A VULNERABILITY-STRESS-COPING MODEL OF ADJUSTMENT TO THE INDIVIDUAL NEGATIVE SYMPTOMS OF SCHIZOPHRENIA

A thesis submitted for the degree of Doctor of Philosophy at the University of Queensland in August 2006.

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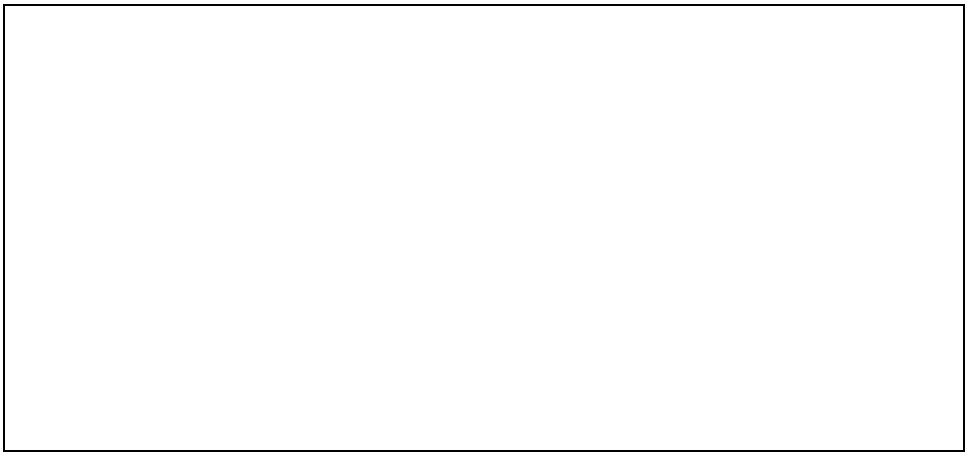

Statement of Originality

I hereby certify that, except where otherwise acknowledged, this thesis describes original research carried out by the author under the supervision of Associate Professor Kenneth Pakenham (principal supervisor) and Professor David Kavanagh (associate supervisor). It has not been submitted previously to any other university or institution.

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Professor Christina Lee, Head, School of Psychology, University of Queensland

Acknowledgements

Financial support for this research program was provided by The Schizophrenia Fellowship of South Queensland, a Joseph Sleight Bursary, and the University of Queensland School of Psychology.

This thesis would not have been completed without the assistance of a large number of people. I would like to offer them my sincerest gratitude.

First and foremost, I would like to thank all the kind people who so generously contributed their time and effort to participate in this research. Thanks must also go to the staff and members of the excellent The Schizophrenia Fellowship of South Queensland, who provided both financial support and assistance.

I also received invaluable assistance from many mental health service providers and organizations. I am extremely grateful to the staff of Stepping Stones Clubhouse, GROW, and the Mental Health Services at Fortitude Valley, Goodna, Ipswich, Logan, and West End. In addition, this research could not have been completed without the assistance of the staff and management committees of the Brisbane North Region, South Brisbane and West Moreton District Health Services.

My heartfelt thanks must also go to the two advisors on this project for their encouragement and expertise. My principal supervisor Associate Professor Ken Pakenham provided essential guidance throughout this extremely lengthy project. My associate supervisor, Professor David Kavanagh was also of great assistance.

Finally, I extend my deepest gratitute to my family and friends for their understanding and support, especially my long-suffering husband, Brett. This research would not have been completed without the exceptional love and encouragement he has provided, and the many sacrifices he and our beautiful sons have made.

This thesis is dedicated to the memory of my late mother, Wendy Beatrice Luke, who taught me the meaning of unconditional love.

ABSTRACT

This research program represents the first systematic exploration of the subjective experience of alogia, anhedonia, attention problems, avolition, and emotional blunting, and its relation to other objective and subjective factors in schizophrenia. Using a combined rational-empirical approach, a vulnerability-stress-coping model of adjustment to the 5 negative symptoms was developed and tested. Three aspects of appraisal were examined, the primary appraisals of symptom severity and distress, and the secondary appraisal of control. The dimensions of coping with individual symptoms were initially examined using a rational approach, and then empirically using exploratory factor analyses.

The Appraisal and Coping with Negative Symptoms Interview Schedule (ACNSIS) was developed for use in Study 1. Both qualitative and quantitative appraisal and coping data were examined for 20 people with negative symptoms. Responses to the ACNSIS demonstrated that appraisals and coping responses varied across participants and individual negative symptoms. Previously employed categorisations of coping behaviour were used to examine and quantify coping. Negative symptom-specific differences were found in awareness of negative symptom presence, degree of agreement with objective ratings, appraisals, reliance on different types of coping, and relations with participant characteristics. Participant coping responses from Study 1 were used to construct the self-report measure used in subsequent studies.

Study 2 involved the development, administration, and evaluation of the self-report Appraisal and Coping with Negative Symptoms Questionnaire (ACNSQ). Both an electronic and paper version of the ACNSQ were developed. The ACNSQ was administered to 120 people with schizophrenia or schizoaffective disorder. Participants were required to make severity, distress and control appraisals for each negative symptom they believed they were suffering from. Following symptom appraisals, a number of symptom-specific and general coping items were presented for each negative symptom.

In Study 2A, the multidimensionality of coping responses and the nature of empirically derived subscales were explored individually for each negative symptom. Factor analyses of data from 119 participants resulted in 3 underlying coping dimensions for each symptom. These dimensions, which formed the basis of the ACNSQ coping

subscales, were labelled as active, emotional, or avoidant forms of coping. Coping subscales were found to be moderately similar across symptoms. The subscales were shown to be internally consistent and largely independent within symptoms. It was found that the degree of reliance on particular coping subscales was negative symptom-specific, although participant coping was related across symptoms.

In Study 2B, the nature of negative symptom appraisals and the psychometric properties of the ACNSQ were examined. There was evidence that the nature of appraisals varied according to negative symptom. Retest reliability analyses indicated that overall, ACNSQ appraisals had a low to moderate degree of reliability while coping subscales demonstrated a moderate to high degree of reliability. Differential associations between appraisal and coping and a range of theoretically related variables provided evidence of the construct validity of the ACNSQ.

Study 3 used exploratory techniques to conduct cross-sectional tests of a vulnerability-stress-coping model of adjustment to individual negative symptoms based on the data of the 119 participants. Associations between the objective indicator of negative symptom stressor level, and the subjective experience variables of insight, appraisal and coping were examined in relation to adjustment using a multidimensional approach. Two models of the relations between negative symptom predictors and 3 separate domains of adjustment were investigated. Study 3A provided moderate support for a direct effects model for each of the 5 negative symptoms. Objective negative symptom level, insight, primary appraisals and coping subscales all had significant direct effects on one or more domains of adjustment. In general, higher objective negative symptom levels, higher severity and distress appraisals, and greater reliance on avoidant forms of coping were associated with poorer adjustment. The direct effects of active and emotional forms of coping were less consistent and varied across symptoms and adjustment domains.

Study 3B extended these findings by providing a limited amount of support for a mediated effects model. Appraisal and coping were found to act as mediators in some of the relations between objective indicators and subjective experience variables for alogia, attention problems and avolition. There was evidence that the impact of insight on coping was partly mediated by control appraisals. Coping partly mediated the relation between stress and adjustment, and appraisal and adjustment.

Overall, this series of exploratory studies make a unique contribution to understanding the subjective experience of the negative symptoms of schizophrenia. The proposed vulnerability-stress-coping model demonstrated utility in identifying variables important in the prediction of adjustment to individual negative symptoms, and in delineating the nature of associations between variables. Further research is required to improve the psychometric properties of the ACNSQ. However, it offers promise as an instrument with which to assess negative symptom appraisals and coping responses, in both clinical and research settings. The present findings have important theoretical and clinical implications concerning the role of subjective and objective factors involved in adjustment to the negative symptoms of schizophrenia. This research program provides a valuable foundation for future research to test the vulnerability-stress-coping model in its entirety.

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CHAPTER 1

INTRODUCTION

This research program investigates a vulnerability-stress-coping model of adjustment to specific negative symptoms of schizophrenia. Schizophrenia can be an extremely debilitating, often chronic, mental illness affecting approximately 1% of the population (World Health Organization, 1995). Caring for people with schizophrenia accounts for a disproportionate share of mental health services with 50% of all admissions to mental health units being for schizophrenia (Mueser & McGurk, 2004). Negative symptoms are a multidimensional construct which represent an absence or deficit in aspects of psychological, social and emotional functioning, and are associated with much of the chronic disability found in people with schizophrenia (Andreasen, 1997; Earnst & Kring, 1997; Kirkpatrick & Fischer, 2006b).

Many questions remain about the nature and aetiology of negative symptoms. Evidence suggests that people with schizophrenia are aware of the presence of these symptoms to varying degrees, and that they may cause individuals substantial distress (Mueser, Sayers, Schooler, Mance, & Haas, 1994; Wiedl, 1992; Wiedl & Schottner, 1991). Thus, negative symptoms may be conceptualised as problematic stressors for which few effective treatments are currently available (Erhart, Marder, & Carpenter, 2006; Milev, Beng-Choon, Arndt, & Andreasen, 2005). People with schizophrenia differ widely in the degree to which they experience negative symptoms, and their impact on adjustment (Earnst & Kring, 1997). While part of this variability is due to biological factors (Earnst & Kring, 1997), research indicates that psychological factors may also have an influential role in the impact of schizophrenic symptoms on functioning (Brekke, Kay, Lee, & Green, 2005; Lobban, Barrowclough, & Jones, 2004; Rector, Beck, & Stolar, 2005). There is growing evidence that modification of these factors can have significant effects on adjustment, including the impact of negative symptoms (Mueser et al., 2006; Thorup et al., 2005).

Vulnerability-stress models of schizophrenia propose that the subjective experience of stressors may play a central role in an individuals' level of adjustment to the disorder (Norman & Malla, 1993; Nuechterlein et al., 1992a; Zubin, Steinhauer, & Condray, 1992). Stress and coping theory proposes that how individuals appraise and

respond to stressors is central to their wellbeing (Lazarus, 1999; Lazarus & Folkman, 1984). In the last decade, there has been an increasing number of investigations on how subjective experience influences adjustment to schizophrenia (for example, Eklund, Backstrom, & Hansson, 2003; Fakhoury & Priebe, 2002; Lysaker, Buck, Hammoud, Taylor, & Roe, 2006; Mueser, Valentiner, & Agresta, 1997b). Two subjective experience variables which have been demonstrated to have utility within vulnerability-stress-coping conceptualisations of schizophrenic symptoms are appraisals and coping responses (Lobban et al., 2004; MacDonald, Pica, McDonald, Hayes, & Baglioni, 1998; Mann, 2003).

Research interest in appraisal and coping with the symptoms of schizophrenia has been influenced by the inability of biomedical models to fully account for the wide variation in adjustment seen in people with the disorder (Nuechterlein et al., 1992a; Nuechterlein, Snyder, & Mintz, 1992b), the inefficacy of available pharmacological treatments to reduce or eliminate some schizophrenic symptoms (Erhart et al., 2006), and a growing movement focusing on individual responsibility and subjective aspects of recovery (Mueser et al., 2002; Oades et al., 2005; Tait, Birchwood, & Trower, 2003). A small number of studies have reported that differences exist in how particular negative symptoms are perceived, as well as the coping strategies employed in an attempt to reduce the impact of these symptoms (Hamera, Schneider, Potocky, & Casebeer, 1996; Mueser et al., 1997b; Selten, Sijben, van den Bosch, Omloo-Visser, & Warmerdam, 1993; Stip, 2003). However, much is still unknown about the nature of appraisals and coping responses for individual negative symptoms, or how these factors are related to adjustment.

The construct of insight in schizophrenia closely resembles that of symptom appraisal, and growing evidence suggests that varying degrees of insight may also be associated with individual variation in both coping and adjustment to schizophrenia (Middelboe, 1997; Mintz, Dobson, & Romney, 2003; Ritsner et al., 2000). Impaired insight has been conceptualised in a variety of ways within schizophrenia research, including cognitive impairment (Lysaker, Bryson, Lancaster, Evans, & Bell, 2003a), and as a form of coping (Bassman, 2000; Warner, Taylor, Powers, & Hyman, 1989). Few studies have investigated the impact of insight and its relationship to the subjective experience of negative symptoms, although a limited amount of previous research has

suggested that insight may be an important factor that is worthy of inclusion in the present investigation (for example, Iancu, Poreh, Lehman, Shamir, & Kotler, 2005; Sevy, Nathanson, Visweswaraiah, & Amador, 2004; Smith et al., 2004).

There has yet to be a comprehensive examination of how subjective experience is associated with adjustment to individual negative symptoms. The present research program seeks to rectify this by examining how the subjective experience variables of insight, appraisal, and coping, along with objective factors, are associated with adjustment to individual negative symptoms. Given the lack of previous research in the area, an exploratory approach is employed using both rational and empirical methods. Vulnerability-stress models of schizophrenia (Lukoff, Snyder, Ventura, & Nuechterlein, 1984; Nuechterlein & Dawson, 1984; Zubin & Spring, 1977) and the transactional stress and coping model of adjustment to stress (Lazarus & Folkman, 1984) were used as theoretical frameworks to guide the choice of variables and nature of the associations examined within the proposed vulnerability-stress-coping model of adjustment to individual negative symptoms, on which this research program is based.

Chapter Outline

Chapter 2 provides an overview of schizophrenia and negative symptoms. The dimensional nature of negative symptoms is discussed, as are aetiological and assessment issues. Andreasen's (1984a) conceptualisation of the five negative symptoms of alogia, anhedonia, attention problems, avolition, and blunting and the Scale for the Assessment of Negative Symptoms are reviewed. The vulnerability-stress framework for understanding schizophrenia and negative symptoms is presented and evidence in support of the model is discussed. Past research concerning the role of vulnerability and stress factors, and subjective experience variables in schizophrenia and negative symptoms is examined as are current methods used to treat negative symptoms.

Chapter 3 presents a stressor, insight, appraisal, and coping model of adjustment to individual negative symptoms of schizophrenia. The chapter begins by reviewing the literature associated with stress and coping theory, and the major findings of previous studies. Limitations in the methodology of these studies are discussed. The vulnerability-stress-coping model is presented and the theoretical and empirical evidence on which it is based is reviewed. The remaining chapters are devoted to the three studies conducted to examine evidence in support of the model.

The studies represent a sequence with each successive study building on the findings of the previous one. Study 1 is presented in Chapter 4. This first study starts at the basic qualitative level and involved individual face-to-face interviews using the Appraisal and Coping with Negative Symptoms Interview Schedule (ACNSIS) to examine the nature of appraisal and coping with negative symptoms in this study. Objective ratings of negative symptom presence and level (made by the author) were compared with those made by participants. The nature and relationships between the two types of appraisals was explored, as was coping. Rational methods are used to categorise the coping data and explore associations between coping indices and the objective factors of negative symptom stressor scores and participant characteristics.

Study 2, presented in the following two chapters, describes the development and empirical evaluation of a self-report instrument to measure appraisal and coping with negative symptoms. Study 2A, contained in Chapter 5, utilised participant coping responses from Study 1, combined with findings from the schizophrenia coping literature, to construct the Appraisal and Coping with Negative Symptoms Questionnaire (ACNSQ). The ACNSQ was administered to 120 people with schizophrenia or schizoaffective disorder experiencing one or more negative symptoms. Factor analyses of data for 119 participants were used to examine the multidimensionality of coping for each of the five negative symptoms under investigation. Three coping subscales were derived for each symptom which were then examined psychometrically. Study 2B, presented in Chapter 6, involves further investigation of the psychometric properties of the ACNSQ. In particular, it addresses the nature of appraisal of negative symptoms, retest reliability analyses and evidence of the construct validity of the ACNSQ.

Two models of the relations between objective indicators and subjective experience variables within the vulnerability-stress-coping model of adjustment to individual negative symptoms were investigated in Study 3. Within the context of examining support for the models, Study 3 seeks to provide further evidence of the construct validity and utility of the ACNSQ. In Chapter 7, Study 3A examines data for evidence of the direct effects of stressor level, insight, appraisal and coping variables on three dimensions of adjustment to each of the negative symptoms. In Chapter 8, Study 3B investigates whether there is evidence to support three different mediated effects models of appraisal and coping. Due to sample size restrictions, only simple mediated

effects models were examined in this research program.

In the concluding chapter, Chapter 9, a summary of findings from each stage of the research program is presented. The theoretical and clinical implications of these findings are discussed as are methodological issues related to the research program. Finally, directions for future research are discussed and concluding remarks are made. The utility of the vulnerability-stress-coping model of adjustment to individual negative symptoms is examined. Overall, the present research program makes a unique and valuable contribution to current understanding of the subjective experience of negative symptoms, and the role of these factors on adjustment.

CHAPTER 2

AN OVERVIEW OF THE NEGATIVE SYMPTOMS OF SCHIZOPHRENIA

Negative symptoms represent a highly complex, multidimensional construct, and consensus has yet to be reached regarding the nature and aetiology of these symptoms (Kirkpatrick, Fenton, Carpenter, & Marder, 2006a). There is widespread agreement however, that negative symptoms represent a core feature of schizophrenia and may cause significant impairment in all aspects of individual functioning. Despite early expectations, evidence suggests that second-generation antipsychotic medications provide limited benefit for a substantial proportion of people with negative symptoms (Erhart et al., 2006). There is growing evidence that negative symptoms may be ameliorated by psychosocial interventions, although results have been inconsistent and the mechanisms of effect remain largely unknown (McGlashan, Heinssen, & Fenton, 1990; Pfammatter, Junghan, & Brenner, 2006; Thorup et al., 2005). Experts agree that further investigation of negative symptoms constitutes an important research need and that new psychosocial interventions tailored to negative symptoms are required to provide the best outcomes for people with these symptoms (Kirkpatrick et al., 2006a; Tarrier, 2006).

This chapter reviews the theory and research pertaining to the negative symptoms of schizophrenia. The discussion begins with a brief historical overview of schizophrenia and negative symptoms. Findings concerning the structure of schizophrenia and classification of symptoms are presented. The nature of negative symptoms is then discussed with reference to assessment issues and dimensional models of symptoms. The aetiological vulnerability-stress model of schizophrenia is then examined and the relations between vulnerability and stress components of the model and negative symptoms is presented. An overview is provided of insight in schizophrenia. Finally, current practices in the treatment of negative symptoms are examined.

General Overview

Historical Background

Negative symptoms have been seen as a core feature of schizophrenia since Kraepelin's early work on "dementia praecox" (Flaum & Andreasen, 1995). Kraepelin coined the term dementia precox to describe the condition involving distinctive cognitive

symptoms (dementia) and early onset (praecox) that he had observed in his patients (Kaplan, Sadock, & Grebb, 1994). The term "schizophrenia" was introduced by Eugen Bleuler and replaced the term dementia precox in the literature (Kaplan et al., 1994). Bleuler conceptualised schizophrenia as a schism between thought, emotion, and behaviour. He argued that, unlike Kraepelin's dementia precox, a deteriorating course was not a necessary condition for a diagnosis of schizophrenia (Kaplan et al., 1994).

Bleuler also pioneered the contemporary view that schizophrenia is in fact a heterogenous group of disorders by referring to "the group of schizophrenias" in relation to the disorder (Walker, Kestler, Bollini, & Hochman, 2004). A range of separate dimensions within the schizophrenia spectrum have now been diagnostically delineated including different subtypes of schizophrenia, schizophreniform disorder, schizoaffective disorder, and delusional disorder (Association, 2000). For the purposes of this research program, the term schizophrenia is used as a general term to include people diagnosed with various forms of schizophrenia as well as schizoaffective disorder.

The label "negative symptoms" comes from Hughlings-Jackson's work in neurology and refers to the absence of behavioural, affective, cognitive, or perceptual phenomena present in normal functioning (Mueser et al., 1994). In contrast, positive symptoms were categorised as functions normally absent in others such as hallucinations and delusions. Based on the work of Hughlings-Jackson, Strauss and his colleagues proposed that separate aetiologies may be responsible for the positive symptoms, negative symptoms, and disorders of personal relationships found in schizophrenia (Strauss, Carpenter, & Bartko, 1974). Since this early work, there have been many attempts to reduce the considerable heterogeneity seen in symptom presentation, course and outcome for people with schizophrenia.

Since the 1980s there has been an emphasis on the distinction between the positive and negative symptoms of schizophrenia (Walker et al., 2004). Crow (1980; 1985) was the first to popularise the positive and negative symptom distinction which is still widely used today. A leading investigator of psychosis, Crow developed two subtypes of schizophrenia, with Type I characterised by Schneiderian first rank (positive) symptoms and Type II, negative symptoms. According to Crow, Type I is seen in the acutely ill, and is reportedly an indicator of good prognosis and indicative of a good response to antipsychotic medication. Conversely, Type II is associated with poorer

outcome, possible structural changes in the brain and is considered relatively irreversible (Crow, 1980; Crow, 1985).

The early work of Andreasen and her colleagues was also very influential in establishing a two-dimensional model of schizophrenia (Andreasen & Olsen, 1982b; Andreasen, Olsen, Dennert, & Smith, 1982a). Andreasen developed two scales, the Scale for the Assessment of Negative Symptoms (SANS, Andreasen, 1984a) and the Scale for the Assessment of Positive Symptoms (SAPS, Andreasen, 1984b), to measure these two dimensions. Since the advent of the SANS and SAPS and alternative measures, numerous factor analytic studies have examined the structure of schizophrenic symptoms and the validity of this positive-negative distinction. These two influential measures have also been utilised extensively in research examining the epidemiology of schizophrenia and associated symptoms.

The Prevalence and Course of Schizophrenia and Negative Symptoms

The lifetime prevalence of schizophrenia is approximately 1%, with 1 in 10 000 adults (12 to 60 years of age) developing the disorder every year (Hafner & Heiden, 1997). Epidemiological studies have suggested that incidence rates are relatively stable across time, geographic location, social class and culture (Hafner & Heiden, 1997). Evidence concerning the outcome and phenomenology of schizophrenia reflects the heterogeneity seen across all dimensions of the disorder. In long term studies, estimates of the proportion of people achieving a good outcome with no or minimal impairment varies from 21% to 57% (Davidson & McGlashan, 1997).

A long-term outcome study following people with schizophrenia or schizoaffective disorder over 25 years reported that only 36% of participants with schizophrenia achieved good to excellent adjustment compared to 90% of those with schizoaffective disorder (Marneros, Deister, & Rohde, 1990). Conversely, another study reported that a diagnosis of schizoaffective disorder was associated with poorer outcomes as measured by rehospitalisation and relapse rates (Doering et al., 1998). Thought to be less common, schizoaffective disorder is closely related to schizophrenia, sharing the same characteristic schizophrenic symptoms with the addition of concurrent mood symptoms (APA, 1994).

The same heterogeneity is reflected in investigations of the course of negative symptoms. Reported rates of negative symptom prevalence vary according to the

population sampled and the measurement criteria employed. For example, the proportion of people with schizophrenia classified as having predominantly negative symptoms or 'negative schizophrenia' has varied widely. In their study, Andreasen, Flaum, Swayze, Tyrrell, & Arndt (1990) reported that 54% of participants demonstrated a marked degree of at least two SANS symptoms. In contrast, Kay (1991) reported that 22% of acute and 17% of chronic patients exhibited three of the seven PANSS (Kay, Fiszgein, & Opler, 1987) negative symptoms to at least a moderate degree. On an individual symptom basis, Flaum and Andreasen (1995) reported that the presence of SANS symptoms (excluding attention) in a sample of 462 people with psychosis varied from 33% with alogia to 69% with asociality. Where the focus has been on core or primary negative symptoms, prevalence rates of 20-25% for clinical samples and 15-20% for population samples have been reported (Kirkpatrick et al., 2006a).

Numerous outcome studies of people with schizophrenia have reported that negative symptoms may be associated with poor outcome across a wide number of adjustment domains (for reviews, see Davidson & McGlashan, 1997; Earnst & Kring, 1997). For example, Milev et al. (2005) examined neurocognition and SANS negative symptoms (excluding attention problems) in their 7-year follow-up study of 99 patients with first-episode psychosis. The authors reported considerable overlap in variance of outcome between neuropsychological measures and negative symptoms. When neurocognitive test performances were taken into account, global severity of negative symptoms at intake significantly predicted poorer global psychosocial functioning, relationships, and work performance. A higher level of attention problems were also predictive of worse psychosocial functioning and work performance (Milev et al., 2005).

In contrast, several studies have found that negative symptoms were not predictive of adjustment when neuropsychological impairments were taken into account (Evans et al., 2003; Velligan et al., 1997). Further, some studies have reported that high severity of initial negative symptoms were associated with higher levels of functioning at follow-up (Lindenmayer, Kay, & Friedman, 1986; Prudo & Blum, 1987). These inconsistent findings are likely to be due to a number of factors, including differences research methodology. As discussed above, the nature of participant samples and measurement of negative symptoms are likely to have an impact on reported prevalence rates and outcome. Participant samples may differ along the dimensions of age, gender

balance, chronicity (first episode verses multiple episode), patient status (inpatient or outpatient), and whether negative symptoms are primary or secondary in nature. The same factors contributing to inconsistencies in findings concerning the epidemiology of negative symptoms are also likely to account for many of the differences found in studies examining the structure of schizophrenic symptomatology.

The Overall Structure of Schizophrenic Symptomatology

Several meta-analytic investigations of studies that used the SANS and SAPS have found that a 3-factor model comprised of positive, negative and disorganised symptoms best fit the structure of schizophrenic symptomatology (for example, see Grube, Bilder, & Goldman, 1998; Smith, Mar, & Turoff, 1998). Arndt et al. (1995) provided further support for the 3-factor model by conducting a longitudinal factor analysis. The authors concluded that positive, negative, and disorganised symptoms show different patterns of exacerbation and remission during the course of schizophrenia (Arndt et al., 1995). Other investigators have concluded that as many as 11 factors best accommodate the heterogeneity seen in SANS/SAPS data (Peralta & Cuesta, 1999). In addition to the three frequently replicated factors of positive, negative and disorganised symptoms, Emsley et al. (2001), reported separate alogia and attention factors in their study of 422 patients with schizophrenia.

As would be expected, the use of different scales, such as the Positive and Negative Syndrome Scale (PANSS, Kay et al., 1987) and the Brief Psychiatric Rating Scale (BPRS, Overall & Gorham, 1962) has resulted in different factor solutions. Investigations based on these scales, which include affective symptoms in addition to alternative positive and negative symptoms, have reported between 4 and 7 factors (Emsley, Rabinowitz, & Torreman, 2003; Mass, Schoemig, Hitschfeld, Wall, & Haasen, 2000; Mueser, Curran, & McHugo, 1997a). Regardless of the symptom measure used, these alternative factor solutions have consistently found that negative symptoms load separately from positive, disorganised and affective symptoms (Blanchard & Cohen, 2006), providing support for the need to examine the nature of negative symptoms as a separate dimension of schizophrenic pathology.

The Nature of Negative Symptoms

Assessment Issues

The presence of negative symptoms is not necessary for the diagnosis of schizophrenia, nor are they unique to people with the disorder. There is evidence that negative symptoms are present in a range of other conditions such as major affective disorders, neurological disorders, and personality disorder, as well as in non-psychiatric populations (Erhart et al., 2006; Mundt, Kasper, & Huerkamp, 1989). Further, expert opinions differ widely as to what symptoms should be included under the umbrella of the negative symptoms (de Leon, Wilson, & Simpson, 1989). As a result, the negative symptom construct is usually operationalized by the items on one of a variety of negative symptom rating scales in use (Earnst & Kring, 1997).

In his early research, Crow (1980) only identified three negative symptoms consistently: affective flattening, poverty of speech, and loss of drive. In his later work he dropped loss of drive in the belief that it may be a secondary symptom which occurs in response to positive symptoms (Crow, 1985). Using the Schedule for Affective Disorders and Schizophrenia (SADS, Endicott and Spitzer, 1978), Lewine, Fogg, and Meltzer (1983) concluded that there were 11 negative symptoms which were reliable and stable over time.

Fenton and McGlashan (1992) pointed out that of the six most prominent negative symptom classification systems, only poverty of speech and affective flattening are contained in all six. In a comparison of eight scales designed to measure negative symptoms, de Leon, Wilson and Simpson (1989) found that only one item, flat affect, was included in all scales. This led the authors to conclude that "far from being a well established and reliably measured entity, 'negative symptoms' remains a concept which individual investigators shape to suit their own inclinations" (p. 212, de Leon et al., 1989). Despite this, a range of studies have demonstrated that the various negative symptom scales have good convergent validity and are significantly correlated with each other even though they contain different items (Earnst & Kring, 1997; Fenton & McGlashan, 1992; Peralta, Cuesta, & deLeon, 1995b). The validity of one of these scales, the SANS, has perhaps been examined more than any other measure of negative symptoms.

The Scale for the Assessment of Negative Symptoms

Due to its pervasive use, both across cultures and disciplines, Andreasen's Scale for the Assessment of Negative Symptoms (SANS) was chosen to define and measure negative symptoms in the present research program. It was the first specific negative symptom scale to be developed and was constructed following an expansion of the Affective Flattening Scale (Andreasen, 1984a). The SANS has since been employed in a wide array of schizophrenia domains including research with an epidemiological (Hafner & Heiden, 1997), clinical (Andres, Pfammatter, Fries, & Brenner, 2003) psychophysiological (Nuechterlein et al., 1992a), pharmacological (Moller, 2004), and neurocognitive (Milev et al., 2005) focus. The SANS has also been used extensively in research examining coping with schizophrenia (for example, MacDonald et al, 1998; Middelboe and Mortensen, 1997; Mueser et al., 1997b; Patterson et al., 1997a).

The SANS takes a multidimensional approach to the measurement of negative symptoms. It provides detailed descriptions of five negative symptom dimensions grouped into separate subscales: alogia (impoverished thinking and speaking), anhedonia/asociality (inability to experience pleasure or lack of involvement in social relationships), attentional impairment, avolition/apathy (lack of goal directed activity or motivation), and blunting or affective flattening (reduced emotional expression) (Andreasen, 1989).

The current version of the SANS contains a total of 19 items and an additional global item for each of the 5 subscales. The original version of the SANS contained an inappropriate affect item which was found to be relatively uncorrelated with other emotional blunting items (Andreasen, 1982c; Andreasen, 1989; Walker, Harvey, & Pearlman, 1988). In addition, global subjective negative symptom ratings, included in the original SANS, have been demonstrated to be unrelated to objective symptom ratings (Andreasen, 1989). Andreasen (1989) suggests these subjective ratings be excluded if additive summary scores are to be calculated.

In her initial investigation, Andreasen reported a high level of interrater reliability and internal consistency for the SANS (Andreasen, 1982c). The five SANS subscales have high face validity and moderate to high internal consistency reliabilities with Cronbach's alpha coefficients ranging from .63 to .86 (Andreasen, 1989). More recently, the SANS has been demonstrated to have good reliability across a wide range of studies

involving raters of different levels of expertise and clinical background (Keefe et al., 1992; Mueser et al., 1994). As discussed previously, since its development, the SANS has been widely used as a clinical and research tool in schizophrenia.

The choice of the SANS over other scales in the present research is confirmed by a recent expert review of negative symptoms (Kirkpatrick et al., 2006a). Although not without weaknesses, the authors concluded that the SANS multiple item assessment of several negative symptom constructs made it the best negative symptom rating scale currently available for use in clinical research (Kirkpatrick et al., 2006a). Despite this endorsement of the SANS, discrepancies between Andreasen's conceptualisation of individual negative symptoms and those of other researchers requires review.

Review of SANS Negative Symptoms

As previously discussed, other schizophrenia investigators differ widely in their conceptualisation of negative symptoms, both in terms of the inclusion of symptoms under the negative symptom rubric and the phenomenology of individual symptoms. These differences will be discussed in relation to each of the SANS symptoms in the sections that follow.

Alogia

In addition to a global rating, there are four items included in the SANS alogia subscale: poverty of speech; poverty of content of speech; blocking; and increased latency of response. De Leon et al. (1989) has suggested that a lack of common definition exists across negative symptom scales in relation to poverty of speech and content. Some scales, such as the SANS, distinguish between the two symptoms, while others do not. Although the SANS makes the distinction between restrictions in the amount of speech and restrictions in the content of speech, both continue to be included within the alogia subscale despite evidence that they may represent different dimensions (de Leon et al., 1989; Liddle, 1987, Mueser et al., 1994). Andreasen, Arndt, Alliger, Pharmd, & Flaum, (1995) reported that poverty of speech loaded on a negative symptoms factor while poverty of content loaded on a disorganisation factor. As the SANS currently stands, the two items cannot be correlated, since poverty of speech is defined as an inadequate amount of speech, while the definition of poverty of content specifies the presence of an adequate amount of speech but with inadequate content (Andreasen et al.,

1995). The authors conclude that future definitional changes may be required for poverty of content and its relation to the SANS alogia subscale (Andreasen et al., 1995).

Anhedonia

The anhedonia-asociality subscale of the SANS consists of a global assessment and four individual items: recreational interests and activities; sexual interest and activity; ability to feel intimacy and closeness; and relationships with friends and peers. Along with emotional blunting, anhedonia is considered a core feature of schizophrenia, and has been included in virtually all descriptions of negative symptoms since the work of Bleuler (Crow, 1985; Keefe et al., 1992). In a recent review of the assessment of anhedonia, Horan et al. (2006) caution that items on the SANS anhedonia subscale may be measuring factors other than anhedonia, and question whether anhedonia, interest, and asociality should be combined in a unitary rating. The authors note that a number of studies have reported a discrepancy between the experience of pleasure and subjective reports of pleasurable activities (Horan, Kring, & Blanchard, 2006).

Laboratory-based studies using a variety of paradigms have demonstrated that participants experience the full range and intensity of pleasant emotions, despite subjective reports of anhedonia and diminished outward expressions of pleasant emotions (Horan et al., 2006). Horan et al (2006) suggest two possible explanations for this discrepancy. The first is that assessments of anhedonia that are interview-based (such as the SANS), or involve self-reports, may be limited by neurocognitive impairments such as the ability to recall and relate pleasant experiences. The second is that the pleasure deficit conceptualised as anhedonia may be related to impairments in anticipatory pleasure, but not to pleasure derived from actually engaging in a pleasurable activity (Horan et al., 2006).

The authors conclude that the SANS anhedonia-asociality subscale may conflate assessment of anhedonia with interest and engagement in recreational and social activities and as a result, subscale scores may be more reflective of a social performance deficit rather than an actual hedonic capacity deficit. Despite these concerns, Horan et al. (2006) conclude that the SANS anhedonia-asociality subscale is the best measure of anhedonia currently available.

Attention Problems

In addition to a global score for attention, two different aspects of attention are rated in the SANS: social inattentiveness and inattentiveness during mental status testing. It has been suggested that the inclusion of attentional impairment in the SANS is conceptually problematic (Earnst & Kring, 1997) and that the attention subscale lacks reliability (Mueser et al., 1994). Impairments in attention are considered by many investigators to be largely unrelated to other negative symptoms (de Leon et al., 1989). Several factor analytic studies have found that attentional impairment correlates highly with disorganised symptoms (Liddle, 1987; Peralta & Cuesta, 1995a). In contrast, several comprehensive SANS-based factor studies have reported evidence of an association between alogia and attention problems (Mueser et al., 1994; Sayers, Curran, & Mueser, 1996).

Atbasoglu et al. (2003) reported that the two SANS attention items were uncorrelated. The investigators found that social inattentiveness was positively associated with alogia and SAPS bizarre behaviour, while inattention during mental status testing was strongly related to a range of neuropsychological test scores measuring memory and verbal abilities (Atbasoglu et al., 2003). Andreasen and her colleagues (Andreasen et al., 1995) have also reported differential associations between the social and mental status inattention items and symptom dimensions. The authors argue that although findings suggest that attention problems may be heterogenous, available evidence indicates that inattentiveness should still be a considered a dimension of negative symptoms, at least on a provisional basis.

Avolition

SANS assessment of the avolition-apathy subscale involves a global rating and three individual items: grooming and hygiene; impersistence at work, school, or household duties; and physical anergia. As for other SANS symptoms, investigators differ in their conceptualisation of the deficit measured by the avolition-apathy subscale. Andreasen (1982c) characterised the ‘avolitional symptom complex’ as a lack of energy, drive, and interest. Marin (1990) defined apathy as ‘a state of primary motivational impairment not attributable to a diminished level of consciousness, an intellectual deficit, or emotional distress’ (p. 22). He also included elements of other SANS subscales such as anhedonia, asociality and affective disturbances in his conceptualisation of apathy

(Marin, 1991). In their review, Brown and Pluck (2000) concluded that as apathy includes aspects of emotion and cognition as well as overt behaviour, there is considerable overlap with other negative symptoms.

This view is consistent with the finding that all the SANS subscales tend to be highly related (Andreasen, 1989; Blanchard, Horan, & Collins, 2005; Earnst & Kring, 1997), but particularly the avolition-apathy and anhedonia-asociality subscales (Kelly, van Kammen, & Allen, 1999; Mueser et al., 1994; Sayers et al., 1996). Blanchard and Cohen (2006) have suggested that the consistent association between these two subscales may represent a reliable sub-domain within the negative symptoms of schizophrenia.

