is still significant progress from baseline. The generalization probe showed no improvement in untrained behaviours until the end of treatment when it reached a mean of 4 on a par with the trained behaviours. This is excellent generalization. It dropped to a mean of 3 at the 3-month follow-up and then remained stable at the 9-month follow-up, again a significant improvement from a low (0-1) baseline. This participant had secured a part-time job and began to socialise after years of being “a loner” and was living in shared accommodation in the community with minimal supervision. He too volunteered that the “whisper-in-the-ear” exercise had restored confidence in himself.

Figure 5.21 also shows that P8, who was impaired on the WCST, was unable to maintain the progress in mean skill of 2 achieved at post-treatment. Unfortunately,

this declined to baseline and remained at baseline at the 3- and 9-month follow-ups. This profile is very similar to that of impaired WCST participant P4 in the cognitive blocks group. This adds to the accumulating converging evidence in the present study from across three groups (two replications) which confirms that impaired *abstract* problem solving on the WCST is consistently associated with failure of maintenance of the *social* problem solving skills trained in the present study. However, no claims of causality can be made, given the study design. The generalization probe showed no improvement at all in untrained behaviours which fluctuated slightly, shortly after the start of treatment but consistently remained at baseline level throughout treatment and the two follow-up periods. This confirms that for this participant (P8) too, failure of generalization was associated with impaired WCST performance. Unfortunately, this participant was reported to have suffered a “relapse” shortly after being selected for a 24-hour supervised community placement, just after the 3-month follow-up and had to return to the local psychiatric hospital.

In summary, all the six normal WCST schizophrenia participants demonstrated maintenance of trained behaviours across two follow-up periods ending 9 months after treatment was completed. Further, the maintenance of trained behaviours from the trained setting (hospital ward) to the community suggests generalization to new untrained (community) settings. More importantly, the trained behaviours generalized to untrained behaviours and were maintained at satisfactory skill levels across two follow-up periods from the trained setting (hospital ward) to the community. These are significant achievements in themselves but the chronicity of the participants with long-standing social dysfunction makes them all the more significant.

In the next chapter, a full discussion will be provided.

CHAPTER SIX

DISCUSSION

- 6.1 Study One**
- 6.2 Study Two**
 - 6.2.1 Controlling methodological flaws**
 - 6.2.2 Changes in the secondary measures**
 - 6.2.3 Demand characteristics or social validation?**
 - 6.2.4 Treatment interference and carry over effects**
 - 6.2.5 Process of change**
 - 6.2.6 Less training is just as effective as more?**
 - 6.2.7 Is cognitive remediation a pre-requisite for successful maintenance and generalization of social problem solving skills?**
 - 6.2.8 The question of cost-effectiveness**
 - 6.2.9 Listening to their voices: the participants' views**
- 6.3 Functional analysis for a more thorough initial assessment**
 - 6.3.1 A case for the re-introduction of self-instructional training?**
 - 6.3.2 Moving away from a unitary model of social dysfunction: "Is it true that everyone has won and all must have prizes?"**
 - 6.3.3 The generalization problem reconsidered: the role of abstraction**
 - 6.3.4 Generalization from a radical behavioural perspective**
 - 6.3.5 Treatment fidelity**
 - 6.3.6 Limitations of Study Two**
 - 6.3.7 Implications for clinical practice**
 - 6.3.8 Recommendations for further research**
 - 6.3.9 Conclusions**

The discussion of results will be divided into several sections. Since Study One has already been discussed, only the main findings will be restated here. Study One (discussed briefly) and Study Two (discussed in more depth) will be considered separately. First, the aims and experimental hypotheses of each study will be restated and discussed. Second, the results will be discussed. Third, conceptual and methodological issues will be re-examined/revisited in the light of the findings. Fourth, limitations of Study Two will be examined. Fifth, the implications for clinical practice will be considered. Sixth, suggestions for further research will be made. Finally, conclusions will be summarised.

6.1 Study One

Study One confirmed the hypothesis that the socially dysfunctional paranoid schizophrenia participants have abstract problem solving skills on a par with normal controls as reflected in their performance on the WCST. This normal performance was also reflected on the other indices of the WCST and therefore can be regarded with some confidence. This view is further strengthened by the 'think-aloud' spontaneous verbalizations during the problem solving and the post experimental self-reports by these participants.

Thus it would seem that in the paranoid schizophrenia participants those aspects of problem-solving behaviour measured in Study One are better preserved (in spite of any negative effects of lengthy hospitalization, neuroleptic medication or symptom severity). This view is consistent with the findings of Payne (1968), Magaro (1980) and Chadwick (1989) who found

that cognitive functioning in paranoid schizophrenia is better preserved than in the other subtypes of schizophrenia. The contrast with the control group confirmed that it was the nonparanoid chronic schizophrenia participants who evidenced significant problem solving deficits on the Wisconsin Card Sorting Test(WCST).

6.2 Study Two

Study Two focused on the role of individual differences (by using a multiple baseline design across participants). It regarded the need to empirically validate the assessment procedure as important in addressing the generalization problem which it will be recalled, is often regarded as simply a question of using the right technical procedures.

The present research addressed the generalization problem in two phases. In the first phase (Study One), a suggestion that a subgroup of participants with chronic schizophrenia may have normal abstract problem solving was investigated by comparing the performance of paranoid and non-paranoid chronic schizophrenia in-patients with empirically assessed social dysfunction. Only the paranoid group had profiles comparable to matched normal controls but the non-paranoid group had neuropsychological deficits on the WCST. This confirmed that mixing schizophrenia patients in SST without being aware of their neurocognitive status (for example, as assessed by the WCST) may confound the outcome and impede efforts to determine generalization failures.

Caution was expressed, which is reiterated here, that we should not be hasty in concluding that all impaired WCST participants with chronic schizophrenia

necessarily have frontal lobe damage since this would be unwarranted. Future studies hoping to clarify this issue would need to include a battery of neuropsychological and psychometric tests to assess executive dysfunction more precisely since it is not a unitary concept. The chronicity and high distractability of the participants in the present research precluded inclusion of a more comprehensive battery of tests. It would also have been ethically questionable to impose tests which may not directly benefit the group of in-patient participants in the present research who were possible candidates for resettlement into the community and had more pressing concerns.

6.2.1 Controlling methodological flaws

A major strength of Study Two was that it controlled for several methodological flaws in social problem solving studies. In particular, it ascertained whether a participant's self-report reflected actual problem solving deficits in situations troublesome for them and attempted social validation to determine treatment efficacy.

It also overcame the problem of having to demonstrate the ecological validity of role plays to real life, since the participants were in-patients who were institutionalized and the situations chosen reflected their daily routine life concerns. Further, the treatment targets were selected by them and were personally relevant to their daily routine.

Also, any improvement in their social behaviours would be helpful in the community settings into which many of them were subsequently resettled. This stresses the point that the selection of targets for training needs as much attention as does the effort to promote generalization. Furthermore, instead of using trained judges to rate the role

plays, this was done by using peers (and key workers) who interacted with them in their daily life which is therefore more relevant to the participants.

Since the use of self-report questionnaires on their own in research and particularly in long stay hospitalized schizophrenia patients may not always be consistent or reliable, the use of the more sensitive individualized Personal Questionnaire with schizophrenia participants (after Brett Jones, Garety & Hemsley, 1987) helped to double check that their self-reports were internally consistent and reliable. The use of the Personal Questionnaire for the primary measures also allowed for an ordinal scale and thus facilitated valid comparisons across participants. Together these helped facilitate more confident interpretation of the findings.

By using a multiple baseline repeated measures longitudinal design across participants, Study Two overcame the thorny problem of recruiting appropriate normal and psychiatric controls and the attendant risk of committing the ‘matching fallacy’ in schizophrenia research. Thus participants served as their own controls and an adequate baseline was obtained from which changes in the primary and secondary outcome measures could be judged.

A longitudinal design was used to compare the differential efficacy of a behavioural versus a cognitive approach to SST, and the effects on generalization were monitored. Concurrently, the treatment validity of a multidimensional assessment of social problem solving was assessed. The findings demonstrated the treatment validity of the multi-dimensional assessment and conceptualization of social dysfunction and offered support for the differential efficacy, maintenance and

generalization of Behavioural SST and Cognitive-Behavioural SST but only for those not impaired on the WCST.

More specifically, the initial individual assessment of problematic behaviours in social problem solving resulted in an efficacious treatment. The participants in the skills deficit group with assessed behavioural skill deficits but not cognitive blocks improved significantly in skill acquisition with the related treatment of Behavioural SST in comparison to the unrelated treatment of Cognitive-Behavioural SST.

However, consistent with the differential treatment efficacy prediction, Behavioural SST was less effective than Cognitive-Behavioural SST in reducing social anxiety for this group of participants.

On the other hand, in the cognitive blocks group the participants with assessed cognitive deficits but not behavioural skill deficits, improved significantly in skill acquisition with the related treatment of Cognitive-Behavioural SST in comparison to the unrelated treatment of Behavioural SST. Again, consistent with the differential treatment efficacy prediction, for this group Cognitive-Behavioural SST was more effective than Behavioural SST in reducing social anxiety.

The control group with both assessed behavioural skill deficits and cognitive blocks improved significantly but showed equivalent improvements in skill acquisition and social anxiety with the related treatments of Behavioural SST and Cognitive-Behavioural SST, respectively.

These results are not only consistent with, but extend the findings of the paradigmatic study of McKnight et al. (1984). They are also in accord with the proposals of

Liberman (1981) who suggested that to maximise treatment efficacy, therapy should be related to target behaviours found to be difficult on the basis of individual assessments.

6.2.2 Changes in the secondary measures

Changes in the secondary measures of depression and self-esteem levels were monitored to ascertain if the treatment effects generalized to other more global clinically relevant indices. The differential patterns of improvement on these global secondary measures, their magnitudes and the consistency with which they occurred across participants in a multiple baseline design, and across the entire phase of the study, from baseline through training and to maintenance and generalization, corroborates the clinical impression that the findings of Study Two are robust enough to be regarded with confidence. This view is further reinforced by the statistical analyses which confirmed the specific predictions. Furthermore, these findings are also consistent with the positive changes observed in depression, anxiety and assertion following individual and group cognitive behaviour therapy by Shaffer, Shapiro, Sank & Coglean (1981).

The finding that Behavioural SST and Cognitive-Behavioural SST were both effective in significantly reducing depression levels in all three groups is consistent with other studies (Harmon, Nelson & Hayes, 1980; Heiby, 1986; McKnight et al. 1984) which found that depressed mood may be alleviated by treating other behaviours in psychosocial training. Further, Alladin (1984) called attention to a proposal that the mechanism of change in cognitive therapy may be due to improved cognitive coping skills. Thus improving social skills can have a positive effect on

mood and self-esteem. This latter view is also consistent with Lewinsohn's theory of the contribution of social skills dysfunction to depression (see Lewinsohn & Arconad, 1981). Study Two thus reinforces the merit in including more global measures such as depression and self-esteem in studying the process of change in SST.