Emotional Blunting

The affective flattening or blunting subscale of the SANS provides a global rating and six individual items: unchanging facial expression; decreased spontaneous movements; paucity of expressive gestures; poor eye contact; affective nonresponsivity; and lack of vocal inflections. Impaired emotional functioning is considered a core feature of schizophrenia and has been included in all classical and modern conceptualisations of negative symptoms (Crow, 1985; Keefe et al., 1992; Pogue-Geile & Harrow, 1985). Investigators differ somewhat in their conceptualisation of emotional blunting, although the three objective behavioural measures of gestures, vocal characteristics, and eye contact are now commonly used across negative symptom scales (de Leon et al., 1989). A range of investigations have provided evidence of a strong relationship between blunted affect and poverty of speech (but not poverty of content), and it has been suggested that the two symptoms may represent a sub-domain of negative symptoms (Blanchard & Cohen, 2006; Kirkpatrick & Fischer, 2006b).

Studies of first-episode psychosis have indicated that blunted affect is present at the onset of illness and is more prevalent in males than females (Gur et al., 2006). Findings are inconsistent with regard to whether emotional blunting represents an impairment in affect perception as well as expression (Gur et al., 2006; Sweet, Primeau, Fichtner, & Lutz, 1998). As has been found in relation to anhedonia, numerous laboratory-based studies have found that participants exhibiting outward signs of emotional blunting report experiencing the same range and intensity of emotional experience as controls (Kring, Kerr, Smith, & Neale, 1993; Kring & Neale, 1996; Sweet et al., 1998). As for the nature of the five SANS symptoms themselves, the nature and

structure of the relations between these symptoms is also disputed across negative symptom investigators.

The Structure of Negative Symptoms

Negative symptoms are frequently treated as a unitary concept in most domains of schizophrenia research, including coping research. Yet, as outlined above, there is considerable evidence to suggest that these symptoms may represent a number of distinct, although related, dimensions (Blanchard & Cohen, 2006). Most of the studies investigating the structure of negative symptoms have conducted factor analytic investigations based on the SANS (Blanchard & Cohen, 2006). Results from these studies have produced conflicting findings with regard to the number and nature of negative symptom factors. Despite these differences, all have supported the multidimensionality of negative symptoms, although many have found high intercorrelations among individual items or factors.

In an early investigation, Keefe et al. (1992) identified 3 factors consisting of diminished expression, social dysfunction, and disorganisation. The analysis was limited by the fact that it was conducted on a reduced number of SANS items, and contained the old inappropriate affect item that has since been dropped from the scale (Keefe et al., 1992). An analysis by Peralta and Cuesta (1995a), also containing the inappropriate affect item, obtained support for Andreasen's original 5 factor model, although there were high intercorrelations amongst some factors. In particular, high correlations were obtained between alogia and emotional blunting (r = .76), and between anhedonia and avolition (r = .69). Peralta and Cuesta's (1995a) findings were criticised by Sayers et al. (1996) who argued that low fit indices indicated that their models did not fit the data well.

Sayers et al. (1996) conducted their own investigation on a large sample of 457 schizophrenia patients and found a 3 factor solution. This solution was cross-validated in a subsequent analysis using a second symptom assessment of the same sample. The 3 dimensions obtained were diminished expression, inattention-alogia, and social amotivation. In a finding similar to that of Peralta and Cuesta's study (1995a), Sayers et al. (1996) also obtained high intercorrelations amongst factors, particularly between the diminished expression and inattention-alogia factors (r =.83).

Others have also reported that alogia and attention problems load onto the same factor (Arajarvi et al., 2006) although some have reported that the two dimensions load

onto separate factors (Emsley et al., 2001). Andreasen et al. (1995) found that alogia and attention items did not correlate consistently with the positive, negative or disorganisation factors in their three factor solution. Alogia items were found to load on either the negative or disorganisation factor, while attention items correlated most strongly with the negative factor but also loaded on the disorganisation factor (Andreasen et al., 1995).

Despite the competing factor solutions derived, and the inconsistent nature of findings, the studies reviewed above provide strong evidence that negative symptoms are not a unitary construct. One question not answered by the studies reviewed above is whether the dimensions found reflect a categorical conceptualisation of negative symptoms. An equally plausible hypothesis is that the factors reflect a unidimensional model of negative symptoms, based on a continuum of symptom severity.

In the first study of its kind, Blanchard et al. (2005) used taxometric statistical methods to examine these competing hypotheses for a sample of 238 patients with schizophrenia. The authors found evidence to support the categorical hypothesis of negative symptoms, with a separate taxon or subgroup of patients found. The taxon group, which was made up of approximately 28-36% of the sample were more likely to be male and to have poorer social functioning. Of particular interest, the two negative symptom groups did not differ in relation to positive or affective symptoms (Blanchard et al., 2005). The taxon resembled the deficit syndrome (DS) concept and the proposal that two types of symptoms exist, primary and secondary negative symptoms.

Several investigators have studied the dimensionality of the deficit subtype of schizophrenia. Kimhy et al. (2006) conducted a factor analysis on symptom data from 52 patients with schizophrenia diagnosed with the DS. The authors reported that the DS appeared to be multidimensional with two distinct factors emerging which accounted for 74% of the variance. The first factor, labelled avolition, consisted of curbing of interests, diminished sense of purpose, and diminished social drive. The second factor, emotional expression, consisted of restricted affect, diminished emotional range, and poverty of speech. These two factors are very similar to those found by Kelly et al. (1999) in their study of primary negative symptoms in 93 men with schizophrenia. The concept of core or primary negative symptoms has been the subject of increasing research interest in the last two decades.

The Deficit Syndrome

Carpenter, Kirkpatrick and colleagues developed the deficit syndrome (DS) subtype of schizophrenia to delineate patients who exhibited enduring, primary negative symptoms from patients with primarily secondary negative symptoms (Carpenter, 1992; Carpenter, Heinrichs, & Wagman, 1988; Kirkpatrick, Buchanan, McKenney, Alphs, & Carpenter, 1989). Secondary negative symptoms have been attributed to a wide range of other factors including medication side effects, other neurological conditions, depression, anxiety, institutionalisation, and psychotic symptoms (Carpenter et al., 1988; Earnst & Kring 1997; Kirkpatrick et al., 1989; Schooler, 1994). Conversely, primary negative symptoms are defined as those caused by the neurobiological disease process of schizophrenia (Carpenter et al., 1988). The authors developed the Schedule for the Deficit Syndrome (SDS, Kirkpatrick et al., 1989) to differentiate between the two types of negative symptoms.

The SDS was developed to identify deficit schizophrenia based upon careful observation and longitudinal assessment of negative symptoms by clinicians who know their patients well (Carpenter, 1992; Carpenter et al., 1988; Kirkpatrick et al., 1989). A number of studies investigating the DS have provided support for the hypothesis that the DS is a distinct subtype of schizophrenia (Kimhy et al., 2006; Kirkpatrick, Buchanan, Breier, & Carpenter, 1994; Kirkpatrick, Ram, & Bromet, 1996). It has been reported that DS patients significantly differ from nondeficit patients in a variety of ways including gender (more males), poorer social functioning and general adjustment, poorer neuropsychological functioning, and fewer depressive symptoms (Blanchard et al., 2005, Buchanan, 1994 #462; Kirkpatrick & Buchanan, 1990; Kirkpatrick et al., 1994; Kirkpatrick et al., 1996). Evidence suggests that the DS distinction can be made reliably using the SDS criteria, although it has been acknowledged that the deficit/nondeficit categorisation may be difficult to make (Kirkpatrick et al., 1996).

Other investigators have questioned the value of making the DS distinction. Following a large multicentre study for the DSM-IV field trial project Flaum and Andreasen (1995) concluded that without extensive longitudinal information and specialised training, the primary/secondary distinction could not reliably be made at the time of an assessment. Schooler (1994) argued that following participant selection, medication discontinuation is needed to distinguish between negative symptoms and

medication side effects. Other investigators have emphasised the importance of negative symptoms which may also be primary to schizophrenia but non-enduring (Kelly et al., 1999). Kelly et al. (1999) compared the negative symptom profiles of patients using a drug withdrawal paradigm. They concluded that negative symptom factor structures were similar for patients with and without medication, suggesting that relationships among the symptoms are independent of both medication and exacerbation (Kelly et al., 1999). Earnst and Kring (1997) have argued that negative symptoms such as flat affect have been observed in people with schizophrenia long before the introduction of neuroleptics.

The research reviewed above suggests that differentiating between participants on the basis of the deficit syndrome may be beneficial, although not essential. Further, it has been suggested that without comprehensive training and experience, raters are rarely able to make a reliable distinction between the DS and negative symptoms (B.Kirkpatrick, personal communication, February 11, 1999). Other evidence also suggests that the reliability of making the DS distinction in the present research program might be unacceptably low (Flaum & Andreasen, 1995). Time and resource constraints precluded the acquisition of the necessary training, and withdrawing patient medication or longitudinal observation were also beyond the scope of this research program.

Finally, it has been suggested that 'the deficit syndrome is closer to the concept of schizoid personality than it is to negative symptoms as defined by the PANSS, SANS or BPRS' (B. Kirkpatrick, personal communication, February 11, 1999). Thus, in light of these arguments, the presence of the DS in participants was not evaluated within the present research. Further, regardless of their origin, both types of negative symptoms fit within the aetiological framework employed in the present research program, the vulnerability-stress model of schizophrenia.

The Vulnerability-Stress Model of Schizophrenia

The stress-diathesis or vulnerability-stress model is a widely accepted aetiological model used to conceptualise schizophrenic spectrum disorders and the development of negative symptoms (Earnst & Kring, 1997; Walker et al., 2004). This multidimensional theoretical model of schizophrenia accounts for the complex range of neurodevelopmental and psychosocial factors which have been implicated in the development of forms of schizophrenia, as well as the highly heterogeneous nature and

episodic course of these disorders. Originally proposed by Zubin and Spring (1977), the model postulates that a person has a specific vulnerability or predisposition to develop schizophrenia and that this vulnerability interacts with stress to produce an exacerbation of symptoms and relapse (Lukoff et al., 1984, Nuechterlein & Dawson, 1984). Early versions of vulnerability-stress models focused on the role of indicators of biological vulnerability and life stressors on relapse (Nuechterlein & Dawson, 1984; Zubin & Spring, 1977; Zubin et al., 1992).

Over the last few decades, investigators have modified and expanded the focus of vulnerability-stress models to include a wider range of variables that have been proposed to be influential in the disorder. For example, Liberman (1986) later expanded the model to emphasise the role of psychobiological vulnerability and protective factors such as coping in adjustment. The narrow focus on relapse as an indicator of outcome has also been expanded to included a broader range of adjustment variables (Brekke et al., 2005; Nuechterlein et al., 1992a). According to the model, vulnerability may be inherited via a person's genes or is the result of a range of early developmental or biological factors (Liberman, 1986; Nuechterlein et al., 1992b).

Sources of stress may have a biological origin, such as symptoms, or be the result of psychosocial factors (Nuechterlein et al., 1992b). Individual responses to stress, in the form of cognitive appraisals and coping strategies, may work as important protective factors in the interaction between vulnerability and stress (Liberman & Kopelowicz, 2002). More recent models of adjustment to schizophrenia which have been influenced by the vulnerability-stress framework have emphasised the importance of subjective experience in the response to stress, and subjective domains of adjustment (Brekke et al., 2005; Yanos & Moos, 2006; Zissi, Barry, & Cochrane, 1998).

Despite differences in emphasis and terminology employed in vulnerability-stress models of schizophrenia, most recognise the importance of subjective factors in adjustment. Numerous labels have been given to this group of subjective factors including personal competencies, person-variables, protective factors, or self-variables (Brekke et al., 2005; Liberman, 1986; Zissi et al., 1998; Zubin & Spring, 1977). These factors are believed to vary both inter-individually and intra-individually in their relation to other factors influential in adjustment to schizophrenia, and they help to account for wide variations in adjustment seen in the disorder (Zubin et al., 1992). For example, it

has been estimated that 20% to 30% of people continue to suffer from moderate symptom levels following recovery from an initial episode and more than half of all people diagnosed will experience significant impairment throughout their life (Walker et al., 2004). On the other hand, Hegarty et al. (1994) conducted a meta-analysis of 20th century literature on outcomes in schizophrenia and concluded that approximately 40% of people with schizophrenia have shown substantial clinical improvement after follow-up periods averaging almost 6 years.

Much of the research on the aetiology of schizophrenia has not distinguished between outcomes for different symptom groups, such as negative symptoms. The literature presented below applies to schizophrenia generally and with reference to negative symptoms where specific findings are available.

Vulnerability Factors Associated with Negative Symptoms

The conceptualisation of vulnerability factors associated with schizophrenia has taken differing forms in the schizophrenia literature. For example, Nuechterlein et al. (1992a) distinguish between 'stable vulnerability indicators' and 'mediating vulnerability indicators'. Stable vulnerability indicators include neurological anomalies, neurocognitive impairments and personality traits (Nuechterlein et al., 1992a). Others have examined the role of pre-existing demographic characteristics such as gender, age, and education level (Malla & Payne, 2005) or premorbid functioning (Walker, Lewine, & Neumann, 1996) as potential vulnerability factors impacting upon adjustment to schizophrenia.

A variety of research paradigms have produced evidence of a link between pronounced negative symptoms and biological vulnerability including twin (Dworkin & Lenzenweger, 1984), sibling pair (Burke, Murphy, Bray, Walsh, & Kendler, 1996; Hwu et al., 1997, Ross, 2000 #431), and adoption studies (Cardno, Thomas, & McGuffin, 2002). Genetic studies have yet to conclusively isolate a specific genetic component to negative symptoms, although negative symptoms have been linked to certain chromosomes (Hong et al., 2005; Kendler et al., 2000) and to genetically homogeneous family isolates (Arajarvi et al., 2006). Similarly there is inconclusive evidence concerning negative symptoms and other suspected vulnerability factors such as specific neurocognitive impairments, gender, age, and other clinical features. In addition, aetiology of a number of negative symptom-related factors, such as depression and

insight, have yet to be determined.

Brain Abnormalities

A variety of studies investigating brain structure, metabolism and neurotransmitter action have provided evidence for a link between brain abnormalities and negative symptoms. Structural abnormalities in a number of brain regions such as the amygdala and frontal lobes have been associated with negative symptoms (Earnst & Kring, 1997) and some investigators have found that more severe negative symptoms are linked with enlarged lateral or third ventricles (Andreasen et al., 1982a). Decreased frontal lobe metabolism and blood flow (Earnst & Kring, 1997; Schroder, Buchsbaum, Siegel, Geider, & Niethammer, 1995) as well as lower metabolic rates in other brain regions such as the thalamus and the parietal and frontal cortex have also been implicated in the aetiology of negative symptoms. Neurotransmitter anomalies in some patients such as the decreased activity of dopamine (Pickar et al., 1990) and increased cholinergic and noradrenergic activity have also been found (Earnst & Kring, 1997). Some studies have found that lower levels of the dopamine metabolite homovanillic acid are associated with more severe negative symptoms (Lindstrom, 1985).

Neurocognitive Impairment

As already discussed, numerous studies have found evidence supporting the existence of neurocognitive impairments in people with schizophrenia, with approximately 70% displaying some level of impairment (Kurtz, 2005). Cognitive impairment has been demonstrated to occur both at the onset of illness and after many years of treatment (Kurtz, 2005). This impairment, as evidenced by poor performance on a wide variety of neurocognitive tests, has a strong association with community outcome, social skill acquisition, and social problem solving (Kurtz, 2005). Kurtz (2005) conducted a review of neurocognitive impairment across the lifespan in schizophrenia and concluded that for community-dwelling outpatients, both IQ and other measures of gross cognitive status remained stable across the lifespan. There was some evidence that IQ and other measures showed improvement over a 5 year test-retest interval, both for first episode and chronic patients (Kurtz, 2005).

Neuropsychological testing has linked a range of deficits in cognitive functioning with negative symptoms, although findings have not been uniform across all studies (for

a review see Green, 1996). Poor performance on tests designed to measure frontal lobe function, as well as general cognitive tests of memory, attention, and nonverbal recognition have all been associated with the presence of negative symptoms (Andreasen et al., 1992; Evans et al., 2003; Milev et al., 2005; Perlick, Mattis, Stastny, & Silverstein, 1992; Velligan et al., 1997). Green (1996) conducted a review of studies investigating the link between neurocognitive deficits and functional outcome for people with schizophrenia. He concluded that negative symptoms were consistently associated with poorer social problem solving ability, while findings concerning an association with community functioning were inconsistent. He could find no relation between negative symptoms and skill acquisition (Green, 1996).

Poor Premorbid Functioning

Evidence of premorbid deficits in functioning related to negative symptoms have been found in a wide range of studies (Addington & Addington, 1993; Cornblatt et al., 2003; Gupta, Rajaprabhakaran, Arndt, Flaum, & Andreasen, 1995; Peralta et al., 1995b; Preston, Orr, Date, Nolan, & Castle, 2002; Walker et al., 1996). Individual negative symptoms have also been associated with poor premorbid functioning. Poverty of speech content and poor attention have been linked to poor childhood school performance, while blunted affect and alogia were shown to be related to deterioration of social functioning in early adolescence (Earnst & Kring, 1997). One study found that children who would later go on to develop schizophrenia displayed more negative facial expressions than their siblings as early as the first year of life (Walker, Grimes, Davis, & Smith, 1993).

Gender and Age

Investigators have frequently failed to examine the influence of pre-existing demographic characteristics in schizophrenia or negative symptom research (for example Iwawaki et al., 1998; Jaeger, Bitter, Czobor, & Volavka, 1990; Milev et al., 2005). Where gender and age differences have been considered in relation to ratings of deficit or negative symptoms, results have been inconsistent. In an investigation of twins with schizophrenia, Dworkin (1990) found a link between poorer social competence in men compared to women, but no gender difference in symptoms. In contrast, Preston et al. (2002) reported higher levels of PANSS negative symptoms in males compared to females, but no gender differences in positive or general symptoms. In a review of early

psychosis research, Malla and Payne (2005) concluded that evidence regarding gender differences in severity of negative symptoms is equivocal, with some studies supporting a higher severity of negative symptoms in males, but not all.

Some differences have also been reported in relation to age and severity or prevalence of negative symptoms. A higher frequency of negative symptoms has been reported for adolescent onset psychosis compared to adult onset (Malla & Payne, 2005). There is some indication that the greater prevalence of negative symptoms reported for males in some studies may be age-related. Evidence suggests that higher male SANS scores are associated with younger age of onset for males, and their over-representation in early onset samples (Hafner & Heiden, 1997). However, in a review of the epidemiology of schizophrenia, Hafner and Heiden (1997) concluded that there was little evidence of age trends in negative symptom presentation in first-episode psychosis. Malla and Payne (2005) have also suggested that gender and age differences reported in relation to negative symptoms may be due to other factors such as sampling artefacts or differences in help-seeking behaviour.

Depression

As is the case for negative symptoms, differing aetiological models have conceptualised depression in a variety of ways. A popular model views depression, like schizophrenia, as a heterogeneous disorder with qualitatively different cognitive and motor impairments related to differing underlying neuropathy (Winograd-Gurvich, Fitzgerald, Georgiou-Karistianis, Bradshaw, & White, 2006). Similarly, the relations between depression and negative symptoms have been conceptualised in various ways, with some researchers suggesting that negative symptoms may be an epiphenomenon of depressive symptoms (Bottlender et al., 2003), while others have argued that they constitute related but separate syndromes (Lindenmayer & Kay, 1989; Winograd-Gurvich et al., 2006).

Despite these competing models, there is widespread agreement that depression is common in schizophrenia, and prevalence rates have been estimated at between 25-40% (Horan et al., 2006; Owens & Johnstone, 1989). Due to the high prevalence of depression in schizophrenia, it has been argued that depression may not be reliably distinguished from negative symptoms in people with schizophrenia (Brown & Pluck, 2000). This problem has been partly attributed to the overlap in symptoms between

depression and the negative symptoms of schizophrenia, particularly apathy, emotional blunting, and anhedonia (de Leon et al., 1989). It has been estimated that 32-77% of patients with major depression exhibit some form of negative symptom (Winograd-Gurvich et al., 2006) and depression is considered a major source of secondary negative symptoms (Kirkpatrick et al., 1994).

Evidence is mixed regarding whether depression is related to negative symptoms and whether symptom scales can reliably distinguish between the two syndromes. Numerous factor analytic studies of schizophrenic symptoms have found that negative symptoms load on to a separate factor from affective symptoms such as depression (Emsley et al., 2003; Mass et al., 2000; Mueser et al., 1997a). Some correlational studies have reported a limited association between negative symptoms and depression scales (Kiang, Christensen, Remington, & Kapur, 2003; Lewine et al., 1983; McKenna, Lund, & Mortimer, 1989), while others have found significant associations (Kelly et al., 1999; Lindenmayer & Kay, 1989; Mundt et al., 1989; Sax et al., 1996).

These associations are due to the similarity in features of negative symptoms and depression. Both syndromes may include poverty of speech, loss of pleasure, reduced and/or slowed movements, and social withdrawal (APA, 2000). Despite this overlap, the two disorders differ in relation to a number of features commonly associated with depression which are not usually attributed to negative symptoms. These symptoms include depressed mood or saddened affect, guilt, tension, somatic concerns, hopelessness, suicidal ideation, self-depreciation, and early wakening (Kulhara et al., 1989). The overlap between mood disorders such as depression and schizophrenia led to the development of diagnostic criteria for Schizoaffective Disorder (Association, 1994) which encompasses features of both syndromes at different episodes.

Insight in Schizophrenia

Overview

The phenomenon of insight, also called disease consciousness or awareness of illness, has long been associated with schizophrenia (David, 1990). As early as the 1880s, poor insight was viewed as being inherent to schizophrenia (Kim, Sakamoto, Kamo, Sakamura, & Miyaoka, 1997). Later, clinicians such as Bleuler (1911 as cited in Kim et al., 1997) and Jaspers (1913 as cited in Kim et al., 1997) supported the widely

held view that psychotic patients generally lacked insight. As a result, lack of insight became a quasi-definition of schizophrenia (Kim et al., 1997). It has been claimed that poor insight is a more prevalent feature of schizophrenia than any other symptom (Birchwood et al., 1994). The World Health Organization's (1973) international pilot study found poor insight in 97% of a sample 811 individuals operationally defined as having acute schizophrenia. Describing the associated features of schizophrenia, The Diagnostic and Statistical Manual of Mental Disorders IV (APA, 1994) states "Lack of insight is common and may be one of the best predictors of poor outcome, perhaps because it predisposes the individual to non-compliance with treatment" (p. 279).

Although not specifically addressed in vulnerability-stress models, a number of differing aetiological models have been proposed to explain the role of insight in schizophrenia. Investigators have variously proposed that insight may be a symptom, particularly in relation to delusions, a defence mechanism, or be related to a specific neuropsychological deficit (Cuesta & Peralta, 1994; David & Kemp, 1998). Cognitive models of insight propose that the construct is a result of a set of attributions or beliefs that an individual makes about their mental symptoms (Birchwood et al., 1994). Impaired insight has been associated with poor performance on a large range of neurocognitive tests linked to frontal and parietal lobe dysfunction (Amador et al., 1994; McEvoy et al., 1996; Young, Davila, & Scher, 1993). Evidence in support of these models has been inconsistent, and it has been argued that these models are not necessarily incompatible and that insight is in fact a complex, multifactorial construct (Amador, Strauss, Yale, & Gorman, 1991).

This complexity has led to numerous investigations seeking to determine the correlates of insight. For example, van den Bosch and Rombouts (1997) made the link between insight, in the form of subjective appraisals of cognitive functioning, neurocognition, and coping. For patients with schizophrenia and depression, insight into the high levels of effort required to complete a neuropsychological test and self-reports of high levels of distractibility and attentional overload (analogous to awareness of the symptoms alogia and inattention) were associated with the coping dimensions of avoidance and worrying. The authors concluded that subjective experiences of 'cognitive malaise' and a high level of mental effort may have a causal role in passive coping choices and that these factors can be traced to the neurological impairment of lack of

cognitive flexibility and poor executive control of cognition (van den Bosch & Rombouts, 1997).

The Structure of Insight

There is a consensus amongst most investigators that the construct of insight is composed of multiple dimensions (Amador et al. 1991). Findings concerning the relations between dimensions of insight and negative symptoms have also been inconsistent (Rossell, Coakes, Shapleske, Woodruff, & David, 2003). Several studies have reported an association between measures of negative symptoms and insight (Cuesta & Zarzuela, 1998; Sevy et al., 2004) while others have not (Schwartz, 1998a). Differences in negative symptom criteria, analyses, and dimensions of insight may all contribute to these discrepant findings.

Sevy et al. (2004) investigated 7 aspects of insight in relation to 5 objective PANSS factors, including a negative factor and an autistic preoccupation factor. The authors found that the negative factor, related to emotional blunting, asociality, and avolition, was only significantly associated with one insight measure, awareness of symptoms. The autistic factor, comprised of inattention and alogia-type symptoms, was also significantly related to awareness of symptoms, as well as one other aspect of insight, awareness of achieved effects of medication (Sevy et al., 2004). Schwartz (1998a) reported a lack of association between insight and PANSS negative symptoms using the original PANSS negative symptom dimension and the single PANSS insight item. In contrast, Goldberg et al. (2001) evaluated the relations between insight and symptoms by dichotomising the same PANSS items used by Schwartz (1998a) to measure negative symptoms and insight. The authors found that greater insight was significantly related to lower PANSS negative symptoms (Goldberg et al., 2001)

Rossell et al. (2003) also investigated the relation between symptoms and insight and found that lower global scores on all of the SANS symptom dimensions except inattention were significantly associated with higher total insight score (Rossell et al., 2003). Conversely, using a 3 dimensional measure of insight, Kim et al. (1997) found no relation between total SANS scores and any of the dimensions of insight. In a meta-analysis of the relation between ratings of insight and symptom dimensions, Mintz et al. (2003) found that there was a highly significant relation between higher insight and lower global negative symptoms, with 5.2% of variance in insight accounted for by variance in

negative symptoms.

T. E. Smith et al. (1998) conducted a longitudinal analysis of insight in 33 patients with schizophrenia following an acute exacerbation requiring hospitalisation. They failed to find any association between unawareness of past or current symptoms, or misattribution of past or current symptoms, and objective SANS scores, both at initial testing or follow-up. Depression was found to be significantly negatively related to unawareness of current symptoms at both assessments, as were unawareness and misattribution of past symptoms at initial testing (T.E.Smith et al., 1998).

The Measurement of Insight

A three dimensional model of insight developed by David (1990) has been influential in insight research. David (1990) proposed that the dimensions of insight include awareness of being ill, the ability to re-label symptoms as pathological, and compliance with treatment. He developed the Schedule for Assessment of Insight (SAI) to reflect these dimensions. Since then other multidimensional measures of insight have been developed. They include the Scale to Assess the Unawareness of Mental Disorder (SUMD, Amador et al., 1991) and the Insight and Treatment Attitudes Questionnaire (ITAQ, McEvoy et al., 1989). Birchwood et al. (1994) developed the Insight Scale (IS), one of the first self-report measures of insight in schizophrenia, based on these 3 dimensions. The IS consists of 3 subscales labelled awareness of illness, need for treatment, and attribution of symptoms and has been demonstrated to be reliable and valid (Birchwood et al., 1994). Since its inception, the IS has been found to be highly related to other self-report insight scales (Baier et al., 2000), including the SUMD (Young, Campbell, Zakzanis, & Weinstein, 2003).

Multidimensional conceptualisations of insight help to account for the frequently observed contradictions in insight reported in some people with schizophrenia. For example, it has been demonstrated that individuals may be aware of their illness yet still misattribute current symptoms (Smith, Hull, Israel, & Willson, 2000), or accept treatment without acknowledging illness or vice versa (McEvoy et al., 1989). Further, people with schizophrenia may recognise the presence of bizarre or abnormal symptoms, yet deny that the problem is illness-related (Young et al., 2003).

The research reviewed above indicates that many questions remain concerning the nature of insight. Most investigators agree that insight is a highly complex construct that

requires further exploration (David & Kemp, 1998; Schwartz, 1998b; T.E.Smith et al., 1998; Young et al., 2003). Another aspect which requires further research is the relation between insight and other subjective factors in schizophrenia, such as symptom appraisals. The small amount of research that has been conducted examining this association will be reviewed in the next chapter.

Stress Factors Associated with Negative Symptoms

General Evidence of the Role of Stress

There has been very little research specifically examining the relations between SANS negative symptoms and their relation to subjective experience factors and adjustment. Numerous studies have examined the influence of other objective indicators of stress, such as stressful life events, and have concluded that stress levels do impact upon the adjustment of people with schizophrenia (Day et al., 1987; Nuechterlein et al., 1992a; Ventura, Nuechtlerlein, Lukoff, & Hardesty, 1989). A review by Norman and Malla (1993) concluded that there was strong evidence that higher levels of stress were associated with the onset, relapse, or worsening of symptoms among people with schizophrenia on maintenance medication.

Subjective experiences of stress have also been linked with increases in negative affect in people with schizophrenia. Myin-Germeys et al. (2001) compared the impact of subjectively assessed daily life stress on negative affect for patients with psychosis, first degree relatives, and healthy controls. Compared to controls, patients reacted with significantly more intense negative emotions to both event-related and social stressors in their daily lives. The authors concluded that patients displayed an excess stress reactivity compared to healthy controls (Myin-Germeys et al., 2001). Others have also found that patients with schizophrenia report more subjective stress than comparison subjects when confronted with the same objective situation (Lukoff et al., 1984).

Subjective Experience and Appraisal

Little research has been undertaken to specifically examine the subjective experience of schizophrenic symptoms and the degree to which symptoms themselves represent a source of stress for people with the disorder (Boker & Brenner, 1987). Over thirty years ago, McGlashan, Levy and Carpenter (1975) conducted a study to examine differences in how 14 recovered patients experienced and responded to their symptoms.

The authors defined two different types of attitudes apparent in participants: integration and sealing over. Integrators tended to have a more flexible, positive attitude towards their illness and sought to understanding and integrate their symptoms into their life. In contrast, those patients who sealed over their illness did not attempt to understand or integrate their symptoms into their life and tended to have fixed negative attitudes about their illness (McGlashan et al., 1975). In a follow-up study of 30 recovered patients, McGlashan and Carpenter (1981) found that the absence of a negative attitude towards their illness and symptoms was critical to achieving a good outcome.

Other researchers soon began investigating illness attitudes and the subjective experience of symptoms. Liddle and Barnes (1988) developed a semi-structured interview, the Subjective Experience of Deficits in Schizophrenia (SEDS) partly based on the SANS. Although constructed to measure the subjective experience of negative symptoms, the SEDS required *clinicians* to make ratings of occurrence, disruption, and distress related to symptoms as well as an overall subjective experience severity rating. The authors evaluated the SEDS on 52 long-stay inpatients with schizophrenia and reported that 85% of patients were aware of at least one of the SEDS items (Liddle & Barnes, 1988). Prevalence of subjective experience of negative symptoms ranged from 40% for lack of energy to 12% for inability to feel intimacy. Significant correlations were found between the SEDS and objective ratings of pathology as measured by the Manchester Scale (MS, Krawiecka, 1977). The SEDS Emotion subscale was positively related to the MS flattened affect subscale, while SEDS Thinking was negatively related to MS poverty of speech. SEDS Emotion and Drive/Energy subscales were positively related to MS depression.

In contrast, the Subclinical Symptoms Scale (SSS), developed by Petho and Bitter (1985) did not include clinical ratings of subjective experience and failed to find significant relations between patient symptom appraisals and objective psychopathology. Jaeger et al. (1990) were critical of the use of clinician judgements in the SEDS, suggesting that this aspect was responsible for the significant relations reported for the SED compared to the SSS. In response, the authors developed the 19 item Subjective Deficit Syndrome Scale (SDSS, Jaeger et al., 1990) based on the SSS. Awareness of negative symptoms varied greatly across samples, and importantly, symptoms, from lows of 8% for loss of emotions and loss of ability to feel pleasure to a high of 70% for lack of

stamina/exhaustion. Despite containing many negative symptom items, total SDSS scores did not correlate with total SANS scores nor the BPRS anergia scale in samples of inpatients and outpatients with schizophrenia and schizoaffective disorder (Jaeger et al., 1990).

Wiedl and Schottner (1991, 1992 #13) examined the subjective experience of stress in people with schizophrenia in a number of studies. Acute and chronic patients with schizophrenia rated three different sources of "disease-related stress" on a scale from 1 for a low degree of strain to 3, for a high degree of strain. Subjective appraisals of frequency and intensity of strain related to the domains of self, the environment, and symptoms/impairment including a range of 'basic symptoms' similar to SANS negative symptoms. Both groups of patients appraised their symptoms as a source of stress with ratings generally in the medium to high range. Notably, when absolute frequency of stressful events were compared across the three sources of stress, symptom-related stress was found to be the most frequently occurring source of stress in both groups of patients (Wiedl, 1992).

Selten and his colleagues (Selten et al., 1993) also examined the subjective appraisal of negative symptoms. Based on the SANS, the authors developed the Subjective Experience of Negative Symptoms scale (SENS, Selten et al., 1993) to evaluate subjective presence, severity, distress, and causal attributions of negative symptoms. In this and subsequent studies, Selten and his colleagues (Selten et al., 1993; Selten, Wiersma, & van den Bosch, 2000a; Selten, Wiersma, & van den Bosch, 2000b) reported a low to moderate awareness of specific negative symptom items and a high level of discrepancy between participant symptom appraisals and those made by clinicians. Of particular importance to the present research, as for studies reviewed above, the subjective experience of the presence of negative symptoms was found to be symptom specific, further supporting the use of a multidimensional approach to the investigation of negative symptoms.

Other studies have also found a lack of agreement between subjective negative symptom ratings and those made by clinicians (Mueser et al., 1997b; Yon, Loas, & Brien, 2005). In contrast, Kim et al. (1997) reported that there was a strong positive correlation between their self-report scale measuring 'degree of subjective suffering' related to avolition and alogia-type symptoms and total SANS scores. Despite the lack of

agreement in objective and subjective ratings found in several studies, the findings generally suggest that participants are aware of at least some of their negative symptoms. Further, evidence indicates that individual negative symptoms are a source of stress for people with schizophrenia, although the degree of distress caused seems to vary across symptoms. For example, Selten et al. (2000a) found the symptoms in the avolition-apathy subscale of the SANS were appraised as causing the highest degree of distress. Mueser et al. (1997b) also reported differences in reported distress levels across individual SANS symptoms.

Finally, Lecomte and Mercier (2005) tested a stress process model of adaptation to schizophrenia and examined the role of subjective appraisals of the severity of negative symptoms as stressors. Unfortunately, negative symptoms were treated as a unidimensional construct limiting the scope for comparison. Despite this, Lecomte and Mercier's findings supported the contention that the experience of negative symptoms constitutes an influential stressor for people with schizophrenia. The authors found that appraised severity of negative symptoms had a significant impact on adaptation, with lower levels of symptoms predictive of higher levels of adjustment. Further, greater use of a form of coping, labelled accommodation, was also a significant predictor of adjustment, providing support for the role of coping as a protective factor for people with schizophrenia (Lecomte & Mercier, 2005).

Coping as a Protective Factor

As conceptualised within the vulnerability-stress model, adaptive coping responses may serve as protective factors in the course of the illness by enhancing adjustment, and maladaptive forms of coping may be a source of vulnerability which contribute to poorer adjustment (Liberman, 1986; Lukoff et al., 1984). A number of vulnerability-stress models of schizophrenia have emphasised the importance of a range of subjective experience factors in response to stress, including appraisals, aspects of social support, and personal coping skills (Lecomte & Mercier, 2005; Liberman, 1986; Nuechterlein et al., 1992a). Lukoff and his colleagues (Lukoff et al., 1984) noted that many people with schizophrenia seem to be deficient in coping responses, and as a result, may experience greater and more prolonged stress than other people. They argued that poor coping may be in part due to less supportive social networks and inadequate social and problem solving skills (Lukoff et al., 1984), concepts very similar to appraising and

coping with problems.

Since these early conceptualisations of coping as a protective factor, numerous studies have reported a significant association between coping and adjustment in schizophrenia. Some forms of coping have been found to be related to poorer adjustment (for example Bechdolf et al., 2003; Hoffmann & Kupper, 2002) while others have found an association between coping dimensions and better adjustment (for example, Hultman, Wieselgren, & Ohman, 1997; Lecomte & Mercier, 2005; Yanos, Primavera, & Knight, 2001). Others researchers have not found any significant association between dimensions of coping and adjustment in schizophrenia (for example Rudnick, 2001). Further, several studies have found a relation between higher levels of negative symptoms and less reliance on problem-focused or active forms of coping (van den Bosch, van Asma, Rombouts, & Louwerens, 1992; Wiedl, 1992; Wiedl & Schottner, 1991). These findings will be reviewed in detail in the following chapter. Another source of evidence for the impact of coping comes from outcome studies examining the efficacy of coping interventions, reviewed below.

Treatment of Negative Symptoms

Pharmacological Approaches

The popularity of neurological vulnerability conceptualisations of schizophrenia has lead to a heavy emphasis on the use of medication to treat the disorder and its symptoms. While concerns have been raised that the reliance on antipsychotic medications comes at the expense of other forms of intervention (Tarrier, 2006), they have long been the treatment of choice for the negative symptoms of schizophrenia (Erhart et al., 2006). Pharmacological treatment for schizophrenia can be classified into three groups: typical antipsychotics, atypical antipsychotics, and other forms of medication. The first group, conventional or typical antipsychotics, were first used in the 1950s and work by blocking dopamine receptors in the brain (Walker et al., 2004). Due to a range of unpleasant and sometimes severe movement disorder side effects such as pseudoparkinsonism, dystonic reactions (severe muscle contractions), akathisia (restlessness) and tardive dyskinesia (twisting or writhing movements), the use of these medications has significantly reduced since the development of a new range of atypical antipsychotics (Walker et al., 2004).

The atypical or second-generation antipsychotics (SGAs) have largely replaced conventional medications. Atypicals vary significantly in their neurotransmitter action, have a reduced risk of movement disorders, and fewer side effects, although some side effects may be severe (Walker et al., 2004). For example, clozapine, demonstrated to be effective in treatment-resistant schizophrenia, is associated with increased risk of the serious side effect of agranulocytosis, and requires frequent blood monitoring (Walker et al., 2004). Despite claims of increased efficacy with negative symptoms, in a recent review, Erhart et al. (2006) conclude that the effect size of SGAs on negative symptoms is generally only modest.

A diverse range of other drugs have been investigated in the treatment of negative symptoms. This third group of drugs have mainly been used as an adjunct to standard medication for schizophrenia rather than as monotherapies (Moller, 2004). Of these, antidepressants, primarily selective serotonin reuptake inhibitors, and oestrogen have shown some promise in alleviating negative symptoms (Kulkarni et al., 2001; Moller, 2004). Trials with other drugs such as anticonvulsants, beta-blockers, and glutamatergic agents have produced inconsistent results and their efficacy in the treatment of negative symptoms is unclear (Moller, 2004).

Corrigan, Reinke, Landsberger, Charate, & Toombs (2003) conducted a review of clinical trials of antipsychotic medications and their impact on negative symptoms, psychosocial functioning, and quality of life. They found that atypical medications led to significant improvements in negative symptoms compared to conventional antipsychotics, or a placebo, for 12 of the studies while 6 studies reported no difference. The results were less promising for the impact of SGAs on psychosocial functioning and quality of life, with only half the studies showing some improvement in these variables when compared to typical antipsychotics or a placebo. Penn et al. (2004) have claimed that there is little evidence that antipsychotic drugs by themselves significantly improve social functioning. In a recent review of the pharmacological treatment of negative symptoms, Erhart et al. (2006) concluded that despite the early promise of SGAs, medication offers ‘limited benefits’ in reducing the burden of negative symptoms (p. 234).

Thus, while SGAs remain important in the treatment of negative symptoms, evidence suggests that pharmacological treatment alone is inadequate. Non-compliance

is a widely recognised problem and it has been reported that for people with schizophrenia living in the community, suboptimal adherence to medication regimes ranges between 45 to 60 percent (Fenton, Blyler, & Heinssen, 1997, Mueser & McGurk, 2004). Others have found that compliance rates for SGAs are in the 50% range for first-episode schizophrenia patients and about 70-80% for previously treated patients, with lower compliance rates for conventional neuroleptics (Tran et al., 1997). Higher relapse rates have been reported for patients being treated with medication alone, or with only limited psychosocial intervention (Rector & Beck, 2001; Tarrier, 2006; Thorup et al., 2005). Thus, optimal functional outcomes for people with negative symptoms require a combined approach of both pharmacological management and psychosocial interventions (Kirkpatrick et al., 2006a; Tarrier, 2006).

Chlorpromazine equivalents are often calculated in an attempt to control for variations in level and type of antipsychotic medication in schizophrenia research. Recently however, the practice of calculating chlorpromazine equivalents has been questioned. The APA (2004) has stated that chlorpromazine equivalents are not relevant to the second-generation antipsychotics, now the most widely prescribed type of antipsychotic (Centorrino, Eakin, Bahk, Kelleher, & al., 2002). In addition, significant differences in published reports of potency values across studies can result in large discrepancies in estimated dosages (Rey, Schulz, Costa, Dick, & Tissot, 1989), and may invalidate any comparisons made.

Psychosocial Interventions

A range of psychosocial interventions have been developed and tested as an adjunct to medication in the treatment of negative symptoms, many based upon cognitive behavioural therapy (CBT) principles (Bellack & Mueser, 1993; Penn et al., 2004). Rector and Beck (2001) reviewed of the impact of CBT and supportive psychotherapy (ST) compared to routine care in the treatment of negative symptoms. They found that there was evidence of large treatment effects for CBT and medium effects for ST. At 9 month follow-up, large gains remained for CBT patients, while ST patients showed maintenance of gains, although to a lesser extent (Rector & Beck, 2001).

Mounting evidence of the link between stress and adjustment in schizophrenia has led to the development of stress management programs with the specific goal of teaching people with schizophrenia skills to cope with stress. For example, Norman et al.

(Norman et al., 2002) compared the differential effectiveness of a stress management program and a social activities control group for stable outpatients with schizophrenia. The authors found that the impact of stress management was not superior to the control group in measures of symptom levels, perceived stress or life skills post treatment or at 1-year follow-up. Notably, hospitalisation rates for the control group were more than twice that of the stress management group in the year following treatment (Norman et al., 2002). Tarrier and his colleagues (Tarrier, 1992) have developed a coping strategy enhancement (CSE) program to treat drug-resistant positive symptoms. When CSE was compared to a problem solving intervention, positive symptoms were reduced in both groups but there was no impact on negative symptoms, mood, or social functioning (Tarrier et al., 1993).

An improvement in negative symptoms has been reported using an 'integrated' treatment (IT) approach which combined aspects of symptom coping, assertive community treatment, social skills training and multifamily groups (Thorup et al., 2005). Thorup et al. (2005) reported a significantly greater reduction in all five global SANS scores in patients receiving IT compared to standard treatment. Unfortunately, the authors were unable to determine which IT treatment element produced the reduction in negative symptoms (Thorup et al., 2005). Schaub et al. (1998) also reported a significant improvement in PANSS negative symptoms in 57 patients with schizophrenia or schizoaffective disorder following training from their Symptom Management Module.

Finally, the Illness Management and Recovery Program (IMR, Gingerich & Mueser, 2005) was designed to improve illness self-management for people with schizophrenia and other forms of severe mental illness. The program was developed as part of a national project to develop evidence-based treatments for mental illness in the United States of America (Mueser, Torrey, Lynde, Singer, & Drake, 2003). Five components were incorporated into the program: psychoeducation, cognitive-behavioural approaches to medication adherence, relapse prevention plans, social skills training, and coping skills training for the management of persistent symptoms. Mueser et al. (2006) conducted a trial of the program, based on 24 people with schizophrenia or schizoaffective disorder (88%), or other severe mental illness. The IMR program involved both individual-based and group treatment over 9 months with a 3 month follow-up, and was conducted at three separate sites, two in the USA and one in Australia

(Mueser et al., 2006).

Adjustment was measured using a range of self-report instruments measuring non-schizophrenic symptoms, illness management, coping, and recovery, and the clinician rated Global Assessment of Functioning (GAF, APA, 1994). At follow-up, significant improvements were found in subjective global psychopathology, coping effectiveness, global self-management, knowledge of illness, recovery attitudes, and objective GAF scores. Of particular relevance to the present research, mean coping with distressing symptoms was not significantly different at follow-up, and had declined marginally from baseline at post treatment and follow-up. The authors concluded that overall, there was evidence that IMR enhanced coping efficacy and that participants felt less dominated by their symptoms (Mueser et al., 2006).

Summary of Support for the Vulnerability-Stress Model

As outlined above, a range of both objective indicators and subjective factors have been implicated in the development and course of schizophrenia and/or negative symptoms. Taken together, the research findings support the hypothesis that negative symptoms are likely to be the result of underlying vulnerability factors interacting with psychosocial factors such as subjective responses to stressors. The full impact of subjective experience in adjustment to negative symptoms has yet to be determined. The evidence is inconsistent with regard to whether negative symptoms constitute a significant source of stress, and whether people with schizophrenia routinely appraise and respond to these symptoms. Despite the inconsistencies in the literature, there is some evidence to suggest that how an individual appraises and copes with specific negative symptoms, and their level of insight, may prove to be important factors in their level of adjustment to these symptoms. Appraisal and coping with negative symptoms will be examined in greater depth in the following chapter.

CHAPTER 3
A VULNERABILITY-STRESS-COPING MODEL OF ADJUSTMENT TO THE INDIVIDUAL NEGATIVE SYMPTOMS OF SCHIZOPHRENIA

The previous chapter examined the nature of negative symptoms and their conceptualisation within vulnerability-stress models of schizophrenia. A number of factors including the limited utility of second generation antipsychotics, advances in psychological interventions, and the recovery movement, have led to a resurgence of interest in psychological factors related to functioning in schizophrenia. Few studies have investigated the subjective experience of individual negative symptoms and the impact this has on adjustment. Yet there is accumulating evidence to suggest that stress-related appraisals and coping responses may be important factors in adjustment to schizophrenia. The subjective experience of negative symptoms, in the form of appraisals and coping responses, represent a potentially important avenue of research and clinical focus. This chapter presents the development of a theoretical model to guide research on negative symptom appraisals and coping and outlines a rational-empirical research plan to test the preliminary model.

Overview of the Theoretical Underpinnings of the Model

While negative symptom stress and coping is an under-studied area of schizophrenia, stress and coping is one of the most extensively examined areas in psychological research generally (Coyne & Racioppo, 2000). Much of this research has been guided by contextual models of stress response which focus on how individuals respond to stress in a specific stressful situation (Moos & Holahan, 2003). One of the most widely accepted contextual models is the model of stress and coping developed by Lazarus and Folkman (Lazarus, 1982; Lazarus, 1999; Lazarus & Folkman, 1984). This stress and coping model was been demonstrated to have heuristic value in research examining coping with a wide range of chronic health conditions, including the symptoms of schizophrenia (Oakland & Ostell, 1996; Wiedl, 1992; Wiedl & Schottner, 1991). Thus, relevant aspects of the stress and coping model were combined with the vulnerability-stress conceptualisation of schizophrenia to develop a vulnerability-stress-coping model of adjustment to negative symptoms to guide the present research.

The vulnerability-stress conceptualisations of schizophrenia, reviewed in the

previous chapter, share many similarities with the contextual stress and coping model. Both view individuals as active agents engaged in attempts to minimise the harm associated with stress (Lazarus & Folkman, 1984; Liberman, 1986). Similarly, both see the enhancement of functioning and well-being as a primary goal towards which individuals strive. Further, both models view the subjective processes of cognitive appraisals and coping responses as potentially powerful factors which may be harnessed to improve individual adjustment (Lazarus, 1999; Liberman & Kopelowicz, 2002).

Transactional Model of Stress and Coping

The transactional stress and coping model places emphasis upon the role of cognitive processes in determining what is experienced as stressful by an individual, and subsequent coping responses (Lazarus & Folkman, 1984). The authors define coping as "the person's cognitive and behavioural efforts to manage (reduce, minimise, master, tolerate) the internal and external demands of the person-environment transaction that is appraised as taxing or exceeding the person's resources" (p. 141, Lazarus and Folkman, 1984). Thus, the experience of stress is seen as a transaction between a person and their environment, dependent on both variables rather than either one (Lazarus & Folkman, 1984).

A basic tenet of contextual approaches to stress, such as the transactional stress and coping model, is that the objective nature of a stressor is less important as a determinant of a person's response than the person's subjective interpretation or appraisal of a particular stressor (Lazarus and Folkman, 1984). According to the model, when an individual appraises a situation or event as stressful and their resources as taxed, they will engage in one or more coping strategies in an attempt to manage the situation (Lazarus & Folkman, 1984). If the coping strategies alleviate the individual's subjective distress, they are likely to continue engaging in that coping response in similar situations in the future (Lazarus and Folkman, 1984).

The coping process is seen as a dynamic, complex interaction between appraisal and coping which operates in a feedback loop (Lazarus & Folkman, 1984). Within the model, coping strategies employed in response to the same stressor vary widely across individuals according to the nature of their emotional responses to stress. Further, according to the model, just as appraisals are neither 'right' or 'wrong', particular coping strategies are neither inherently 'good' or 'bad', they vary in their adaptational utility for

the individual (Lazarus and Folkman, 1984). Two types of appraisal have been outlined, primary and secondary appraisal.

Lazarus and Folkman's (1984) model of stress and coping has formed the basis of coping research across a large number of domains. The model has provided a framework for examining adaptation to a wide range of illnesses (Roesch & Weiner, 2001) including rheumatoid arthritis (Manne & Zautra, 1989), sickle cell disease (Thompson, Gil, Abrams, & Phillips, 1992), multiple sclerosis (Pakenham, 2001) and AIDS (Fleishman & Fogel, 1994). It has provided the theoretical basis for understanding various psychological problems such as disordered eating (Bittinger & Smith, 2003), as well as alcohol dependence, agoraphobia, panic disorder, generalised anxiety and depression (Hoffart and Martinsen, 1993; Vollrath et al., 1998; Uehara et al., 2002). Findings from these studies concerning the associations between appraisal and coping and adjustment have been inconsistent. A range of factors have been reported to influence the relation between coping and mental health outcomes, most notably the type of problem (Pearlin & Schooler, 1978) and appraisals such as the degree of stress experienced (Lazarus, 1999).

A number of investigators have also employed transactional stress and coping theory to guide research on coping with schizophrenia (for example Hoffmann, Kupper, & Kunz, 2000; Middelboe, 1997; Wiedl, 1992). Relatively few investigations have examined appraisals and coping responses in relation to negative symptoms. In schizophrenia research, coping responses have generally been examined in relation to any 'recent stressor' (Lysaker, Davis, Lightfoot, Hunter, & Stasburger, 2005b), a nominated stressful event (Horan et al., 2005), positive symptoms (Mann, 2003; Tarrier, 1987), or symptoms in general (Yanos et al., 2001).

Major Components of the Stress and Coping Model

The Nature of Appraisal

According to stress and coping theory, primary appraisal refers to an individuals' cognitions regarding the impact or significance of a potential stressor (Lazarus, 1999). Through primary appraisal a stressor may be judged to be irrelevant, benign-positive, or stressful (e.g. "Is it a threat to my wellbeing?"). Secondary appraisal refers to cognitions regarding the individuals' coping resources or options for dealing with the situation (e.g. "What can I do about it?"). Together, primary and secondary appraisal are believed to

determine the nature and intensity of emotional response to stress and influence the coping response (Folkman, 1992). A range of studies have examined these two types of appraisal and the role the play within the coping process. As with many aspects of stress and coping research, results have been inconsistent and at times contradictory.

Chang (1998) conducted a factor analysis on 6 individual exam-related appraisals made by 370 university students. Results suggested that there were two dimensions of appraisal accounting for 65% of variance. These dimensions conformed to the constructs of primary and secondary appraisal described by Lazarus and Folkman (1984). Ratings of the exam's degree of importance, stress, threat, and challenge loaded onto a primary appraisal factor, and control (over exam outcome) and effectiveness (in preparing for the exam) loaded onto a secondary appraisal factor. Correlations indicated that the two dimensions were unrelated (r = -.01), and displayed marked differences in their pattern of significant relations with a range of coping dimensions and adjustment variables (Chang, 1998). Conversely, others have reported that higher primary stress appraisals were significantly negatively related to secondary appraisals of greater control and self-efficacy (Terry, 1991).

The construct of primary appraisal has been measured in a variety of ways such as ratings of harm/loss, threat or challenge, degree of stressfulness, and stressor severity (for example, see Bittinger & Smith, 2003; Chang, 1998; Edwards, Baglioni, & Cooper, 1990; Folkman & Lazarus, 1985; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986a; Tomaka, Blascovich, Kibler, & Ernst, 1997). In relation to the measurement of secondary appraisal, ratings of acceptance, control, locus of control/causality, self-efficacy, changeability, and effectiveness, have been employed (Chang, 1998; Folkman et al., 1986a; Roesch & Weiner, 2001; Terry, 1991). A diverse range of studies have presented evidence to suggest appraisal may be directly related to coping and/or adjustment or may have a more complex role in the stress-coping process.

Chang (1998) reported that for university students, exam-related primary appraisals were significantly positively related to 7 diverse coping subscales and negatively related to only one, problem avoidance. Primary appraisal ratings were significantly related to the 3 adjustment measures used. Higher primary appraisal ratings were related to greater depressive and physical symptoms, and negatively related to life satisfaction. Secondary appraisal was significantly positively related to problem solving

and cognitive restructuring, unrelated to express emotions and social support coping, and significantly negatively related to problem avoidance, wishful thinking, self-criticism, and social withdrawal. The pattern of significant associations with adjustment was the reverse of those for primary appraisal with high levels of control and effectiveness related to greater life satisfaction and lower depressive and physical symptoms (Chang, 1998).

In their laboratory study of disordered eating in 56 female undergraduates, Bittinger and Smith (2003) found that higher stress was significantly associated with greater use of emotion-focused coping. Stress appraisals mediated the relation between degree of eating-related pathology and use of emotion-focused coping, but not task or avoidant forms of coping (Bittinger & Smith, 2003). Others have also found evidence of more complex relations between appraisal and coping. In a longitudinal study of 134 people with multiple sclerosis (MS), Pakenham (1999) reported that initial primary and secondary appraisals were not directly related to adjustment 12 months later. There was an interaction between primary threat appraisals and coping and the relation with adjustment. Participants with low levels of subjective psychopathology used lower levels of emotion-focused coping regardless of level of appraised threat, whilst higher levels of pathology were associated with greater use of emotion-focused coping. Further, levels of subjective pathology increased with higher threat appraisals (Pakenham, 1999).

In her study of 138 university students, Terry, (1991) reported that appraisals of greater stress were related to greater use of escape/self-blame and seeking emotional support. Conversely, appraised control of a situation was significantly related to the greater use of instrumental action forms of coping but unrelated to escape/self-blame, seeking emotional support, or minimization. In a meta-analytic review of the role of secondary appraisals in adjustment to physical illness, Roesch and Weiner (2001) found that greater control was related to greater use of approach, cognitive-approach, problem-focused, and emotion-focused forms of coping. Conversely, appraisals of low control were associated with greater use of avoidance. Greater control was associated with positive psychological adjustment (Roesch & Weiner, 2001).

Folkman and Lazarus and their colleagues (1985; Folkman et al., 1986a; Lazarus & Folkman, 1984) have found evidence to support the contention that secondary appraisals and coping are related. The authors report that in situations where participants felt that they had some influence over the stressor, there was evidence of greater reliance

on problem focused forms of coping such as confrontive coping and planful problem solving. In situations appraised as being unchangeable or outside their control, participants engaged in more emotion-focused forms of coping such as distancing and escape-avoidance(Folkman & Lazarus, 1980; Folkman & Lazarus, 1985; Folkman et al., 1986a). In a further study based on a large community sample, Folkman, Lazarus, Gruen, & DeLongis (1986b) found that secondary appraisal was not a significant predictor of either psychological symptoms or health status, but that primary appraisal accounted for significant variance in total psychological symptoms.

The Nature of Coping

Within the stress and coping model, two distinct forms of coping have been the primary focus of interest: problem-focused and emotion-focused coping (Lazarus & Folkman, 1984). Problem-focused coping is viewed as the active management of a stressor, while emotion-focused coping involves directing coping efforts towards emotional responses to stress. Most research that has employed this dichotomy of problem-focused and emotion-focused coping has defined emotion-focused coping as denial, withdrawal or wishful thinking (Parker & Endler, 1996). Expressed in these terms, it has been concluded by some authors that this form of coping is less constructive than problem-focused approaches (Lazarus, 1999).

Since the development of the problem-focused/emotion-focused coping dichotomy, a large number of diverse coping dimensions have been developed using both rational and empirical methods (Parker & Endler, 1992). Recent reviews have argued that despite the enormous amount of research in the area, there is very little consistent evidence indicating which forms of coping may be considered adaptive (Coyne & Racioppo, 2000). Some coping studies have found that problem-focused coping behaviours such as problem solving, information seeking, and positive comparisons, were associated with reduced distress (Aldwin & Revenson, 1987; McCrae & Costa, 1986; Pearlin & Schooler, 1978). Others have reported the opposite pattern (Baum, Fleming, & Singer, 1983).

One study by Menaghan (1982) found that while problem-focused coping had little effect on emotional distress, it was associated with a reduction in subsequent problems. Pakenham (1999) also reported a lack of association between problem-focused coping and several measures of psychological adjustment. In contrast, greater reliance on

emotion-focused coping was related to higher levels of global distress, depression, and poorer subjective ratings of health. In a longitudinal study, Folkman et al. (1986b) found that appraisal and coping failed to predict somatic health status of 150 people from the general community.

In a number of studies on coping with the impact of psychological distress, such as being diagnosed with HIV, it has been found that engaging in behaviour such as wish-fulfilling fantasy, emotional venting, or denial was associated with increased distress (Fleishman & Fogel, 1994). Self-reports of anxiety, negative affect, and depressed mood have all been found to be positively related to escapism (Aldwin & Revenson, 1987), neurotic coping (McCrae & Costa, 1986), avoidance coping (Billings & Moos, 1981), and selective ignoring (Pearlin & Schooler, 1978). In a meta-analysis of the relation between coping and physical and psychological health in nonclinical populations, Penley et al. (2002) found that problem-focused coping was positively related to overall health outcomes, while planful problem solving and positive reappraisal were unrelated. In contrast, there was a negative relation between physical and psychological adjustment and use of confrontive coping, distancing, self-control, seeking social support, accepting responsibility, wishful thinking, and avoidance.

Criticisms of Stress and Coping Theory

Recent reviews of stress and coping research have been highly critical of some aspects of the studies conducted in this area (Coyne & Racioppo, 2000; Oakland & Ostell, 1996; Parker & Endler, 1992; Somerfield & McCrae, 2000). Commentators have highlighted problems with methodology, particularly in relation to the measures used to evaluate appraisal and coping (Coyne & Racioppo, 2000; Parker & Endler, 1992; Somerfield & McCrae, 2000). It has been argued that despite the prodigious amount of research conducted, relatively little in terms of clinical or theoretical benefit has resulted (Somerfield & McCrae, 2000). According to Coyne and Racioppo (2000), instrumentation is largely to blame for the lack of meaningful findings from coping research. The authors argue that the most common coping instruments employed, omnibus coping checklists based upon 'normal coping' fail to assess clinically relevant variables and are therefore unable to provide clinically relevant data (Coyne & Racioppo, 2000).

Extensive criticism has also been levelled at the psychometric properties of

coping checklists (Parker & Endler, 1992). Parker and Endler (1992) conducted a comprehensive review of the measurement of coping. The authors concluded that most of the coping scales reviewed suffer from at least one major psychometric inadequacy. Inadequacies reported include omitting information about scale construction or test/retest reliability, lack of empirical validation of coping scales, and inadequate or absent construct validity. The authors were also critical of the unstable or unsubstantiated factor structures presented by many coping scales (Parker & Endler, 1992).

The most common method of empirically deriving coping dimensions is through the use of principle components or factor analyses. There is a lack of consensus about how to determine the number of factors to be extracted using these techniques. The use of an eigenvalue-one criterion has been highlighted as one of the primary causes of this problem. It has been argued that this procedure is known for producing over-factoring and fragmentation of the true factor structure (Comrey, 1978; Roger, Jarvis, & Najarian, 1993; Walkey & McCormick, 1985). This approach has resulted in scales having up to 28 factors, with some factors only containing one item (McCrae, 1984). It has been argued that the large number of factors extracted from some coping scales may have contributed to the masking of core coping dimensions (Cook & Heppner, 1997).

Two of the most widely used scales, The Ways of Coping Checklist (WCC, Folkman & Lazarus, 1980) and the more recent version, the Ways of Coping Questionnaire (WCQ, Folkman, 1988), are coping instruments which have been criticised for the instability of their factor structures, which have varied considerably across studies (Edwards & O'Neill, 1998). For example, the WCQ has been demonstrated to have an unstable factor structure with anything between three and nine factors emerging when used with different populations (Folkman & Lazarus, 1985; Folkman & Lazarus, 1988; Vitaliano, Russo, Carr, Maiuro, & Becker, 1985; Edwards & Baglioni, 1993; Oakland & Ostell, 1996). Folkman and Lazarus (1985) originally derived a six factor solution for the new WCQ. As one factor contained three emotion-focused items that they believed were theoretically distinct, they then created an additional two factors. A year latter, Folkman and her colleagues (Folkman et al., 1986a) administered their WCQ to another sample and factor analysed the results to derive eight different factors from those found in the previous year.

The COPE (Carver, Scheier, & Weintraub, 1989) is another scale that has been

criticised for over-factoring and poor reliability. Using an eigenvalue greater than one criterion, 12 factors were obtained, one of which was dropped (due to low item loadings). The authors subsequently formed two more factors from the original analyses and then created a further factor containing only one item which did not load onto any original factors. Despite these methodological difficulties, alpha reliabilities as low as .45, and its validation on nonclinical populations, versions of the COPE have been used to examine coping with schizophrenia in a number of studies (for example, Meyer, 2001; Vollrath, Alnes, & Torgersen, 1996; Vollrath, Torgersen, & Alnes, 1998).

Support for claims of over-factoring come from reports of scales with multiple factors being reduced to two or three factors via second-order factor analyses. A second-order analysis of the A-COPE (Patterson & McCubbin, 1987) reduced it's original 12 scales down to just 2: a utilising personal and interpersonal resources factor, and a ventilation and avoidance factor (Hanson et al., 1989). Similarly, the original authors of the COPE (Carver et al., 1989) themselves reported a second-order factor analysis based on scores for 14 of the COPE's factors which resulted in 4 factors which they labelled task, emotion, cognitive coping and avoidance. Another separate second order analysis of the COPE also derived three factors which were labelled problem-focused coping, avoidance coping, and lack of emotion-focused coping (Ingledew, Hardy, Cooper, & Jemal, 1996).

A growing number of researchers are moving away from extracting large numbers of factors for their coping inventories, instead deriving more parsimonious factor solutions with three or four factors (Amirkhan, 1990; Billings & Moos, 1981; Billings & Moos, 1984; Endler & Parker, 1990; Feifel & Strack, 1989; Roger et al., 1993, Rosenfarb et al., 1999). Others have re-assessed existing coping scales and found that a smaller number of factors are more appropriate than the multiple factors originally proposed by the scales' author (Cook & Heppner, 1997; Lyne & Roger, 2000). These more parsimonious factor solutions are remarkably similar, despite using diverse target populations and item pools. This suggests the presence of a small number of common underlying coping dimensions. The trend towards fewer factors is partly in response to criticisms discussed above (Endler & Parker, 1990; Parker & Endler, 1992).

Further support for the existence of a small number of core coping dimensions comes from a study conducted by Cook and Heppner (1997). The purpose of their study

was to examine the dimensions underlying coping inventories in an attempt to determine whether any common dimensions could be derived. They examined coping with a sample of 329 undergraduates using three popular coping inventories: the Coping Inventory for Stressful Situations (CISS, Endler and Parker, 1994), the COPE (Carver et al., 1989), and the Coping Strategies Inventory (CSI, Tobin, Holroyd, Reynolds, & Wigal, 1989).The authors predicted that four underlying dimensions would emerge from a confirmatory factor analyses of the scales. Scale scores from the three coping measures were used as observed variables. As predicted, a problem-focused, task orientated factor emerged, as did an avoidance factor. However, the predicted third and fourth factors, an emotion management, and a social support factor, emerged as one factor rather than two.

The extent of problems associated with omnibus checklists in general has led to the suggestion by some authors that they should come with a warning advising against their use (Coyne & Racioppo, 2000). The present research program seeks to address the criticism of generic coping scales by developing and evaluating a negative symptom-specific appraisal and coping measure designed specifically for use with people with schizophrenia. Data gathered using this specialised instrument will then be used to test the model of adjustment to negative symptoms presented below.

THE VULNERABILITY-STRESS-COPING MODEL OF ADJUSTMENT TO INDIVIDUAL NEGATIVE SYMPTOMS

General Overview

Figure 3.1 presents a preliminary model of objective indicators and subjective experience variables proposed to be influential in adjustment to the negative symptoms of alogia, anhedonia, attention problems, avolition, and blunting. As discussed previously, the model has been guided by vulnerability-stress models of schizophrenia (Liberman, 1986; Nuechterlein et al., 1992a, Yanos and Moos, 2006; Zissi et al., 1998) and the transactional model of stress and coping (Lazarus, 1999; Lazarus & Folkman, 1984). The vulnerability-stress-coping model presented represents an amalgamation of the two approaches. It employs aspects of both models to determine which variables may be influential in adjustment to negative symptoms, and the nature of relationships between these variables.

The model is based upon the premise that two main types of variables will

influence adjustment to SANS negative symptoms: objective indicators and subjective experience variables. It is proposed that the five SANS negative symptoms represent individual stressors to people with schizophrenia and that each symptom needs to be examined separately in relation to the role of the two types of variables.

Within the model, individual negative symptom levels represent an objective indicator of stressor intensity, and as such are a focal variable within the model. Pre-existing objective factors included in the model are a range of participant demographic and illness characteristics. These variables are considered to be of secondary importance in the stress and adjustment process. The subjective experience variables included in the model are the focal variables of negative symptom-specific appraisals and coping responses, and the secondary variable of insight.

In line with evidence discussed in Chapter 2, a multidimensional approach is taken to the measurement of the focal objective and subjective variables within the model. The multi-item SANS is used to provide an objective clinical evaluation of each of the five negative symptom stressors, and multidimensional measures are employed to evaluate insight, appraisal and coping. Adjustment in schizophrenia is also hypothesised to be multidimensional, encompassing both objective and subjective domains. It is proposed that objective indicators and subjective experience variables will be related to adjustment once influential demographic and illness factors have been controlled. Clinician-rated negative symptom level and participant appraisals represent alternative measures of the stressors under investigation, one objective (or at least, externally observed) and one subjective (and internally observed).

Two alternative models of the relations between the objective indicators and subjective experience variables are examined in this research program. The first is the direct effects model, and the second is a more complex mediating model. It is important to note that although each negative symptom will be investigated separately, it is not suggested that either the symptoms, or the underlying stress and coping processes related to adjustment, are unrelated. Rather, separate investigation is an important preliminary step to clarifying aspects of the model and the impact of each symptom. Thus, separate investigation of individual symptoms is a necessary foundation on which future research

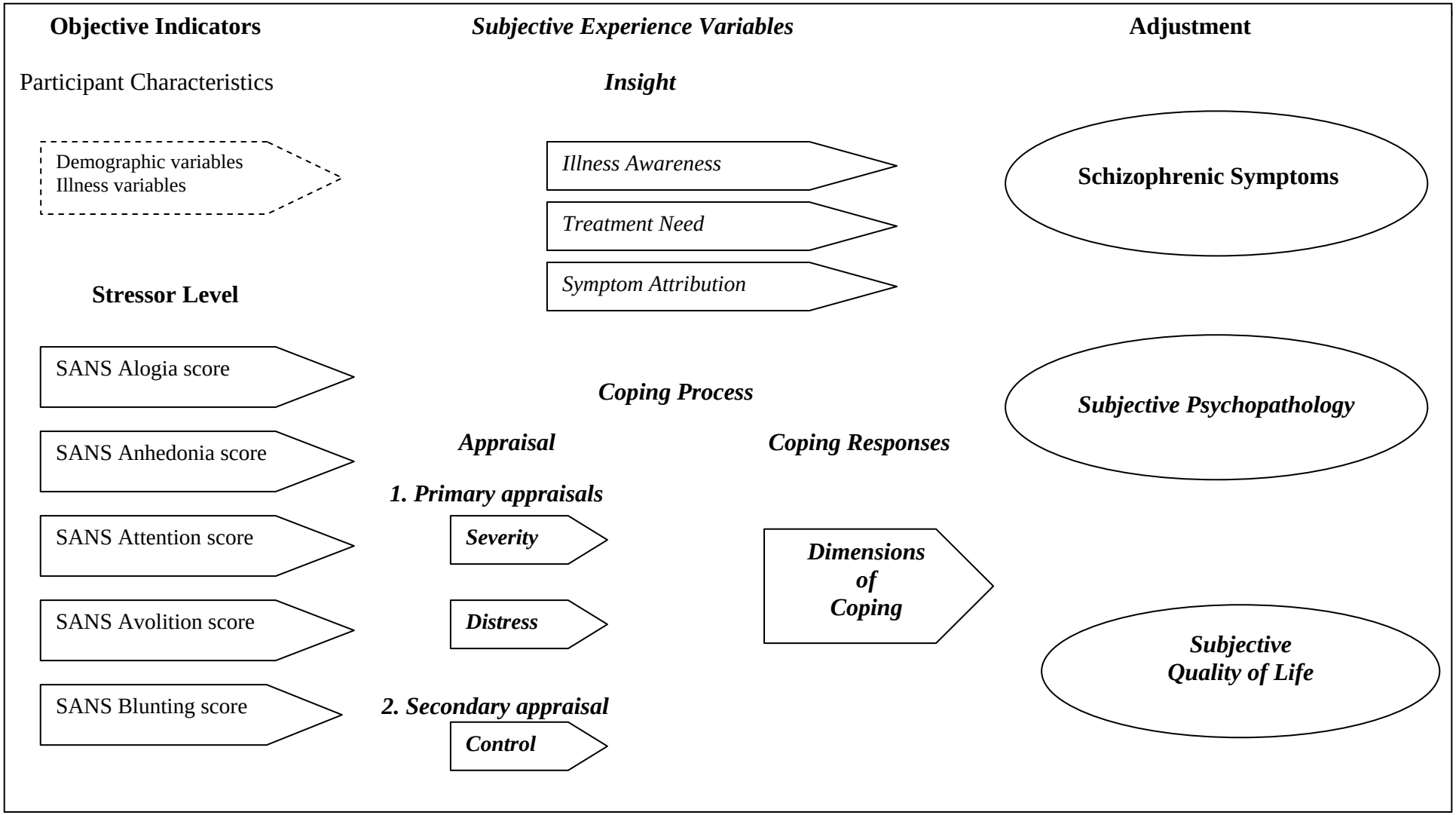

Figure 3.1. A vulnerability-stress-coping model of adjustment to individual negative symptoms.

may be built to simultaneously examine all the negative symptoms experienced by an individual. The following discussion will review past research concerning evidence in support of the model and the role of the objective and subjective factors included as predictors or adjustment variables.

Background

A number of studies have presented evidence supporting the theory that vulnerability to stress and poor coping skills are significant factors contributing to poorer adjustment in schizophrenia (Hultman et al., 1997; Zubin et al., 1992). A growing number of studies have supported the utility of a stress and coping framework in relation to positive symptoms such as hallucinations (Mann, 2003; Singh, Sharan, & Kulhara, 2003). As reviewed in the previous chapter, negative symptoms may also constitute a significant, ongoing source of stress for people with schizophrenia. A number of studies have found that people with schizophrenia differ in the degree to which they are aware of their negative symptoms and how they appraise them (Mueser et al., 1997b; Selten et al., 2000a; Selten et al., 1993; Selten et al., 2000b). Families and carers report a heavy burden associated with these symptoms (Raj, Kulhara, & Avasti, 1991), and persisting negative symptoms are known to extract a high economic cost from the community (Mueser & McGurk, 2004).

The subjective experience variables of appraisal and coping have been variously referred to in the schizophrenia literature as self-control (Breier & Strauss, 1983), self-healing (Boker et al., 1984), autoprotective efforts or self-stabilizing manoeuvres (Brenner, Boker, Muller, Spichtig, & Wurgler, 1987), stress management (Norman et al., 2002), and illness management (Mueser et al., 2006). The amount of research evaluating how individuals appraise and cope with the symptoms of schizophrenia has increased substantially over the last twenty years. Although findings have been equivocal, these studies have consistently demonstrated that many people with schizophrenia actively employ a range of coping responses in an attempt to manage the impact of their symptoms on their lives (for example, MacDonald et al., 1998; Vollrath et al., 1998; Rosenfarb et al., 1999; Horan & Blanchard, 2003). A number of factors may be responsible for the failure to find any consistent associations between symptom coping and adjustment, including the widely heterogeneous nature of schizophrenia and differences in the methodologies employed.

Some studies have employed 'omnibus' coping measures developed for use with general, non-psychiatric populations (for example van den Bosch et al., 1992; Jansen, Gispen-de Wied, Kahn, & Jansen, 2000; Lysaker, 2003a). As discussed above, it has been argued that these measures lack validity when used to examine coping in relation to specific health conditions (Coyne & Racioppo, 2000). Some investigators have employed a rational approach and constructed measures containing coping behaviours based on face validity, which participants then endorse (for example, Carr and Katsikitis, 1987). Other investigators have conducted structured interviews to examine coping in schizophrenia (for example, Lobban et al., 2004; Middelboe, 1997). The small number of studies which have examined coping in relation to negative symptoms have generally used an interview-based approach (for example, Carr, 1988; Carr & Katsikitis, 1987; Cohen & Berk, 1985; Mueser et al., 1997b; Wiedl & Schottner, 1991).