The fact that the participants in Study Two were chronic schizophrenia in-patients with a documented history (see Crosby, Barry, Carter & Lowe, 1993) of long standing social dysfunction argues against the baseline measurements being of a transient nature. Conversely, the dramatic improvements in severely socially dysfunctional participants in just an eight session programme confirms the potency of offering Behavioural SST and /or Cognitive-Behavioural SST based on assessed individual response classes (behaviours) using the multidimensional conceptualization of social dysfunction proposed by Alladin (1988).

6.2.3 Demand characteristics or social validation?

It may be argued that measures of depression level and self-esteem are, nevertheless, state-dependent. This is inevitable with clinical measures sensitive to change.

However, the multiple baseline and repeated measures across eight treatment sessions showed consistent patterns of improvements in responses when, and *only* when, the treatments were applied. Further, the self-report measures were consistent with reports by independent 'blind' key workers who did not participate in the study. This was further corroborated by the progress reports of observed behavioural changes reported in community mental health team meetings and by anecdotal reports of the occasional visiting relative or friend.

It may be argued further that although the ratings from role plays were based on actual behavioural data, the self-report data may be of questionable validity since participants could merely be reporting what they thought the therapists wanted to hear. Self-report data should, of course, always be treated with caution in empirical research. However, several features of the present study suggest reasons for confidence. First, the therapists (apart from the researcher) and participants were completely blind as to the experimental predictions and the design of the study. Second, during the entire course of the study, all participants including the researcher, were blind as to which of the three groups each of the nine participants belonged to. Third, apart from the researcher, neither the therapists nor the participants were aware that three impaired WCST participants were independently allocated to each one of the three groups. Fourth, these factors coupled with the differential patterns of results and the specificity of effects (some of which were in opposite directions, as predicted) would strongly refute demand characteristic explanations for the obtained self-report results. Fifth, as a further precaution, all participants were informed that the findings of the present study would have no bearing on any clinical decisions of their possible resettlement into the community. Sixth, all six of the normal WCST profile paranoid schizophrenia participants were reported to have been selected independently (by staff who were not involved in the SST) as part of the first cohort of patients for resettlement into the community. Seventh, the findings have social validity in that they were confirmed independently by the key workers of the individual participants. Finally, the follow-up meetings with the independent assessor (a community psychiatric nurse) further confirmed that the reported improvements were maintained and even generalized to other untrained behaviours and were evident in untrained settings over the three- and nine- months' follow-up periods.

6.2.4 Treatment interference and carry over effects

Barlow & Hersen (1984) have stressed the need to consider the possibility of multiple treatment interference and carry-over effects in an alternating treatments design since both treatments were administered to all participants. McKnight et al. (1984) also considered this issue and their refutation is echoed in the present study:

First, the individual session measures show clear differential treatment effects produced by receiving treatment related to initially assessed problems. Second, despite quasi-random sequencing, the results are quite consistent across participants and were in opposite directions (as predicted) for the skills deficit and cognitive blocks groups. It is possible that Cognitive-Behavioural SST is enhanced by occurring in the presence of Behavioural SST or vice versa. If so, it would still have to be explained why one treatment was better in one group and the other, with the other group.

Of course, multiple treatment and carry over effects may be subtle and cannot be easily ruled out. However, the equivalent treatment effects in the control group suggests that, as in the McKnight et al. 1984 study, these were not confounding problems in Study Two.

The findings of Study Two confirm the treatment validity of initial assessment of problematic response classes according to a multidimensional conceptualization of social dysfunction focusing on social anxiety as proposed by Alladin (1988) and subsequently offering training approaches theoretically consistent with the underlying dysfunction for maximum efficacy. In other words, directing Behavioural SST for

assessed behavioural skills deficits and Cognitive-Behavioural SST for assessed cognitive blocks was more productive than previous attempts which divided participants more globally on dimensions such as “behavioural reactors” or “cognitive reactors” or merely assigned participants randomly thereby ignoring (or potentially cancelling out) individual differences.

6.2.5 Process of change

The difficulty in recruiting low social anxiety schizophrenia in-patients, and the presence of high social anxiety in all three groups of participants at baseline, precluded a more comprehensive test of the relationship between social anxiety and social skill in the present research. However, the consistent and statistically significant reductions in social anxiety with concomitant improvements in skill level in the present study accords with the literature and particularly with the process study by Stravynski et al. (1987).

Thus Study Two provides evidence that the relationship found by Stravynski et al. (1987) also holds in socially dysfunctional chronic schizophrenia patients. Further, by comparing a well established approach (Behavioural SST) with a relatively new and empirically untested approach (Cognitive-Behavioural SST), Study Two demonstrated the applicability of Trower's empowering agency approach to chronic schizophrenia patients. This group is also widely regarded as possibly the most difficult subgroup to train (Bentall *et al.* 1987).

The present study also offers fresh optimism for incorporating, at least tentatively, self-instructional training into SST and offers a plausible reason why Bentall et al.

(1987) failed to find adequate generalization effects in their chronic schizophrenia patients since they did not control for possible frontal/executive dysfunction.

The fact that the Vygotsky inspired “whisper-in -the -ear” game impressed a number of participants suggests that, at least for these participants, the potency of verbal self-regulation helped in maintenance and generalization of skills both in trained and untrained behaviours. The findings of the present study thus underscore the observation of Woods and Lowe (1986) that the Skinnerian analysis of rule-governed behaviour has much to recommend it as a framework for understanding the processes involved in the *acquisition* and *maintenance* of complex human behaviour.

The maintenance and generalization findings of the present study are remarkably consistent with the findings of a multiple baseline study (reported in Woods and Lowe, 1986) which used verbal self-regulation in which three adults with learning disability clearly demonstrated substantial improvements. They report that for two participants, it produced powerful effects that lasted into a twelve-month follow-up without the need for ‘booster’ sessions. Further, generalization to other inappropriate social behaviours was found. The present study too did not offer any ‘booster’ sessions and yet demonstrated substantial maintenance and generalization effects observable some nine months after the SST ended. However, this could have been due to efforts to reinforce treatment gains by the community resettlement staff rather than the continuing potency of the SST group or a combination of both.

The consistent finding of a “plateau effect” either around mid-treatment or towards the end of treatment and the apparent failure to maintain the higher levels acquired earlier in treatment in each of the three impaired WCST [abstract problem solving]

participants [P1 in the skills deficit group, P4 in the cognitive blocks group and P8 in the skills deficit and cognitive blocks group] suggests that failure at abstract problem solving may be a useful predictor of failure at *social* problem solving. This is confirmed by the poor mean level(2/5) of skill attained with Cognitive-Behavioural SST and 1/5 with Behavioural SST. However, for the cognitive blocks group Behavioural SST consistently resulted in a return to baseline levels of mean skill for the normal WCST participants, P2 and P3. Thus, Behavioural SST proved to be an inappropriate treatment for these participants. Nevertheless, even the impaired WCST participants appeared to have derived clinically significant benefits in that improvements were observed in social anxiety, depression and self-esteem levels across the training, and the maintenance and generalization phases in all three groups. These intriguing findings bear further investigation.

The sharing of common concerns and becoming aware that others are in a similar situation from oneself and the group solidarity in the SST are conducive to generating a “feel good” factor. This group dynamic may be responsible for the improvements in anxiety, depression and self-esteem across all phases of Study Two, consistent with a point noted by Alladin (1988) in his elucidation of the process of change in group CBT and by Yalom (1995) in group psychotherapy in general. Halperin, Nathan, Drummond & Castle (2000) demonstrated that an eight week group-based CBT is also effective in reducing social anxiety and depression for schizophrenia patients with social phobia too. Remarkably, Gledhill, Lobban & Sellwood (1998) in their preliminary evaluation of group CBT for people with schizophrenia also found, after therapy, that participants were less depressed and had higher self esteem.

The impaired WCST participants in Study Two were also impaired on social problem solving, supporting, at least tentatively, the utility of the WCST as a social problem solving screening instrument. Further, two out of three of these participants were still in hospital and the third participant was in need of 24-hour supervision, at the time of the follow-ups. As Green, Ganzell, Satz & Vacalav (1990) observed, in the context of trying to teach the WCST to schizophrenia patients: it was as if the therapists in the SST group served as the subject's "frontal lobe" [fulfilling the executive functions] and so withdrawal of treatment resulted in a dramatic return to baselines. No such patterns of impairment were apparent for any of the other six participants in Study Two whose pre-screening WCST scores confirmed that they had normal abstract problem solving skills.

It must be stressed that it was not possible to judge from overt behaviours that these participants were obviously impaired. This is because the level of their impairment was not in the severe range typically found in those classified by Heaton (1981) as suffering "definite" brain impairment. Thus, unless a thorough analysis is conducted of a range of subscores on the WCST, it would be easy to be misled into thinking that these participants are poorly motivated. Further, looking back at the performance levels in Study One (see Figure 4.2, Chapter 4) ^{P. 88} both the normal WCST participants and some of the impaired WCST participants (with one exception, P19) were able to acquire the first category (rule formation), that is, they were capable of skill acquisition, and in about the same number of trials (latency of rule formation). This is consistent with the findings of Abbruzzese, Bellodi, Ferri & Scarone (1995). P15 achieved the same number of categories as the normal WCST participants (P2 and P9) and with the same number of trials. P22 took 60 trials and failed to achieve more

than one category. However, P7 with a normal WCST profile took 40 trials to attain the first category and yet achieved all six categories.

Going back to Study One briefly, in terms of the WCST profiles, the only clear-cut distinguishing feature between the two groups is that the impaired WCST participants (P15,P19,P22) all had raw perseverative responses greater than 18 whereas all of the normal WCST participants in Study One (P2,P3,P4,P7,P9 and P10) scored much less than this. Thus, schizophrenia participants who are not grossly impaired on the WCST may still show normal skill acquisition and mislead SST therapists and researchers alike into thinking that they should have no problems in the maintenance and generalization phases. This is because the critical impairment in abstract problem solving (at least as far as the present research found) and subsequently in social problem solving, appears to be manifest only at the maintenance and generalization phases of SST - the critical stages in psychiatric rehabilitation. Similarly, the full range of social problem solving was not sampled, only a subset: assertiveness training was studied and therefore generalization to other domains is yet to be established.

Again, it is worth cautioning that the generalizability of these findings to other groups of people with schizophrenia needs to be investigated and not assumed. It is tempting to speculate that perhaps different processes/skills underlie maintenance and generalization. For example, abstraction does not appear to be required in straightforward skill acquisition and therefore it is not difficult to acquire. On the other hand, it is difficult to see how generalization can occur without some process of abstraction occurring.