A number of investigators have developed specialised coping measures for use with schizophrenia or severe mental illness (for example, Bak et al., 2001a; Rivera-Mindt & Spaulding, 2002; Tarrier, 1992; Yanos, Knight, & Bremer, 2003). In addition, there have been several non-English coping inventories developed for use with people with schizophrenia (for example Schottner, Wiedl, & Schramer, 1988 cited in Wiedl & Schottner, 1991). The author is not aware of any published English language measures specifically evaluating the primary and secondary appraisals made in relation to SANS negative symptoms and the coping responses employed based on these appraisals. Further, little published research has systematically examined subjective factors related to negative symptoms and adjustment in schizophrenia. Studies which have examined one or more of these factors have produced inconsistent findings.

Wiedl and Schottner (1991) have argued that inconsistent findings in relation to symptomatic coping in schizophrenia should be addressed in two ways. First, by examining coping within samples selected on the basis of clinical similarities, or second, by selecting participants on the basis of theoretically relevant stress and coping characteristics rather than assessing total samples of patients with schizophrenia. In this way, relevant symptom specific coping data is not lost within the analysis of large generic samples. In response to this suggestion, a population and symptom-specific model to guide the investigation of the relations between adjustment and negative symptom level, insight, appraisal, and coping in schizophrenia is presented below.

Components of the Model

Objective Indicators

Participant Characteristics

The primary focus of the present research is the stress and coping process associated with negative symptoms and its relation to adjustment. As a result, objective variables in the form of participant characteristics are treated as secondary variables within the model. This approach is supported by the findings of recent reviews of the determinants of QOL in people with severe mental illness (Hansson, 2006; Holloway & Carson, 2002). Holloway and Carson (2002) concluded that evidence from a substantial body of cross-sectional research indicated that personal and demographic characteristics either had a weak relationship or no relationship with subjective wellbeing. Thus, the relations between participant characteristics and other variables within the model will be examined and only those participant factors with a demonstrated relation with primary variables will be included in model testing.

A total of 10 participant variables are considered as potentially relevant objective factors within the model. The demographic characteristics which will be examined include: gender, age, marital status, education level, and employment status. Illness variables included within the model are: diagnosis (schizophrenia or schizoaffective disorder), age at diagnosis, length of illness, number of hospitalisations, and current antipsychotic medication usage. The inclusion of a large range of pre-existing variables is partly in response to criticisms that many researchers do not place enough emphasis on the potential role of demographic characteristics in the coping process (Maes, Leventhal, & De Ridder, 1996; Parker & Endler, 1992). In addition, as discussed in Chapter 2, several illness variables, such as antipsychotic medication dose, have been implicated in the distinction between primary versus secondary negative symptoms (Schooler, 1994).

Personal characteristics may influence coping with negative symptoms in a number of ways. For example, coping has been conceptualised as a process of trial and error in an attempt to reduce or eliminate the effects of a stressor (Lazarus and Folkman, 1984). It is therefore possible that older people, or those who have experienced negative symptoms for longer periods of time, may have a broader range of coping responses or may use more effective strategies in response to their symptoms. This argument is in line with the transactional nature of stress and coping theory which argues that feedback from

previous coping attempts influence subsequent appraisals and coping responses.

As with other domains of coping research, evidence regarding the role of participant factors in the coping process is mixed and at times, contradictory. It is likely that these inconsistent findings reflect the large differences in research methodology, coping measurement and nomenclature employed. In the general coping literature, age and gender are the most commonly investigated demographic characteristics examined in relation to the stress and coping process. Findings from the non-clinical literature will be presented first followed by a review of findings based upon population samples with severe mental illness.

With regard to gender, a number of differences have been found in the types of coping that are relied upon. Females have been reported to rely more heavily on seeking social support and venting emotions, while men have been found to rely more heavily on alcohol consumption (Amirkhan, 1990; Carver et al., 1989). It has also been reported that emotional approach forms of coping are associated with higher levels of life satisfaction and lower depression and hostility in females, and decreased satisfaction and greater depression in males (Stanton, Danoff-Burg, Cameron, & Ellis, 1994). Others have reported that when investigating coping with chronic disease, greater use of avoidant and/or emotion-focused coping was associated with female gender, as well as older age, and lower education levels (Maes et al., 1996).

Endler and Parker (1990) also found that females use emotion and avoidance coping more than males. Overall, both groups relied most heavily on task coping and used avoidant forms of coping the least (Endler & Parker, 1990). The link between gender and coping is not consistently found, with other studies failing to find any evidence of gender differences (for example, Pakenham, 1999; Terry, 1991). The same inconsistency in findings occurs in regard to age. It has been reported that younger people use more active coping strategies such as problem solving, confrontive coping, and seeking social support, compared with older people, who rely more heavily on positive reappraisal, distancing and humour (Lazarus, 1999). Others have failed to find an association between coping and age (Pakenham, 1999). Lazarus (1999) has argued that evidence of age differences, particularly in cross-sectional studies, may be due in large part to cohort effects. Strack and Feifel (1996) have also argued that there may be developmental changes in coping across the life-span.

In the schizophrenia literature, relations between participant characteristics and

both stress and coping variables and adjustment variables have been inconsistent. The associations between gender and age and negative symptoms have already been reviewed in Chapter 2. Just as the non-psychiatric literature frequently fails to consider sample characteristics in coping research, many schizophrenia studies examining insight, appraisal, coping, or adjustment have not investigated the role of demographic or illness variables (for example Andres et al., 2000; Ritsner et al., 2003a; Ritsner & Ratner, 2006b; T.E. Smith et al, 1998; Ventura, Nuechterlein, Subotnik, Green, & Gitlin, 2004).

In a review of subjective experiences in schizophrenia, Peralta and Cuesta (1994) concluded that most studies made no reference to the relation between subjective variables and gender, age, level of education, or years of illness. However, they reported that women reported significantly greater subjective awareness of symptoms. They also found a significant inverse relation between the degree of subjective experiences and level of education (Peralta & Cuesta, 1994). In their examination of the subjective experience of deficit symptoms, Liddle and Barnes (1988) reported that degree of awareness decreased with age.

With regard to insight, some studies have reported that dimensions of insight may be differentially related to demographic or illness variables. For example, Kim et al. (1997) examined the relations between the insight dimensions of treatment compliance, illness awareness, and relabelling of symptoms and several pre-existing factors and found that age at onset predicted poorer ability to relabel symptoms. MacPherson et al. (1996) found that total SAI scores (David, 1990) were significantly positively related to years of full-time education and length of illness, significantly negatively related to antipsychotic medication level, total negative symptoms, and mental status score, and unrelated to age. In contrast, in a comparison between self-ratings and objective ratings of insight, Young et al. (2003) failed to find any association between the dimensions of insight for either source of ratings and gender, age, education, length of illness, or chlorpromazine equivalents of medication dosage. Carr and Katsikitis (1987) reported a significant relation between higher levels of insight and greater use of maladaptive behaviours.

In a large treatment study of relapse and rehospitalisation in schizophrenia and schizoaffective disorder conducted by Doering et al. (1998), poorer outcome was significantly associated with a diagnosis of schizoaffective disorder, male gender, younger age, and absence of antipsychotic treatment. Findings concerning the impact of marital status and employment were mixed. Being married was associated with a higher

rehospitalisation rate in one sample but not in another, as was longer duration of employment (Doering et al., 1998). Others have reported associations between lower levels of adjustment and a diagnosis of schizophrenia, male gender, older age, and less education (Corrigan, Giffort, Rashid, Leary, & Okeke, 1999; Torgalsboen & Rund, 1998). In contrast, Hoffmann and Kupper (2002) failed to find any significant associations between rehabilitation outcome and more than ten demographic and illness variables.

Yanos et al. (2001) failed to find a relation between gender, marital status or diagnosis and the variables of appraised self-efficacy, active problem-focused coping, and self-reported social functioning. The authors found that having more years of education was related to higher levels of social functioning, while older age at first hospitalisation was related to greater use of active forms of coping (Yanos et al., 2001). In a later study, Yanos et al. (2003) reported that, in a sample of 79 outpatients with severe mental illness, participants that failed to report the presence of symptoms tended to be older and were more likely to have schizophrenia rather than schizoaffective disorder or another mood disorder.

In their sample of older people with severe mental illness, Patterson et al. (1997a) reported that avoidant coping, SANS scores, depression, and levels of social functioning and wellbeing were unrelated to age, duration of illness, or chlorpromazine equivalents. The authors also reported that a participant diagnosis of schizophrenia versus schizoaffective or mood disorder was unrelated to adjustment measures of social functioning and wellbeing. Similarly, Lysaker et al. (2005b) reported that in their mixed sample of 42 outpatients, diagnosis (schizophrenia or schizoaffective disorder) was unrelated to coping, symptoms or cognitive abilities.

In contrast, Ritsner et al. (2000) did report a difference in wellbeing based upon diagnosis. Participants diagnosed with schizoaffective disorder reported significantly greater levels of wellbeing in relation to subjective feelings, social relationships, and satisfaction with medication than participants with schizophrenia. In a later longitudinal study, Ritsner and his colleagues (Ritsner, Gibel, & Ratner, 2006a) reported that changes in subjective ratings of global quality of life were unrelated to gender, marital status, age, age at onset, education, duration of illness, number of hospitalisations, and length of last hospitalisation.

Lee et al. (1993) found that men with schizophrenia rated coping strategies such

as better organization and occupation of time as more helpful than women. Women reported that they found social support and guidance more helpful than men (Lee et al., 1993). In a study of 86 outpatients with schizophrenia, Cohen and Berk (1985) failed to find any gender or age differences in coping styles. Significant differences in coping were found in relation to employment, with employed participants more likely to use active forms of coping and unemployed participants more likely to do nothing and feel helpless in response to their symptoms (Cohen & Berk, 1985). Carr and Katsikitis (1987) reported in their study of 200 outpatients with schizophrenia that several types of coping were related to demographic factors. Younger participants relied more heavily on self-stimulation and maladaptive behaviour while males used more self-stimulation and less adaptive learning techniques than females (Carr & Katsikitis, 1987).

In their interview-based study of coping with schizophrenic symptoms, Middelboe and Mortensen (1997) reported that neither age nor gender were associated with the total number of coping strategies or number of active or passive strategies employed. In a longitudinal study of the stability of task, emotion, and avoidant form of coping in a sample of 148 people with schizophrenia, Strous, Ratner, Gibel, Ponizovsky, & Ritsner (2005) also failed to find an association between age, education, or length of illness and coping.

It has also been suggested by some investigators that women may adjust better to schizophrenia than men (Goldstein, 1990). Yet, when Thornicroft et al. (2002) conducted a large multi-site investigation of the relation between gender and adjustment for 404 people with schizophrenia, they failed to find any gender differences in relation to global ratings of quality of life. In a review of quality of life in schizophrenia, Holloway and Carson (2002) concluded that there was some evidence that higher levels of global subjective quality of life were related to being employed, but that most other demographic variables were largely unrelated to subjective wellbeing. Finally, Rocca et al. (2005) found that younger age at onset of illness was significantly related to greater severity of both depression and negative symptoms, while male gender was only significantly related to greater severity of depression.

In summary, findings concerning the role of participant demographic and illness variables in adjustment to schizophrenia are contradictory. Past research has failed to find consistent evidence of a strong relationship between participant characteristics and the stress-coping process in schizophrenia. This trend is in accord with the limited role

assigned to participant characteristics within stress and coping theory (Lazarus & Folkman, 1984). Within vulnerability-stress conceptualisations of schizophrenia, some participant characteristics, such as age at onset of illness, have been considered as vulnerability markers representative of poorer prognosis, or the deficit syndrome (Carpenter, 1992; Carpenter et al., 1988; Nuechterlein et al., 1992b). However, investigators employing this theoretical framework to stress research generally control for participant characteristics rather than include them as factors which are central to determining outcome (for example, Brekke et al., 2005; MacDonald et al., 1998; Yanos et al., 2001).

Stressor Level

Objective stressor levels are operationalized within the model as clinician ratings of negative symptoms. In line with the multidimensional nature of negative symptoms, each negative symptom is measured individually by summing ratings on two or more observable behavioural items from the SANS (Andreasen, 1984a). By calculating individual subscale score totals each SANS negative symptom is examined as a separate stressor within the model. As outlined in Chapter 2, although accumulated evidence supports the contention that negative symptoms are multidimensional, investigators are yet to reach a consensus as to the composition of these dimensions of impairment. Because of this uncertainty, separate investigation of each of Andreasen's SANS symptoms was deemed appropriate to allow for a fine-grained investigation of the objective and subjective impact of each of the five symptoms.

A number of investigators have examined aspects of stress and coping in relation to clinician-rated negative symptoms. None have specifically investigated individual SANS negative symptoms within a vulnerability-stress-coping model. Negative symptom stress has been measured both objectively (for example, Bechdolf et al., 2003; Lysaker et al., 2006; Ritsner et al., 2000) and subjectively (for example, Lecomte & Mercier, 2005). As for most associations examined within this research program, evidence from previous studies regarding the relations between objective negative symptom levels and subjective factors remain unclear, as do the relations with adjustment.

In one of the few studies to examine any separate dimensions of negative symptoms, Ritsner et al. (2000) tested a model of adjustment for 210 people diagnosed

with severe mental illness. Ten PANSS dimensions were examined as predictors of subjective quality of life (SQOL). Using a backwards selection procedure to select the most related predictors, PANSS anergia was found to be a significant predictor of mean SQOL and for the subjective feelings subscale of the SQOL measure. In each case, higher levels of objectively rated anergia (SANS avolition) was related to poorer SQOL (Ritsner et al., 2000). In a follow-up longitudinal study, SQOL was evaluated in 148 participants 16 months later (Ritsner et al., 2006a). Ritsner et al. (2006a) reported that anergia remained a significant predictor of lower general SQOL both for outpatients and those discharged from a subsequent admission.

In a related study with the same sample, Strous, Ritsner and colleagues examined the utility of a range of objective and subjective factors for predicting coping at illness exacerbation and stabilization (Strous et al., 2005). Total negative symptoms were not related to any of the three coping dimensions during an exacerbation of schizophrenia (Strous et al., 2005). The PANSS negative factor was significantly negatively related to task- and emotion-related coping at stabilization but not avoidance-related coping. In contrast, Lysaker et al. (2005b) reported that total PANSS negative symptoms were unrelated to active forms of coping, but significantly negatively related to a resigning coping style. A later study by Lysaker and his colleagues (Lysaker et al., 2006) found no association between negative symptoms and a narrative scale measuring subjective experience of the self and schizophrenia.

The findings reviewed above suggest that individual negative symptom dimensions may be differentially related to aspects of the stress-coping process and adjustment levels. Methodological differences in measurement and research design makes it difficult to evaluate the validity of conceptualising individual schizophrenic symptoms as potential stressors. The impact of individual negative symptoms on level of functioning and wellbeing has rarely been systematically examined within vulnerability-stress or stress and coping frameworks. Further research is clearly needed to clarify the nature and impact of these symptoms, as well as how they are subjectively experienced by people with schizophrenia.

Subjective Experience Variables

Insight

Insight is conceptualised within the model as a subjective experience factor that

may be related to appraisals of negative symptoms and/or coping responses, or adjustment. The aetiology and multidimensional nature of insight was reviewed in Chapter 2, as were findings concerning relations between insight and negative symptoms. Although the construct of insight is not directly canvassed in most vulnerability-stress and stress and coping models, conceptually, it has strong parallels with aspects of both domains. As discussed in the previous chapter, within schizophrenia research, insight has been conceptualised as both a biological vulnerability indicator and as a cognitive factor related to attempts to understand or protect against subjective illness experiences (Birchwood et al., 1994; Cuesta & Peralta, 1994; David & Kemp, 1998). Both aetiological models have clear associations with the variables proposed to be influential within the vulnerability-stress-coping model presented. As a result it would be expected that insight would be influential in adjustment to negative symptoms.

There is also a clear association between the cognitive conceptualisation of insight and the theoretical underpinnings of stress and coping theory. Appraisals regarding the degree of threat posed by a SANS stressor and what may be done about it should theoretically be closely linked to the degree an individual is aware of being mentally ill, their beliefs about symptoms accompanying that illness, and their understanding of the role of treatment for that illness. Thus, if the cognitive model of insight is relevant to adjustment to negative symptoms, significant associations would be expected between insight and both objective stressor levels and the other subjective experience factors of appraisal and coping.

The evidence concerning the associations between insight and the subjective experience of negative symptoms is limited and inconclusive. There is some evidence to suggest that subjective awareness of cognitive deficits similar to alogia and attention problems may be related to coping and that both factors may be associated with underlying neurocognitive impairments (van den Bosch & Rombouts, 1997). Because of this link, it has been argued that degree of insight may be a central factor in the coping process (Middelboe, 1997). Others have reported a lack of association between insight and the appraisal of negative symptoms, and suggested that this finding may indicate that the two represent separate constructs (Iancu et al., 2005).

A small number of studies have examined the role of insight in coping with schizophrenia. Middelboe and Mortensen (1997) explored coping strategies and level of illness awareness in 98 long-term mentally ill patients, 85% of whom had an ICD-10

diagnosis of a schizophrenia spectrum disorder. Illness awareness was measured using David's (1990) Schedule for the Assessment of Insight (SAI). The authors found that a high awareness score predicted the total number of coping strategies, the strategy of increased socialization, and the total number of active strategies engaged in by patients (Middelboe, 1997). Ritsner (2003b) reported that the awareness of illness subscale from the Birchwood et al. (1994) Insight Scale was a significant predictor of two SQOL domains, social relationships and general activities. In both cases, improvements in quality of life were negatively related to awareness of illness (Ritsner, 2003b).

Several studies have examined the association between insight and subjective appraisals of schizophrenic symptoms, including negative symptoms. These studies have been in response to growing evidence that clinician assessments of symptoms frequently have little or no relation to patients' perceptions of these symptoms (Amador et al., 1994; Peralta & Cuesta, 1994; Schwartz, 1998b). This lack of correlation between objective and subjective symptom ratings has led to several studies investigating potential predictors of this difference. For example, Iancu et al. (2005) found that while SAPS scores correlated with positive symptoms on their self-reported Positive and Negative Symptoms Questionnaire (PNS-Q), SANS scores did not. The authors examined insight scores on the SUMD (Amador et al., 1994) in an attempt to explain this disparity, but failed to account for the lack of relationship between subjective and objective measures of negative symptoms.

In their study of the appraisal of negative symptoms, Selten et al. (2000a) included a single insight item, question 104 from the Present State Examination (PSE, Wing, Cooper, & Sartorius, 1974 cited in Selten et al., 2000a), as a possible predictor of distress levels related to negative symptoms. The item is defined as "the subjects ability to recognise that the psychotic symptoms are anomalies of his own mental processes" (p. 177, Wing et al., 1974; cited in Selten et al., 2000a). The authors found that insight was a significant predictor of subjective distress caused by negative symptoms at initial testing and after a 2 month interval.

Finally, a concept very closely resembling insight and appraisal is the subjective experience variable of self-regulation. An illness model, the self-regulation model (SRM) was originally formulated to explain individual responses to physical illness (Lobban, Barrowclough, & Jones, 2003). Lobban et al. (2003) recently applied the SRM to understanding schizophrenia. According to this model, the coping behaviours chosen

by individuals are guided by their interpretation and evaluation of their disorder. Within the SRM model, illness evaluations and coping strategies are interrelated and closely resemble the proposed personal protector role of appraisal and coping within the vulnerability-stress model of schizophrenia. Illness evaluations are composed of numerous dimensions including awareness of the presence of symptoms, attributions about the cause and consequences of symptoms, and appraisals about the degree of personal control and treatment control over symptoms. The authors reported evidence in support of the SRM model in a recent study which found that illness beliefs were the strongest predictors of outcome in a sample of 124 people with schizophrenia (Lobban et al., 2004).

Thus, although inconclusive, evidence from the literature reviewed above suggests that insight may be an important aspect of subjective experience that is related to the appraisal and coping process and/or directly related to adjustment. Given the central role accorded to insight historically in conceptualisations of schizophrenia, and paucity of research investigating insight in relation to the subjective experience of negative symptoms, the three dimensions of insight from the IS (Birchwood et al., 1994) were included in the present research.

Appraisal

The construct of appraisal examined within the model is drawn primarily from the stress and coping domain. Few studies examining adjustment to negative symptoms have taken a multidimensional approach to the subjective appraisal of individual symptoms. As reviewed above, stress and coping theory proposes that two major types of appraisal are central to coping responses to a stressor, primary and secondary appraisal. These types of appraisal are included with the model as important subjective experience factors proposed to be influential in the coping process and directly and indirectly associated with adjustment to negative symptoms.

Two dimensions of primary appraisal are measured within the model: appraised symptom severity and appraised distress caused by the symptom. One aspect of secondary appraisal, appraised control over the negative symptom, was also proposed to be influential within the model. Also inherent in the model is the primary appraisal of symptom presence. If a person appraises a negative symptom as absent, then according to stress and coping theory, they will not engage in any coping responses in relation to

that symptom (Lazarus, 1999). Thus, for participants who are unable or unwilling to identify the presence of a negative symptom, the impact of the symptom on adjustment cannot be evaluated within the model.

Few studies have examined appraisals of specific negative symptoms, and even fewer have investigated the relations between these subjective factors and stress, insight, coping or adjustment in schizophrenia (for example, Mueser et al., 1997b; Selten et al., 1993; Selten et al., 2000a; Wiedl, 1992). Chapter 2 reviewed research concerning subjective experience of negative symptoms. The following discussion examines research which has investigated negative symptom appraisals in relation to other objective and subjective variables.

Primary Appraisal

Subjective perceptions of symptom severity and distress were chosen to represent this dimension of appraisal. Findings from the few studies examining the primary appraisal of negative or deficit symptoms were reviewed in the previous chapter. Unfortunately, coping responses were not examined in relation to these appraisals. As discussed in Chapter 2, Selten and his colleagues have conducted several studies to examine primary appraisals of SANS negative symptoms (Selten et al., 2000a; Selten et al., 1993; Selten et al., 2000b; Selten, Wiersma, & van den Bosch, 2000c). A range of findings from these studies are relevant to the present research program, including symptom-specific variations in reports of the presence of objectively present symptoms, and variations in appraised distress. In addition, it was found that the stability of severity ratings for symptom items varied considerably across symptom items over a 2 month period (Selten et al., 1993). These findings support similar reports from past research indicating that primary appraisals of individual negative or deficit symptoms differed substantially across time (Liddle & Barnes, 1988).

A further study by the same group examined the relation between severity appraisals, insight, and adjustment measures. Using regression analysis, Selten et al. (2000c) reported that underestimation of the severity of negative symptoms (compared to objective ratings) was significantly predicted by higher levels of total objective SANS symptoms, lower levels of depression, and higher levels of anxiety. It was reported that the discrepancy between objective and subjective symptom appraisals was unrelated to a single item measure of insight into psychotic symptoms (Selten et al., 2000c).

The previously reviewed research by Wiedl (1992), and Wiedl and Schottner (1991), investigated four aspects of appraisal in relation to a range of symptoms, including anhedonia. Participants appraised a symptom's changeability, controllability, degree of strain or distress, and their level of satisfaction with their coping efforts. Evidence suggested that appraised distress influenced the type of coping used. High levels of strain were related to greater use of non-problem focused and emotional types of coping compared to groups reporting low symptom strain. These results are incongruent with those reported by Boschi et al. (2000) in their study of appraised stressfulness and control of symptoms for 95 people with schizophrenia. The authors reported that 57% of participants appraised their symptoms as highly stressful. Based on correlation analyses, the authors concluded that stress and control were unrelated (r = -.04). Appraised stress was also unrelated to the three forms of coping examined, nor was it related to total coping efforts.

Several investigations have included total scores of symptom distress and/or severity in stress and coping models of schizophrenia. For example, Ritsner and his colleagues (Ritsner, 2003b; Ritsner et al., 2000; Ritsner, Modai, & Ponizovsky, 2002; Strous et al., 2005) have used the Talbieh Brief Distress Inventory (TBDI) to provide a measure of primary appraisal in much of their research. The TBDI measures six psychotic and affective symptom dimensions, although no negative symptoms are included (Ritsner et al., 2002). Based on the TBDI, it has been found that higher levels of appraised distress are associated with greater use of emotional and avoidant forms of coping, and reports of poorer SQOL across a number of domains and populations, both cross-sectionally and longitudinally (Ritsner et al., 2006a; Ritsner et al., 2000).

The literature reviewed above indicates that the construct of primary appraisal, operationalized as subjective negative symptom severity and distress appraisals, may be influential in adjustment to individual SANS symptoms. As reviewed in Chapter 2 and prior sections of Chapter 3, subjective stressor evaluations have been proposed to be influential in both theoretical frameworks informing the present research, vulnerability-stress models of schizophrenia and stress and coping theory (Lazarus, 1999; Lazarus & Folkman, 1984; Liberman, 1986; Liddle & Barnes, 1988).

Secondary Appraisal

Of the research examining symptom or stressor appraisals in schizophrenia, the

secondary appraisal of control has been studied the most. Controllability reflects the degree to which an individual perceives that the presence and intensity of the stressor can be influenced and therefore controlled by their own actions (Wiedl, 1992). The transactional model of stress and coping predicts that individuals who appraise their level of control over a symptom as high may be more likely to engage in active forms of coping in response to the symptom, and cross-sectionally, high levels of control may be associated with better adjustment. Conversely, appraisals of a low control will be associated with more passive or avoidant forms of coping and poorer adjustment. Evidence in support of these predictions has been inconclusive.

A number of studies have failed to find a relation between secondary appraisals and coping or adjustment. As reviewed previously, the studies by Wiedl (1992) and Wiedl and Schottner (1991) examined the secondary appraisals of controllability and changeability in relation to schizophrenic symptoms. Analyses indicated that appraised changeability and controllability were not significantly related to individual symptom groups, appraised stress levels or problem and non-problem centred forms of coping. Wiedl (1992) reported that 79% of participants rated their level of control over symptoms as medium or high. The level of these control appraisals are in direct contrast to those made by the participants in the Boschi et al. (2000) study. The authors found that 70.5% of their sample appraised themselves as having little control over their symptoms. Boschi et al. (2000) also reported that appraised control was unrelated to coping.

In contrast, Bak and his colleagues (Bak et al., 2001a; Bak et al., 2001b) examined appraised control of symptoms in a sample of 21 patients with schizophrenia. The authors found that appraised control over all symptoms was significantly associated with greater use of active forms of coping, and there was a negative relation between control and symptomatic coping. Hoffmann et al. (2000) also reported significant associations between control and coping, in a study of 75 people with schizophrenia. High levels of internal control were related to greater use of active-change coping, while depressive-resigned forms of coping were related to appraisals of lack of individual control over symptoms (Hoffmann et al., 2000). In a predictive model of outcome following a rehabilitation program, the authors reported that the two biggest predictors of poor outcome were global negative symptoms and appraisals of low control over symptoms in the form of high external control beliefs (Hoffmann et al., 2000).

Investigators using alternative theoretical frameworks have examined a variety of

different constructs which have considerable conceptual overlap with control appraisals. These constructs have including learned helplessness (Abramson, Seligman, & Teasdale, 1978), causal attributions (Weiner, 1988), self-efficacy (Bandura, 1982), and locus of control (Rotter, 1966). Despite coming from different theoretical perspectives, most have examined these variables in relation to a specific stressor. To the extent that coping changes across these stressors, the appraisal variable could be considered situationally determined.

Lecomte and Mercier (2005), collected data from the Stress Appraisal Measure (SAM, Peacock & Wong, 1990) in their model of adaptation (adjustment) to schizophrenia. As the subscale with the highest correlation with adaptation, only the controllable-by-self subscale from the SAM was included as a predictor in their model. They found that control appraisals did not make a significant direct contribution to level of adjustment. Two interaction terms, one two-way and one three-way, involving control appraisals did make a significant contribution to adjustment, although not in the direction predicted by stress and coping theory. Surprisingly, for participants with *low* control, an *increase* in stressful life events also led to an *increase* in adjustment. In the three-way interaction, for those with *high* control and *greater* use of accommodation coping, an *increase* in stressful life events also led to an *increase* in adjustment. The authors' state that further research is needed to explain these unexpected findings, although they suggest that they may be attributable to differences in stressors and personal resources reported by low and high control participants (Lecomte & Mercier, 2005).

Bechdolf et al. (2003) proposed a vulnerability-stress-coping model of subjective quality of life for 66 outpatients with schizophrenia. They examined the predictive utility of a range of stress and coping variables including the secondary appraisal measures of self-efficacy and external locus of control. Numerous alternative models were explored using path analysis. Higher self-efficacy significantly predicted better general quality of life in the direct effects analyses. The authors also found that self-efficacy was indirectly related to general quality of life through its negative relation to objective depression levels, which predicted poorer quality of life (Bechdolf et al., 2003). Based on this evidence, and that of several other studies reviewed above, a concept theoretically related to self-efficacy, negative symptom control appraisals, was included within the vulnerability-stress-coping model under investigation in the present research.

Coping

The role of coping in adjustment has been discussed in the general review of stress and coping above, and in the brief review of coping as a protective factor in Chapter 2. The following discussion of the correlates of coping and the relations between coping and adjustment in schizophrenia is divided into two sections. The first discusses findings from studies in relation to coping with other stressors, and the second examines the small number of studies which have investigated coping with negative symptoms in schizophrenia.

Coping with Other Stressors in Schizophrenia

The relations between stress, symptoms and coping in schizophrenia are unclear. Some investigators have claimed that people with schizophrenia display coping styles that may amplify the effects of stress. Based on their comparative study, van den Bosch et al. (1992) concluded that patients with schizophrenia, as well as anxious and depressed patients, were lacking in effective coping styles, particularly problem solving, when compared to healthy controls. Compared with the control group, the three patient groups used significantly more coping styles that were considered ineffective, such depressive reactions, preoccupation with problems, worrying, and feeling helpless. In addition, their patients with schizophrenia used significantly more avoidant coping than healthy controls (van den Bosch et al., 1992).

Horan and Blanchard (2003) used a laboratory role-play test to induce stress and measure coping in their sample of male outpatients with schizophrenia and healthy male controls. They found that the patients used significantly more strategies that the authors considered maladaptive, such as denial and disengagement (Horan & Blanchard, 2003). In direct contrast, Brenner et al. (1987) reported that their participants with schizophrenia had a significantly higher proportion of problem solving oriented coping attempts compared to both neurotic and healthy control groups. Furthermore, people with schizophrenia used problem solving coping three times as often as non-problem solving strategies such as avoidance and denial in response to the stressors of their disorder (Brenner et al., 1987). Ventura and his colleagues (Ventura et al., 2004) also compared coping with schizophrenia and a control group. They reported that approach coping, the equivalent of active or problem-solving coping, was used significantly more often by healthy controls than by participants with recent-onset schizophrenia (Ventura et al.,

2004).

Mindt and Spaulding (2002) developed the clinician administered Coping Strategies Task (CST) to evaluate coping for people with severe and persistent mental illness. The CST was validated on a sample of 29 to 33 long-term inpatients with schizophrenia spectrum disorders. The 67-item CST was designed to reflect four rational dimensions of coping. Coping with a specific stressful situation was rated for stressfulness and then each coping item was rated according to frequency of use. Objective measures of behavioural functioning were significantly negatively related to the escape-avoidance and behavioural reaction subscales and significantly positively related to total subjectively rated daily stress levels. The authors reported that the other two coping subscales, planful problem solving and social-support seeking were unrelated to stress or adjustment measures.

Breier and Strauss (1983) identified a three-phase process in the self-control of psychotic symptoms. Although a different conceptualisation and terminology was used, there are many similarities between this model of self-control and the present research's model of the subjective experience of negative symptoms. First, the detection of unwanted behaviour occurred (primary appraisal). Second, there was an evaluation of the unwanted behaviour as a warning or as abnormal (secondary appraisal), and thirdly, a particular control strategy was employed (coping). The most common control strategies were self-instruction and either reduced or increased involvement in activity (Breier & Strauss, 1983).

In their study predicting subjective quality of life in 66 outpatients with schizophrenia, Bechdolf et al. (2003) investigated the role of three 'positive coping' and a 'negative coping' subscale from the German Stress Coping Questionnaire (SCQ, Janke, Erdmann, & Kallus, 1985 as cited in Bechdolf et al., 2003). The authors found significant correlations between the coping subscales and a number of the seven subjective quality of life (SQOL) dimensions examined. Of a total of 21 correlations for the positive coping subscales only 3 were significant. 'Devaluation' positive coping was associated with better psychosocial SQOL while stress control coping was related to higher vitality and psychosocial QOL. In contrast, 'negative coping', consisting of social withdrawal, resignation, and self-pity, was significantly correlated with five of the seven SQOL subscales. Negative coping was further investigated within regression models. The authors reported that negative coping had a significant direct effect on general SQOL

and an indirect effect via its relation with higher PANSS rated depression, which in turn predicted poorer SQOL (Bechdolf et al., 2003).

Boschi et al. (2000) used face validity to group 18 coping items into the three coping categories of active-cognitive, active-behavioural, and avoidance. They reported that appraised stress and control were unrelated to the three forms of coping nor to total coping efforts. Further, for the total sample, the four coping indices were uncorrelated with total scores on the SANS, SAPS, GAF, objective social functioning scales, or a subjective happiness scale, either initially or at 24 month follow-up. When a regression analysis of adjustment was conducted selecting for participants who rated active coping strategies as most helpful, these participants had significantly lower SANS and SAPS scores, and significantly higher scores on the GAF, objective social functioning, and subjective happiness scales (Boschi et al., 2000).

Thus, evidence concerning the associations between adjustment and coping with other stressors has been mixed, as has the associations between appraisal of these measures and coping. The literature on coping with negative symptoms has been equally inconsistent.

Coping with Negative Symptoms in Schizophrenia

As stated, only a small number of schizophrenia coping studies have specifically examined negative symptoms as stressors. Mueser, et al. (1997b) investigated appraisal and coping with negative symptoms using a semi-structured interview of 20 patients with schizophrenia and their relatives. In addition to symptom distress appraisals, patient data was collected on number and type of coping strategies; knowledge about schizophrenia; and levels of anxiety and depression. Coping responses were categorised rationally into behavioural-cognitive, social-nonsocial, and problem focused-emotion focused coping types (Mueser et al., 1997b). No significant results were obtained linking symptom distress appraisals with the use of coping strategies.

Wiedl and Schottner (1991) also based their investigations of coping with schizophrenia on the transactional theory of coping. Cultural differences in the conceptualisation and classification of symptoms make close comparisons difficult. Coping was rationally categorised as problem-centred versus nonproblem-centred and then more specifically as behavioural, emotional or cognitive. Nonproblem-centred strategies predominated in the highly strained groups, along with a tendency to more

emotional forms of coping and less cognitive, active forms of coping. Patients rated as being high in negative symptoms used emotion-orientated coping strategies significantly more often than problem-orientated coping (Wiedl & Schottner, 1991).

A study by Carr (1988) investigated how 200 schizophrenia patients coped with seven specific symptom groups including a negative symptom group labelled retardation/inhibition. He found that individuals tended to favour similar methods of coping with this symptom group. Categories of coping techniques used were behaviour change (78% of subjects), increase in socialisation (13%) and cognitive control (19%) in the form of shifting attention. Within the behaviour change category, 25% coped by using distraction in the form of active or passive diversion or environment change; 44% used a physical change such as being inactive, engaging in activity or a postural change; 19% sought simple need gratification such as drinking or eating; 9% performed a task; and 19% responded in non-specific terms such as "I keep myself occupied" (Carr, 1988).

Carr and Katsikitis (1987) drew three conclusions from this study. The first was that schizophrenic patients most frequently used techniques which reduced their level of arousal. The second conclusion was that the type of coping technique employed was not related to the type of symptom experienced. Subjects seemed to use the same techniques for negative symptoms and anxiety that they used for delusions and hallucinations. The third conclusion was that females use less arousal increasing techniques than males and also show a tendency to use more techniques which reflect adaptive learning than males (Carr and Katsikitis, 1987). Unfortunately, Carr's (1988) study did not investigate the impact of coping efforts upon the patients' level of adjustment.

The Dimensions of Coping with Schizophrenia

The dimensions used to examine the construct of coping have important implications for the conclusions that can be drawn regarding how a particular population copes with a designated stressor. Many studies focusing on coping in clinical populations rely on coping scales designed to assess coping within the general population (for example, Horan & Blanchard, 2003; Meyer, 2001; Rudnick, 2001). This raises questions about the clinical generalizability and the construct validity of these coping questionnaires. The WCQ (Folkman & Lazarus, 1988) and the Brief COPE (Carver, 1997) are two scales which have been used numerous times to assess coping with schizophrenia. The WCQ was validated on 108 undergraduate university students

(Folkman & Lazarus, 1988). It has since been employed to investigate the coping strategies used by people with schizophrenia in a number of studies (Lysaker, Clements, Wright, Evans, & Marks, 2001; Lysaker et al., 2005b; Lysaker, Wilt, Plascak-Hallberg, Brenner, & Clements, 2003b; Rudnick, 2001). Lysaker et al. (2004) used rational methods to define new coping dimensions in order to overcome the potential lack of generalizability of the WCQ factors to populations with schizophrenia.

The Brief COPE (Carver, 1997) was psychometrically assessed on a sample of adults who had survived a major hurricane, and its coping dimensions are therefore likely to reflect to some extent the nature of this particular stressor. Apart from questions concerning generalizability, practical problems also exist when using non-specialised scales for psychiatric populations. For example, although the Brief COPE (Carver, 1997) was constructed and validated as a self-report questionnaire, it was necessary to administer it in an interview format for examining coping with schizophrenia (Meyer, 2001).

In addition to coping dimensions reflecting the population and stressor on which they were based, dimensions are also determined by the methodology used to derive them and the labels assigned to them. Two different strategies have traditionally been used to derive these coping dimensions: rational approaches where dimensions are based upon face validity and/or literature reviews, and empirical approaches employing statistical techniques such as factor analyses. Apart from the general problem-focused and emotion-focused categories proposed by Lazarus and Folkman (1984), a large variety of other labels have been applied to coping dimensions. For example, categorisation systems common in schizophrenia research include grouping coping responses according to cognitive, behavioural, and affective strategies (Wiedl & Schottner, 1991), adaptive and maladaptive strategies (Horan & Blanchard, 2003; Meyer, 2001), and the traditional problem-focused and emotion-focused dimensions (Rudnick, 2001). Several schizophrenia coping studies have also defined illness-related categories such as manipulation of physiological arousal, medical management, withdrawal, self-instruction, socialisation, and symptomatic control (Carr, 1988; Tarrier, 1987; Wiedl & Schottner, 1991).

Relatively few coping instruments have been developed specifically for people with schizophrenia, although a number of non-English coping measures exist (for example, Janke et al., 1985 as cited in Hoffmann et al., 2000; Schreurs, van de Willige,

Tellegen, & Brosschot, 1993 as cited in Bosch & Rombouts, 1997). The schizophrenia-specific coping scales that have been developed have used a range of methods to determine the number and nature of underlying coping dimensions. Some schizophrenia scales have used a combination of both rational and empirical methods. For example, Bak et al. (2001a; 2001b) used factor analyses to investigate data from the Maastricht Assessment of Coping Strategies (MACS-I), based on the coping responses of 21 patients with schizophrenia. Rational methods were first used to define five coping categories consisting of 14 subcategories. Participant coping scores were classified according to these categories and then factor analysed to produce five factors explaining 71% of variance: active problem-solving, passive illness behaviour, active problem-avoiding, passive problem-avoiding, and symptomatic behaviour.

Yanos et al. (2003) used rational methods in the development of the Coping with Symptoms Checklist (CSC). The CSC is a semi-structured interview schedule to assess coping with five common symptoms of severe mental illness: anxiety, depression, mania, delusion, and hallucinations. The three rational coping categories of problem-centred, neutral, and avoidance coping, were examined in relation to insight, self-confidence and adjustment. Contrary to original predictions, the authors found that none of the three coping subscales were related to either total insight scores or self-confidence. Further, there was only one significant association between coping and adjustment. Greater reliance on problem-centred coping was significantly related to higher levels of social functioning (Yanos et al., 2003).

Of the scales that have used empirical methods, Andres et al. (2003) derived a four-factor solution which they labelled as problem-focused coping, avoidant coping, resignation and helplessness, and external attributions of successful coping. van den Bosch and Rombouts (1997) collected data from the Utrecht Coping List (UCL, Schreurs, et al., 1993 as cited in Bosch & Rombouts, 1997) and several measures of cognitive functioning in a sample of people with schizophrenia. A simultaneous components analysis resulted in a three-factor solution composed of problem solving, distraction, and comforting cognitions; avoidance and worrying; and support seeking and emotional expression.

The use of a wide variety of differing classification systems has made comparison of findings across studies problematic. It has been argued that the application of rationally-based classification systems, developed using assessments of face validity,

have questionable construct validity and reliability (Endler & Parker, 1990). Despite this criticism, rationally-based coping categorisation does offer some advantages. For example, by employing similar categorisation systems to previous research, comparisons can occur. In addition, the degree that empirical dimensions generalise beyond the population on which they were obtained is questionable. Confirmation of empirically derived dimensions in other samples is therefore required to confirm their validity.

In summary, as with many of the variables included for investigation in the present research, evidence concerning the impact of coping, and nature of underlying coping dimensions in schizophrenia is inconclusive and frequently inconsistent. Numerous factors may account for the contradictory nature of findings including the wide heterogeneity observed in people with schizophrenia, differing theoretical orientations, and a diverse range of methodological approaches to sample selection, coping measurement, and statistical analysis. Despite these differences, taken as a whole, the literature reviewed suggests that the construct of coping offers utility as an important subjective experience variable that may be influential in adjustment to negative symptoms.

Adjustment Variables

As for the predictors included in the present vulnerability-stress-coping model, the three domains of adjustment to be investigated were conceptualised as either objective indicators or subjective experience variables. Schizophrenic symptoms provided the only objective indicator adjustment measure within the model. Two dimensions of subjective experience were proposed to be related to adjustment to negative symptoms: subjective psychopathology and subjective quality of life (SQOL). Variables previously examined in relation to stress and coping models of schizophrenia have included psychological wellbeing, frequently focusing on measures of anxiety and depression; physical functioning; performance of daily living skills; social functioning; and quality of life variables (Breier & Strauss, 1983; Carr, 1988; Middelboe, 1997; Mueser et al., 1997b; Wiedl, 1992; Wiedl & Schottner, 1991). As discussed in Chapter 2, in the past, a narrow focus was taken to the construct of adjustment to schizophrenia.

More recently, theorists have recognised the importance of a multidimensional approach to adjustment, encompassing both objective and subjective domains. It has been argued that investigations that take a unidimensional approach to the measurement

of adjustment, for example, only considering subjective quality of life (for example, Eklund and Backstrom, 2005), may be inadequately measuring the construct (Brekke, 1992). Several investigators have emphasised that when subjective experience is not examined in the study of mental illness, a vital source of information is overlooked (Brekke, Levin, Wolkon, Sobel, & Slade, 1993; Strauss & Estroff, 1989c).

Evidence suggests that objective and subjective domains of adjustment may be relatively independent, among people with schizophrenia (Brekke, 1992; Strauss & Carpenter, 1972). Strauss and Carpenter (1972) used the term 'open linked system' to describe the phenomena of multiple outcomes across different dimensions in schizophrenia. This concept has since been supported by evidence of a limited association between objective and subjective measures of psychopathology and quality of life (for example, Lasalvia, Ruggeri, & Santolini, 2002; Ritsner, 2003b; Selten et al., 2000c).

Objective Schizophrenic Symptoms

Objective symptom levels have traditionally been used as the primary indicator of adjustment in vulnerability-stress conceptualisations of schizophrenia. For the present research, summary ratings of individual positive and negative symptoms provided a measure of schizophrenic symptomatology. These scores are based on Andreasen's SANS and SAPS (1984a; 1984b) which were discussed in the previous chapter. Due to the use of individual SANS symptoms as objective stressor measures, summary SANS scores will be calculated excluding the individual SANS symptom score for the stressor under investigation. Numerous studies have found an association between negative and positive symptoms and stress and coping variables (for example, Middelboe, 1997; Pratt, Mueser, Smith, & Lu, 2005; Ritsner & Ratner, 2006b).

Middelboe and Mortensen (1997) reported that SANS scores were the strongest predictor of total coping efforts and active coping strategies in their study of 96 hostel residents with severe mental illness. Negative symptoms were negatively related to both coping measures while total SAPS scores were only negatively related to active coping. Neither measure was associated with passive coping strategies. Pratt et al. (2005) reported a more complex association between subjective appraisals of negative symptom control, psychosocial adjustment and negative symptoms. Total SANS scores completely mediated the relationship between negative symptom self-efficacy (appraised control)

and measures of psychosocial functioning. Negative symptom self-efficacy was negatively related to SANS scores which in turn was negatively related to functioning (Pratt et al., 2005).

Ritsner and Ratner (2006b) examined long-term changes in four temporal coping styles which they labelled as stable favourable and unfavourable or becoming favourable and unfavourable. The study was based on the same sample of 148 outpatients with schizophrenia on which their previous studies were based (for example, Ritsner, 2003b; Ritsner et al., 2006a; Ritsner et al., 2000). The authors reported that total PANSS negative symptoms, but not positive symptoms, were a significant predictor of changes in coping across time. Specifically, reductions in negative symptoms were associated with the becoming favourable coping style (2006b).

Numerous studies by Lysaker and his colleagues (for example, Lysaker et al., 2006; Lysaker, Campbell, & Johannesen, 2005a; Lysaker et al., 2003b) have investigated the relations between objective positive and negative symptoms and other stress and coping variables. They have reported evidence that total negative symptoms were significantly related to lower levels of insight (Lysaker et al., 2005a), unrelated to subjective appraisals or wellbeing (Lysaker et al., 2001), related to greater use of a resigning coping style (Lysaker et al., 2005b), and accounted for only 4% of variance in objectively rated participant dysphoria over time (Lysaker, Bell, Bioty, & Zito, 1995). Conversely, total positive symptoms have been related to lower levels of hope and insight (Lysaker et al., 2005a), lower use of active coping and greater use of ignoring coping styles (Lysaker et al., 2005b), and 14% of variance in dysphoria over time (Lysaker et al., 1995).

Subjective Psychopathology

Given that the primary focus of this research program is the nature and influence of subjective experience, the inclusion of subjective adjustment measures in the proposed model is of central importance. Further, emotional responses to stress are seen as intrinsic to the stress and coping process (Lazarus, 1999). A large range of ‘negative’ emotional responses have been associated with the experience of a harmful or threatening stressor, including anxiety, sadness, jealousy, and anger (Lazarus, 1999). The Brief Symptom Inventory (BSI, Derogatis & Melisartos, 1983; Derogatis & Spencer, 1982) was chosen to provide a multidimensional assessment of subjective pathology as it

measures the degree of emotional distress associated with 7 different symptom dimensions. Based on stress and coping theory, each of the symptom dimensions contained within the BSI represent different emotional responses that may be associated with adjustment to negative symptom stressors.

Within vulnerability-stress conceptualisations, the subjective experience of psychopathology is considered by some theorists to be an important separate domain of adjustment (Brekke & Long, 2000; Strauss & Carpenter, 1972). Numerous studies investigating outcome in schizophrenia have examined the influence of objective factors or other subjective variables on subjective psychopathology. Many of these studies have found evidence that subjective measures of pathology are significantly associated with stress and coping variables, sometimes more so than objective measures (for example, Brekke et al., 1993; Brekke & Long, 2000; MacDonald et al., 1998; Ritsner, 2003b; Ritsner et al., 2006a).

Ritsner (2003b) conducted a longitudinal study to compare the utility of a range of subjective measures and 5 PANSS factors in the prediction of changes in 6 domains of SQOL. In each of the SQOL domains, subjective measures were the strongest predictors of change. Of particular relevance to the present research, the somatization subscale of the BSI had significant negative effects on the domains of physical health, subjective feelings, and general activities. The PANSS anergia scale did not significantly account for variance in any SQOL domains. Similarly, MacDonald et al. (1998) reported that SANS negative symptoms did not significantly contribute to the prediction of problem-focused coping in a sample of early psychosis patients. The strongest predictor was self-efficacy, with participants who rated themselves as having the greatest ability to cope with a stressor (analogous to symptom control) more likely to use problem-focused coping.

Lobban et al. (2004) investigated the utility of the Self Regulation Model in adjustment to schizophrenia. Subjective ratings of anxiety and depression, as well as SQOL were examined as an outcome measure with numerous subjective appraisal and coping measures, and objective symptoms as predictors. Cross-sectionally, significant predictors of anxiety in order of strength of association were: emotion focused coping, appraised negative consequences related to symptoms, identity, and PANSS positive and negative symptoms. Significant predictors of depression were two appraisal measures of consequences and coherence. Longitudinally, only one of these variables remained a

significant predictor of subjective psychopathology. Higher levels of negative appraised consequences of symptoms at the initial interviews predicted higher levels of depression 6 months later (Lobban et al., 2004).

Subjective Quality of Life

In parallel with the recovery movement, there has been an substantial increase in studies examining subjective quality of life as an index of adjustment in schizophrenia. The subjective experience of life domains is particularly relevant to the investigation of adjustment to negative symptoms as it has been well established that negative symptoms may have an impact on most aspects of psychosocial functioning (Fenton, 1994; Kiang et al., 2003; Kirkpatrick et al., 1996; Milev et al., 2005). Evidence from several recent reviews of SQOL support the importance of including the construct as a measure of adjustment related to the present stress and coping model of negative symptoms.

As with many other domains of schizophrenia stress and coping research, evidence concerning the relations between SQOL and other important predictors is inconsistent. In their review of quality of life in severe mental illness, Holloway and Carson (2002) reported that, as would be expected, SQOL is strongly related to mood state, particularly anxiety and depression. The authors also report that several other factors relevant to the present research program have been significantly related to poorer SQOL. Objectively rated negative symptoms were found to be positively related to lower SQOL while hope, autonomy, and a positive self-concept were found to be negatively related (Holloway & Carson, 2002). Alternative reviews have also reported a significant relation between higher levels negative symptoms or objective ratings of psychopathology and SQOL (Malla & Payne, 2005).

In contrast, others have found no such association between SQOL and schizophrenic symptoms, or found that the relation was more complex. Carpiniello et al. (1997) reported that neither total scores nor individual symptom scores from the SANS and the SAPS were related to SQOL. In the Lobban et al. (2004) study reviewed previously, significant predictors of SQOL in order of strength of association were: appraised negative consequences related to symptoms, primary appraisal, PANSS positive and negative symptoms, and personal control. All predictors were negatively related to SQOL apart from secondary appraisals of control. Longitudinally, negative consequences at time 1 significantly predicted reduced SQOL at time 2, as did negative

coping strategies at time 1, to a lesser extent (Lobban et al., 2004). PANSS symptoms did not contribute significantly to predictive models of SQOL at time 2.

Variables Not Examined Within the Model

It is not possible to evaluate all potentially influential factors within the model. Important factors not included within this model can be grouped into vulnerability factors and other psychosocial variables. Vulnerability factors not included within the model, for which there is some evidence of an association with objective or subjective indices of negative symptoms, include: neuropathology and neurocognitive impairments, poor premorbid functioning, personality traits, the deficit syndrome and responses to antipsychotic medication (Earnst & Kring, 1997; Hafner & Heiden, 1997; Kirkpatrick et al., 2006a; Kirkpatrick et al., 1996). Potentially important psychosocial factors not examined within the model include social support and expressed emotion, general measures of hope, beliefs and self-efficacy, and the influence of clinical factors such as previous exposure to psychoeducation or other interventions (Mueser & McGurk, 2004; Mueser et al., 2006; Penn et al., 2004; Rector et al., 2005).

The Nature of Relationships Between Variables

As discussed above, this research program investigates two differing mechanisms through which the proposed objective indicators and subjective experience variables may be related to each other and adjustment to individual negative symptoms. The first type of association to be examined is the direct effects or additive model, the simplest and most frequently examined form of association between variables. The second type of relation to be investigated is the mediating effects model, a more complex and less frequently examined model of association between variables.

Direct Effects Model

Previous investigations of vulnerability-stress models of schizophrenia have frequently only examined data for the presence of direct effects. This is the simplest model that can be used to describe the effects of stressor level, insight, appraisal and coping on adjustment. A direct effects relationship exists between variables when each independent variable or predictor has an independent direct effect on the dependent variable. This model is summarised in Figure 3.2. The model postulates that the stress, insight, appraisal and coping variables have independent effects on adjustment, after

controlling for any influential participant variables. The direct effects model underlies much of the early stress and coping research, and remains the most common model investigated in this field (Edwards et al., 1990). The direct effects of each independent variable on each domain of adjustment will be investigated in Study 2.

Overall, general coping research has been moderately supportive the direct effects model for appraisal and coping (Edwards et al., 1990). As reviewed above, both appraisal (Terry, 1991; Thompson et al., 1992; Weisenberg, 1987) and coping (Stanton & Snider, 1993; Thompson et al., 1992) have been demonstrated to be associated with adjustment. Studies of the direct effects of coping have found both positive and negative effects (Edwards et al., 1990). Evidence of these effects, reviewed above, have been inconsistent and found to vary according to a range of factors such as the nature of the stressor, appraisals, and coping dimensions.

Within schizophrenia research, the author is unaware of any studies that have examined direct effects models of objective and subjective experience factors related to

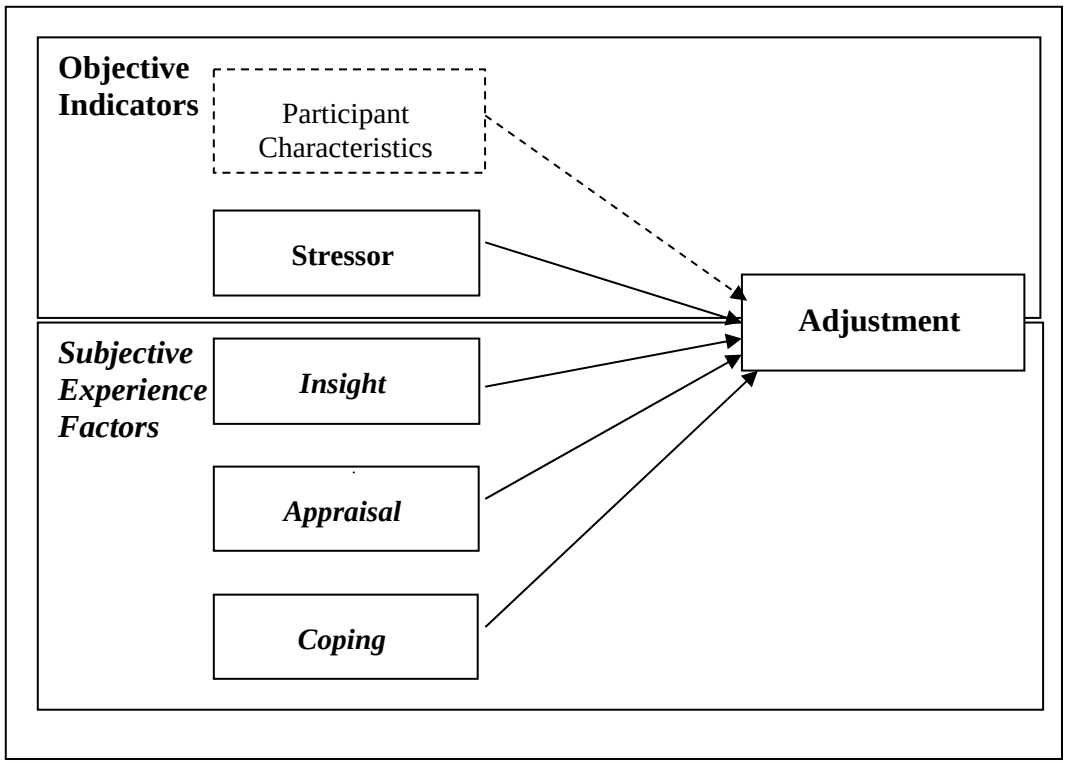

Figure 3.2. Vulnerability-stress-coping direct effects model of objective indicators and subjective experience factors associated with adjustment to individual negative symptoms of schizophrenia.

specific SANS negative symptoms. Evidence of the direct effects of stress and coping variables on adjustment have been reported in relation to total objective negative symptoms and adjustment (Andres et al., 2003; Bechdolf et al., 2003), and negative symptom subjective appraisals and both objective and subjective indices of adjustment (Fakhoury & Priebe, 2002; Pratt et al., 2005; Ritsner, 2003b; Ritsner et al., 2006a).

In regard to coping, significant direct effects have been reported in relation to avoidant forms of coping and anxiety, depression and subjective wellbeing (Lysaker et al., 2001; Patterson et al., 1997a), active coping and improved subjective adjustment (Ritsner et al., 2006a; Ritsner et al., 2000), positive and negative coping and anxiety, depression and QOL (Lobban et al., 2004; Lobban, Barrowclough, & Jones, 2005). Several studies have also found significant direct effects of insight on adjustment (Hasson-Ohayon, Kravetz, Roe, David, & Weiser, 2006; Mintz et al., 2003; Ritsner, 2003b).

Mediating Effects Model

A second, more complex, type of relationship that may exist among variables is a mediated one. Baron and Kenny (1986) described mediation as occurring when one variable has an impact an another indirectly through a third variable (the mediator). The mediated effects model is the second type of proposed association between variable that will be examined within this research program. A diagram of the causal paths involved in a mediating model is displayed in Figure 3.3.

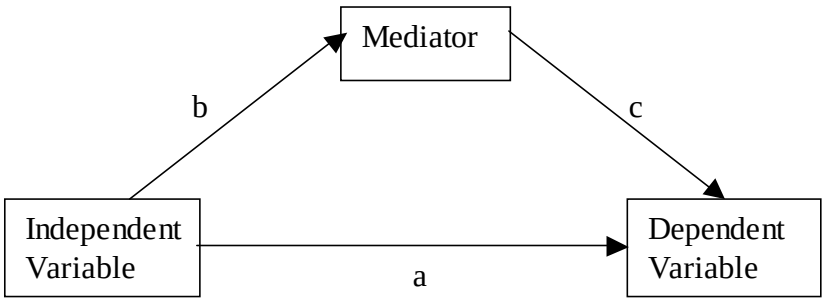

Figure 3.3. Mediating effects model of relations between variables within the vulnerability-stress-coping model. Paths (a, b, and c) reflect proposed processes of association.

The proposal that mediated effects may exist between negative symptom-related objective and subjective factors is supported by theorists from both vulnerability-stress models of schizophrenia and stress and coping theory. Strauss (1989a) and Ciompi (1989) have both called for the investigation of potential mediating effects in the relation between objective and subjective factors in adjustment to schizophrenia. According to Strauss (1989a), 'coping may be a mediating process for illness, and illness may be a mediating process for coping' (p. 26). In the general coping literature, Lazarus and Folkman (1984) proposed a mediated effects model to describe the relationship between appraisal, coping, and adjustment in their transactional theory.

Despite this early focus on mediating models, relatively few researchers since then have directly investigated this type of relationship in either the general or schizophrenia coping literature. Edwards and his colleagues (Edwards et al., 1990) empirically evaluated seven alternative models specifying the interrelationships among stress, personality, coping, and psychological and physical symptoms. They found that the direct effects and mediated effects models received the most support across samples and measures. The authors reported that some forms of coping partially mediated the effects of stress on symptoms for several different occupational groups examined in their study (Edwards et al., 1990).

Conversely, Connor-Smith and Compas (2002) failed to find any evidence that coping mediated the relation between stressor appraisals and anxiety or depression in a large sample of students. Using path-analyses, a meta-analytic review of 27 studies found that medical illness controllability had significant indirect effects on adjustment via a small proportion of the coping types examined (Roesch & Weiner, 2001). Using a different approach, Terry (1991) investigated whether appraisal mediated the effect of coping resources on coping. Of five coping resources and four coping categories examined, only one mediating model was supported. Stress and situational control appraisals partially mediated the effect of personal control beliefs on Seeking Social Support coping (Terry, 1991).

A number of investigators have investigated more complex indirect models of the associations between stress and coping variables in schizophrenia (for example see Brekke et al., 2005 #370; Hultman et al., 1997; Lecomte and Mercier, 2005; Lysaker et al., 2005a; Ritsner et al., 2003a; Ritsner et al, 2006a). In regard to the mediational effects of coping, Ritsner et al. (2003a) found some evidence that emotional and distraction

coping mediated the relation between the two predictors of psychopathology and subjective distress, and quality of life for people with schizophrenia (Ritsner et al., 2003a). In further study, Ritsner et al. (2006a) found that coping style partially mediated the effect of emotional distress on quality of life. In a prospective study based upon a mixed sample of past psychiatric outpatients, Vollrath et al. (1998) found mixed support for the mediating effects of 3 of 4 coping types (active goal-orientated coping, disengagement, and venting emotions) on the relation between neuroticism and 4 of 9 psychiatric symptom dimensions.

Pratt et al. (2005) investigated the proposal that two aspects of self-efficacy, negative symptom self-efficacy and social self-efficacy, mediated the relation between objective functioning, including SANS scores, and psychosocial adjustment in schizophrenia. They found that, contrary to expectations, self-efficacy appraisals did not act as a mediator between predictors and outcome. Rather, SANS scores mediated the relationship between self-efficacy and adjustment (Pratt et al., 2005). Yanos et al. (2001) investigated the mediating effects of appraisal and coping in a mixed sample of people with severe mental illness. It was found that greater use of active coping strategies in relation to total coping strategies mediated the relation between attendance at consumer-run rehabilitation services and social adjustment. The appraisal variables measured, self-efficacy and hope, were found to be unrelated to coping or self-help attendance (Yanos et al., 2001).

Eklund and Backstrom (2005) found evidence that objective pathology and subjective appraisals may mediate the effects of objective factors on adjustment. Similarly, Zissi et al. (1998) examined a mediating model of the relations between objective life conditions, appraisal, and subjective quality of life. The authors reported the presence of a direct relationship between various forms of appraisal and SQOL, and concluded that objective indicators were only indirectly related the SQOL through their relationship with appraisal. Finally, Brekke et al. (2005) developed and tested a biosocial model of adjustment to schizophrenia. They found that the effect of neurocognition on 4 dimensions of outcome was mediated by appraisal factors (Brekke et al., 2005).

THE PROPOSED STUDIES

The literature review presented in the present and previous chapter has highlighted the lack of research in relation to the both subjective experience of specific

negative symptoms, and factors influential in adjustment to these symptoms. This lack of research, coupled with the reliance on ineffective medications to treat negative symptoms, and the paucity of psychological interventions for these symptoms, suggests an area of substantial research and clinical need. In addition, a number of methodological limitations related to generic coping scales and schizophrenia coping investigations have been outlined. This research program represents an attempt to address these shortfalls. The chapters to follow present a series of studies designed to evaluate the vulnerability-stress-coping model presented above.

As outlined in Chapter 1, the first qualitative study examines interview-based responses of negative symptom appraisals and coping. The next study, Study 2, develops a questionnaire based upon Study 1 responses and examines the nature of negative symptom appraisals and coping while evaluating the psychometric properties of the questionnaire. The third and final study examines the utility of the vulnerability-stress-coping model presented above. As discussed, two alternative models of associations between objective and subjective variables in relation to adjustment to specific SANS symptoms forms are empirically examined: direct effects and mediating effects. It is proposed that both forms of associations may operate within the stress-coping process to influence adjustment to individual negative symptoms. The final chapter presents a summary of the findings of this research program and discusses the theoretical and clinical implications of findings for people with negative symptoms. Methodological issues related to the present studies are examined and suggestions for future research are outlined.

CHAPTER 4

STUDY 1: THE APPRAISAL AND COPING WITH NEGATIVE SYMPTOMS INTERVIEW SCHEDULE (ACNSIS)

Study 1 represents the first exploration of the vulnerability-stress-coping model presented in Chapter 3. As discussed, the proposed model is informed by two theoretical frameworks. Vulnerability-stress models of schizophrenia emphasise the key role of two types of factors in the adjustment of people with schizophrenia: objective indicators and subjective experience variables (Liberman, 1986; Nuechterlein et al., 1992b). Stress and coping theory postulates that the subjective experience variables of appraisal and coping are the key determinants of adjustment to a stressor (Lazarus & Folkman, 1984). The previous chapters highlighted the lack of research examining both types of variables in relation to individual negative symptoms. To address this shortfall, a series of exploratory studies grounded in a vulnerability-stress-coping framework was proposed. It was argued that a sequential approach using both rational and empirical methods would be beneficial in guiding this largely unexplored domain. A qualitatively based study is required prior to more empirically-based quantitative studies.

As the first step in this sequence of investigations, Study 1 develops a rationally based interview to examine the nature of appraisal and coping with the five negative symptoms of alogia, anhedonia, attention problems, avolition, and emotional blunting. As discussed in Chapter 2, few studies have investigated how individuals evaluate or respond to specific SANS negative symptoms. Yet many investigators now consider negative symptoms to represent different dimensions of impairment, raising the possibility that subjective factors associated with individual symptoms may also demonstrate differences.

Evidence is sparse and inconsistent concerning subjective appraisals of the presence, severity, distress, or level of control associated with the SANS symptoms of alogia, anhedonia, attention problems, avolition, and blunting. According to stress and coping theory, appraisals and coping responses occur in response to a specific stressor (Lazarus & Folkman, 1984). Therefore, it is essential to first determine whether an individual is aware of the presence of specific negative symptoms. If aware of a negative symptom, it is proposed that primary appraisals of symptom severity and distress, and the secondary appraisal of control, are likely to be influential in the subjective experience of

the symptom.

Research concerning awareness of the presence, and primary and secondary appraisals of negative symptoms were reviewed in previous chapters. In brief, studies have reported a low or moderate level of agreement between subjective and objective negative symptom assessments (Hamera et al., 1996; Iancu et al., 2005; Mueser et al., 1997b; Selten et al., 1993), although others have disputed this finding (Mass et al., 2000). Evidence has been found to suggest that negative symptom awareness, and primary appraisals, differ as a function of negative symptom type (Mueser et al., 1997b; Selten et al., 2000a). Further, both primary and secondary stressor appraisals, and coping responses have been demonstrated to be related in samples with schizophrenia (Andres et al., 2003; Bechdolf et al., 2003; Lobban et al., 2004; Lysaker et al., 2005a; Lysaker et al., 2005b; Patterson et al., 1997a; Yanos et al., 2001).

In general, schizophrenia research that has examined coping with negative symptoms has failed to discriminate between coping responses to specific negative symptoms, or between negative symptoms and other symptoms (for example, Bak et al., 2001a; Brenner et al., 1987; Carr & Katsikitis, 1987; MacDonald et al., 1998; Wiedl & Schottner, 1991). A very small number of studies have investigated coping with individual negative symptoms or the 'basic disorders' of schizophrenia (Boker et al., 1984; Brenner et al., 1987; Mueser et al., 1997b). Limited evidence from these investigations suggests that some aspects of coping with negative symptoms, such as the total number of coping responses employed, may be negative symptom-specific (Mueser et al., 1997b) or related to clinician ratings of symptoms (Middelboe, 1997). Evidence concerning the use of negative symptom-specific coping responses is inconclusive. Some studies have found that responses tend to be similar regardless of the negative symptom stressor (Carr & Katsikitis, 1987), while others have reported differences (Boker et al., 1984; Brenner et al., 1987; Mueser et al., 1997b). Differences in the classification systems employed in these studies makes comparison difficult.

Thus the present study sought to clarify and build on previous findings concerning appraisal and coping with negative symptoms. Within the context of the research program as a whole, the purpose of this first exploratory study was to investigate the utility and relevance of the appraisal and coping variables and to provide quantitative coping data on which to base the coping instrument developed for Study 2. With regard to the specific aims of Study 1, they were: first, to examine the degree of concordance

between clinician ratings and participants' subjective experience of negative symptom presence and severity; second, to quantify and examine the relationships between primary and secondary appraisals of specific negative symptoms; third, to examine and categorise the number and types of the coping responses used by participants in relation to specific negative symptoms; and fourth, to examine whether coping with negative symptoms differed according to participant variables of objective negative symptoms, gender, age, years education or length of illness.

Method

Participants

Recruitment Procedure

A total of 20 individuals, comprising 7 females (35%) and 13 males (65%), participated in Study 1. The majority of participants were recruited from suburban community mental health centres and a schizophrenia rehabilitation centre. Three participants independently contacted the author following an advertisement outlining the study placed in a newsletter for people with schizophrenia. For the remainder, initial contact was made with case managers and a rehabilitation coordinator who then approached suitable clients to request their participation. Criteria included a diagnosis of schizophrenia or schizoaffective disorder, the presence of one or more negative symptoms and an absence of concurrent diagnoses, organic pathology or other symptomatology which would impede the interview process. An attempt was made to recruit people with a range of negative symptoms and duration of illness.

Participant Characteristics

Due to the small sample size, only a limited a reduced number of the participant characteristics contained within the proposed vulnerability-stress-coping model were examined in Study 1. A summary of participant characteristics is provided in Table 4.1. Participants ranged in age from 25 to 64 years (M = 43.45 years, SD= 11.95). Nineteen participants met DSM-IV criteria (APA, 1994) for schizophrenia, while one participant met criteria for schizoaffective disorder. Original diagnoses were made by the participants' treating psychiatrist and confirmed using a checklist of DSM IV criteria. Where participants were unable to provide the required information on interview, the information was obtained from case managers or medical charts.

Table 4.1

Study 1 Participant Characteristics (N = 20)

Variable	%	(*n*)
Gender		
male	65	(13)
female	35	(7)
Marital Status		
single	55	(11)
married/de facto	25	(5)
separated/divorced	20	(4)
Employment Status		
employed	15	(3)
pension/ unemployed	85	(17)
Diagnosis		
schizophrenia	95	(19)
schizoaffective disorder	5	(1)
Age		
Mean		43.45
SD		11.95
range		25-64
Years of Education		
Mean		10.20
SD		2.59
range		6-15
Length of illness (years)		
Mean		18.65
SD		13.57
range		1-43

Number of years of education completed ranged from 6 to 15 (*M* = 10.2, *SD* = 2.59). Two participants had completed tertiary degrees before becoming ill and two had partially completed degrees. Three people were in full or part-time employment, while 17 were on a disability pension, unemployment pension or single parent benefit. Eleven participants had never married, five were married, one was widowed, two were divorced, and one was separated from their spouse. At the time of interview, all participants were

living in the community in either a private residence or a supervised hostel. Duration of illness ranged from 1 to 43 years (*M*=19, *SD*=13.6) and mean number of hospitalisations was 7.8 (*SD* =13) with a range of 1 to approximately 50 (estimated).

Measures and Procedure

Interviews were conducted individually by the author at the participants' residence or a private room within the community mental health centre or rehabilitation centre. A brief description of the purpose of the study was given to participants and they were encouraged to ask questions. Written consent was then obtained for participation in the study and to access medical records. Two semi-structured interviews were then administered one after the other. During the first interview, participant illness history and demographic information was gathered and the clinician rated Scale for the Assessment of Negative Symptoms was completed. Following the clinical assessment interview, participants were administered the self-report Appraisal and Coping with Negative Symptoms Interview Schedule. Total duration of the interviews ranged between 45 minutes and 2 hours, with several participants stopping for breaks during testing.

Clinician Rated Negative Symptoms

As outlined previously, the Scale for the Assessment of Negative Symptoms (SANS, Andreasen, 1984a) was used to provide an objective, clinician-rated measure of the presence and level of negative symptoms. Chapter 2 contains a detailed description of the SANS. One item from the anhedonia subscale relating to sexual activity was excluded as it was deemed too intrusive. For the purposes of Study 1, item scores within each symptom dimension were summed to form separate SANS symptom scores for each of the five symptoms. To provide a score of the overall intensity of negative symptoms for participants these five SANS symptom scores were summed to form SANS summary score. The interviewer received training in the assessment of negative symptoms prior to commencing Study 1.

Self-Report Negative Symptoms

The rationally-based Appraisal and Coping with Negative Symptoms Interview Schedule (ACNSIS) was developed for use in Study 1 following a review of the stress and coping literature. A copy of the ACNSIS is contained in Appendix 4A. The

ACNSIS was based upon the SANS and evaluates appraisal and coping with the five negative symptoms contained within the SANS: alogia, anhedonia, attention, avolition, and emotional blunting. Each of the five negative symptoms are evaluated separately, with assessment of each symptom divided into two parts: an appraisal component, and a coping component. The same procedure was repeated for all five negative symptoms with the interviewer recording the participants' answers throughout the interview.

First, a brief description of the purpose of the interview was given and then a description of the first symptom was read out to participants. The same symptom description was presented on a card for participants to read. This card was left in front of the participant for the duration of the questions concerning that particular symptom. Clarification of the symptom description and its meaning was provided where required. The appraisal component of the assessment was then administered, followed by the coping component.

Appraisal

Following the symptom description, participants were asked whether they were currently experiencing the symptom. If the participant response was negative, the interviewer moved on to the next symptom description. If the participant indicated that they did have the negative symptom, they were asked to make three separate appraisals of symptom severity, distress, and control. Each appraisal was presented verbally and on a card also containing a five point Likert rating scale.

For the first appraisal, the interviewer presented the card and asked: *On average, how <u>severe</u> has this symptom been over the past week?* The first appraisal card contained a scale from 1, *mild* to 5, *severe*. The next appraisal question was: *On average, how much does this symptom <u>bother or distress</u> you?* This card contained a rating scale ranging from 1, *very little distress* to 5, *a great deal of distress.* The final appraisal question was: *On average, how much <u>control</u> do you feel you have over this symptom?* With a rating scale from 1, *no control* to 5, *a great deal of control.* If the participant failed to respond to a question, the interviewer gestured to the card and repeated the question. Following completion of the symptom appraisals, the interviewer presented the coping component of the interview.

Coping

The coping component consisted of a series of predetermined questions beginning

with the general question: *What do you do in response to this symptom*? If the participant did not respond or was uncertain about the question, a follow-up prompt was given : *How do you react to this symptom*? All coping responses were written down by the interviewer. Appendix 4B contains a copy of all participant coping responses.

Participants were encouraged to describe all the coping strategies they used for each symptom. To ensure that all the responses had been identified, one further prompt was made regardless of whether any strategies had been named: *Are there any (other) things you do or tell yourself to cope with this symptom?* Examples were used to provide clarification when required.