10.2.6 Less training is just as effective as more?

Perhaps longer treatment sessions would have produced some maintenance and generalization effects for the impaired WCST participants? This is, of course, an empirical question. However, the available research (see Scott et al. 1983) suggests that more training hours are not necessarily better, a finding consistent with the meta-analysis by Benton & Schroeder (1990).

Some studies with schizophrenia patients have spent many hours and yet failed to produce the generalization effects they could reasonably hope for. For example, Bentall et al. (1987) report spending on average some 11.75 to 15 hours per participant on intensive training.

But it would be premature to suggest that the impaired WCST participants are untrainable. The literature on training schizophrenia patients to improve on the WCST is equivocal. There is evidence which suggests that it is possible [eg. Morice & Delahunty (1996), Wykes & Reeder (2005)] and that it is not (Goldberg et al. 1987).

However, the literature recognizes that perhaps not all chronic schizophrenia patients can be successfully trained in completing the WCST in spite of instruction and reward. It is tempting to speculate that this subgroup may be those who are frontal lobe damaged and who are unable to complete the WCST. In spite of being told the sorting principle and being able to verbalize the rule, they still cannot stop themselves from perseverating with an incorrect response time and again. Fortunately, these people are the exception. Nevertheless, as Golberg, Berman & Weinberger (1990)

found, there appears to be another subgroup of those who do show improvements over baseline but still score in the impaired range.

More recently, Young, Zakzanis, Campbell, Freyslinger & Meichenbaum (2002) have provided an elegant demonstration that 'scaffolded instruction' remediates WCST deficits in schizophrenia patients and there is therefore renewed optimism.

6.2.7 Is cognitive remediation a pre-requisite for successful maintenance and generalization of social problem solving skills?

The evidence from Study Two suggests that impaired WCST schizophrenia participants were unable to benefit much from standard Behaviour SST or Cognitive-Behavioural SST. This highlights the need for a different approach from that normally adopted in SST and the literature suggests that attentional re-training, such as that devised by Sohlberg & Mateer (1987) may be a prerequisite for successful maintenance and generalization of social problem solving skills. This view is also consistent with the work of Wykes & Reeder (2005).

However, 'cognitive remediation' has not always produced better results in terms of outcome. For example, Wykes, Tarrier & Lewis (1998) observe that Hodel & Brenner (1994) report a study of two interventions, social problem solving and cognitive remediation. Contrary to their hypothesis, they found even larger benefits for cognitive functioning when the social problem solving module was presented first. Hodel & Brenner (1994) suggest that this may be due to the ecological validity of the social problem solving intervention which appealed to patients since it dealt with the everyday problems they faced and therefore engaged their motivation.

Wykes et al. (1998) comment that no data were presented to support this view. They propose an alternative interpretation: the group approach of Hodel & Brenner may have favoured the social problem solving therapy because it dealt with issues more common to the group as a whole. In Study Two, it would seem that both factors applied which explains the positive outcomes.

6.2.8 The question of cost-effectiveness

The positive results of SST reported in the literature (eg. Bellack, 2004, Liberman et al. 1986) are often from leading experts in the field and the training team is often made up of professionals of considerable experience, expertise and prestige. In contrast, the present research deliberately set out to be embedded in the ward routine and used key workers with a mixture of nurses (both trained and untrained) and an assistant psychologist, none of whom had any experience or expertise in running SST groups. Thus a more realistic range of staff were used in the SST to see if therapists with little or no experience of SST, who tend to be the norm in the NHS, could help facilitate positive outcomes.

The use of a group format in addition to being more reflective of real life (people do not just interact in dyads) has been found to be more effective in the normalizing, sharing and caring (cf. Wykes et. al. 1998). In Study Two only four sessions of Behavioural SST and four sessions of Cognitive-Behavioural SST were offered, lasting a total of some 16 hours. The follow-up sessions though planned, were not scheduled specifically for Study Two but built into the work routine of the independent assessor (a community psychiatric nurse) so no extra staff time was required, apart from administration of questionnaires.

Staff training for the SST to ensure treatment fidelity was held in the ½ hour before the group and ¼ of an hour was spent after the group for debriefing and tying up any loose ends. This was provided by the researcher. By all accounts, the SST group was an enjoyable learning experience for both the schizophrenia participants, the staff and the present researcher. Thus it was arguably cost-effective, contributed to the continuing professional development of staff and facilitated efforts at resettlement of some of the schizophrenia patients who were drawn from three long stay rehabilitation wards. The remarkable results were maintained and generalized by all participants except the three WCST impaired participants. There were no dropouts which suggests that the group engaged the participants who found it relevant to their needs.

6.2.9 Listening to their voices: the participants' views

How can we explain the dramatic results with only four sessions of Behavioural SST and four sessions of Cognitive-Behavioural SST? It is worth listening to the participants' views. The majority, it will be recalled, were impressed with the “whisper-in-the-ear” technique which was cast as a game and clearly several participants were utilising it some of the time outside the group. As one participant put it, “ I really enjoyed the group, it made work seem like play”.

This, “a bit of sugar gets the medicine down” philosophy has parallels in the work of others in the field. For example, Foxx et al. (1985), report that game formats are more effective in SST. In Study Two, a short break was taken at every session of the group during which the participants, therapists and the researcher joined in preparing

and enjoying the tea and biscuits. Some participants took pleasure in asserting themselves by reminding the researcher and therapists that it was “Your turn to do the washing up!” This friendly banter and brief opportunity at role reversal to ‘boss’ the staff added to making the training sessions more sociable and realistic and blurred the traditional ‘them’ and ‘us’ boundaries between the staff and the patients.

Another participant reported: “I often feel threatened in a group but the game reminded me of being playful in my school days..... I’m very shy but it relaxed me and brought out the actor in me.” It could also be that schizophrenia participants (if they have auditory hallucinations) may find it soothing to recall a whisper in the ear which is friendly and encouraging. In addition, or alternatively, it may be that the ‘whisper in the ear’ technique aided in helping participants to stay task focused rather than self-focused and thereby enhanced their performance whilst decreasing their anxiety levels.

6.3 Functional analysis for a more thorough initial assessment

The individual assessments using the multidimensional conceptualization of social dysfunction were done using a functional analysis of the antecedents, behaviour and consequences of the participant’s particular problem areas. In other words, when a participant was classified as having a skill deficit, this was checked out, not assumed. Was it really the case that the participant could not emit the required response? Did the participant ever have the skill?

In practice it was found that a number of participants who claimed that they did not know how to do a particular task actually had the required skill in their repertoire but

were suffering from response inhibition due to high social anxiety or dysfunctional beliefs. Thus assignment to either the skills deficit or cognitive blocks or the control group was carefully done so that a more accurate and better match was obtained. It is therefore suggested that SST assessment should, as a matter of course, include a functional analysis of each behavioural problem rather than take self-report on questionnaires or observer reports of topographical behaviours at face value. In this way, for example, a genuine problem with (cognitive) response inhibition can be identified and not mistaken for a (behavioural) skill deficit.

The literature review suggested that most potent psychological therapies can be conceptualized as attempts to change the client's verbalizations. Thus it was decided to incorporate verbal self-regulation via a self-instructional training procedure as part of the SST package. Some studies (cited in the literature) using self-instructional training have found remarkable levels of skill acquisition, maintenance and generalization. Thus, the present findings are not without precedent.

6.3.1 A case for the re-introduction of self-instructional training?

The failures to replicate the dramatic findings of Meichenbaum (discussed in the literature review) in a chronic psychiatric group may possibly be explained by the present research. Study Two, for example, showed that impaired WCST participants were unable to maintain skills acquired and showed dramatic failures to generalize, returning rapidly to baseline levels. Some attempts to teach patients with schizophrenia the WCST report an identical pattern of such behaviours. Could it be that self-instructional training does not work for those who are WCST impaired? From a theoretical viewpoint, invoking frontal/executive dysfunction does not explain

the whole story, even if it is shown to exist with the help of brain scan imaging, on a case by case basis for a subgroup of people with schizophrenia. More interestingly, it could perhaps be that executive dysfunction, if established to be the case for a particular patient, impairs the ability to verbally self-regulate and this results in failure to internalise skills and consequently, in failures at maintenance and generalization. In addition or alternatively, as Mohlman and Gorman (2005) have suggested, intact executive function may result in better outcomes in CBT. These intriguing speculations may be fruitful hypotheses for future research

6.3.2 Moving away from a unitary model of social dysfunction: “Is it true that everyone has won and all must have prizes?”

Study Two was also informed by the literature review which suggested that a unitary model of social skills was inadequate to account for the varieties of social dysfunction. Generalization is sometimes seen as the end of the line in SST but the present research confirmed the importance of paying attention to the beginning of the process of treatment: the assessment stage. The treatment utility of assessment approach proposed by Hayes et al. (1987) and adopted for Study Two seems to have demonstrated its worth by not only linking assessment to treatment but in the positive outcomes achieved.

It was suggested that it may not be productive to search for the best model but rather a combination of the strengths of more than one model may be more useful in individually determining which approach is most suitable for which person, with which particular problem. This view was consistently supported by the findings of Study Two: for the group of participants with *both* skills deficit and cognitive blocks,

a combination of the two treatments, Behavioural SST and Cognitive-Behavioural SST, was best.

On the other hand, for those with primarily skill deficits, the Behavioural SST was the best treatment and for those with primarily cognitive blocks, the Cognitive-Behavioural SST was the best treatment. This underscores the importance of putting empirical assessment, not ideological or personal preferences in selecting and tailoring individualised SST, consistent with the scientist practitioner model in clinical psychology practice.

Further, the integrative conceptual framework proposed by Alladin (1988) which essentially provided a multidimensional cognitive-behavioural conceptualization of social dysfunction focusing on social anxiety, seemed to provide a better fit for the available evidence and is supported by the predicted differential efficacy findings for Behavioural SST and Cognitive-Behavioural SST.

The process of change discussed earlier in this chapter confirms that improvements in the primary measure of social anxiety and the secondary measures of depression and self-esteem were a consistent feature. This appears to be the mechanism by which SST effected improvement in Study Two. This finding can be regarded with confidence since it replicates the findings of the larger study by Stravynski et al. (1987) which attributed improvements in SST to improvements in social anxiety and self-esteem and extends their findings to people with schizophrenia.

6.3.3 The generalization problem reconsidered: the role of abstraction

The present research made explicit the implicit links between the trained target behavioural response classes and the untrained generalization behavioural response classes. This connecting or abstraction process was specifically made for the participants. The cognitive psychology literature confirms that this process provides a 'problem solving schema' and results in even larger generalization effects, as Gick & Holyoak (1983) have demonstrated and as confirmed further by the findings of Study Two. Or to put it in Skinnerian rule-governed terms, the contingencies need clear specification. Skinner used the example of teaching someone who has no idea of how to pick sweet apples (short of taking a bite) by teaching the abstracting of a cardinal property, the colour: choose *red* apples- they are sweet. Of course, social problem solving is not simply a matter of making a strategic choice. The social problem solving (SPS) model used in Study Two provided a problem-solving schema which provides structure and guidance and this can only be helpful to chronic schizophrenia participants who are often easily overwhelmed.