Pilot

The ACNSIS was initially piloted with three people with a DSM-III-R confirmed diagnosis of schizophrenia. Participants were recruited from a community mental health centre, and had a length of illness ranging from 7 to 24 years. These cases were not included in Study 1 data. The ACNSIS was administered individually to each person. Once the schedule had been completed, feedback about each step of the procedure was elicited from participants. Particular emphasis was placed on checking participant's understanding of each negative symptom description and the meaning of the rating scales. As a result of this pilot study, several modifications were made to the methodology and materials to improve the interview schedule. For example, three of the five symptom descriptions were reworded and simplified to improve participant comprehension. Structural changes to the materials included increasing the font size on description cards and rating scales to make them easier to read.

Results

Prior to analysis, SANS scores, severity, distress and control appraisals, and number of coping strategies, were examined through SPSS (Norusis, 1998) programs for accuracy of data entry, missing values, fit between their distributions and assumptions of multivariate normality. One univariate outlier was detected, with Participant 18 having a particularly high number of coping strategies for avolition. This score presented a potential problem for the parametric tests and across-symptom comparisons. As recommended by Tabachnick and Fidell (1989), this score was reduced to one greater than the next highest score to limit its effects in analyses. Analyses were conducted with and without this transformation and the pattern of results were the same. Hence results

using the original data without transformation are presented.

Following data checking, frequencies, means, and standard deviations were calculated for the SANS and ACNSIS data. To examine the degree of participant awareness of negative symptoms, the relationship between objective and subjective evaluations of negative symptoms was compared by correlating SANS symptom scores and participant severity appraisals. Next, correlations were conducted to examine the relationships between ACNSIS severity, distress and control appraisals for negative symptoms. Next, coping responses were examined and t-tests were conducted to determine whether the number of coping responses differed according to negative symptom. Participant responses were then categorised according to the system developed by Carr (1988). A series of chi-square analyses were conducted to determine whether the type of coping differed significantly across and within negative symptoms.

Finally, to examine whether coping with negative symptoms differed according to participant variables, correlations were conducted between the number of coping responses and SANS summary scores, age, years of education and length of illness. Gender differences in total coping responses were examined using an independent samples t-test. Group sizes were too small to allow for analyses of coping differences in relation to individual negative symptoms and gender, diagnosis, marital status or employment.

Negative Symptom Awareness

Table 4.2 contains a summary of participant and clinical assessments of negative symptom presence, SANS symptom score and severity appraisal correlations, and means and standard deviations of SANS symptom scores for participant reported symptoms. Subjective reports of the presence of negative symptoms varied with three (15%) participants reporting the presence of all five symptoms, five (25%) reported four symptoms, eight (40%) three symptoms, three (15%) reported two symptoms, and one (5%) participant reporting only one negative symptom. In total, 80% of participants reported the presence of alogia, 45% reported anhedonia, 70% attention problems, 90% avolition, and 45% emotional blunting. In contrast, clinical assessment indicated that 12 (60%) participants had all five symptoms, while 90% had alogia, 80% anhedonia, 95% attention problems, 90% avolition, and 85% emotional blunting. The symptom with the largest proportion of participants unaware of its presence was blunting. Avolition was

the only negative symptom for which there was complete agreement between clinician and participant appraisals of symptom presence.

Correlations between objective SANS symptom scores and ACNSIS severity appraisals varied from a low of .20 for emotional blunting to a high of .78 for anhedonia, with a mean level of concordance of .42 across all negative symptoms. Only the level of agreement between clinician and participant ratings of anhedonia reached statistical significance. The mean SANS summary score for the total sample was 30.20 (*SD* = 13.30), with a range of 12 to 55.

ACNSIS Appraisal

Means, standard deviations and correlations for participant severity, distress, and control appraisals are also presented in Table 4.2. On average, alogia (*M* = 2.18, *SD* = .83) was appraised as the least severe negative symptom, and anhedonia (*M* = 3.33, *SD* = 1.22) the most severe. As for severity appraisals, participants with alogia appraised this symptom as the least distressing (*M* = 2.63, *SD* = 1.36), while on average, anhedonia was appraised as the most distressing (*M* = 3, *SD* = 1.41). The lowest mean level of control was reported for blunting (2.22, *SD* = .97). On average, participants believed they had the greatest control over their attention problems (*M* = 2.93, *SD* = 1.33).

Appraisal correlation results indicated that the pattern of relationships between severity, distress, and control appraisals differed according to negative symptom. For all symptoms except anhedonia, appraised severity was positively correlated with appraised distress and this relation was significant for participants reporting attention problems and avolition. Control appraisals were nonsignificantly negatively associated with severity and distress appraisals for alogia, and severity appraisals for anhedonia. Conversely, control appraisals were positively, although nonsignificantly, associated with appraised distress for attention problems and appraised severity for blunting.

Table 4.2

Rate of Clinician and Participant Assessed Negative Symptoms, ACNSIS Severity, Distress, and Control Appraisal Intercorrelations, Means, Standard Deviations, and SANS Symptom Score Means, Standard Deviations, and Correlations with Severity Appraisals

Negative Symptom	Participants Reporting Symptom Present		Clinical Assessment of Symptoms Present		SANS Symptom Score[a]			ACNSIS Appraisal Ratings				
					Correlation with				Correlations			
	N	%	*N*	%	Severity Appraisal	*M*	*(SD)*		Severity	Distress	*M*	*(SD)*
Alogia	16	80	18	90	.36	6.88	(2.83)	Severity			2.18	(0.83)
								Distress	.24		2.63	(1.36)
								Control	-.34	-.46	2.75	(1.24)
Anhedonia	9	45	16	80	.78*	8.11	(2.85)	Severity			3.33	(1.22)
								Distress	-.29		3.00	(1.41)
								Control	-.24	.08	2.56	(1.13)
Attention	14	70	19	85	.39	4.36	(1.60)	Severity			3.00	(1.36)
								Distress	.53*		2.64	(1.39)
								Control	.00	.36	2.93	(1.33)
Avolition	18	90	18	90	.39	7.00	(3.45)	Severity			2.33	(1.08)
								Distress	.47*		2.89	(1.57)
								Control	.13	.19	2.83	(1.29)
Blunting	9	45	17	85	.20	10.00	(4.09)	Severity			2.89	(0.93)
								Distress	.34		2.89	(1.54)
								Control	.31	.02	2.22	(0.97)

* $p < .05$ All tests two-tailed

[a]For negative symptoms reported as present by participants only

ACNSIS = Appraisal and Coping with Negative Symptoms Interview Schedule

SANS = Scale for the Assessment of Negative Symptoms

Note. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control

ACNSIS Coping

Table 4.3 shows the number of coping responses, means, standard deviations, and absence of responses according to negative symptom. Participants reported a total of 163 coping strategies across all five symptoms, with a range of 0 to 25. The mean number of strategies reported per participant was 8.15 (range 0 to 25), with the highest mean number of responses reported for avolition. This result was in part due to one participant who identified 22 responses for avolition. However, when this participants' data was removed from analyses, the mean number of coping responses remained highest for avolition (*M* = 3.47). The lowest mean number of strategies reported was in response to alogia.

Table 4.3 also contains the results of significant paired t-test comparisons of total number of coping responses according to negative symptom. Three tests were significant indicating that for participants with these pairs of symptoms, the degree of coping differed according to negative symptom. Results indicated that the 14 participants reporting both alogia and avolition used significantly fewer coping strategies in response to their alogia than for avolition. Similarly, the nine participants reporting both alogia and blunting used significantly fewer strategies to cope with their alogia than they used for blunting. Finally, participants with both attention problems and avolition used significantly fewer coping strategies in response to attention problems than they used for avolition.

With regard to the absence of coping responses, nine participants were unable to identify any strategies they used in response to one or more of the negative symptoms they identified as present. Only one participant, who reported the presence of only one symptom, was unable supply any coping responses at all. The symptom with the largest proportion of participants without a coping strategy was alogia, with 38% of people reporting alogia unable to identify a single coping response to the symptom.

Categorisation of Coping Strategies

A slightly modified version of Carr's (1988) classification system was used to categorise all coping responses for each negative symptom. Two of Carr's categories which were primarily concerned with coping with delusions and hallucinations, symptomatic coping and suppression, were not used. Participant ACNSIS responses were categorised as belonging to one of four types of coping: behaviour change,

Table 4.3

Total Number of Coping Responses, Means, Standard Deviations, Absence of Coping Responses, and t-tests Displaying Significant Differences in Total Number of Coping Responses for Negative Symptom Pairs Reported by Participants

Negative Symptom	*N*	Absence of Coping Response %	(*n*)	Total Coping Responses *n*	*M*	*(SD)*	Comparison of Total Number of Coping Responses Negative Symptom Pair	*n*	*M*	*t*	*df*	*p*
Alogia	16	38	(6)	23	1.44	(1.63)	alogia and avolition	14	1.29 3.64	-3.44	13	*p* = .004
Anhedonia	9	11	(1)	20	2.22	(1.39)						
Attention	14	21	(3)	22	1.57	(1.16)	alogia and blunting	9	0.67 1.89	-2.48	8	*p* = .04
Avolition	18	22	(4)	81	4.50	(5.26)	attention and avolition	12	1.50 5.75	-2.55	11	*p* = .03
Blunting	9	11	(1)	17	1.89	(1.27)						
All symptoms	20	5	(1)	163	8.15	(6.30)						

cognitive control, socialisation, or medical care. This particular classification symptom was chosen as it has been used in several other studies (for example, Bak et al., 2001a; Middelboe, 1997) and clear definitions and examples of categories are provided. In addition, its Australian origin was considered culturally appropriate for this sample. The strategies were categorised by the author as well as independently by a trained psychologist blind to the author's categorisation. An agreement of 91% was reached. The 14 discrepant strategies were discussed and categorised by consensus. As Carr (1988) argues in his study, the division of a diverse range of strategies into categories is somewhat arbitrary, however these categories enable a closer examination of coping practices across symptoms and allow for comparison with other studies.

Table 4.4 displays a summary of the frequency of coping responses according to category and negative symptom. Appendix 4C contains examples of coping responses for each category type. Across all negative symptoms, cognitive control strategies were the most common (45%) followed by behaviour change (40%) and then responses which involved a change in social contact (13%). The fourth type of coping, medical care, was very rarely utilised, with only one participant supplying two strategies from this category.

Behaviour Change

Carr (1988) defines behaviour change strategies as any alteration in behaviour which was non-social and not directed towards medical management of any kind. Coping techniques involving behaviour change of some kind accounted for 40% of all strategies reported in the present study, and were the second most common type of strategy reported across all negative symptoms. For blunting and avolition, coping responses involving behaviour change were the most common type of strategy reported. The behaviour change category was further broken down into five subgroups: distraction, physical change, indulgence, task performance, and non-specific activity.

The highest proportion of behaviour change strategies reported in total were from the distraction group. This group was defined as those strategies which appeared to shift the person's attention away from their symptoms and on to some external focus. Within the distraction group, strategies were classed as one of three forms: passive diversion, active diversion, and environmental change. Passive diversion involved the passive reception of external stimuli without any significant cognitive or manual activity,

Table 4.4

Coping Strategies According to Category and Negative Symptom Type

Category		Alogia *N* = 16		Anhedonia *N* = 9		Attention *N* = 14		Avolition *N* = 18		Blunting *N* = 9		Total for all Symptoms				
		%	(*n*)	%	(*n*)	%	(*n*)	%	(*n*)	%	(*n*)	(*n*)	%	(*n*)	%	(*n*)
Behaviour Change	1. Distraction												47	(31)		
	a). Passive diversion									12	(2)	2				
	b). Active diversion					9	(2)	17	(14)	6	(1)	17				
	c). Environmental change			15	(3)	5	(1)	7	(6)	12	(2)	12				
	2. Physical Change												24	(16)		
	a). Inactivity/passivity	4	(1)	5	(1)	5	(1)	5	(4)			7				
	b). Activity					5	(1)	6	(5)	6	(1)	7				
	c). Postural change							2	(2)			2				
	3. Indulgence	4	(1)	10	(2)	9	(2)	4	(3)	18	(3)		17	(11)		
	4. Task Performance	13	(3)					4	(3)				9	(6)		
	5. Non-specific									6	(1)		3	(2)		
	Total Behaviour Change	22	(5)	30	(6)	32	(7)	45	(37)	60	(10)				40	(65)
Socialisation	1. Increase	4	(1)	15	(3)			12	(10)	12	(2)		74	(16)		
	2. Decrease	9	(2)	20	(4)								26	(6)		
	Total Socialisation	13	(3)	35	(7)			12	(10)	12	(2)				13	(22)
Cognitive Control	1. Shifted Attention	22	(5)	10	(2)	5	(1)	7	(6)	24	(4)		24	(18)		
	2. Problem Solving	39	(9)	25	(5)	64	(14)	33	(27)	6	(1)		76	(56)	45	(74)
	Total Cognitive Control	61	(14)	35	(7)	68	(15)	41	(33)	29	(5)					
Medical Care		4	(1)					1	(1)						1	(2)

for example listening to music or watching television. Active diversion referred to strategies where there was physical and cognitive activity on the part of the person in order to redirect their attention away from their symptoms, for example engaging in a hobby. The third form of distraction, environmental change, referred to strategies in which the primary goal was escape from the immediate physical environment, for example by going out.

The second of the behaviour change subgroups was physical change, this was defined as behaviours which altered the degree and type of body movement. Physical change was also broken down into two elements: inactivity/passivity and activity. The inactivity/passivity group involved behaviours where people ceased whatever activity they were doing and resorted to a degree of physical immobility. All examples provided by participants in this category involved sleeping or relaxing. In contrast, the activity category involved physical movement, where this movement was for its own sake rather than to move to a different environment, for example engaging in some sort of exercise.

Cognitive Control

This category encompassed those coping strategies which involved a deliberate alteration to particular thoughts or perceptions (Carr & Katsikitis, 1987). Across all symptoms, there were more cognitive control strategies reported than any other type of strategy with 45% of strategies classified as cognitive. Cognitive control was divided into two subgroups: shifted attention and problem solving. Shifted attention involved the deliberate redirection of attention away from distressing thoughts towards neutral or comforting ones, for example by saying reassuring things to themselves. The problem-solving subgroup included cognitive activity which was specifically focused on resolving a present difficulty or planning for a future task or problem, for example by making a special effort to concentrate harder. Cognitive Control strategies were the most frequently used coping response for participants reporting alogia and attention problems.

Socialisation

The socialisation category was made up of those strategies that altered the amount of interpersonal contact experienced by the person. These strategies were grouped according to whether they produced an increase or decrease in interpersonal contact, for

example either specifically seeking others out or withdrawing from other people. For anhedonia, socialisation coping responses were named as frequently as cognitive control strategies, with 35% of strategies belonging to these two categories respectively. In contrast, none of the participants responding to attention problems identified strategies which involved a change in socialisation.

Medical Care

This last category referred to those strategies which involved altering medication routines or seeking out a person involved in their treatment. Due to the low incidence of coping of this type, this category was removed from further analyses.

Coping Categorisation According to Negative Symptom

Chi-square analyses were conducted to determine whether the differences in the type of coping responses used for each of the symptoms was significant. Analyses were significant for participants responding to alogia and avolition. For participants reporting alogia, cognitive control (61%) was utilised more than behaviour change (26%), and socialisation (13%), χ^2 (2, N = 23) = 8.44, p = .015. Similarly for avolition, behaviour change (46%), and cognitive control (41%) were used significantly more than socialisation (14%), χ^2 (2, N = 81) = 14.52, p = .001.

Relationship Between Coping and Participant Variables

Correlations between coping and the participant variables of SANS summary score, age, education and duration of illness are presented in Table 4.5. There was an inverse relation between total coping responses and SANS summary scores for all five negative symptoms, and the correlation was significant for alogia, avolition and total coping responses. The associations between the number of coping strategies and age, years education and length of illness differed according to negative symptom. Participants' age was negatively but nonsignificantly associated with the number of coping responses for all symptoms except attention problems. For participants with attention problems, the relation between older age and the use of more coping responses approached significance ($p < .10$). There was a significant association between having more years of education and a greater number of coping strategies overall, and for participants reporting avolition. The positive relation between greater length of illness

Table 4.5

Correlations between Total Coping Responses and Participant Variables

Coping Category	*N*	SANS summary score	Age	Years education	Length of illness
Alogia coping	16	-.61*	-.29	.37	-.07
Anhedonia coping	9	-.41	-.06	.14	-.28
Attention coping	14	-.34	.48^	-.10	.46^
Avolition coping	18	-.67***	-.16	.57*	-.44^
Blunting coping	9	-.44	-.16	-.08	-.04
Total all symptoms	20	-.65***	-.15	.55*	-.39^

^ $p < .10$ $p < .05$* $p < .01$ $p < .005$*** All tests two-tailed

SANS = Scale for the Assessment of Negative Symptoms

and more attention coping strategies approached significance ($p < .10$), as did the negative relation between greater length of illness and less coping strategies overall for avolition. An independent samples t-test examining gender differences in total coping responses was not significant.

Discussion

Study 1 represents the first stage of the systematic exploration of a vulnerability-stress-coping model of adjustment to individual negative symptoms. As such, the purpose of the present study was to conduct a qualitative investigation of whether individuals are aware of the presence of specific negative symptoms, and if so, how they appraise and cope with these symptoms. The aims of this exploratory study were descriptive in nature and no causal inferences may be drawn. Findings suggest the majority of participants were aware of at least some of their negative symptoms. Further, the results indicate that the negative symptom-specific appraisal and coping variables, contained in the vulnerability-stress-coping model, are relevant to the investigation of the subjective experience of individual negative symptoms. Overall, negative symptom type was influential in the degree of symptom awareness and the nature of appraisals. In

addition, participants were generally able to describe a number of different types of coping responses that they used in relation to these stressors, some of which appeared to be negative symptom-specific. Each of the specific aims of Study 1 will be discussed separately below.

The Awareness of Negative Symptoms

The first aim of the present study was to evaluate the extent to which participants were aware of the presence and severity of their negative symptoms. The results indicated that overall, participants were moderately aware of the presence of their negative symptoms. Two or more participants failed to report a negative symptom assessed as present by the interviewer, except in the case of avolition. These findings replicate a number of previous studies which have reported varying degrees of unawareness of negative symptoms or a lack of agreement between subjective and objective ratings of negative symptoms (Iancu et al., 2005; Stip, Caron, Renaud, Pampoulova, & Lecomte, 2003; Yon et al., 2005). Selten et al. (2000b) reported that 9-89% of patients failed to report one or more negative symptom items that were clinically assessed as present.

The extent that participants could accurately judge the severity of negative symptoms varied across the five symptoms. The agreement between objective and subjective symptom ratings was low for blunting, moderate for alogia, attention problems, and avolition, and high for anhedonia. Only the mean level of agreement concerning the severity of anhedonia reached statistical significance. However, these findings need to be viewed with caution due to the small symptom sample sizes in the present study. In addition, Selten et al. (2000b) outline a number of alternative explanations for the magnitude of discrepancy they found between observer and subjective negative symptom ratings, pointing out that clinical ratings are never perfectly valid. The authors conclude that an impaired awareness of negative symptoms is the most plausible explanation for a lack of agreement between raters. This issue will examined more reliably in Study 2 by using larger sample sizes.

Support for the reliability of the present findings comes from previous research. Mueser et al. (1996) reported similar correlations of .31 to .79 between participant severity appraisals and SANS ratings. Mirroring the present findings, the highest level of

agreement was for social anhedonia and the lowest was for emotional blunting. Similarly, Liraud et al. (2004) found a moderate correlation between SANS symptom scores and subjective ratings for anhedonia and avolition, with anhedonia ratings again demonstrating the highest level of agreement. These authors report a moderate correlation between raters for blunting, and no relation between objective and subjective alogia ratings (r = .004).

In contrast to the .42 mean level of agreement across all negative symptoms in the present study, Iancu et al. (2005) found minimal relation between SANS scores and participant ratings (r = -.09). This discrepancy may be in part explained by the higher level of overall negative symptom severity in the Iancu et al. study. The authors report a mean total SANS score of 50.2, compared to the present study's mean of 30.2. Another possibility is that variations in participant insight was responsible for the difference in findings. Iancu et al. (2005) administered an insight scale to their sample and found that the mean level of negative symptom insight was low. It has been argued in a review of subjective experiences in schizophrenia that a lack of insight is associated with fewer reports of symptoms presence (Peralta & Cuesta, 1994). Insight was not measured in the present study. To further investigate this issue, the role of insight in relation to negative symptom appraisals will be examined in Study 2 and Study 3 by the inclusion of an insight measure in the study protocol.

ACNSIS Appraisals of Negative Symptoms

The second aim of Study 1 was to quantify and examine the relationships between primary and secondary appraisals. Findings and participant feedback during testing indicated that the three types of appraisal ratings were generally relevant and meaningful in relation to the subjective experience of negative symptoms. Mean appraised severity was mild to moderate for alogia, avolition and blunting, moderate for attention problems, and moderate to high for anhedonia. Mean appraised distress was mild to moderate for all symptoms apart from anhedonia, which was appraised as causing a moderate to high amount of distress. None of the symptoms were appraised as causing high or severe amounts of distress. On average, participants with alogia appraised it as the least severe and distressing negative symptom, while those with anhedonia found it the most severe and distressing. On average, participants believed they had the most control over their

attention problems and the least control over their emotional blunting. Overall, participants appraised their control over their negative symptoms as between a little and a moderate amount of control. The small sample sizes precluded statistical analyses of these differences.

Very few studies have investigated or reported negative symptom appraisals in depth, making direct comparisons difficult. The author is not aware of any research that has individually examined both primary and secondary appraisals in relation to specific negative symptoms. Iancu et al. (2005) reported mean negative symptom severity appraisals in the mild to moderate range, and in parallel with Study 1 findings, anhedonia was rated the most severe and alogia the least. Wiedl and Schottner (1991) reported a mean level of negative symptom strain or distress in the medium range. Selten et al. (2000a) found that the majority of their participants denied that their negative symptoms caused them any distress. The greatest proportion of high or severe distress appraisals were for avolition and the smallest proportion were for blunting. Several studies have examined appraised control in relation to schizophrenia but have not distinguished between types of symptoms. Findings in relation to control have also been contradictory. Wiedl (1992) reported that 58% of participants rated their level of control over their symptoms as high, while the majority of participants in a study by Boschi et al (2000) reported little subjective control.

Correlation of results show differences in the relations between the three appraisals across negative symptoms, although these results must be viewed with some caution, due to the small sample sizes for specific symptoms. The most consistent pattern was a positive relationship between the two primary appraisals of symptom severity and distress. For all symptoms apart from anhedonia, the more severe a symptom was, the greater distress it caused participants. The relations between the secondary appraisal of control and primary appraisals were less consistent across negative symptoms and need to be examined using larger samples.

ACNSIS Coping with Negative Symptoms

The third aim of the present study was to examine the nature of coping and its relation to negative symptoms and type of coping. Overall, findings from this study are congruent with past research where coping with negative symptoms has been examined

(Carr, 1988; Mueser et al., 1997b; Wiedl, 1992). As with many aspects of the present research program, direct comparisons with other studies are difficult because of differences in classification systems and methodology. Nearly all participants in Study 1 reported one or more cognitive, behavioural or social coping strategies that they used in response to their negative symptoms. The range in number of strategies reported is very similar to the range of 2-30 strategies used by the 21 patients interviewed by Bak et al. (2001). The inability of some participants to identify any coping strategies for one or more of their negative symptoms mirrors the findings of Mueser et al. (1997b) who reported a lack of coping strategies for 5 of their 20 participants. As in the present study, the authors also found that the greatest number of coping strategies reported overall were in response to avolition, and participants used significantly more strategies in response to avolition than alogia (Mueser et al., 1997b).

The classification of responses into categories indicated that participants relied more on cognitive strategies than behavioural ones, and less on social forms of coping. Very few medically focused techniques were used. In contrast, Mueser et al. (1997b) reported a greater prevalence of behavioural rather than cognitive responses. As was the case in the present study, the authors found that coping responses aimed at increasing social contact were utilised considerably more than non-social responses across all symptoms. Congruent with the findings of Study 1, Takai et al. (1990) found that behavioural change and a cognitive category they termed strategic intervention were the most common types of strategies used in response to negative symptoms. The authors also found that medical forms of coping were used comparatively infrequently.

Wiedl (1992) reported that participants with predominantly negative symptoms demonstrated significantly more emotion-oriented coping efforts than problem-orientated ones, with the majority using behavioural techniques and relatively few using cognitive strategies. This is in direct contrast with the present findings that overall, cognitive control techniques were the most frequently reported, and problem-solving strategies were the single largest group employed. One aspect of coping replicated in the present study was the finding that for people with schizophrenia, coping is generally marked by low sociability (Wiedl, 1992). Wiedl (1992) concluded that “schizophrenics tend to try to solve their disease-related problems on their own” (p. 119). Overall, only 14.1% of

participants in the present study used strategies from the socialisation category, and a quarter of those were aimed at decreasing social contact.

The degree of reliance on cognitive coping responses reported by participants in a study by Lee et al. (1993) are similar to the present findings. Cognitive coping efforts were the second most common category of coping, with 42% of people reporting their use. The authors report that the largest proportion of their participants (71%) endorsed psychotropic medication as the most helpful factor in overcoming their illness. However, as with many other coping studies, Lee and colleagues did not distinguish between the symptoms the coping responses were targeting. This discrimination between symptoms may be central to the evaluation of coping.

The findings from the present study indicate that the type of coping used is at least partially negative symptom-specific. For example, frequency data indicated that the most common type of strategy relied upon in response to the cognitive problems of alogia and attention was cognitive control. In contrast, participants responding to alogia used relatively few socialisation strategies, and none were reported in response to attention problems. Participants responding to anhedonia used as many socialisation strategies as cognitive ones. Participants responding to avolition and blunting relied most heavily on behaviour change. Within negative symptoms, analyses indicated significant differences in the type of coping used in response to alogia and avolition. Previous research has also found that different negative symptoms tend to elicit different types of coping strategies (Boker et al., 1984; Brenner et al., 1987; Mueser et al., 1997b).

Mueser et al. (1997b) reported a significantly greater use of problem-focused coping in response to attention problems than for blunting, alogia, and social anhedonia. Somewhat congruently, the present study found that the highest proportion of cognitive problem-solving strategies were in response to attention problems with 64% of coping responses to attention problems being from this category. Participants with avolition identified nearly twice as many cognitive problem solving strategies overall. As found in the present study, the problem-solving strategies were least used in response to anhedonia and blunting (Mueser et al., 1997b).

Carr's (1988) findings concerning the types of strategies used for a symptom category labelled retardation/inhibition is supported by findings in the present study.

This symptom category most closely resembles the negative symptoms of blunting and avolition. Carr found that the most common type of strategy used in response to retardation/inhibition was behaviour change, followed by cognitive control, and then socialisation. This finding mirrors patterns of coping strategies utilised in response to blunting and avolition in the present study. Neither Carr's participants, nor those responding to blunting and avolition in the present study used any strategies which resulted in a decrease in socialisation.

Coping in Relation to Participant Variables

The fourth and final aim of Study 1 was to examine whether coping with negative symptoms differed according to objective negative symptoms, gender, age, education, or length of illness. Correlations indicated that there was a consistent negative relation between the total number of coping responses engaged in and clinician assessed negative symptoms. Other studies have also reported that greater negative symptom pathology is associated with fewer overall coping attempts (MacDonald et al., 1998; Middelboe, 1997). Research examining other indices of coping in relation to severity of negative symptoms has found that coping may be differentially associated with level of pathology (Andres et al., 2003; Lysaker et al., 2005b; Meyer, 2001). Sample sizes in the current study were too small to examine this issue. Studies presented in the following chapters will further explore the relations between coping dimensions and negative symptom severity.

With regard to associations between participant characteristics and number of coping responses, the pattern of results again suggests that aspects of coping may be negative symptom specific. Despite a lack of statistical significance for many correlations, common trends emerged. Older participants reported more attempts at coping with attention problems than younger participants. Similarly, a greater length of illness was associated with higher numbers of coping responses to attention problems. This pattern was reversed for coping with all other symptoms. More years of education and lower duration of illness was associated with more coping strategies for avolition. No gender differences were found in relation to total number of strategies. There are no comparable studies examining participant characteristics and negative symptom coping. When examining coping with all types of problematic symptoms, Middelboe and

Mortensen (1997) found no relation between total coping and age or gender, while Takai et al. (1990) reported a positive relation between age and number of coping responses.

Limitations and Future Research

There were a number of methodological limitations to this study. The small sample size and the nature of the data presented a number of problems for analysis. The data was a repeated measures design in the sense that the same 20 participants were assessed on the five negative symptoms. The occurrence of symptoms varied between a participant having just one symptom, to having all five. Unequal group sizes limited the use of conventional statistical tests to compare appraisal and coping across negative symptom groups. In addition, no attempt was made to measure depression, the symptoms of which share considerable overlap with some aspects of negative symptoms. It is possible that patients were appraising and coping with depressive symptoms rather than negative symptoms. This potential confound will be addressed in Study 2 by including a measure of depression.

Small participant numbers, selection criteria and the use of non-random selection also limits the extent to which these findings can be generalised. Individuals with dual diagnoses, severe depression or florid positive symptoms were screened, resulting in a unrepresentative sample of people with predominantly negative symptoms. The use of a single interviewer and resource constraints precluded the use of diagnostic interview schedules to confirm diagnoses, and prevented the calculation of interrater reliability analyses for SANS assessments. In addition, social desirability bias may have influenced participant responses. This is a problem with any face-to-face interview process and attempts were made to keep these effects to a minimum by offering only noncommittal encouragement and emphasising that there were no right or wrong answers. Despite these precautions, a predominance of ‘positive’ or adaptive coping responses over ‘negative’ or socially undesirable responses indicates that there may have been an element of response bias.

In conclusion, Study 1 represents the first attempt to explore primary and secondary appraisals and coping responses in relation to specific negative symptoms. The findings provided some important preliminary insights into how specific negative symptoms are appraised and responded to, and suggest that these variables provide a

useful avenue for exploring individual differences in the subjective experience of these symptoms. Findings suggested that variations in aspects of both appraisal and coping may be related to negative symptom type, and provide support for the multidimensional conceptualisation of negative symptoms taken in this research program. Study 1 results confirm the findings of a small number of previous studies which have found that people with schizophrenia employ a range of coping responses in an attempt to actively manage their own negative symptoms.

Overall, findings from the present study are very encouraging and provide support for the proposed model, both in terms of the utility and relevance of the subjective experience variables, and the level of participants' awareness of negative symptoms. Meaningful negative symptom-specific differences in reliance on different forms of coping also support the further investigation of the vulnerability-stress-coping model of adjustment to individual negative symptoms. However, Study 1 findings represent only the first preliminary test of the model, and a larger scale investigation is required to build upon the results found here. The present findings will be utilized to inform the more comprehensive investigations that are presented in subsequent chapters.

CHAPTER 5
STUDY 2: THE DEVELOPMENT AND EVALUATION OF THE APPRAISAL AND COPING WITH NEGATIVE SYMPTOMS QUESTIONNAIRE

Introduction to Study 2

As discussed previously, relatively little is known about how people with schizophrenia evaluate and cope with their negative symptoms. The vulnerability-stress-coping model presented in Chapter 3 proposes that the nature of the subjective experience of individual negative symptoms may be influential in adjustment to these symptoms. Negative symptom-specific primary and secondary appraisals and coping responses may enhance or detract from an individuals' level of psychosocial functioning. The previous chapter presented an interview based investigation of how people with schizophrenia appraise and cope with the SANS symptoms of alogia, anhedonia, attention problems, avolition and emotional blunting. In order to conduct a comprehensive, large scale assessment of the subjective experience of negative symptoms, a self-report questionnaire-based instrument is required. It has been argued that generic coping scales, frequently used in schizophrenia research, are not sensitive enough to evaluate the way individuals respond to specific disease-related stressors (Maes et al., 1996). Further, many of the generic coping instruments currently used for populations with schizophrenia have numerous psychometric weaknesses (Parker & Endler, 1992). Currently, there is no specialised English language, self-report questionnaire with which to evaluate both appraisals and coping with negative symptoms.

Findings from the ACNSIS, developed for use in Study 1, suggest that examining how negative symptoms are appraised and responded to is a relevant and potentially valuable method of investigating the role of psychological factors in adjustment to specific negative symptoms. While an interview schedule can provide important individual in-depth information, a self-report questionnaire has other advantages. It may help to reduce response bias, is easier to administer, and makes it possible to collect data from much larger and more diverse samples of the population. A specialised negative symptom appraisal and coping questionnaire will advance current theoretical and clinical approaches to these disabling and pervasive symptoms. Despite the well documented

impact of negative symptoms on a significant portion of the millions of people living with schizophrenia, no such specialised appraisal and coping instrument has ever been developed and published.

Study 2 comprises the development and evaluation of a specialised instrument to measure appraisal and coping with SANS negative symptoms. As such, Study 2 represents an continuation of the exploration of vulnerability-stress-coping model begun in the previous study. A combination of empirical and rational approaches form the basis for this investigation. Study 2 is divided into two parts and was divided into two chapters to simplify presentation of the material. Part A, described in the present chapter, involves the development and administration of the Appraisal and Coping with Negative Symptoms Questionnaire (ACNSQ). Part B, presented in Chapter 6, involves further investigation of the psychometric properties of the ACNSQ. In particular, Study 2B will focus on the nature of appraisal of negative symptoms, retest reliability analyses and evidence of the construct validity of the ACNSQ.

STUDY 2A: DEVELOPMENT AND FACTOR ANALYSES OF THE APPRAISAL AND COPING WITH NEGATIVE SYMPTOMS QUESTIONNAIRE (ACNSQ)

As outlined previously, the purpose of Study 2A was to develop and examine a specialised appraisal and coping questionnaire to assess the negative symptoms of alogia, anhedonia, attention problems, avolition, and emotional blunting. Little is known about individual differences in the subjective experience of individual negative symptoms. Virtually nothing is known about the multidimensionality of coping with these five SANS symptoms. This study sought to identify and examine any underlying coping dimensions that may shape coping responses to these negative symptoms. Further, Study 2A sought to determine whether any existing coping dimensions were common across negative symptoms or unique to specific symptoms. The ACNSQ was developed to explore the nature of appraisal and coping to individual negative symptoms, as well as to allow for comparison across negative symptoms.

Study Aims

Study 2A had four primary aims. The first was to develop and administer the

Appraisal and Coping with Negative Symptoms Questionnaire (ACNSQ) to a large sample of people with schizophrenia. The content of the ACNSQ was based upon coping responses collected from Study 1 and a review of the literature. The remaining aims involved investigating the nature of coping with individual negative symptoms. The second aim was to determine whether coping with the five SANS symptoms was multidimensional, by empirically deriving underlying dimensions from participants' coping responses. Exploratory factor analyses in the form of principal components factor analysis was used to investigate the multidimensionality of coping with individual negative symptoms. The third aim of Study 2A was to examine the nature of these coping dimensions or ACNSQ subscales. The fourth and final aim was to compare and contrast coping across negative symptoms. In line with results from Study 1 and other schizophrenia coping research, it was hypothesised that participants would identify a wide variety of different responses they used to cope with their negative symptoms and that these responses could be empirically partitioned into a smaller number of underlying coping dimensions. Due to the lack of empirical investigations of coping with individual negative symptoms, no specific predictions concerning the nature of these dimensions or their similarity across symptoms were made.

Method

Development of the Appraisal and Coping with Negative Symptoms Questionnaire (ACNSQ)

As discussed previously, a vulnerability-stress-coping model provides the basis of the present series of investigations of adjustment to individual negative symptoms. A combined rational-empirical approach was proposed to guide the present research program, and will be applied to the development of the ACNSQ. The first stage in this approach entailed the documentation of coping strategies used by a sample of the target population in response to the specific negative symptom stressors, as described in Study 1. The second stage, described below, is rationally based and involves the selection and refinement of a wide variety of coping responses for inclusion within the negative symptom-specific questionnaire. Appraisal of the negative symptom stressors will be incorporated within the ACNSQ in line with the emphasis on the cognitive process of

appraisal contained within the transactional model of stress and coping (Lazarus & Folkman, 1984), and adopted within the vulnerability-stress-coping model.

Administration of the ACNSQ to a large sample of people with schizophrenia is presented following the description of its development. Finally, the first stage of the empirical approach involves the use of statistical analysis to determine the nature of coping responses. The results of these analyses are contained in the latter part of this chapter. The final stage of the development process, the use of various statistical methods to provide empirical validation of the ACNSQ, is presented in Chapter 6.

As described in the previous chapter, an interview using the ACNSIS was initially conducted with 20 participants with schizophrenia. This resulted in the generation of a total of 163 coping strategies across the five negative symptoms of alogia, anhedonia, attention problems, avolition, and emotional blunting (see Appendix 4B). From examination of the coping responses across symptoms it became apparent that many were employed for several or all symptoms, while a smaller number were given only in response to a specific symptom.

To produce a useable questionnaire it was necessary to refine these items. Participant responses were first examined according to symptom. For each symptom, a complete list of coping responses was generated. Similar strategies were grouped together. Redundant strategies which were identical or similar to an existing item were removed. For example, four variations of 'I have a sleep' were reported by participants. Drinking coffee or tea and smoking cigarettes were also common repetitions. Next, related items within each symptom were grouped together then transformed into one item. For example, those strategies which involved engaging in work or activities in the participants' home or garden were assimilated into one strategy: 'I think of jobs to do in the house or garden'. Similarly, the cognitive coping responses involving reassurance such as 'I reassure myself that it won't last forever' were represented by 'I say reassuring or comforting things to myself'. Due to the large number of responses supplied for avolition (81), some of the more unusual strategies judged to be less commonly used were not included, for example 'Form positive connections between memories and movements and use the movements to feel better'.