As one participant remarked "I am often frustrated and lost in social situations... I still get lost as often but I am not easily frustrated because now it is as if I have a compass." It may be recalled that Study Two used Wasik's (1984) simplified version of the SPS model and this is easier to understand and follow. It appears that the only other study which had specifically included the SPS model for the specific purpose of aiding generalization is the one by Liberman, Eckman & Marder (2001) which they attribute as being responsible for the remarkable generalization findings in a series of their studies.

6.3.4 Generalization from a radical behavioural perspective

Self-regulatory failure and the adoption of inadequate models of generalization may be implicated for poor generalization. It will be recalled from the literature review, that Skinner's view is that the process of abstraction involves bringing responses

under the control of a single property, while extinguishing the control exerted by all other properties through a programme of differential reinforcement. This was precisely the problem for some schizophrenia participants in the present research who appeared to have great difficulty inhibiting or opposing competing responses during the WCST. It is therefore heartening to note that efforts to provide cognitive remediation therapy are showing promise (see Wykes and Reeder, 2005).

The present research confirmed that SST generalization failures in some schizophrenia patients may be confounded by neurocognitive deficits which need to be taken into account and this meets one of the cognitive pre-requisites for skills training suggested by Kern & Green (1994). Empirical research in the neuropsychology of schizophrenia is expanding quickly (see Corrigan & Penn, 2001, David & Cutting, 1994, Green 2001) and, as the present research has shown, could inform efforts at improving SST and highlight difficulties in generalization.

As the importance of linking assessment to treatment was stressed, the multidimensional assessment of social problem solving was tested for its treatment validity using an alternating treatments design. This had the advantage of comparing two treatments with a “control” group. The multiple baseline design also ensured that individual differences were not neglected. The findings of Study Two, by making an explicit link between assessment and treatment, provide further empirical evidence for the utility of the treatment validity approach of Hayes et al. (1987). It also replicated the elegant alternating treatments multiple baseline design proposed by McKnight et al. (1984) and extended their findings to a group of in-patients with schizophrenia and further extended it by the addition of the maintenance and generalization phases of SST.

It was not possible to conduct a component analysis of the SST within the scope of the present research since the concern with the present work was to validate the SST as a package. Consequently, no firm claims can be made about the efficacy of any particular component, though two likely candidates would be the simplified SPS model and SIT. It is for further research to ascertain, by replication (with larger and more representative samples) whether the modified self-instructional training and SPS model suggested by the present research, live up to their promise.

6.3.5 Treatment fidelity

A treatment manual was used to encourage and facilitate treatment fidelity and replication attempts, even when video taping was not feasible (in keeping with ethical considerations in respecting the views of anxious in-patients). Thus the non-availability of inter-rater reliabilities in the present research was a compromise but by using cue cards the therapists and researcher were kept within agreed boundaries to help consistency of delivery of the Behavioural and Cognitive-Behavioural SST. The multidimensional assessment and conceptualization of social dysfunction used in the present research was just the beginning and much development work remains to be done to ascertain its strengths and limitations for clinical practice.

6.3.6 Limitations of Study Two

Whilst the interpretations of the findings of the present study seem warranted, it is important to stress that in an alternating treatments design, some treatments may not show efficacy until and unless they have been consistently implemented for a

continuous period of time. Thus, it is possible that the session by session random alternation of treatments might have obscured effects that could have been seen if the same treatment was presented consecutively. There were only three women in the present study (more men than women tend to have the diagnosis of schizophrenia) and all three impaired WCST participants were men. Thus it was not possible to tease out any gender differences that may have been present. Also, the applicability of the findings regarding impaired WCST functioning and the associated failure of maintenance and generalization of social skills to women chronic schizophrenia patients is yet to be determined. Generalization of the findings of the present study (owing to the small sample) is warranted only to other schizophrenia patients who share similar characteristics of the participants in the present study and only to the particular assessed assertive response classes (behaviours) and not to the entire domain of social problem solving.

In concluding, Study Two has demonstrated the treatment validity of a multidimensional assessment of social problem solving by assessing assertive response classes on an individual basis. It showed the heuristic value of the WCST as a social problem solving screening instrument and identified clear differences in the maintenance and generalization of SST between normal WCST and impaired WCST participants with schizophrenia. Whilst it cannot be stressed too strongly that abstract problem solving cannot be assumed to be necessarily equivalent to social problem solving, it was demonstrated that assessment on the impersonal WCST which is objective, non-threatening and imposes no time pressure constraints (or possible social embarrassment in role play) had heuristic value in excluding one possible basic neurocognitive deficit of relevance to SST and neuropsychological theories of schizophrenia- executive dysfunction.

The differential efficacy of Behavioural and Cognitive-Behavioural SST in skill acquisition, maintenance and generalization was shown by longitudinally monitoring the process of change with specific and global measures. Generalization occurred in untrained behaviours which had some similarity to the trained behaviours and transferred from the hospital to community settings. Claims of the superiority of Behavioural or Cognitive-Behavioural treatments in SST in an absolute sense, it would seem, are untenable in the light of the present findings: for each specific problem, a particular treatment modality was differentially efficacious but only if there was a functional relationship between assessment and treatment.

Trower (1984) observed that Curran, Farrell & Grunberger (1984), in their critique and call for a rapprochement in social skills, discovered a confused and misleading polarization in which issues have been treated mistakenly as dichotomous, either /or issues, as a result of which false arguments have been generated and progress impeded. Curran et al. (1984) refer to the rigid drawing of boundaries between behavioural SST and cognitive approaches which has led to each side engaging in polemics in defending their treatments rather than attempting to dissect and analyze the utilities of each treatment strategy for our client populations.

Unfortunately, this polarization of the behavioural against the cognitive still appears in more recent work (eg., Cartwright-Hatton et al. 2005). It is hoped that the present research would help towards redressing the balance in encouraging SST clinicians and researchers to consider the adoption of a multidimensional approach.

In a nutshell, the present study has made a start on providing an empirical response to the concerns expressed some 25 years ago by Barlow (1981):

We are not asking the most pertinent questions. With whom will these procedures work and with whom will they fail? What are the most efficient and effective methods for delivering these procedures? How can we facilitate generalization and maintenance of treatment effects? p. 147.

6.3.7 Implications for clinical practice

The findings of the present research support the view that it is more productive to study paranoid schizophrenia patients separately instead of being “lost” by being put together with ‘undifferentiated’ schizophrenia patients merely because they are a convenience sample or to increase sample sizes.

The present research provides fresh optimism for reinstating, at least tentatively, self-instructional training into SST and for focusing on social anxiety rather than social skills in SST. The failure of the impaired WCST schizophrenia participants in the present research was found, not at the skill acquisition phase, but during the maintenance and generalization phases and attributable to possible frontal/executive dysfunction. The successful performance of normal WCST schizophrenia participants confirms that people with a diagnosis of schizophrenia are not invariably impaired in problem solving, they need better assessment and a different approach to SST tailored more closely to their individual needs. Social dysfunction needs to be empirically

assessed on a case by case basis and not be taken for granted. There are signs for cautious optimism that those who are WCST impaired may also be helped but would require different strategies.

The in-depth and more extensive work of Wykes & Reeder (2005) confirms that the findings of the present research are in the right direction and offers much hope for the further development of SST. The present research findings should, of course, be treated as preliminary until replicated further. However, built-in within the multiple baseline design of Study Two is generalizability across different participants, across different therapists and across different settings. As Turpin (2001) reminds, there is a misconception that single case experimental designs involve only a single participant. He suggests that the problem of generalizability is resolved through replication across different clients, therapists and settings. A parallel can be drawn with the even smaller sample of six participants with schizophrenia in a study by Chadwick & Lowe (1990) which some have credited as having laid the foundation to the rapid development of a more robust cognitive therapy for delusions (see Chadwick, Birchwood and Trower, 1996). Similarly, as Wykes (1998) has demonstrated, insights about executive dysfunction may be gleaned by an in-depth study of just two participants with schizophrenia. A hint that there is a paradigm shift in schizophrenia research is suggested by MacDonald & Carter (2002). Laws, McKenna & McCarthy (1996) have boldly entitled their paper "Reconsidering the gospel according to group studies: a neuropsychological case study approach to onset schizophrenia" which confirms a convergence with the present research approach and serves to encourage and reinforce the potential value of small scale studies in clinical psychology practice.

6.3.8 Recommendations for further research

The present research has highlighted several possibilities for future research. In this section, a few suggestions will be made.

The question as to why some participants did not spontaneously verbalize during problem solving and the effects on the outcome on the problem solving might be worth pursuing. For example, a study could be designed by having different levels of task difficulty (easy, moderate, difficult) with participants who verbalized spontaneously; those who did so only when encouraged; and those who did not, and observing if there are systematic differential outcomes. The theory behind verbal self-regulation suggests that once a skill is mastered there is no need to verbalize it overtly and it is only when the task gets difficult that overt verbalization becomes manifest. Of course, verbalization that is self-damning (eg. “I’m useless, might as well give up now...”) is likely to inhibit problem solving whereas verbalization that is self-enhancing (eg. “You can do it...take your time... easy does it...”) is likely to be facilitative.

Further investigations of SST may usefully focus on a game format versus a traditional format. A game format not only conveys a playful and therefore less serious approach but also encourages participants not to take failure as a catastrophic disappointment. After all, playing a game is meant to be fun and a light hearted mindset can relax people who may be highly socially anxious and afraid of not being able to perform well.

The process(es) behind the ‘whisper in the ear’ technique used in the SST may be explored by studying a group of schizophrenia participants with and without current auditory hallucinations, further subdivided into those with and without impaired WCST profiles. Perhaps schizophrenia participants with auditory hallucinations may find it soothing to recall a ‘whisper in the ear’ which is friendly and encouraging. This may be another useful issue for further investigation.

An important theoretical question worth addressing in further research is whether impaired ability to engage in verbal self-regulation is related to failure to generalize, which in turn may well require “intact” or “normal” executive function. If so, then cognitive remediation of the type suggested by Wykes & Reeder (2005) may not only be helpful in cognitive therapy skills acquisition in general but also for SST effects to be maintained and generalized in particular.

Further research should attempt to recruit more women to redress the gender balance (and hopefully extend the generalizability of the findings of the present research) as there were no women in the non-paranoid schizophrenia group of in-patients in Study Two. Once this is achieved, consideration may be given to dismantling studies which could help refine the present findings and ascertain which particular components are essential for efficacy in skill acquisition, maintenance and generalization.