In total, 44 coping items were generated from the original 163 coping responses

reported by participants. Following reduction and simplification of the coping responses, a literature review was conducted of published coping responses for negative symptoms. A comparison was made between the strategies generated from the ACNSIS and previous research examining coping with negative symptoms. As a result of this comparison, a further ten coping items not included in the original participant responses, or modified versions of original responses were included in the ACNSQ. In particular, coping strategies from the Australian research by Carr and Katsikitis (1987), Carr (1988), and MacDonald et al. (1998) were incorporated into the questionnaire.

The use of data from the same cultural background was based on findings that coping responses to the symptoms of schizophrenia may differ across cultures (for example Wahass and Kent, 1997). Including additional coping items was considered important to combat any limitations in the range of responses collected due to the relatively small sample size and its restricted nature. The enhanced theoretical utility and relevance of including a rational or deductive approach in the development of coping scales has been outlined by Parker and Endler (1992). The authors also point out that there are limitations to relying on a purely rational approach, such as in cases where the construct under investigation is obvious to participants and social desirability bias may result.

It appears the rationally-based ACNSIS may have suffered from this limitation. Coping strategies that could be considered negative or socially unacceptable were noticeably absent from the coping responses supplied by participants in study one. These strategies, which Carr and Katsikitis (1987) label as *maladaptive behaviour* or *indulgence* within their coping categorisation, include responses such as contemplating suicide, stopping medication and the use of alcohol and other drugs. Social desirability response bias is likely to be particularly problematic where an interview format is used. In contrast to Study 1 interview responses, the two most common coping responses in the MacDonald et al. (1998) questionnaire-based coping inventory involved wishful thinking and dwelling on problems. Both these strategies, as well as a third, 'I have negative thoughts about myself', were used by more than half of the participants in the MacDonald et al. (1998) study and were included in the ACNSQ. To further ensure that the range of coping items was representative of those used by the wider population of people with

negative symptoms, six items from the much larger Carr and Katsikitis (1987) study were also included within the set of core coping items of the ACNSQ. Finally, to make the ACNSQ as comprehensive as possible, a question at the end of each symptom asked participants to include any additional strategies they used in response to the symptoms presented that had not been listed.

There were two types of coping items included within the ACNSQ, items specific to particular negative symptoms and a group of 29 general coping items presented for each symptom. The 29 core items were included to allow for comparison of coping across negative symptoms. These items were responses from Study 1 that had been reported for more than one symptom, as well as responses that were deemed to be relevant for all symptoms. Also included in the set of core coping items were representative items from other research, as discussed above.

The ACNSQ contained five additional items each for alogia, anhedonia, and attention, and twenty for avolition/apathy. Blunting was the only negative symptom without additional specific coping items as sixteen of the seventeen responses given for blunting in Study 1 were subsumed in the core coping items for all symptoms. One participant response for blunting 'I take a vitamin B pill knowing I'll have more energy in an hour' was erroneously left out of the ACNSQ. Two coping responses 'I avoid situations that make me feel worse' and 'I reduce the amount of time spent in social settings' were included in the specific coping items for both the alogia and anhedonia. The number of specific coping items for individual symptoms included within the ACNSQ reflects the general pattern of participant coping responses from Study 1, with blunting producing the smallest number (17) and avolition producing the greatest (81). This pattern is nearly identical to that found by Mueser et al. (1997b) with apathy or avolition associated with significantly more coping responses than other negative symptoms. Similarly, when data in the Mueser et al. study are combined for the two anhedonia categories, blunting produced the least number of coping responses.

As presented in Chapter 3, a vulnerability-stress-coping model forms the theoretical framework for the present research. An important component of this approach is appraisal, whereby an individual interprets the meaning of a stressor. Three aspects of appraisal proposed to be relevant to the process of adjustment to negative symptoms are

included in the ACNSQ. These are the primary appraisals of negative symptom severity and distress, and the secondary appraisal of control.

Participants

Recruitment Procedure

A total of 120 participants with schizophrenia or schizoaffective disorder were recruited from suburban community mental health centres, rehabilitation centres for people with long term mental illness, and via an advertisement in a monthly newsletter for people with schizophrenia. The majority of referrals came from community mental health case managers. Complete data was obtained for 119 people. Resource and time constraints precluded the use of structural diagnostic interviewing instruments. Initial diagnoses were therefore made by treating psychiatrists and confirmed by using a checklist of DSM-IV criteria. Where required, information was also obtained from case managers and a review of medical charts. Participants signed a medical records release form as well as a general consent form. Potential participants were included in the study if they were currently experiencing one or more negative symptoms, were living in the community and did not have any organic brain injury or concurrent pathology which would significantly impede the interview process. Participation was voluntary and all participants provided informed consent. Each participant received either ten dollars cash or a cinema ticket for their participation. Six to eight weeks following initial testing, 30 participants were retested.

Measures and Procedure

Following an explanation of the nature and purpose of the study, consent was obtained from each participant. A semi-structured interview was then conducted to obtain participant demographic and clinical information and to evaluate schizophrenic symptomatology. Where necessary, clinical and demographic data was obtained from medical records and participants' mental health practitioner. Following the interview, the ACNSQ and a number of other electronic and/or paper and pencil self-report questionnaires were administered. A total of 91 (76%) participants completed an electronic version of the ACNSQ on a laptop computer, the remainder completed a paper version. A detailed description of other measures included during testing is presented in

the next chapter. Thirty participants were re-administered a paper version of the ACNSQ 6 to 8 weeks following their initial assessment.

Participant Characteristics

A summary of participant characteristics is contained in Table 5.1, along with the characteristics of the retest subgroup. As noted in Chapters 2 and 3, a number of clinical and demographic variables have been found to be associated with the coping process, insight, negative symptoms or adjustment in schizophrenia. As a result, data was gathered on the five demographic characteristics of gender, age, marital status, level of education, and employment status, and the five clinical variables of diagnosis, age at onset of illness, length of illness, number of hospitalisations, and level of antipsychotic medication. Level of antipsychotic medication was converted to milligrams of chlorpromazine equivalents (mgCPZ) per day based upon potency ratios of approximate median recommended daily doses of chlorpromazine 400 mg/day (Bitter et al., 2003) and data from the APA (2004), Centorrino et al. (2002), and Mauri, et al. (2005).

The 119 participants included in the analyses had a DSM IV (APA, 1994) confirmed diagnosis of schizophrenia (92.4%) or schizoaffective disorder (7.6%). Seventy-one percent of the participants were male. Participants ranged in age from 22 to 63 years (M= 39.95, SD= 10.2). A total of 77% participants had never married, 12% were married or in a de facto relationship, and 11% were divorced or separated. Number of years education completed varied from 6 to 19 years. Twenty-one percent of the participants had commenced or completed tertiary degrees, one participant had completed a doctorate. Five percent of the participants were employed to some degree, while 95% were unemployed, the majority on a disability pension.

With regard to clinical variables, 92% of participants had a DSM IV confirmed diagnosis of schizophrenia and the remaining 8%, schizoaffective disorder. Age at onset of illness varied from 13 to 45 years, and length of illness varied from 1 to 43 years. Total number of psychiatric hospitalisations ranged from zero to an estimation of 50 times. Mean daily antipsychotic medication level was 379.56 mgCPZ (SD= 234.4), with a range of nil to 1800mgCPZ. While two participants were no longer prescribed medication by their treating medical practitioner, others indicated that they were not fully adhering to their medication regime.

Table 5.1

Participant Characteristics in the Total Sample (N = 119) and the Re-test Subsample (n = 30)

	Total Sample (N = 119)		Retest Subgroup (n = 30)	
Variable	%	(n)	%	(n)
Gender				
Male	71	(84)	63	(19)
Female	29	(35)	37	(11)
Marital Status				
Single	77	(92)	77	(23)
Married/De facto	12	(14)	13	(4)
Separated/Divorced	11	(13)	10	(3)
Education				
Primary	5	(6)	3	(1)
Secondary	74	(88)	73	(22)
Tertiary	21	(25)	23	(7)
Employment Status				
Employed/Studying	5	(6)	10	(3)
Pension/ Unemployed	95	(113)	90	(27)
Diagnosis				
Schizophrenia	92	(110)	97	(29)
Schizoaffective Disorder	8	(9)	3	(1)
Age				
M	39.95		40.50	
SD	10.20		9.71	
range	22-63		22-54	
Age at onset				
M	23.26		22.50	
SD	6.81		5.81	
range	13-45		14-45	
Length of illness (years)[a]				
M	16.79		18.33	
SD	10.62		10.88	
range	1-43		1-35	
Number of hospitalisations[b]				
M	10.08		11.10	
SD	15.12		14.40	
range	0-50		1-50	
Antipsychotic Medication[c]				
M	379.56		332.20	
SD	234.40		154.52	
range	0-1800		75-630	

[a] Estimated for 5 participants

[b] Estimated for 19 participants

[c] In chlorpromazine equivalents.

Sample Comparison with other Coping with Schizophrenia Studies

In order to examine the representativeness of the study sample with the population of people with negative symptoms living in the community, a comparison of participant characteristics from the present study was made with other similar schizophrenia studies. Table 5.2 contains the participant characteristics reported in a range of coping with schizophrenia studies. The studies were selected on the basis of the similarity of their aims to the aims of the present study. Data concerning participants in the present study are presented in the first column of Table 5.2. Direct comparisons are hampered by the limited amount of information about participant characteristics supplied by some studies and differences in the way data was collated. Only the interview based study by Mueser et al. (1997b) specifically focused on SANS negative symptoms.

In terms of demographic variables, the sample in the present study seems comparable to that of other coping with schizophrenia studies. As can be seen from Table 5.2, the gender imbalance present in the current study is not uncommon in these studies. Many schizophrenia studies have a predominance of male participants, although the reasons for this are unclear. In all tabled studies with employment data, the majority of participants (over 80%) are unemployed or on a disability pension, although the present study has a slightly higher proportion in this category than the other studies. Apart from the first hospitalisation and early psychosis studies, the mean age of participants in this study equates well with the data supplied by other studies.

With regard to illness variables, length of illness is similar to that of Lecomte and Mercier (2005) and number of hospitalisations falls between that of Meyer (2001) and Lecomte and Mercier (2005). It is very hard to compare antipsychotic medication levels across most studies investigating coping with schizophrenia. This is due to the large range of published mean daily chlorpromazine equivalents used to calculate typical levels and the failure of studies to supply details of the source and dosage used to calculate levels.

Table 5.2

Comparison of Participant Characteristics for the Present Sample and Other Schizophrenia Coping Studies where Negative Symptoms were Examined

	Present Sample		Mueser et al. (1997a)		McDonald et al. (1998)		Boschi et al.[e] (2000)		Meyer (2001)		Bak et al. (2001)		Lecomte & Mercier (2005)	
Total Sample Size	119		20		50		95		70		23		101	
Variable	%	(*N*)	%	(*N*)	%	(*N*)	%	(*N*)	%	(*N*)	%	(*N*)	%	(*N*)
Gender														
Male	71	(84)	65	(13)	78	(39)	66	(63)	66	(46)	65	(15)	78	(79)
Female	29	(35)	35	(7)	22	(11)	34	(32)	34	(24)	35	(8)	22	(22)
Marital Status														
Single	77	(92)	85	(17)	90	(45)	79	(83)	--	--	79	(16)	87	(86)
Married/De facto	12	(14)	15	(3)	10	(5)	21*	(12)	--	--			13	(15)
Separated/Divorced	11	(13)					(*ever married)		--	--				
Education														
Primary	5	(6)	--	--	30 <= 10yrs		--	--	*M* =11.99yrs		--	--	*M* =11yrs	
Secondary	74	(88)	--	--	50 <=12yrs		66	(63)	6-postgrad*		--	--	*SD* = 3	
Tertiary	21	(25)	--	--	20 > 12 yrs		--	--	*range		--	--		
Employment status														
Employed/Studying	5	(6)	--	--	10	(5)	--	--	17	(2)	--	--	18	(17)
Pension/ Unemployed	95	(113)	--	--	90	(45)	--	--	83	(68)	--	--	82	(84)
Diagnosis														
Schizophrenia	92	(110)	90	(18)	22	(11)	80	(76)	56	(39)	100	(23)	72	(71)
Schizoaffective Disorder	8	(9)	10	(2)	6	(3)	18	(17)	10	(7)			21	(21)
Other/Controls					72	(36)	2	(2)	34	(24)			8	(9)

Table 5.2 continued.

Comparison of Participant Characteristics for the Present Sample and Other Schizophrenia Coping Studies where Negative Symptoms were Examined

	Present Sample		Mueser et al. (1997a)		McDonald et al. (1998)		Boschi et al.[e] (2000)		Meyer (2001)		Bak et al. (2001)		Lecomte & Mercier (2005)	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Age	39.95	10.20	--	--	22.90	3.58			40.70	11.97	38.50	10.07	40.99	9.43
range		*22-63*		*23-46*		*16.42-31.75*		*18-36+*		*18-87*				--
Length of illness (years)	16.79[a]	10.62	--	--	2.5	3	59% < 1yr		--	--	--	--	15	8.27
range		*1-43*		--			(at baseline)			--		--		--
Number of hospitalisations	10.08[b]	15.12	--	--	1.4	1.25	First admission		15.53	--	--	--	7	8.1
range		*0-50*		--		--	(at baseline)			*0-50*		--		--
Antipsychotic Level	379.56[c]	234.40	--	--	--	--	--	--	--	--	--	--	513[c]	474.5
range		*0-1800*		--		--		--		--		--		--
Sample Type	Community		Community		Community		Hospitalised Community follow-up		Hospitalised		Community		Community	

[a] Estimated for 5 participants

[b] Estimated for 19 participants

[c] In chlorpromazine equivalents.

[d] In haloperidol equivalents

[e] Only participants with coping data included

-- No information available

The Appraisal and Coping with Negative Symptoms Questionnaire (ACNSQ)

The development of ACNSQ was described in detail earlier in the chapter. A copy of one version of the ACNSQ is contained in Appendix 5A (to limit order effects, multiple paper versions of the ACNSQ were made varying the order of presentation of the symptoms). The ACNSQ was divided into five parts corresponding with the five SANS symptoms of alogia, anhedonia, attention problems, avolition, and blunting. The wording on the paper version and the laptop version of the ACNSQ were identical apart from instructions about completing the questionnaire. The first screen of the computerised version of the questionnaire presented participants with a brief general introduction and simple instructions about how to answer questions. Participants were informed that there were no right or wrong answers and that all responses were completely confidential. They were instructed to click 'OK' using the mouse button to proceed to the next screen. Participants were asked questions about their experience with each of the five symptoms separately. First, a description was given of the negative symptom. On the same screen, the participant was asked whether they were experiencing that symptom.

This question was asking participants to make a primary appraisal about the presence of the individual symptom. Participants who appraised the symptom as present were then required to make separate severity, distress, and control appraisals for that symptom, in that order. The severity and distress questions examined aspects of primary appraisal while the control rating provided a measure of secondary appraisal. Following the three appraisal ratings a range of coping strategies in response to blunting was presented. The 29 general coping items were then presented individually. For the other four negative symptoms, the symptom specific items were presented following the general items.

If participants responded that they did not have blunting (that is, chose the 'no' option on the screen), the questionnaire moved on to a description of the next negative symptom. The same procedure was then repeated for the other symptoms. Both the appraisal and coping questions took the form of a five point Likert scale with one question per screen. Due to the computerised nature of the questionnaire, the order of presentation of the five symptoms and the coping and appraisal items were not

randomised. Where a hard copy of the ACNSQ was used, the presentation of symptoms was randomised but not the coping and appraisal items.

Appraisal.

As discussed above, after an initial yes/no appraisal of the presence of the negative symptom, participants were required to make three appraisals of the symptom: severity, distress, and control ratings. In the computerised version, each question appeared on a separate screen. The first question asked participants to rate the severity of the symptom: *On average, how severe has this symptom been over the past month?*. Participants responded by using the computers' mouse to choose one of the following options listed below the question: *1. mild, 2. between mild and moderate, 3. moderate, 4. between moderate and severe, 5. severe*. The next question asked the participant to rate the level of distress that particular symptom caused them: *On average, how much does this symptom bother or distress you? 1. very little distress, 2. a little distress, 3. moderate distress, 4. considerable distress, 5. a great deal of distress.* The final appraisal question was a control rating: *On average, how much control do you feel you have over the symptom of (symptom descriptor inserted)? 1. no control, 2. a little control, 3. moderate control, 4. considerable control, 5. a great deal of control.*

Coping.

Following the appraisal questions, respondents were asked to indicate which coping strategies they used for that particular symptom. The following instructions were given prior to the presentation of the coping items: *You will now be asked about ways in which people might respond to the symptom of (name of symptom). Please read each statement carefully and indicate how often you have responded in this way to the symptom.*

Each symptom began by presenting the same 29 general coping responses, followed by the specific strategies for that symptom. The responses were presented one at a time with each screen identical to the one before except for the strategy description. The first of the strategies presented for each symptom was: *I lie down and have a rest or sleep.* Below this statement was the question: *Over the last month, how often have you used this approach to the symptom of (name of symptom)? 1. not at all, 2. used very*

little, 3. used sometimes, 4. used often, 5. used a great deal. Once the participant had rated the frequency of use of the coping response, the next response automatically appeared.

Participants were encouraged to take breaks as required while completing the ACNSQ. The final question at the end of each symptoms' coping items asked participants to list (either type in for the electronic version or write down for the paper version) any additional coping responses they used to manage the symptom.

Pilot

The ACNSQ was initially piloted with two people with a DSM IV confirmed diagnosis of schizophrenia. Both participants were recruited from an advertisement in a newsletter for people with schizophrenia. The results from the two pilot cases were not included in the study data as additional predictor and dependent measures were not completed. The procedure followed was the same as that outlined above for administration of the ACNSQ. Once the participant had completed the coping questionnaire, feedback about the material was elicited from participants. In particular, the participants were questioned about their experience using the laptop computer and its suitability as a research tool. Both participants positively endorsed its use and suggested some changes to the format of the ACNSQ. As a result of this pilot, several small changes were made such as the expansion and simplification of some instructions.

Results

Only results concerning the coping variables are presented below. All results concerning participant characteristics and appraisal data are contained in the following chapter.

Data Screening

All analyses were performed with SPSS 9.0 (Norusis, 1998). Prior to analyses, data was checked for errors and missing information. As one participant did not acknowledge the presence of any negative symptoms and therefore had not supplied any coping data the original sample of 120 was reduced to 119. Analyses were conducted to provide measures of central tendency, variability and shape of distribution for all coping items for each of the five symptoms. Univariate distributions were inspected for marked

deviations from normality. For each symptom, scores on a number of coping items were skewed and kurtosed, with many participants indicating that they used the coping strategy 'not at all' or 'very little'.

Inspection of scatter plots also revealed that a non-linear relationship existed between several pairs of variables for each symptom. A number of variables were initially transformed to correct for skewness and non-normality using square root and logarithm transformations (Tabachnick & Fidell, 1989). Transformations were conducted according to Tabachnick and Fidell (1989). Transformed distributions were not normally distributed and the original data was retained. This decision was in accordance with Tabachnick and Fidell (1989) who propose that untransformed variables may be retained to enhance interpretability of results when transformation results in nonnormal distributions.

Next, data were checked for multivariate normality and to determine if the correlation matrix contained potentially interpretable information. Significance tests of correlations and the anti-image correlation matrices were both used to provide an indication of the factorability of the data sets. For each symptom, there were a substantial number of significant correlations between variables and many small values within the off-diagonal data points of the anti-image matrix, suggesting the five data sets were factorable. When squared multiple correlations (SMCs) were examined for each of the five data sets it was evident that both singularity and the presence of outliers was a problem. Singularity occurs when any of the SMCs equal one. Outlier variables are those with extremely low SMCs.

To rectify these two problems, and the nonlinearity observed from the inspection of scatter plots, a number of problematic variables were omitted from further analyses as recommended by Tabachnick and Fidell (1989). Deletion of problematic variables also assisted to redress the poor ratio of observations to variables for each symptom and improved measures of sampling adequacy provided by the Kaiser criterion (Tabachnick & Fidell, 1989). However, many non-normally distributed coping items still remained in the data set, which may result in a degraded but still worthwhile factor analytic solution, according to Tabachnick and Fidell (1989).

Following removal of many of the problematic variables, factor analyses were

carried out on the remaining coping items for each of the five symptoms within the ACNSQ. Following factor analyses, the psychometric properties of the factors within each of the five symptom scales were examined, including internal reliabilities and intercorrelations. In order to compare the pattern subscale use across symptoms, intercorrelations were conducted and mean subscale scores were calculated. To determine the magnitude of differences in subscale use, a series of paired sample t-tests were performed on symptom pairs.

Negative Symptom Frequencies

Initial appraisals of the presence or absence of each negative symptom varied considerably. Of the 119 participants, 48% appraised alogia as present in the last month, 25% reported having anhedonia, 40% reported attention problems, 55% reported avolition, and 29.4% reported emotional blunting. The total number of symptoms acknowledged by participants varied from 1 to 5, with 8 (7%) participants reporting all 5 symptoms, 8 (7%) participants reporting 4 symptoms, 10 (8%) with 3, 37 (31%) with 2, and 56 (47%) with 1 symptom. In comparison, data from the clinician administered SANS suggested the following number of participants with each symptom: 74 (62%) with alogia, 64 (54%) with anhedonia, 80 (67%) with attention problems, 88 (74%) with avolition, and 52 (44%) with emotional blunting. The lack of agreement between subjective symptom awareness and objective clinician assessments mirrors the findings of Study 1. Further detail concerning frequencies and descriptive data for symptoms and appraisal are presented in the next chapter.

Coping Frequencies

Lack of Coping Responses

In total, only one participant indicated that that they did not use any of the coping items listed for a particular symptom. This was for avolition. The same participant reported varying degrees of use for the other two symptoms they reported as present, suggesting that they were not responding erroneously to all items. In comparison, nine participants or 45% of the sample from Study 1 were unable to supply any coping responses for one or more symptoms they reported as present.

Coping Item Frequencies Across Negative Symptoms

Most Used Coping Items

Frequencies of coping item responses for each symptom, as indicated by item mean scores, are presented in Appendices 5B, 5C, 5D, 5E, and 5F. There were many similarities across symptoms with respect to coping item frequencies. General coping item 24 'I eat or make a cup of tea or coffee' was the most frequently used for all five negative symptoms, regardless of coping item type (general or specific). Mean item scores for this response ranged from 3.65 for attention problems to 3.77 for alogia with an overall mean for this item of 3.70 across all symptoms. The proportion of participants who indicated that this coping response was *5. used a great deal* was 36.8% for alogia, 26.7% for anhedonia, 27.1% for attention, 29.2% for avolition, and 22.9% for blunting.

Within the general items, number 12 'I accept it and get on with things' was the second most frequent response for alogia and attention while the second most frequently used coping response for anhedonia, was general item 27, 'I think about how I would like things to be'. The response with the second highest mean for avolition was the general item 2 'I watch TV or listen to music', while for blunting, item 21 'I think positive thoughts', was on average the second most frequently endorsed item.

Of the symptom specific items, one of the two items presented for both alogia and anhedonia, 'I avoid situations that make me feel worse', was the most frequently reported specific item for those two symptoms. For attention, the specific strategy 'I make a special effort to listen or concentrate harder' was the second most frequently endorsed strategy overall for this symptom. For avolition, the item 'I try to keep healthy eg. get plenty of sleep or eat a healthy diet' was the most frequently used of the avolition specific items, and the third most frequently used overall for that symptom. Overall, when the ten most frequently used general items, in terms of mean response rate, were compared across symptoms, there was considerable overlap. In total, fifteen items made up the ten most frequently used items for all symptoms, and of these, seven occurred in the top ten for each symptom.

Least Used Coping Items

The same strategy, general item 28 'I reduce or stop taking my medication' was

the least frequently used of all strategies for all five negative symptoms. The overall mean for this item was 1.13 across all symptoms. The proportion of participants who responded that they used this coping strategy *1. not at all* was 88% for alogia, 90% for anhedonia, 96% for attention, 85% for avolition, and 89% for blunting. When the five least frequently used general items were compared across symptoms very similar usage patterns are apparent. The same five items were the least used for alogia, anhedonia, attention problems, and avolition. These were general items 28 (above), 7 'I give up', 16 'I think of ending my life', 5 'I drink alcohol or take drugs such as marijuana', and 6 'I increase the amount of medication I take or take my medication early'. For blunting, item 25 'I read, or write things like letters, poems, or stories' was the fifth least used strategy. Unlike the other four symptoms, these two items are used more often for blunting with mean scores of 2.31 and 2.46 indicating that these responses are used on average between *2. very little* to *3. sometimes*.

Coping Item Correlations

Pearson correlations were conducted between each possible pair of negative symptoms to compare the level of use of the five most frequently used coping items both within, and across, symptoms. Within symptoms, these correlations investigated the extent to which individual participants used pairs of coping responses with the same frequency. Across symptoms, these correlations measured the degree to which individual participants were using the same coping items in response to the two different negative symptoms being compared. Appendix 5G contains the results of these analyses.

Coping Item Correlations Within Negative Symptoms

Item correlations indicated that the direction and strength of relationships between coping items used for the same negative symptom varied greatly according to SANS symptom. For example, for participants with alogia or blunting, greater use of item 12 ' I accept it and get on with things' was significantly positively related to greater use of item 27 'I think about how I would like things to be' for the same symptom. Conversely, for participants with anhedonia, these two responses were significantly negatively related. For participants with attention problems, greater use of item 2 'I watch TV or listen to music' was highly related to greater use of item 21'I think positive thoughts' ($p < .0001$).

The relationship between these two coping items was non significant ($r < .2$) for all other negative symptoms. These results suggest that utilisation of two particular coping responses is determined by the nature of the negative symptom itself.

Coping Item Correlations Across Negative Symptoms

Correlations indicate that for all symptoms pairs, participants' use of a coping item in response to one symptom was positively associated with their use of the same item for another symptom, although the magnitude of this association varied somewhat. For example, for the 15 participants reporting the presence of both attention problems and blunting, the correlations between the use of items 2 and 21 were non significant and relatively low ($r < .2$). In contrast, for the 17 participants with attention problems and anhedonia, the correlation between the use of the same items (2 and 21) in response to these symptoms was highly significant, $r = .63$ ($p = .006$) and $r = .74$ ($p < .0008$) respectively.

There was also variation across symptoms in the associations between different items for pairs of negative symptom. For example, for the 16 participants who reported the presence of both anhedonia and blunting, greater use of both 'I eat or make a cup of tea or coffee' (item 24) and 'I watch TV or listen to music' (item 2) for anhedonia was strongly related to lower reliance on 'I think about how I would like things to be' (item 27) for blunting. In contrast, while greater use of the strategy 'I think about how I would like things to be' (27) for avolition was significantly related to greater use of another cognitive strategy 'I accept it and get on with things' (12) for alogia, the same strategy for avolition was negatively related to accepting it and getting on with things for blunting. These correlations suggest a complex pattern of relationships in how participants cope with more than one symptom. The factor analyses presented in the following sections assist in reducing and summarising this complexity.

Additional Coping Responses

Of the 119 participants, 23 answered the question asking for additional coping strategies. These verbatim responses are contained in Appendix 5H. These 23 participants provided approximately 50 additional coping items. Of these responses, the majority had some degree of overlap with core coping items, expressed in slightly

different ways or providing more detail. Examples of additional strategies included wanting to specify a particular type of book such as a "dictionary-thesaurus" in response to alogia, or to provide detail about the positive thoughts employed in response to symptoms. Of the unique additional strategies the majority were of a religious nature. Seven participants provided one or more religious coping responses to symptoms. For example, "I pray" or "Buddism" or "I talk and listen to God". One male participant (55) provided additional strategies but went on to state that he didn't believe he had schizophrenia because he didn't hear voices. Finally, one participant (22) provided detail concerning an abusive episode and it's relation to coping with alogia.

Factor Analysis of Coping Items

A separate principal components factor analysis with varimax rotation was carried out for each of the five negative symptoms within the ACNSQ. For each symptom, there were between 7 and 12 factors with eigenvalues over 1. Many of these factors did not meet commonly used criteria for determining the number of factors to retain within factor analysis (Tabachnick & Fidell, 1989). Cattel's scree test and comprehensibility of factors were the primary criteria used to select the number of factors for extraction (Tabachnick & Fidell, 1989). Where scree test results were ambiguous, all possible factor solutions were explored. Bartlett's test of sphericity was examined for each factor solution. This statistic provides a test of the hypothesis that the correlations in the correlation matrix are zero and is recommended where there are fewer than five cases per variable (Tabachnick & Fidell, 1989).

Criterion for initial item retention were .3 or greater factor loadings, a .05 or greater difference between an item's loading on the primary factor and its loading on other factors, the presence of three or more items per factor, and finally, that the item was theoretically related to other items on the factor. Following the initial factor solution, criteria for retention of items for subsequent factor analyses were: .4 or greater factor loadings, a .15 or greater difference between loadings on the primary factor and other factors, and comprehensibility.

Alogia

To improve the normality and factorability of the data set, a number of

problematic variables identified during data screening and preliminary analyses were eliminated from further analyses (coping items 1, 4, 5, 14, and 28). Following principal components factor analysis (PCFA), Cattel's scree test of the 29 items for alogia clearly indicated a three factor solution. Appendix 5I contains items and loadings for the initial three factor solution for alogia. Using the criteria outlined in the section above, three items were discarded. Of these, two items did not load significantly onto any factor (items 6 and 24), while item 8 had a split loading of less than .05 difference.

The remaining 27 items were subjected to PCFA and three factors were rotated to orthogonal and oblique positions. Criteria for item retention were .40 or greater factor loadings, a .15 or greater difference between an item's loading on the primary factor and loading on other factors, and an interpretable and rational connection with other items on the factor. A further eight items were subsequently excluded, one failed to load > .40 on any factor (item 2, 34), and five had split loadings on two or more factors (items 13, 27, 29, 30 and 31). Thus, a total of 19 coping items were retained.

In order to confirm the factor structure of the remaining 19 items, the items were again subjected to PCFA using both oblique and varimax rotations. This analysis resulted in the exclusion of one further item (33) which failed to load > .40 on any factor. Thus, for alogia a total of 18 coping items were retained in the final three factor solution. The final factor items, loadings and eigenvalues are contained in Table 5.3. The Kaiser-Meyer-Olkin measure of sampling adequacy for alogia was acceptable at .62 and Bartlett's test of sphericity was significant ($p < .0005$).

The three factor solution accounted for 45.77% of total variance. All three factors contained six items and included a mixture of both behavioural and cognitive coping responses. The first factor accounted for 16.43% of the total variance and contained items that related to task-orientated or problem solving coping behaviours and was labelled Active Coping. Items on this subscale all seemed to be focused on taking constructive steps to minimise the impact of alogia on their lives.

Table 5.3

Principal Components Analysis of the ACNSQ for Alogia (N = 57)

Subscales, Item Number and Description	Factors		
	1	2	3
Active Coping			
22. I go out and do things, for example, go to town or shopping…	.78		
18. I concentrate on my work, study, or leisure activities.	.77		
26. I analyse the problem and think of ways to solve it.	.64		
3. I do some physical activity, for example, go for a walk ...	.61		
17. I try to behave like people who do not have this symptom.	.60		
25. I read, or write things like letters, poems, or stories.	.58		
Avoidance			
9. I avoid other people.		.70	
16. I think of ending my life.		.67	
32. I reduce the amount of time I spend in social settings.		.66	
10. I do nothing and hope that it goes away.		.63	
19. I dwell on my problems or how bad I feel.		.59	
7. I give up.		.58	
Emotional Coping			
11. I say reassuring or comforting things to myself.			.68
15. I spend time with other people or talk to people on the phone.			.65
20. I talk to other people about the problem.			.64
23. I think of jobs to do in the house or garden.			.57
21. I think positive thoughts.			.50
12. I accept it and get on with things.			.49
Eigenvalue	2.96	2.81	2.70
% of variance	16.43	15.63	13.71

ACNSQ = Appraisal and Coping with Negative Symptom Questionnaire

Factor two accounted for 15.63% of variance. Labelled Avoidance, this factor appeared to assess behaviours (eg, 'I reduce the amount of time spent in social settings') and cognitions (eg. 'I think of ending my life') reflecting a desire to withdraw from contact with others and their own suffering.

The third factor, labelled Emotional Coping, accounted for 13.71% of total variance. This factor was comprised of coping responses that seemed to reflect attempts to improve emotional wellbeing or affect regulation. Items that loaded highly on this factor included cognitive strategies such as positive self-talk (eg. 'I say reassuring or comforting things to myself') and behavioural strategies such as seeking out the company or support of others (eg. 'I spend time with other people or talk to other people on the telephone'). One strategy in this factor 'I think of jobs to do in the house or garden' appears to belong more in the Active Coping factor. However, the highest correlation for this item was with the other Emotional Coping item 'I think positive thoughts'. This suggests that for participants coping with alogia, the primary purpose of the item may be emotional enhancement through distraction. In addition, reliability analyses indicated that the reliability of the Emotional Coping scale was reduced when the item was removed, thus the decision was made to retain the item.

Anhedonia

Following preliminary analyses, four problematic variables were eliminated from the coping item data set (items 3, 8, 9 and 34). Examination of the PCFA scree plot for the remaining 30 anhedonia variables did not suggest a clear solution with potential one, three, five or seven factor solutions. Each of the factor solutions were explored and all failed to meet criteria apart from the three factor solution. For example, the last two factors for the seven factor solution contained only two uniquely loading items each, less than that recommended for ease of interpretability of a factor (Tabachnick & Fidell, 1989). Thus, the three factor solution was retained. Appendix 5J contains the initial factor items and loadings for anhedonia. Item retention criteria were as listed above.

Following rotation of the 30 item three factor solution, three further items were excluded due to < .3 loading (item 17), split loadings < .05 (item 29) or both (7). The remaining 27 items were subjected to principal components analysis with varimax rotation and a further 11 items were dropped due to loading less than .40 (items 11, 18,

27, 28, 30, 31, and 32), split loadings < .15 (5, 10, and 25) or both (33). In order to confirm the factor structure of the remaining 16 coping items, the items were once again subjected to principal components factor analysis with varimax rotation. This analysis resulted in the exclusion of one further item (2) which no longer met the > .40 loading criteria. Factor items, loadings, and eigenvalues are contained in Table 5.4. Kaiser's criterion for anhedonia was.61 and Bartlett's test of sphericity was significant ($p <$ .0005).

Table 5.4

Principal Components Analysis of the ACNSQ for Anhedonia (N = 30)

Subscales, Item Number and Description	Factors		
	1	2	3
Active / Emotional Coping			
21. I think positive thoughts.	.89		
13. I try to be or stay cheerful.	.82		
14. I try to get on top of the feeling.	.82		
23. I think of jobs to do in the house or garden.	.79		
22. I go out and do things, for example, go to town or shopping…	.77		
20. I talk to other people about the problem.	.72		
15. I spend time with other people or talk to people on the phone.	.70		
26. I analyse the problem and think of ways to solve it.	.65		
Resigned Avoidance			
19. I dwell on my problems or how bad I feel.		.82	
16. I think of ending my life.		.75	
12. I accept it and get on with things.		-.64	
6. I increase the amount of medication I take, or take my medication...		.60	
Palliative Avoidance			
4. I smoke cigarettes			.77
24. I eat or make a cup of tea or coffee			.76
1. I lie down and have a rest or sleep.			.75
Eigenvalue	4.90	2.41	1.97
% of variance	32.67	16.09	13.14

ACNSQ = Appraisal and Coping with Negative Symptom Questionnaire

In total, 15 items were retained in the final 3 factor solution, accounting for 61.92% of the total variance. The first factor contained eight items and accounted for 32.67% of the total variance. Items correlating highly with factor one reflected both active coping strategies and those aimed at enhancing emotional wellbeing. Items on factor 1 were united by their adaptive or constructive, non-avoidant approach to minimizing the impact of anhedonia on the persons' quality of life. This factor encompassed problem solving, distraction, positive cognitions and support-seeking, and was labelled Active/Emotional Coping.

Factor two accounted for 16.9% of variance in responses and contained four items which reflected helplessness or resignation. One active item, 'I accept it and get on with things', loaded negatively onto the factor, lending support to the predominant theme of passive withdrawal or a resigned avoidant coping style. It was labelled Resigned Avoidance.

Factor three contained three items and accounted for 13.14% of total variance. These items reflected a palliative or indulgent coping approach (smoking, eating/drinking, resting/sleeping) rather than active attempts to change the stressor and were labelled Palliative Avoidance.