A final question arises with respect to the impaired WCST participants: should cognitive retraining precede SST? Morice & Delahunty (1996) offer grounds for

optimism with their neurocognitive rehabilitation frontal-executive programme. Reeder et al. (2004) used SPECT scan analysis to demonstrate robust changes in the cortex with cognitive retraining of schizophrenia patients who were impaired on executive function, which is promising. Thus, the time seems right for efforts to combine cognitive remediation therapy with SST.

Mohlman and Gorman (2005) have provided evidence which suggests that successful CBT assumes reliance on “cognitive skills known as executive functions” which they identify as hypothesis generation, allocation of attention, self monitoring, all of which are governed by the prefrontal cortex. Thus there may be closer links between executive function, CBT and the success or failure of generalization in SST than hitherto recognized. Finally, it cannot be stressed too strongly that an adequately powered (see Cohen, 1988) larger scale group comparison study to confirm, extend and refine the present findings and to aid further generalization of results is necessary.

6.3.9 Conclusions

The ‘symptom approach’ demonstrated its worth since the focus of the present research during SST was on a specific behavioural subset of social problem solving (assertiveness) and not the controversial syndrome of schizophrenia. Further, by focusing on another more robust symptom- social anxiety, as the primary dependent variable rather than the amorphous and problematic concept of social skill, the present research got closer to identifying the process of change in SST.

The WCST may be used as a social problem solving analogue and a relatively quick but robust neurocognitive screening instrument to exclude executive dysfunction in

SST for people with schizophrenia and help assess if cognitive remediation is indicated. The failure to control for executive dysfunction may explain generalization failure in SST. The re-introduction of self-instructional training into SST appears warranted.

The treatment validity of a multidimensional assessment of social problem solving focusing on social anxiety rather than social skills appears to be more productive in facilitating maintenance and generalization of SST.

The present research adds to the body of knowledge about generalization, treatment matching and the treatment validity of assessment. Maximizing the opportunity for each schizophrenia patient to take back his or her agency is an ongoing task for researchers and clinicians if such people are no longer to be “behaviour therapy’s forgotten child[ren].” Bellack,(1986), p. 214. It is hoped that the present research has made a small but significant contribution towards that effort.

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Related Publication

Relationship Between Subjective Self-Report of Cognitive Dysfunction and Objective Information-Processing Performance in a Group of Hospitalized Schizophrenic Patients

now Waseem Alladin

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Summary. This study examines the relationships between subjective self-report of cognitive difficulties associated with schizophrenia and performance parameters of an objective choice reaction time task. The predicted relationships did not emerge and the results are discussed with regard to the methodological difficulties of measuring self-report and the features of the CRT task used. One positive finding was the significant relationship between chronicity of illness and the CRT measures.

Key words: Schizophrenia - Information theory - Reaction time

Introduction

The area of research into cognitive dysfunction in schizophrenia suffers from an inherent difficulty due to the absence of any obvious external criterion for disordered thought. Measures of cognitive disorder have traditionally been validated in terms of the extent to which they differentiate schizophrenic patients from other patients and from "normals". It is well recognized, however, that schizophrenia is a disjunctive concept including within it a highly heterogeneous mixture of symptoms and problems which carry with them diverse life-courses and prognoses. A substantial proportion of individuals diagnosed as schizophrenic are not judged as demonstrating clinical thought disorder (e.g. Cancro 1968; Stephens 1970) whereas many investigations have found non-schizophrenic psychiatric subjects, especially manic and brain-damaged patients, to show abnormal cognition on objective measures similar to those designed to reflect schizophrenic thought disorder (e.g. Oltmanns 1978; Harrow and Quinlan 1977; Goldstein 1978). Cognitive abnormalities have also been detected in non-symptomatic individuals such as other members of schizophrenics' families and patients in remission (Garmezy 1975; Wohlberg and Kornetsky 1973). Since schizophrenics can fail to show thought disorder and other patient groups and non-symptomatic individuals can demonstrate such disorder, the use of the diagnosis of schizophrenia as the principle criterion against which to validate measures of cognitive dysfunction seems to be inappropriate.

There is nonetheless a lengthy tradition whereby some form of cognitive disorganisation is viewed as fundamental and primary in schizophrenia. A number of formulations for the nature of this cognitive abnormality have been proposed,

many expressed in terms of Information Theory developed over the past 30 years by human experimental psychologists (e.g. Broadbent 1958 and 1971). Whereas earlier theorists tended to implicate the perceptual input component of the information-processing channel, (McGhie 1969; Payne 1961) suggesting that schizophrenics have difficulty filtering out irrelevant from relevant stimulus information, later experimental work has indicated that a defect in the theoretical, perceptual "filter" is not specific to schizophrenia, being found in other subject groups (e.g. Schneider 1975; Hemsley 1976; Hemsley and Zawada 1976; Oltmanns 1978). More recent theorists have pointed to the confusion over different types of attention and, in particular, to a failure to distinguish between stimulus and response uncertainty. They have postulated that schizophrenic cognitive disorder is specifically associated with impairment at the response decision/selection stage of the information-processing system (Broen 1968; Marshall 1973; Hemsley 1976a). Using a choice reaction time task to vary stimulus and response complexity independently, Hemsley (1976a) found that acute schizophrenics were significantly more retarded by increasing response complexity than were matched, acutely depressed subjects, whereas neither group was significantly affected by increasing stimulus complexity.

If there is suggestive evidence that schizophrenics tend to show a specific difficulty in handling increasing complexity in response alternatives, the problem remains of how to verify such a formulation. We need to establish that there is some meaning to an information-processing task measure involving increasing response complexity, relating to aspects of the subjects' functioning in "real life" e.g. to subjects' complaints, their problems as rated by others, the prognosis of their disorder in terms of their subsequent degree of independence, frequency of relapse etc. This study is part of an attempt to investigate the practical significance of an information-processing measure derived from a choice reaction time (CRT) task investigating the relationship between CRT functions and self-reported difficulties in everyday situations, in a sample of inpatient subjects having the unequivocal hospital diagnosis of schizophrenia.

There are some suggestions in the literature that cognitive measures do relate to other significant indices of individual functioning. Austin and Hemsley (1978) found with a normal subject sample that subjective ratings of ability to concentrate and of distractibility were significantly correlated with speed of processing measures on various cognitive tasks. In the field of schizophrenia, Cancro (1968), Cancro et al. (1971), and Zahn and Carpenter (1978) have found simple reaction time on admission to be significantly related to prognosis as measured

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by subsequent duration of hospitalization or short-term clinical improvement. Cognitive abnormalities have been found to be related to ratings of mental health (Rosenthal et al. 1960) and to be reduced with treatment (e.g. Shimkunas 1970; Goldberg 1972). Improvement in cognitive performance has been related to adjustment in the community on discharge (Penk 1978). In addition, some authors have posited a relationship between cognitive performance and social functioning (Wing 1975; Hemsley 1978; Garmezy 1978) whereby the attainment of social competence is hypothesized as being dependent upon intact information-processing functions in a social environment highly complex for both stimulus and response variability.

In this study, the main information-processing measure derived from a discrete CRT task is the slope function relating reaction time to the amount of stimulus and response uncertainty (i.e. to the number of stimulus and response alternatives, varied simultaneously from one to two to four).

Self-reported difficulties were assessed by means of a standard questionnaire, the Frankfurt Complaint Questionnaire (Sullwold 1977). The Frankfurt Questionnaire was developed from a collection of verbatim statements made by schizophrenic patients. It includes items relating to a wide range of difficulties and a factor analysis (Schunemann-Wurmthaler 1980) has yielded distinct dimensions for disorders of perception and motor responses, thought and speech, and secondary emotional reactions. Giessen (1981) has found a significant relationship between Frankfurt scores and clinical ratings of mental state. Zehner (1979) found Frankfurt scores to be related to clinical judgements about the degree of improvement patients had made in treatment.

In view of the consistent reports of the association between simple reaction time and short-term and long-term prognosis in schizophrenia (e.g. Cancro 1968; Zahn and Carpenter 1978) the same associations with self-report were investigated for simple reaction time scores (RT).

To summarize: the principle hypotheses under test were (1) there is a positive correlation between a response complexity deficit measure (CRT-slope—an absolute measure of information-processing impairment) and self-reported cognitive difficulties as assessed by the Frankfurt Questionnaire, specifically the "thought and speech" factor. (2) The correlations between CRT slope and self-report exceed the corresponding correlations calculated for RT.

Additional measures were employed to describe the patient sample, also as control variables for use in a subsequent study where different patient groups were to be compared and to test subsidiary hypotheses.

1. *WAIS Verbal Scale Vocabulary subtest* (Wechsler 1955) was used as a screening test for general ability since an adequate level of functioning (approximate IQ equivalent 80) was thought necessary for the experimental tasks. A general ability measure was also required as a control for the CRT tasks, especially since it has been suggested (e.g. Jensen and Munro 1979) that intelligence is correlated with speed on reaction time tasks. Other writers (e.g. Hunt 1980; Smith and Stanley 1980) have found the intercorrelations to be low and accounting for little common variance.

2. *Premorbid social competence* was assessed by the Abbreviated Scale of Premorbid Sexual and Personal Social Adjustment (Harris 1975) derived from the Phillips scale (Phillips 1953). This rating scale covers the development of heterosexual behaviours from casual dating to stable relationships and of

social behaviour from minimal social contact to leadership of adult social groups. Some investigators have found differences in cognitive functioning between process and reactive schizophrenics defined by such a scale (e.g. Pavy 1968; Traupmann 1975).

3. *Chronicity of Illness*. Many investigators have found differences between acute and more chronic patients on experimental measures (e.g. Prior 1973; de Silva and Hemsley 1977; Williams et al. 1976). Several writers have postulated processes of adaptation to the original acute disorder with subsequent modifications of overt behaviour (e.g. Broen 1968; Hemsley 1977). A specific prediction about the relationship of chronicity of illness to CRT slope, however, is not clear, except that in so far as chronic subjects are by definition, poor prognosis individuals, more chronic schizophrenics could be expected to show increased RT and CRT slope.

4. *Severity of Illness*. Individual subject's psychiatrists were asked to provide a rating on a seven-point scale of the severity of illness shown at the time of testing.

Method

The subjects were in-patients at the Maudsley-Bethlem, St. Francis, East Dulwich and Goodmayes Hospitals (London, GB) and were between the ages of 18 and 60 years. All subjects had received an unequivocal hospital diagnosis of schizophrenia and, under the International Classification of Diseases, could be placed within one of the categories of hebephrenic, paranoid or residual schizophrenia (Codes 295.1, 295.3, 295.6). As discussed above, some aspects of heterogeneity within the sample (i.e. those factors hypothesized to relate significantly to the dependent variables viz. general intellectual level, premorbid social competence, chronicity and severity of illness) were assessed and studied. Thus it is clear that variations attributable to the inclusion of the chronic, residual ICD category were to be investigated. Differences attributable to heterogeneity in symptoms between the hebephrenic and paranoid categories were not the subject of the present study. Although the use of the paranoid-non-paranoid distinction has a long history in psychiatry, some recent workers e.g. Cromwell (1975); Berkovitz (1981) have argued against the validity of the distinction. Berkovitz concludes that the criteria for inclusion have often been unclear and inconsistently used with the result that there are many inconsistent and contradictory findings. No clear predictions about information-processing could be made.

Patients with history of ECT within the preceding 3 weeks, with alcoholism or known cerebral organic involvement were excluded. Appropriate patients were located by discussion with ward staff and were assessed at some variable point during their in-patient stay, at a time when they were considered able to co-operate but not symptom-free. All patients were receiving therapeutic doses of phenothiazine medication at the time of testing.

Patients were given a standard description of the tasks involved in the study and invited to take part. Approximately one-third of those patients approached refused to co-operate.

Testing was usually carried out in a single session lasting 1-1½ h. The tests were administered in a standard order.

1. *WAIS Verbal Scale Vocabulary subtest*, administered according to the instructions in the manual (Wechsler 1955) to yield IQ equivalent scores (VIQ).

RT and CRT Tasks. The tasks were similar to those employed by Karras (1973) being discrete CRT tasks with different levels of complexity. The simplest condition (RT(R₀)) is equivalent to a simple reaction time task in which the subject is required to extinguish a single light by means of a single response button i.e. no response uncertainty is involved in performing the task. In the first CRT task (CRT(R₁)), the subject is required to respond to one of two alternative light stimuli by depressing the button contralateral to the illuminated light i.e. in this condition, one piece of stimulus/response uncertainty is resolved. In the more complex CRT task (CRT(R₂)), four alternative lights are involved and the subject is required to extinguish an illuminated light by depressing the response button closest to the adjacent light, in a clockwise direction around the board i.e. two pieces of uncertainty are resolved in responding correctly on each trial. In condition R₁ and R₂, contralateral responses were employed since it has been suggested that stimulus-response compatibility greatly affects information-processing functions (e.g. Ogden and Alluisi 1980). Hemsley (1976) has reviewed the literature on information-processing deficits in schizophrenia and concludes that tasks involving low stimulus-response compatibility have been more sensitive to deficits in schizophrenia, such deficits being hypothesized to result from difficulties in response decision/selection.

Apparatus

For each level of stimulus/response uncertainty, subjects were shown a board upon which was mounted one, two or four light stimuli and correspondingly one, two or four switch buttons. A start point equidistant from switches and lights was also marked on the board. Onset of a light stimulus was controlled by the experimenter and offset achieved by depressing the correct response button. The interval between onset and offset was timed automatically and recorded in s to 3 decimal places by means of a Gould Timer Counter TC 314. Errors were ignored, but occasional, very long reaction times when a subject virtually made an error but corrected himself before depressing the wrong button were counted, although omitted from calculations of means. Since we were principally concerned with the variance contributed by response complexity, it was decided to attempt to minimise the influence of the preparatory interval before stimulus onset (described by e.g. Rodnick and Shakow 1940) by using a brief and regular preparatory interval. The auditory verbal warning signal "Ready" was given by the experimenter approximately 2-2.5 s before stimulus onset. The preparatory interval was timed approximately by use of a stop watch. (Karras 1973 warns against anticipatory responses occurring with completely regular stimuli.) The interval between trials was kept constant at 6 s where possible, although some subjects broke off during the sequence of RTs.

The sequence of stimuli used in conditions R₁ and R₂ was standard and derived from a table of random numbers, with the exception of the practice trials for R₂ where the frequency of the four alternatives was roughly equated to provide equal practice for the four response alternatives.

The subjects were introduced to each task condition with standard instructions asking them to switch the light off by moving their index finger from the start point to the button as quickly as possible. Subjects were given five practice trials in R₀ and ten practice trials in R₁ and R₂ or more if accuracy was less than chance. Although a variable number of practice trials was allowed under the administration procedure according to the number of errors in the first practice trials, more than ten

practice trials were only rarely required. The literature suggests that several hundreds of trials are required before the function relating RT and information load is changed (e.g. Fitts and Deininger 1954; Briggs and Blaha 1969). The original number of experimental trials was set at 40 trials per condition but analysis of the data for the first 14 subjects showed that there were no significant differences between the means for the first 20 and total 40 trials for all three conditions. This finding is consistent with the results of Venables and O'Connor (1959). The number of trials was subsequently reduced to 20 and all analyses were performed on data from the first 20 trials only. Means were calculated for each individual for RT(R₀), CRT(R₁) and CRT(R₂) conditions and the CRT slope function (CRTS) calculated by subtracting RT(R₀) from CRT(R₂) scores.

3. Frankfurt Complaint Questionnaire (PQ) (Sullwold 1977). This was administered orally as a structured interview. Subjects scoring below IQ equivalent 80 were excluded from the study as this level of functioning was thought necessary for adequate comprehension of the questionnaire. Although items were only read aloud, repeated but not explained in any other way, it was often possible to detect by subjects' comments that items had been interpreted in an idiosyncratic way. Repetition of the items helped to reduce this misinterpretation thereby, perhaps, increasing the meaningfulness of the measure. The questionnaire yields scores on three factors: (1) perceptual and motor disorders (PM), (2) thought and speech disorders (TS), (3) secondary emotional reactions (SER) and a total score (FQT) which includes some additional items not loading on any of the factors.

In addition, further information about subjects was gathered indirectly.

4. Premorbid Social Competence (Social Competence). Information relevant to the Abbreviated Scale (Harris 1975) was gathered from each patient's case notes. Where information was missing, (more often for the personal-social than sexual scale) scores were prorated from those obtained. Scores vary from 0-12, low scores indicating highly developed social competence.

Chronicity of Illness. The duration of time (to the nearest whole year) since the first psychiatric admission was recorded from information in the patient's case notes.

Results

The characteristics of the patient sample are summarised in Table 1

It will be noted that the sample is biased towards the more chronically ill: only five patients had been receiving psychiatric

Table 1. Characteristics of patient sample

	Sex: 9 F: 15 M		
	Mean	SD	Range
Age	41.21 years	13.14 years	19- 59 years
VIQ	104.17	11.39	78-118
Chronicity	11.5 years	9.70 years	<1- 34 years
Social compt.	5.79	3.39	0- 12
Severity	3.71	1.23	2- 6

treatment for less than 3 years before testing. An increased bias in selection may have been introduced by asking psychiatrists to refer only unequivocal cases: first-admission patients especially may be "given the benefit of the doubt" where the diagnosis of schizophrenia is concerned. It will also be seen that all the descriptive measures show considerable variability. On average the sample can be described as of moderate premorbid social competence, average general ability and moderately ill at the time of testing. As outlined in the introduction, one aim of the study was to examine the relationships of these descriptive characteristics with the experimental variables.

The means, standard deviations and ranges for each experimental measure are shown in Table 2.

The data was analysed by means of Pearson Product-Moment Correlations calculated between each pair of variables. The significant correlation coefficients are reported in Table 3.

Considering the major predictions: —

Table 2. Means, standard deviations and ranges of experimental measures

	Mean	SD	Range
RT(R ₀)	0.51	0.23	0.29- 1.07
CRT(R ₁)	0.77	0.20	0.46- 1.38
CRT(R ₂)	1.08	0.34	0.58- 1.88
CRTS	0.59	0.37	0.12- 1.48

FQPM	7.92	4.31	0 -19
FQTS	10.71	4.24	0 -19
FQSER	6.83	2.70	2 -12
FQT	35.04	13.92	4 -61

Abbreviations: VIQ = Vocabulary scale IQ equivalent; RT(R₀) = Simple reaction time; CRT(R₁) = Choice reaction time (2 choices); CRT(R₂) = Choice reaction time (4 choices); CRTS = Choice reaction time slope function; FQPM = Frankfurt Questionnaire perception and motor factor; FQTS = Frankfurt Questionnaire thought and speech factor; FQSER = Frankfurt Questionnaire secondary emotional reactions factor; FQT = Frankfurt Questionnaire total score

Table 3. Intercorrelations reaching 5%* and 1%** levels of significance

	1	2	3	4	5	6	8	9	10
1 Age									
2 VIQ									
3 Chronicity	0.63**								
4 RT(R ₀)		-0.62**							
5 CRT(R ₁)	0.51**	-0.59**	0.49**	0.72**					
6 CRT(R ₂)	0.50**	-0.39*	0.56**		0.66**				
7 CRTS			0.35*			0.84**			
8 FQPM		-0.47**							
9 FQTS		-0.53**					0.60**		
10 FQSER	-0.40*						0.38*	0.68**	
11 FQT	-0.39*	-0.47*				-0.36*	0.81**	0.91**	0.73**

Abbreviations: VIQ = Vocabulary scale IQ equivalent; RT(R₀) = Simple reaction time; CRT(R₁) = Choice reaction time (2 choices); CRT(R₂) = Choice reaction time (4 choices); CRTS = Choice reaction time slope function; FQPM = Frankfurt Questionnaire perception and motor factor; FQTS = Frankfurt Questionnaire thought and speech factor; FQSER = Frankfurt Questionnaire secondary emotional reactions factor; FQT = Frankfurt Questionnaire total score

1. The Relationship Between CRT Slope and Self-Reported Cognitive Difficulties

The correlations between CRTS and all self-report measures failed to reach significance, disconfirming the first hypothesis. A significant negative correlation was obtained between CRT (R₂) and FQSER indicating that the more retarded subjects, on the most complex CRT condition only, reported less secondary emotional symptoms.

2. The Relationships Between Simple RT and Self-Reported Cognitive Difficulties

The correlations between RT(R₀) and all self-report measures failed to reach significance.

Subsidiary hypotheses and other findings:

1. *Vocabulary IQ.* Correlational analysis revealed significant inverse relationships between VIQ and RT(R₀), CRT(R₁) and CRT(R₂). These findings are consistent with theories whereby intelligence is explained in terms of speed of mental operations. VIQ was not, however, related to CRTS, indicating that, within this group, the response complexity deficit measure cannot be explained in terms of general intellectual loss i.e. it is tapping a function distinct from VIQ and simple RT.

VIQ was also found to be highly inversely related to FQPM, FQTS and FQT i.e. more intelligent subjects were less likely to affirm dysfunctional statements especially those related to perception and motor responses, thought and speech.

2. *Chronicity of Illness.* Chronicity was found to be highly correlated with CRT(R₁) and CRT(R₂) and to a lesser extent with CRTS i.e. more chronically ill individuals showed relatively greater impairment in the more complex CRT conditions as compared with simple RT performance. RT(R₀) did not correlate with chronicity.

3. *Frankfurt Questionnaire.* Results from this small sample of schizophrenic subjects show strong intercorrelations between the three scales and between each scale and the total score such that it is doubtful whether the three scales are measuring meaningfully separate functions. The strong negative correlations with VIQ have already been noted. It seems possible that the source of these latter relationships lies in the fact that

some questionnaire items are complex statements with many qualifications, making them quite specific (e.g. "Sometimes it is too much for me when there are people around me being busy or talking; then I withdraw in order to find some peace and rest."). Probably more intelligent subjects are more able to comprehend each statement as a whole and, therefore, they are more likely to disconfirm when qualifications do not apply. Less intelligent subjects may be more likely to respond to a word or phrase in isolation and, such part-items being more general, have an increased tendency to affirm.

4. *Age.* As would be expected, a significantly positive correlation was found between subjects' age and chronicity of illness. Age was found to be related to scores on CRT (R_1) and CRT (R_2) but not to RT (R_0) or CRTS. Significant inverse intercorrelations of age with FQSER and FQT were also found indicating that older subjects were less likely to affirm dysfunctional statements, especially those relating to secondary emotional reactions.

Conclusions

The results of this study provide little support for the general hypothesis that there is an association between self-reported cognitive disturbances and information-processing functions as measured by a CRT task. Our findings call into question the validity either of self-report in assessing cognitive disorder, (an assumption which has formed the basis of contemporary studies of cognition in schizophrenia (e.g. McGhie and Chapman (1961), Freedman (1974)) or of the CRT measure as a crucial index of cognitive dysfunction, although it is possible though unlikely, that subjective and objective measure are related to completely distinct aspects of pathology and are therefore uncorrelated. It would appear that the present findings with the Frankfurt Questionnaire are at variance with those of Sullwold who reports low correlations with intelligence although the details of the factorial structure of the questionnaire are not made clear. It could be that differences in administration (oral and written) as well as in language may account for the discrepancies. Also relevant may be differences in subject characteristics: in one study Sullwold described 58% as "paranoide".

A frequently used questionnaire measure of self-reported cognitive disturbances failed to relate either to CRT functions or to simple RT. The methodological problems of self-report assessment have been recently discussed by Shapiro (e.g. Shapiro 1975) who severely criticized the validity of multiple-item questionnaires. When dealing with highly disturbed individuals, such problems are likely to be multiplied by, for instance, subjects' idiosyncratic ideas about the purpose of the assessment and the consequences of admitting to or denying problems in any area, especially when the experimenter is unknown to the subject and not involved in clinical matters. It has to be unrealistic to expect a patient who may make little social contact, either because of chronic incapacity or acutely florid symptomatology, to consider rationally a number of complex questions and to respond fully and truthfully. It is difficult to conceive of how to overcome the methodological problems in measuring subjective complaints when a prominent component of the disorder may be in the general area of interpersonal communication. Shapiro's Personal Questionnaire (Shapiro et al. 1973) has the advantage of using the individual's

own terminology and having a built-in check on reliability but it does not deal directly with the more fundamental problems of disturbed interpersonal behaviour, attitudes and motivation. Possibly in addition, more severely disturbed individuals may genuinely show unreliable self-appraisal. The method also makes it difficult to compare across individuals. It seems likely, however, that multiple-item questionnaire measurement could be improved by, for example, simplifying items to maximise on the possibility of uniform comprehension thereby decreasing the high loading on intelligence. In addition, the use of computerized recording could be employed in an attempt to eliminate error due to idiosyncratic subject-experimenter interaction. Alternatively, only individuals well-known to subjects could be employed as experimenters.

On the question of the validity of the CRT measure as an index of cognitive dysfunction, the present task differs from the card-sorting task used by Hemsley (1976a) in that it is discrete rather than continuous. The present task employs discrete response trials separated by brief pauses whereas the card-sorting task requires continuous responding without a break. The provision of brief rest periods in the current procedure might allow for some kind of recovery between trials thus obscuring a crucial aspect of dysfunction only revealed by a continuous task. Consistent with such an interpretation, Karras (1973) found schizophrenic and depressed groups not to be differentiated on first testing with a discrete, incompatible RT task, but this task employed only limited variation in response-uncertainty.

The only relationship favourable to Hemsley's theory of cognitive dysfunction in schizophrenia was that obtained between CRT functions and chronicity of illness. More chronic individuals showed a greater response-complexity deficit and the lack of any relationship between the CRT functions and age suggests that this association is not explainable in terms of normal ageing. As has been pointed out, however, (Strauss 1973) we cannot conclude from cross-sectional data such as this that differences with chronicity result from adaptational changes occurring during the course of the illness. Explanation in terms of a selection bias whereby more chronic subjects are also more severely ill, is to be preferred in the absence of direct, longitudinal evidence. Both explanations, however, are consistent with Hemsley's theory.

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Social Skills Training Research Project

A research study is being carried out by Waseem Alladin, Clinical Psychologist from the Department of Psychology with support from ward staff. Some of you may perhaps already know him as your ward psychologist. Your doctor and the resettlement team have given their full support for this project. The study will be carried out in two parts. In the first part, the main aim is to find out about your problem solving skills. Some people have unknown strengths and perhaps a few problems in this area. We wish to identify these and find better ways of helping you. In the second part, we hope to test two types of therapy for social skills and see which may be better for you.

In the first part, if you agree to participate, you will be asked to complete two questionnaires, the Assertion Inventory and the WAIS-Clarke Vocabulary Scale which will take about 30-40 minutes to complete. Your key worker will be happy to help you complete these and you can take your time in doing them unrushed.

A problem solving test using cards will also be used. It takes about 15-20 minutes or less to do. You can take your time doing it since there is no time limit on doing this test either. Most people find it interesting like a card game and hopefully so will you.

With your permission, a tape recording will be made, during your card sorting test. The recording will only be used by the researcher to learn better ways of helping you and it will be erased immediately after it is transcribed for data analysis. If you do not wish to have the tape recording then it will not be done. You do not have to participate in this research project if you do not wish to do so. If selected, you are still free to withdraw from the group or the research project at any time. This will not affect the care you are currently receiving in any way.

However, if you do participate, you may get the chance of joining a once a week social skills training group over a period of 8 weeks. This group may help improve your social skills and your possible resettlement into the community. (Your key worker will explain to you in detail what this group is about). Your performance in the social skills training group or follow-up meetings will not

be used to decide whether you will be the first to be resettled into the community or not. Your results will be treated as confidential and no names will be used on the questionnaires or tape recordings.

If you do participate, there will also be two follow-up meetings around 1 and 9 months, after the end of the group. This is to see if the social skills that have been taught are maintained and whether you can apply it in real-life situations. The follow-ups will be done by a community psychiatric nurse from the resettlement team. She will ask you to complete the same questionnaires that you would have done in the social skills training group. It is hoped to publish the results of this project but no personal identifying information will be used.

Please sign and date your consent to participate if you wish to do so:

I have read and understood the above information which has been personally explained to me by my key worker. I wish to participate in the above research project but can withdraw at anytime if I change my mind.

Signed:.....

Date:.....

Submission to Ethics Committee

Social Skills Training Research Project

Provisional Title: Social skills generalization in chronic schizophrenia

Aims: It is proposed that a research study be carried out on the above topic which it is hoped will provide a formal social skills training (SST) group as part of innovative service delivery and staff training. It will also fulfil the requirements for a doctoral dissertation. This project has been discussed with the staff of the three rehabilitation wards and the resettlement team and has the full support of both nursing and medical personnel.

The practice of mixing all patients with a diagnosis of schizophrenia in a single group for SST may be one reason why generalization has been problematic (see Bentall, Higson & Lowe, 1987).

The proposed research will be carried out in two parts. In the first part, the main aim is to find out about abstract problem solving skills and to test the heuristic value of the Wisconsin Card Sorting Test (WCST) as a possible screening tool for SST.

Hypotheses

It is hypothesized that those who are impaired on the WCST will have difficulty in the generalization of social skills whereas those who have normal abstract problem solving will be expected to benefit more from the SST group.

In the second part, it is hoped to test two types of therapy – Behavioural SST and Cognitive-Behavioural SST to see which may be better suited to particular patients, that is, to test the differential efficacy. A multidimensional model of social dysfunction proposed by the present researcher (Alladin, 1988) will be used for a more precise assessment of social dysfunction but to keep things manageable the focus will be on a subset of social problem solving: assertion training. Patients will only focus on two classes of assertive behaviours and be given plenty of practice role plays. A game format specially devised for the proposed research called the ‘whisper in the ear’ technique will be used to make the eight week SST group more enjoyable and relaxed for the patients. The detailed group programme is attached.

Research design

Following McKnight et al. (1984), an alternating treatments design (ATD) combined with a multiple baseline across participants, will be used. Barlow & Hersen (1984) have commended this advanced methodology because of “the elegant experimental manipulations and the wealth of information available due to combining the ATD with a multiple baseline across subjects...” and affirm it “as a model in many ways...” (p.278) since it controls for potential confounds and allows for a determination of treatment effects. It allows for a within-participant comparison of results produced by a treatment that is directly related to the participant's identified target problem with those produced by a treatment that is unrelated to the participant's target problem. In the present research, it is proposed to include an extension to the McKnight design by incorporating a continuous generalization probe, so that during baseline, treatment and post-treatment (two follow- up periods 1-9 months), any natural covariation could be observed and a more confident interpretation of any therapeutic changes

changes in generalization and maintenance could be made. This is in line with the recommendation made by Barrios & Hartmann (1988) who observed that demonstrations of generalization which used single probes during treatment alone were inadequate since it is “nothing more than a post-test only design” – the weakest of all research designs. Given the complexity of the present research and the distractability of the schizophrenia participants, assessments will be deliberately kept to the bare minimum to reduce the information load.

The present researcher has expertise, experience and training in SST and particularly in cognitive-behavioural group therapy (see Alladin, 1988) and hopes to train nursing and psychology staff in this promising approach. He has received further SST training by internationally recognized authorities in the field of SST Professor Robert Liberman and Kim Mueser at University College London. The SST group and the staff training will be embedded into the ward routine once a week and hopefully would facilitate efforts for resettlement into the community.

Ethical considerations and patient care

No invasive procedures or administration of drugs will be involved. There will be no deception, no withholding of treatment and no waiting list condition. In keeping with research protocol, apart from the researcher, therapists and patients will be blind as to the experimental hypotheses. Numbers and not names will be used on data sheets and confidentiality will be maintained. Whilst no promises can be made, it is anticipated that patients in the SST group will receive some benefit in improved social functioning and perhaps be resettled into the community sooner.

The patients’ psychiatrists are satisfied that as medication is normally reviewed every six months and all patients are currently on maintenance dosage of neuroleptic medication, no problems are envisaged. Of course, if there is any deterioration or need to change medication, this will be done in accordance with clinical need. Whilst any medication change will be noted in ward rounds, drug dosage is not a concern of the present research since a multiple baseline and an alternating treatments design (see Hayes, Nelson & Jarrett, 1987) will be used and in this respect all patients in the group will be their own controls.

As participation in all stages of the research is entirely voluntary and consent can be withdrawn at any time (please see attached patient consent sheet) it is not expected that there will be any adverse effects. A friendly relaxed approach with gentle encouragement to participate in group exercises will be the key feature. As some of the group leaders may also be key workers of the patients, they will be with people they know well and feel safe with. It is envisaged that some 24 potentially suitable patients will be approached for the first screening study but unfortunately only nine patients will be selected for the SST group to keep it manageable and to ensure that adequate individual attention is provided during the training. Those not selected will be offered a few individual sessions by the researcher, if this is welcomed and regarded as appropriate for their needs.

Pre-screening assessment instruments

The Assertion Inventory (Gambrill & Richey, 1975) to assess social dysfunction and the Multiple-Choice WAIS-Clarke Vocabulary Scale (to obtain estimated Verbal IQ) which will take about 30-40 minutes to complete.

The Wisconsin Card Sorting Test which takes about 15-20 minutes or less to complete. Most people find it interesting like a card game and hopefully so will the patients.

Dependent variables: Social anxiety, skill level, depression, self-esteem
Personal Questionnaires for social anxiety and skill level (after Chadwick 1989)
The Short form of the Beck Depression Inventory (Beck & Beck, 1972)
The Rosenberg Self-Esteem Scale (Rosenberg, 1967)

Independent variables: Behavioural SST (after Argyle, 1967) and Cognitive-Behavioural SST(after Trower, 1984).
[Further details of these are available, on request]

Tape recording: With the permission of patients and subject to their agreement, a tape recording will be made, during the WCST when they will be encouraged (but not pressured) to think aloud as they problem solve. The recordings of any self-verbalizations will only be used by the researcher to learn better ways to improve problem solving strategies for the SST group. The tape will be erased immediately after it is transcribed for data analysis.

Statistical analysis: It is envisaged that non-parametric statistics (Friedman's ANOVA and the binomial test) and graphical analysis will be used. The present researcher has access to expert statistical advice from the university which is also providing the research supervision.

Outcome: It is hoped to publish the results of the research in a professional journal, if suitable data are obtained but no personal identifying information will be used. Debriefing at the end of each session will be provided for both the staff helping run the SST group and the patients participating, by the present researcher who is also the rehabilitation psychologist. It is possible that a successful outcome will encourage more SST groups to be offered for the rest of the patients in the run up to resettlement plans. The few staff who will be trained may feel confident enough to run similar groups with support, supervision and consultancy from psychology.

Resource implications: No additional resources are necessary apart from the time spent at the SST group (about 2 hours once a week inclusive of a tea/coffee break) and the ½ hour before (for staff training) and ¼ hour after each group, for debriefing.

Relevant experience:

The present researcher (a former psychiatric nurse) is a chartered clinical psychologist and has some experience of researching patients with schizophrenia and dealing with them sensitively (see attached paper by Williams, Alagaratnam[now Alladin], & Hemsley (1984). He was also the recipient of a Small Research Grant from the University College of North Wales Research Committee (Alladin, 1989) and was responsible for the major part of the research proposal to the Welsh Office, as part of the All Wales Mental Health Strategy (see Lowe, Grant, Morrell, Alladin, & Ellis, 1988) and is a principal investigator with the Health Care Evaluation Research Team.

I would be happy to appear before the Ethics Committee if required and hope that this project will be judged worthy of support.

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Appendix II

Table 1. ASSERTIVE RESPONSE CLASSES
of the Gambrill & Richey (1975)
Assertion Inventory

- * turning down requests;
- * expressing personal limitations;
- * initiating social contacts;
- * expressing positive feelings;
- * handling criticism;
- * differing with others;
- * assertion in service situations;
- * giving negative feedback.

**The Gambrill and Roney
Assertion Inventory**

"Many people experience difficulty in handling interpersonal situations requiring them to assert themselves in some way, for example, turning down a request, asking a favor, giving someone a compliment, expressing disapproval or approval. Please indicate your degree of discomfort or anxiety in the space provided *before* each situation listed below. Utilize the following scale to indicate degree of discomfort.

- 1 = none
- 2 = a little
- 3 = a fair amount
- 4 = much
- 5 = very much

"Then, go over the list a second time and indicate *after* each item the probability or likelihood of your displaying the behavior if actually presented with the situation. For example, if you rarely apologize when you are at fault, you would mark a "4" after that item. Utilize the following scale to indicate response probability:

- 1 = always do it
- 2 = usually do it
- 3 = do it about half the time
- 4 = rarely do it
- 5 = never do it

"Lastly, please indicate the situations you would like to handle more assertively by placing a circle around the item number.

Note. It is important to cover your discomfort ratings (located in front of the items) while indicating response probability. Otherwise, one rating may contaminate the other and a realistic assessment of your behavior is unlikely.

<i>Degree of Discomfort</i>	<i>Situation</i>	<i>Response Probability</i>
___	1. Turn down a request to borrow your car	___
___	2. Compliment a friend	___
___	3. Ask a favor of someone	___
___	4. Resist sales pressure	___
___	5. Apologize when you are at fault	___
___	6. Turn down a request for a meeting or date	___
___	7. Admit fear and request consideration	___
___	8. Tell a person you are intimately involved with when he/she says or does something that bothers you	___
___	9. Ask for a raise	___
___	10. Admit ignorance in some area	___
___	11. Turn down a request to borrow money	___
___	12. Ask personal questions	___
___	13. Turn off a talkative friend	___
___	14. Ask for constructive criticism	___
___	15. Initiate a conversation with a stranger	___
___	16. Compliment a person you are romantically involved with or interested in	___
___	17. Request a meeting or a date with a person	___
___	18. Your initial request for a meeting is turned down, ask the person again at a later time	___
___	19. Admit confusion about a point under discussion and ask for clarification	___
___	20. Apply for a job	___
___	21. Ask whether you have offended someone	___
___	22. Tell someone that you like him/her	___
___	23. Request expected service when such is not forthcoming, e.g., in a restaurant	___
___	24. Discuss openly with the person his/her criticism of your behavior	___
___	25. Return defective items, e.g., in a store or restaurant	___
___	26. Express an opinion that differs from that of the person you are talking to	___
___	27. Resist sexual overtures when you are not interested	___
___	28. Tell the person when you feel he/she has done something that is unfair to you	___
___	29. Accept a date	___
___	30. Tell someone good news about yourself	___
___	31. Resist pressure to drink	___
___	32. Resist a significant person's unfair demand	___
___	33. Quit a job	___
___	34. Resist pressure to "turn on"	___
___	35. Discuss openly with the person his/her criticism of your work	___
___	36. Request the return of borrowed items	___
___	37. Receive compliments	___
___	38. Continue to converse with someone who disagrees with you	___
___	39. Tell a friend or someone with whom you work when he/she says or does something that bothers you	___
___	40. Ask a person who is annoying you in a public situation to stop	___

APPENDIX III

Name _____

Date _____

SHORT FORM BECK DEPRESSION INVENTORY

INSTRUCTIONS

On this questionnaire are groups of statements. Please read the entire group of statements of each category. Then pick out the one statement in that group which best describes the way you feel today, that is, *right now!* Circle the number beside the

statement you have chosen. If several statements in the group seem to apply equally well, circle each one.

Be sure to read all the statements in each group before making your choice.

- A.
- 3 I am so sad or unhappy that I can't stand it.
 - 2 I am blue or sad all the time and I can't snap out of it.
 - 1 I feel sad or blue.
 - 0 I do not feel sad.

- B.
- 3 I feel that the future is hopeless and that things cannot improve.
 - 2 I feel I have nothing to look forward to.
 - 1 I feel discouraged about the future.
 - 0 I am not particularly pessimistic or discouraged about the future.

- C.
- 3 I feel I am a complete failure as a person (parent, husband, wife).
 - 2 As I look back on my life, all I can see is a lot of failures.
 - 1 I feel I have failed more than the average person.
 - 0 I do not feel like a failure.

- D.
- 3 I am dissatisfied with everything.
 - 2 I don't get satisfaction out of anything anymore.
 - 1 I don't enjoy things the way I used to.
 - 0 I am not particularly dissatisfied.

- E.
- 3 I feel as though I am very bad or worthless.
 - 2 I feel quite guilty.
 - 1 I feel bad or unworthy a good part of the time.
 - 0 I don't feel particularly guilty.

- F.
- 3 I hate myself.
 - 2 I am disgusted with myself.
 - 1 I am disappointed in myself.
 - 0 I don't feel disappointed in myself.

- G.
- 3 I would kill myself if I had the chance.
 - 2 I have definite plans about committing suicide.
 - 1 I feel I would be better off dead.
 - 0 I don't have any thoughts of harming myself.

- H.
- 3 I have lost all of my interest in other people and don't care about them at all.
 - 2 I have lost most of my interest in other people and have little feeling for them.
 - 1 I am less interested in other people than I used to be.
 - 0 I have not lost interest in other people.

- I.
- 3 I can't make any decisions at all anymore.
 - 2 I have great difficulty in making decisions.
 - 1 I try to put off making decisions.
 - 0 I make decisions about as well as ever.

- J.
- 3 I feel that I am ugly or repulsive-looking.
 - 2 I feel that there are permanent changes in my appearance and they make me look unattractive.
 - 1 I am worried that I am looking old or unattractive.
 - 0 I don't feel that I look any worse than I used to.

- K.
- 3 I can't do any work at all.
 - 2 I have to push myself very hard to do anything.
 - 1 It takes extra effort to get started at doing something.
 - 0 I can work about as well as before.

- L.
- 3 I get too tired to do anything.
 - 2 I get tired from doing anything.
 - 1 I get tired more easily than I used to.
 - 0 I don't get any more tired than usual.

- M.
- 3 I have no appetite at all anymore.
 - 2 My appetite is much worse now.
 - 1 My appetite is not as good as it used to be.
 - 0 My appetite is no worse than usual.

APPENDIX IV

SOCIAL SKILLS TRAINING FOR CHRONIC PSYCHIATRIC PATIENTS

A Treatment Manual¹

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This treatment manual is designed to assist professionals in the establishment and implementation of a social skills training program for the chronic psychiatric patient. After reviewing the relationship between social competence and successful community adjustment, the skills training approach is presented, detailing the various components of social skill and also examining the efficacy of this approach in comparison with other treatment modalities. The manual provides instruction in how to train group leaders and presents the educational format utilized in the social skills training program. Included in the manual are trainer's guidelines, which outline the specific format used to remediate the skill deficits commonly encountered in the chronic population. The guidelines cover topics such as conversation skills, assertiveness training, hetero-social skills, and health service personnel interactions. A structured approach to generalization programming is provided, including the use of "in vivo" sessions, homework assignments, and booster sessions. The manual provides a list of appropriate generalization tasks and also includes a patient manual for use as an accompaniment to the group training procedures.