Attention Problems

To improve the normality and factorability of the data set, a number of problematic items were excluded from factor analysis (items 2, 3, 5, 16, 23 and 27). This left a total of 28 coping items. Following PCFA of the 28 items, Cattel's scree plot was ambiguous with potentially two, three or five factor solutions indicated. All three solutions were explored. Ultimately, the three factor solution proved the most satisfactory for attention problems using the criteria of comprehensibility and Kaiser's criterion. Appendix 5K contains the initial three factor solution item loadings for attention. Following the initial three factor solution, two coping items did not load at the .3 level and were excluded. A second PCFA was then conducted on the remaining 26 items. Following the above criteria, 11 further items were excluded using the more stringent criteria of loadings < .4 and < .15 difference between loadings.

In order to confirm the factor structure of the remaining 15 coping items, the items were once again subjected to principal components factor analysis and varimax

rotation. This final three factor solution accounted for 55.35% of the total variance in scores. The results of the final factor solution for anhedonia are displayed in Table 5.5. Kaiser's criterion for attention was 0.63, and Bartlett's test of sphericity was significant ($p < .0005$).

Factor one contained items aimed at affect regulation or enhancing emotional wellbeing, either through cognitive strategies or support-seeking. This Emotional Coping factor contained six items and accounted for 22.14% of total variance.

Table 5.5

Principal Components Analysis of the ACNSQ for Attention (N = 48)

Subscales, Item Number and Description	Factors		
	1	2	3
Emotional Coping			
13. I try to be or stay cheerful.	.73		
21. I think positive thoughts.	.73		
8. I follow the advice of my doctor, therapist, case manager…	.72		
15. I spend time with other people or talk to people on the telephone	.69		
11. I say reassuring or comforting things to myself.	.67		
20. I talk to other people about the problem.	.65		
Active Coping			
26. I analyse the problem and think of ways to solve it.		.79	
31. I use techniques to improve my attention, for example…		.72	
32. I write lists of things to remember or keep a diary or calendar…		.72	
33. I make sure the book I'm reading or activity I'm doing is interesting		.63	
4. I smoke cigarettes		-.59	
17. I try to behave like people who do not have this symptom.		.54	
Avoidance			
29. I criticize myself or think negative thoughts about myself.			.86
19. I dwell on my problems or how bad I feel.			.82
7. I give up.			.61
Eigenvalue	3.32	2.82	2.16
% of variance	22.14	18.81	14.40

ACNSQ = Appraisal and Coping with Negative Symptom Questionnaire

Factor two, labelled Active Coping, contained six items and explained 18.81% of variance. Coping items loading on this factor encompassed cognitive and behavioural strategies such as problem solving aimed at either directly improving attention problems or reducing their impact on day to day functioning. One item, 'I smoke cigarettes' loaded negatively on factor two and was reverse scored.

The third factor, Avoidance, contained three items and explained 14.40% of variance. Items on this factor seemed to reflect a feeling of resignation or defeat rather that attempts to actively problem solve or limit negative emotional consequences.

Avolition

To improve the multivariate distribution of variables and the factorability of the data set, 11 coping items were excluded from further factor analysis (items 4, 5, 13, 15, 16, 23, 28, 29, 34, 37 and 38). Following PCFA with varimax rotation of the remaining 38 items, Cattel's scree test indicated a three factor solution was the most likely. Although less clear, the scree plot also indicated a possible five factor solution, which was explored. When poorly loaded and split loaded items were excluded from the five factor solution, the last factor only contained two items. Thus, the three factor solution was retained. Appendix 5L contains the three factor solution for the 38 items and their factor loadings. Using the same criteria as above, a sequence of PCFAs were conducted resulting in a final 21 item solution. A final PCFA conducted to confirm the 21 item three factor solution resulted in the exclusion of one further item which no longer reached the > .40 loading criteria.

Thus, the final three factor solution retained 20 items and accounted for 52.73% of total variance. Kaiser's criterion for avolition was .65, and Bartlett's test of sphericity was significant ($p < .0005$). Item details are presented in Table 5.6. The first factor, labelled Active Coping, consisted of seven items and accounted for 28.05% of the total variance. Items loading highly on this factor seemed to reflect a coping dimension primarily concerned with actively overcoming or improving the problem of avolition. Coping items included psychological strategies such as cognitive restructuring and problem solving.

Table 5.6

Principal Components Analysis of the ACNSQ for Avolition (N = 65)

Subscales, Item Number and Description	Factors		
	1	2	3
Active Coping			
40. I try to set an example for other people or demonstrate to others...	.79		
39. I remind myself that past experience has shown me that …	.74		
14. I try to get on top of the feeling.	.73		
26. I analyse the problem and think of ways to solve it.	.69		
27. I think about how I would like things to be.	.68		
20. I talk to other people about the problem.	.68		
35. I stop and evaluate the situation.	.67		
Avoidance			
31. I think about something for a long time until I work up the energy...		.71	
42. I stay in bed all day or until I feel like getting up.		.71	
1. I lie down and have a rest or sleep.		.67	
10. I do nothing and hope that it goes away.		.67	
9. I avoid other people.		.66	
7. I give up.		.54	
19. I dwell on my problems or how bad I feel.		.53	
Emotional Coping			
43. I use inspirational material, such as positive books and tapes ...			.72
44. I try to make myself feel better by using alternative approaches …			.72
11. I say reassuring or comforting things to myself.			.67
47. I participate in group activities, for example self-help, social …			.58
45. I keep a journal or diary of the positive things I have achieved ...			.57
3. I do some physical activity, for example, go for a walk or exercise.			.52
Eigenvalue	5.61	3.28	1.65
% of variance	28.05	16.42	8.26

ACNSQ = Appraisal and Coping with Negative Symptom Questionnaire

Avoidance, the second factor, contained seven items and accounted for 16.42% of the total variance. Items on this factor included coping responses concerned with palliation, withdrawal and a sense of submission to the avolition.

The third factor accounted for 8.26% of variance and contained a mix of cognitive and behavioural coping items that reflect a common goal of improving emotional wellbeing. Items on this Emotional Coping factor included individual activities to enhance mood such as using inspirational material or alternative approaches, as well as

seeking support or company by participating in group activities.

Emotional Blunting

Following preliminary data analyses, five problematic blunting items were removed from the data set (items 6, 19, 27, and 28). After PCFA with varimax rotation using the remaining 24 items, Cattel's scree plot was ambiguous with a number of factor solutions equally possible. All solutions were explored. On the basis of comprehensibility criteria, and after split and poorly loading items were excluded from the larger solutions explored, a three factor solution was again the most viable. Appendix 5M contains the factor items and loadings for the three factor solution of the 25 blunting coping items. Using the same exclusion criteria, 20 items were retained which were confirmed in a final PCFA with varimax rotation. Results are presented in Table 5.7.

Kaiser's criterion for blunting was low at .53. Tabachnick and Fidell (1989) indicate that values of .60 and above are required for good factor analyses. Given the exploratory nature of the study, the decision was made to retain the blunting data for further analysis. However, because of the low nature of the sampling statistic, results concerning the blunting coping factors need to be interpreted with caution. Bartlett's test of sphericity was significant ($p < .0005$).

The final three factor solution accounted for 50.31% of variance. The first factor contained eight items and accounted for 17.2% of total variance. Highly loading items on this factor seemed to reflect avoidant palliative behaviours, withdrawal and a sense of resignation or submission. This factor was labelled Avoidance.

Factor two, labelled Emotional Coping, contained five items and explained 17.09% of variance. Items on this factor seemed to reflect a coping dimension based upon the use of psychological strategies to address mood states and improve emotional wellbeing.

The third factor contained seven items and explained 16.06% of the total variance. This Active Coping dimension contained items focused on addressing the problem of blunting, either through help from others, engaging in activities or individual problem solving.

Table 5.7

Principal Components Analysis of the ACNSQ for Blunting (N = 35)

Subscales, Item Number and Description	Factors		
	1	2	3
Avoidance			
7. I give up.	.76		
10. I do nothing and hope that it goes away.	.71		
9. I avoid other people.	.64		
4. I smoke cigarettes.	.58		
29. I criticize myself or think negative thoughts about myself.	.57		
1. I lie down and have a rest or sleep.	.54		
17. I try to behave like people who do not have this symptom.	.51		
24. I eat or make a cup of tea or coffee.	.45		
Emotional Coping			
14. I try to get on top of the feeling.		.79	
13. I try to be or stay cheerful.		.77	
11. I say reassuring or comforting things to myself.		.72	
12. I accept it and get on with things.		.65	
21. I think positive thoughts.		.62	
Active Coping			
3. I do some physical activity, for example, go for a walk...			.76
23. I think of jobs to do in the house or garden.			.66
20. I talk to other people about the problem.			.64
26. I analyse the problem and think of ways to solve it.			.62
25. I read, or write things like letters, poems, or stories.			.58
8. I follow the advice of my doctor, therapist, case manager…			.56
18. I concentrate on my work, study, or leisure activities.			.52
Eigenvalue	3.44	3.42	3.20
% of variance	17.18	17.09	16.05

ACNSQ = Appraisal and Coping with Negative Symptom Questionnaire

Psychometric Properties of the ACNSQ Subscales

For each symptom, separate subscale scores were calculated for participants who appraised the symptom as being present. Each score was computed by reverse scoring negatively loaded items, summing item scores for that subscale and dividing by the number of items. Mean scores were used for each subscale due to the unequal number of items across the subscales for some symptoms. Inspection of the distributions of the subscale scores for normality indicated that Avoidance for alogia and attention, Resigned

Avoidance for anhedonia, and Emotional Coping for avolition were all positively skewed, while Emotional Coping for blunting was negatively skewed. Avoidance for alogia and Resigned Avoidance for anhedonia were kurtosed. Scores were transformed using square root, logarithm or inverse transformations and the negatively skewed variables were reflected first (Tabachnick & Fidell, 1989). These transformations resulted in several nonnormal distributions. For ease of interpretation and comparison the decision was made to use untransformed scores for all variables in subsequent analyses. As a result, findings involving these nonnormal variables need to be interpreted with caution.

Subscale means and standard deviations and item numbers and means for each of the ACNSQ negative symptoms are presented in Table 5.8. A comparison of subscale means indicates that, on average, reliance on a particular type of coping depended on the negative symptom a participant was responding to. For participants responding to alogia, Emotional Coping was, on average, the most frequently used group of coping strategies and Avoidance the least frequently used. For anhedonia, coping items within the Palliative Avoidance subscale were the most used, and Resigned Avoidance the least used.

The pattern was different again for attention problems with Active Coping the most frequently used and Avoidance the least. The Active Coping subscale was the most used for avolition, and Emotional Coping the least used. The overall mean for avolition was 2.52. Participants used the Emotional Coping the most, and Avoidance the least, although there was very little difference between Avoidance and Active Coping (M = 2.89). Blunting was the negative symptom with the highest mean strategy use at 3.01, indicating a mean item use of *sometimes*. Mean strategy use was lowest for avolition (2.52) and alogia (2.53) indicating that on average these items were used mid way between *very little* and *sometimes*.

A series of paired sample t test comparisons were conducted between pairs of negative symptoms to determine whether the observed differences in mean subscale use across symptoms was statistically significant. The tests provide a measure of whether

Table 5.8

ACNSQ Coping Subscale Correlations, Means, Standard Deviations, Item Number and Means, Mean Inter-item Correlations, and Cronbach's Alpha

		Correlations		Symptom	Subscale		Item	Mean Inter-item	
Coping Subscales	*N*	1	2	*M*	*M*	*SD*	*n*	Correlation	α
Alogia				2.54					
1. Active Coping	57				2.58	.93	6	.35	.77
2. Avoidance		.10			2.13	.80	6	.30	.72
3. Emotional Coping		.33*	.06		2.90	.79	6	.25	.67
Anhedonia				2.72					
1. Active/Emotional	30				2.89	.81	8	.44	.86
2. Resigned Avoidance		.04			2.06	.72	4	.45	.66
3. Palliative Avoidance		-.02	-.01		3.22	1.06	3	.36	.63
Attention				2.60					
1. Emotional Coping	48				2.85	.95	6	.41	.81
2. Active Coping		.27			2.91	1.03	6	.43	.76
3. Avoidance		.02	.07		2.03	.94	3	.45	.71
Avolition				2.51					
1. Active Coping	65				2.82	.85	7	.48	.89
2. Avoidance		-.14			2.50	.81	7	.35	.78
3. Emotional Coping		.54**	-.04		2.21	.87	6	.36	.81
Blunting				3.01					
1. Avoidance	35				2.86	.83	8	.28	.75
2. Emotional Coping		-.04			3.27	.84	5	.43	.78
3. Active Coping		.10	.22		2.89	.78	7	.31	.76

*$p < .05$. **$p < .01$. All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptom Questionnaire

participants generally respond in the same way, regardless of the target symptom. Pairs of mean subscale scores were examined and t-tests were conducted on any pairs with a .50 or greater difference in means. Only t scores greater than $p < .01$ were considered significant. Results of the significant analyses are contained in Table 5.9. Findings support and expand those found for the five most used individual coping items. The degree to which participants used a particular type of coping was frequently determined by the nature of the negative symptom they were responding to.

For example, for the 30 participants who reported both alogia and avolition, the use of Active Coping in response to alogia was significantly less than their use of Active Coping in response to avolition. Similarly, these participants used a significantly greater amount of Emotional Coping in response to alogia than avolition. Conversely, these 30 participants relied on avoidant strategies significantly more frequently in response to avolition than alogia. The greatest number of differences in coping response type according to symptom was for avoidant strategies. In total, 11 comparisons were significant, indicating that reliance on a particular coping response was at least to some extent determined by the symptom in question.

Multidimensionality of Coping

While factor analysis provides one source of evidence for the multidimensionality of the ACNSQ, another source of evidence is provided by the intercorrelations of the subscales within symptoms. Table 5.8 contains these correlations. Within each symptom, these correlations were very low to moderate, the highest correlation was .54 and the lowest was .006. Two correlations were statistically significant. These were for Active Coping and Emotional Coping for alogia and Active Coping and Emotional Coping for avolition. The moderate nature of the highest correlation indicates that the coping subscales were generally measuring distinct dimensions.

Internal Reliability of Coping Subscales

Item total correlations provide a measure of the internal reliability of a scale, and it has been suggested that .20 is the minimum acceptable item total correlation for a reliable scale (Kline, 1986). For the ACNSQ, correlations between coping items and

Table 5.9

Results of Significant Paired t-test Comparisons of ACNSQ Coping Subscale Use According to Negative Symptom Type

ACNSQ Coping Subscale Type	Negative Symptom Pair	*N*	*M*	*SD*	*t*	*df*	*p*
Active	1. alogia Active Coping and avolition Active Coping	30	2.47 2.98	.80 .79	-4.95	29	$p < 0.001$
Emotional	1. alogia Emotional Coping and avolition Emotional Coping	30	2.98 2.35	.75 .87	4.91	29	$p < 0.001$
	2. attention Emotional Coping and avolition Emotional Coping	23	2.83 2.21	1.02 .89	3.47	22	$p = .002$
Active/Emotional	1. anhedonia Active/Emotional and avolition Emotional Coping	23	2.90 2.44	.77 .83	3.29	22	$p = .003$
Avoidance	1. alogia Avoidance and anhedonia Palliative Avoidance	15	2.47 3.36	.47 1.15	-3.24	14	$p = .006$
	2. alogia Avoidance and avolition Avoidance	30	2.17 2.76	.60 .81	-4.57	29	$p < 0.001$
	3. anhedonia Resigned Avoidance anhedonia Palliative Avoidance	30	2.06 3.22	.72 1.06	-4.97	29	$p < 0.001$
	4. anhedonia Resigned Avoidance and avolition Avoidance	23	2.00 2.75	.71 .70	-3.73	22	$p = .001$
	5. anhedonia Resigned Avoidance and blunting Avoidance	16	2.14 3.19	.74 .53	-4.87	15	$p < 0.001$
	6. anhedonia Palliative Avoidance and attention Avoidance	17	3.39 2.29	1.13 .99	3.36	16	$p = .004$
	7. attention Avoidance and avolition Avoidance	23	2.04 2.64	.94 .89	-3.13	22	$p = .005$

All tests two-tailed

their respective subscale total ranged from .26 to .74. Mean inter-item correlations ranged from a low of .25 for Emotional Coping for alogia to a high of .48 for Active Coping for avolition. Subscale mean inter-item correlations are presented in Table 5.8.

Cronbach's alpha, the most commonly reported measure of reliability, were calculated for all ACNSQ subscales. These values ranged in magnitude from .63 to .9 and are displayed in Table 5.8. The mean internal consistency within symptoms was alogia .72, anhedonia .72, attention .76, avolition .83, blunting .76. The mean internal consistency for all the ACNSQ subscales was .76. Three of the fifteen subscale internal reliability coefficients fell below the conventional standard of .70 (Edwards et al., 1990). These were for Emotional Coping for alogia, and Resigned and Palliative Avoidance for anhedonia. It has been argued that the number of items on the subscale, and the sample size need to be taken into account when assessing the reliability of a scale. Todd and Bradley (1994) have suggested that a Cronbach's alpha as low as .50 may be considered reliable for a 3-item subscale, and .65 acceptable for a 4-item scale. Given the small negative symptom sample sizes in the present study, and the number of items in these three subscales, they were judged to have adequate reliability.

Examining the Nature of Coping Across Symptoms

A comparison of coping across symptoms was made in earlier sections by examining the mean response rate and interrelationships for the five most used coping items, and by conducting t-tests of subscale use within symptom pairs. A further comparison of coping across symptoms was made by conducting Pearson correlations between symptom subscales.

Table 5.10 contains ACNSQ subscale intercorrelations. Due to the large number of correlations conducted, only alpha levels greater than .01 were considered significant, although those with alpha levels of .05 are marked on the table. The number of participants with each of the symptom pairs is contained within the individual cells of the table. The number of participants with two particular symptoms ranged from a high of 30 participants with both alogia and avolition to a low of 15 for participants with alogia and anhedonia, alogia and blunting, and blunting and attention problems. The degree to which individual participants contributed to analyses varied widely. For example, 8 participants reported all 5 symptoms, while 37 participants only reported 2 symptoms. A

further 56 (47%) of participants were excluded from correlational analyses because they reported only 1 symptom.

There was a great deal of similarity in patterns of use of a particular coping type across symptoms. That is, use of active and emotional coping types tended to be positively related with each other across symptoms, and use of avoidant strategies for one symptom tended to be positively related to use of avoidance for other symptoms. For example, participants use of Active Coping for alogia was strongly positively associated with their use of Active/Emotional Coping for anhedonia, Active Coping for attention and both Active and Emotional Coping for avolition ($p < .005$). Their were several exceptions that did not fit this general pattern. For example, greater reliance on Emotional Coping for blunting was related to lower use of all other types of coping for the 15 participants who also reported alogia, but greater use of Active/Emotional Coping with anhedonia and Active Coping for attention. Use of Active Coping for blunting was largely unrelated to use of Active Coping for either alogia or avolition.

The pattern of relationships between active and emotional forms of coping and avoidance were more complex across the negative symptom pairs. For some symptoms, greater use of avoidance was associated with less use of active and/or emotional coping for other symptoms. For example, for participants who reported both attention problems and blunting, greater use of Active Coping for attention problems was associated with significantly less use of Avoidance for blunting. Conversely, there was a positive relationship between Resigned Avoidance and both Active Coping and Emotional Coping for attention and avolition, and Active Coping for alogia and blunting. Participants who relied more on avoidance to cope with their blunting also relied more on Active and Emotional Coping to cope with their alogia.

As would be expected if participants are using similar responses across symptoms, significant correlations between two subscales occurred where the subscales shared a number of coping items in common. For example, Active/Emotional Coping for anhedonia has two strategies in common with alogia's Active Coping and four with alogia's Emotional Coping.

Table 5.10

ACNSQ Coping Subscale Intercorrelations and Participant Numbers

Symptom and	Alogia			Anhedonia			Attention			Avolition			Blunting	
Subscale	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Alogia	*N* = 57													
1. Active Coping														
2. Avoidance	.09													
3. Emotional Coping	.33*	.06												
Anhedonia	*n* = 15			*N* = 30										
4. Active/Emotional Coping	.74***	-.12	.83***											
5. Resigned Avoidance	.42	.32	-.03	.04										
6. Palliative Avoidance	-.30	.38	.10	-.02	-.01									
Attention	*n* = 23			*n* = 17			*N* = 48							
7. Emotional Coping	.45*	-.11	.73***	.87***	.07	.05								
8. Active coping	.70***	.01	.13	.47	.05	-.71***	.27							
9. Avoidance	.05	.15	.18	.34	.17	.20	.02	.07						
Avolition	*n* = 30			*n* = 23			*n* = 23			*N* = 65				
10. Active Coping	.74***	-.28	.54***	.72***	.11	-.29	.68***	.61**	.07					
11. Avoidance	-.16	.53**	-.23	-.14	.08	.55**	-.39	-.18	.51*	-.14				
12. Emotional Coping	.73***	.06	.50**	.65***	.29	.06	.60**	.66***	.37	.54***	-.04			
Blunting	*n* = 15			*n* = 16			*n* = 15			*n* = 22			*N* = 35	
13. Avoidance	.12	.47	.41	-.01	.11	.68***	-.25	-.69***	.21	-.51*	.57**	.05		
14. Emotional Coping	-.29	-.13	-.12	.16	-.40	-.09	-.09	.24	.03	-.01	.08	.13	-.04	
15. Active Coping	.48	-.43	.26	.43	.37	-.18	.36	.09	-.10	.06	-.28	.31	.10	.21

*p < .05. **p < .01. ***p < .005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negtaive Symptoms Questionnaire

Similarly, all three coping items contained in the Palliative Avoidance subscale for anhedonia are contained in the Avoidance subscale for blunting. Thus the magnitude of the correlation indicates that the 16 participants reporting both anhedonia and blunting are responding in a very similar way to the two negative symptoms. In addition, the majority of coping items retained in the final three factor solutions were core coping items with only one specific item retained for alogia, three for attention, and nine for avolition, increasing the likelihood of overlap in items across symptoms. There was a highly significant positive correlation between Active Coping with attention problems and Emotional Coping with avolition even though the subscales did not have items in common. Similarly, there were also highly significant negative correlations between Palliative Avoidance for anhedonia and Active Coping for attention problems, and Avoidance for blunting and Active Coping for attention problems. Overall, results indicate that there is a great deal of similarity in coping use across symptoms with a tendency to use the same type of coping for more than one symptom. There is also evidence suggesting that participants are engaging in negative symptom-specific coping at times.

Discussion

The ACNSQ was developed and evaluated using a combined empirical and rational approach, and based upon a vulnerability-stress-coping model of adjustment to individual negative symptoms. There were four primary aims of Study 2A. First, to develop and administer an instrument investigating the subjective experience of negative symptoms for people with schizophrenia. Second, to investigate the multidimensionality of coping. Third, to examine the nature of empirically derived coping subscales and fourth, to compare and contrast coping across negative symptoms. Each aim will be discussed in turn and compared where applicable to previous coping research. It should be noted that, as discussed previously, only a very small number of studies have used symptom-specific coping instruments to investigate coping with the symptoms of schizophrenia, and even fewer have examined or published data concerning coping with specific negative symptoms. Of these, few have used empirical methods to derive coping dimensions. These limitations prevented the development of specific hypotheses regarding coping with negative symptoms and restrict the comparisons that can be made between the present findings and previous research.

The Development of the ACNSQ

With regard to the first aim, the ACNSQ was developed as an appraisal and coping instrument designed to be sensitive to the unique stressors of specific negative symptoms. The questionnaire was built on the foundation of responses supplied by participants suffering from negative symptoms from Study 1. The ACNSQ was administered to a large sample of people with schizophrenia or schizoaffective disorder. However, the number of participants who acknowledged the presence of individual symptoms was markedly less than the numbers identified as having the same symptom when assessed using the clinician administered SANS (Andreasen, 1984a). This issue will be discussed in detail in the next chapter, however it is important to note here, as it meant that the aim of testing a large sample was only partially met. The relatively small participant numbers, while not uncommon in schizophrenia coping research, is less than recommended for factor analyses. Consequently, all ACNSQ results must be considered exploratory only. Despite these reservations, Study 2A findings suggest the ACNSQ may be a potentially useful tool for examining these very specific stressors for people with schizophrenia.

Verbal feedback provided by participants indicated that many responders found the electronic ACNSQ easy to use. When asked, participants generally responded that they found the instructions clear and the descriptions easy to understand. Very few participants requested assistance to complete the electronic or paper version of the questionnaire. Despite the length of the ACNSQ and the other accompanying instruments, only a small number of participants required a break or rest during testing, usually to have a cigarette. Several people stated that they enjoyed using the laptop computer and many reported that they found the testing session informative and/or interesting. Thus, although some slight future modifications are indicated, the ACNSQ appeared to be a user-friendly instrument for examining coping with negative symptoms.

The Multidimensionality of Coping and the Nature of the Coping Subscales

With regard to the second aim, the results indicate that coping with negative symptoms was indeed multidimensional. As hypothesised, use of exploratory factor analyses confirmed that meaningful coping dimensions were observable from participants responses for each of the negative symptoms investigated. Additionally, correlational analyses confirmed that within negative symptoms, these dimensions were generally independent with only 2 of the 15 showing a moderate relationship.

The third aim of Study 2A was to examine the nature of the empirically derived coping subscales. With some item variation, three similar coping dimensions labelled as Active Coping, Emotional Coping, and Avoidance emerged for alogia, attention, avolition and blunting. However, a three factor solution for anhedonia resulted in a combined Active/Emotional Coping subscale and two distinct uncorrelated avoidance subscales. The degree of reliance on particular forms of coping represented by the subscales varied across negative symptoms as did the direction and strength of subscale associations with each other, both within and across symptoms. The three types of coping dimensions found in the present study are similar to those found in other recent studies in the coping literature (Bak et al., 2001a; van den Bosch & Rombouts, 1997), although there are some important distinctions to be made concerning nomenclature used.

A deliberate choice was made to avoid the use of the traditional labels such as problem-focused coping or the dichotomy of problem-centred versus nonproblem-centred coping. These categories fail to take into account many coping responses utilised by participants in the present study that, although not directly focused on the negative symptom target as such, are still constructive attempts to improve levels of functioning. For example, coping responses that involve conscious efforts to engage in exercise or hobbies would not be accounted for by these categories. The active coping subscales described in Study 2A include both specific problem-focused strategies as well as actions that do not directly target the negative symptom stressor. However, the commonality between the apparently dissimilar items which loaded heavily on the Active Coping factors appears to be the goal of enhancing levels of day to day functioning or conversely, reducing the detrimental impact of the negative symptoms. These coping attempts to improve daily functioning varied from responses targeting specific problem solving to role performance such as housework, and included activities which appeared to be active attempts at distraction.

Active coping strategies were endorsed across all symptoms in one form or another and consisted of primarily cognitive or behavioural strategies which focus on the problem and/or taking action such as engaging in leisure activities, work or physical activities. As stated previously, the primary goal of items loading highly on active dimensions appeared to be a desire to achieve or maintain a desired level of psychosocial functioning. On average, coping responses characterized as active were the most heavily used by participants responding to attention problems and avolition. Examples include: “I analyse the problem and think of ways to solve it” and “I try to behave like people who do

not have this symptom".

The use of the term Emotional Coping also requires clarification. ACNSQ subscales labelled Emotional Coping differ from traditional classifications of emotion-focused coping. For this study, the term is used to refer to items loading highly on a coping dimension where the primary goal appears to be a combination of enhancing general wellbeing and the amelioration of negative emotions associated with the negative symptom. In this sense, the use of the descriptor emotional coping is very similar to its original use (Folkman & Lazarus, 1980). However, traditional uses of the term emotion-focused coping frequently categorise avoidance as belonging to this group of responses (Folkman & Moskowitz, 2004). In addition, traditional emotional coping classifications frequently focus on the venting of emotions and imply a level of passivity towards resolving the emotional impact of the stressor. In contrast, within the ACNSQ, emotional coping items reflect a more constructive approach to emotional regulation and encompass items that can be primarily cognitive, behavioural, or social in nature.

Thus the items which loaded highly onto the ACNSQ subscales labelled Emotional Coping seemed to be connected by their focus on enhancing emotional wellbeing in some way. Items on these coping dimensions frequently involved seeking out the company of other people for support, advice or distraction as a way of relieving the negative emotional impact of the negative symptom stressor. The Emotional Coping subscales also contained various non-social forms of distraction and comforting cognitions. Examples include: "I try to be or stay cheerful" and "I spend time with other people or talk to other people on the telephone". Emotional coping subscales have been identified in many coping studies, however unlike the Emotional Coping subscales presented here, some distinguish between social coping or social support coping and emotional coping. When responding to alogia and blunting, participants tended to rely most heavily on Emotional Coping responses.

Turning now to the last subscale type, factor analyses indicated that the coping data for all five negative symptoms contained at least one dimension characterised by withdrawal, negative cognitions and an apparent avoidance of active attempts to improve functioning or wellbeing. These dimensions were labelled Avoidance for alogia, attention problems, avolition, and blunting, and Resigned Avoidance and Palliative Avoidance for anhedonia. Subscales containing avoidant behaviours or cognitions encapsulated a sense of hopelessness, passive acceptance or negativity about the negative symptom problem. Common coping responses included avoiding other people, dwelling on the problem,

doing nothing, palliative behaviours (eg. smoking cigarettes, eating, sleeping) and considering suicide.

The three factor solution for anhedonia was the only one of the negative symptoms which produced two separate avoidance subscales, Resigned Avoidance and Palliative Avoidance. The low correlation between these two subscales ($r = – .006$) indicates that they each represent quite distinct coping dimensions. A comparison of means using a paired samples t-test for these two avoidant coping dimensions indicated a highly significant difference in the degree to which participants with anhedonia relied on these two dimensions $t\ (29) = 4.31$, $p < .0005$. Coping responses comprising the Palliative Avoidance subscale were relied on most for participants with anhedonia.

It should be noted that there were several coping items which were categorised under different coping dimensions. That is, for some negative symptoms, the item loaded heavily on the Active dimensions and minimally on the Emotional dimensions, while for other symptoms this pattern was reversed. The coping dimensions seemed to reflect differences in the purpose or goal of the strategies. Thus, the author was guided by the other items on the factor, and which correlated highly with the specific item, in relation to the meaning of the item for that particular negative symptom. For example, general item 23, 'I think of jobs to do in the house or garden', loaded highly with other wellbeing-focused items for alogia, but appeared to have an active, functionally based purpose when used in response to blunting.

The empirically derived coping dimensions from the present study differ considerably from the rationally based categories used to examine Study 1 coping responses. These differences make comparison difficult, however a number of similarities are apparent, particularly in terms of reliance on Active Coping, which overlaps with several Study 1 categories such as active diversion, activity, task performance and problem solving. As for Study 1, where participants with attention problems and avolition reported a predominance of strategies from these categories, Study 2 participants with the same symptoms relied most heavily on Active Coping.

However, the coping dimensions derived in the present study do have many similarities with those reported in other coping research. A growing number researchers have also used empirical methods to determine a smaller number of underlying dimensions for nonclinical, community coping scales. These dimensions generally involve some variation of the ones identified in the ACNSQ and often include an active/rational/problem solving component, an emotional/social component, and an

avoidance component (for example CSI, Amirkhan, 1990; CSQ, Roger et al., 1993; CISS, Endler & Parker, 1994; COPE, Lyne & Roger, 2000). The trend towards identifying a smaller number of key coping dimensions is in direct contrast to the large numbers employed by some earlier coping scales which contained as many as 8 (Folkman & Lazarus, 1985; Folkman & Lazarus, 1988; Madden, James, & Paton, 1992), 12 (Patterson & McCubbin, 1987), 14 (the COPE, Carver et al., 1989) or 19 (Janke et al., 1985 as cited in Hoffmann et al., 2000) coping subscales.

Other recent studies examining coping with schizophrenia have also tended to conceptualise coping responses along a smaller number of dimensions. The total number of these dimensions have generally ranged between two to five coping types and have been obtained by rational (Lobban et al., 2004; Yanos et al., 2003) or empirical methods (Andres et al., 2003), or sometimes a combination of both (Bak et al., 2001a). A number of these studies have methodological problems, such as extremely small sample sizes, or lack adequate reliability and/or validity information. In addition, some have included participants with other forms of severe mental illness or have used coping instruments developed for and validated on general community samples. Finally, most assess general coping styles or evaluate coping with a recent stressor of any type. Few have focused specifically on coping with the symptoms of schizophrenia. However, despite these differences, the coping dimensions outlined in a number of these schizophrenia coping studies have many similarities to those found in the present study.

The Maastricht Assessment of Coping Strategies (MACS-I, Bak et al., 2001a; Bak et al., 2001b) measures coping with 13 symptoms of schizophrenia, including 5 negative symptoms. The coping responses of 21 patients were rationally categorised and then coping frequency scores were factor analysed to produce five factors. These factors, explaining 71% of variance were: active problem-solving, passive illness behaviour, active problem-avoiding, passive problem-avoiding, and symptomatic behaviour. With some exceptions, the content of the two active factors are similar to the ACNSQ subscales Active Coping and Emotional Coping, while the two passive categories closely resemble the ACNSQ subscales for avoidant coping. The symptomatic behaviour category largely concerns coping with symptoms such as compulsions, delusions, hallucinations and hostility.

The Coping with Symptoms Checklist (CSC, Yanos et al., 2003) is an interview schedule that was developed specifically to assess coping with five common symptoms of severe mental illness: anxiety, depression, mania, delusion, and hallucinations. The

authors state that roughly half the 91 participants reported being diagnosed with schizophrenia or schizoaffective disorder. Of these, 79 indicated the presence of one or more symptoms. A rational approach was used to categorise an unspecified number of coping items into three categories: problem-centred, neutral, and avoidance. There is considerable overlap with the ACNSQ subscales with the exception of the inclusion of 'social support efforts' in problem-centred coping, while neutral coping consists of emotional acceptance strategies, behavioural and cognitive distraction efforts, and use of non-addictive substances. Content of the CSC avoidance scale was very similar to those in the present study.

A number of studies have also examined coping with schizophrenia using general coping scales. van den Bosch and Rombouts (1997) compared coping in 20 patients with schizophrenia, 14 major depressive patients, 19 patients with anxiety, adjustment, or personality disorders, and 19 normal controls. Participants completed the German UCL (Schreurs et al, 1993 as cited in van den Bosch & Rombouts, 1997) which measures coping with general stressors and two measures of cognitive functioning. A simultaneous components analysis on the UCL's seven coping subscales and cognitive data resulted in an unnamed three factor solution. The first factor contained the three UCL factors of problem solving, distraction, and comforting cognitions, all of which are very similar to the cognitive and behavioural strategies contained in the ACNSQ Active Coping subscales. The second factor contained the two UCL factors of avoidance and worrying, while the third factor contained the two UCL factors of support seeking and emotional expression (van den Bosch & Rombouts, 1997).

Andres et al. (2003) factor analysed 24 coping items taken from four general coping with illness questionnaires. Based on data from 32 outpatients with schizophrenia spectrum disorders, the authors derived a four factor solution which they labelled as problem-focused coping, avoidant coping, resignation and helplessness, and external attributions of successful coping. Hoffmann et al. (2000) investigated coping for 46 outpatients with schizophrenia using the 19 factor German SCQ (Janke et al., 1985 as cited in Hoffmann, 2000). Factor analysis resulted in a two factor solution incorporating 17 of the original factors. They labelled the new factors active-change orientated coping and depressive-resigned coping.

Rosenfarb et al. (1999) administered the WCQ and a small number of additional items to 22 people with recent onset schizophrenia. Three rational factors based on a total of 42 coping items were then "purified" through internal consistency checks to derive

three subscales closely resembling those of the ACNSQ: problem-focused coping, seeking social support, and avoidance/denial. Meyer (2001) administered the COPE to 70 inpatients with mental illness, 66% of whom were diagnosed with schizophrenia or schizoaffective disorder. Correlations of .65 and .76 indicated substantial overlap between some of the 14 subscales contained within the COPE. As a result, the author aggregated subscale scores on the basis of face validity into two summary scores which he labelled adaptive and maladaptive coping (Meyer, 2001).

Psychometric Evaluation of the ACNSQ

It is apparent that many of these coping dimensions found in previous research closely resemble the ACNSQ subscales derived in the present study. Psychometric evaluation of the ACNSQ coping subscales indicated that they were generally reliable and comparable to other schizophrenia coping research. The three subscales for each symptom accounted for a modest amount of the total variance in coping responses, ranging from 45.8% for alogia to a high of 53.3% for avolition. In comparison, the total amount of variance accounted for by other empirically derived coping subscales using participants with schizophrenia have ranged widely: 35% (Mann, 2003), 56% (van den Bosch & Rombouts, 1997), 57% (Andres et al., 2003), 60% (Hoffmann et al., 2000), and 71% (Bak et al., 2001a). Reports of the total variance accounted for by empirical dimensions from other coping domains have also varied widely. For example, the three subscales of the Coping Strategy Indicator (Amirkhan, 1990) accounted for only 21% of total variance following initial administration. This figure had increased to 37% of variance by the third administration. Figures reported by Pakenham (2001) with the more specialised populations of Multiple Sclerosis sufferers and their care givers compare favourably, with 38.40% and 43.85% of total variance accounted for respectively.

The majority of the ACNSQ coping subscale internal reliabilities were moderate to high with mean internal reliabilities for each symptom ranging from .72 to .83. As such they are comparable to those reported for the few instruments designed specifically to examine coping with schizophrenia. Yanos et al. (2003) overcame the problem of uneven group sizes within symptoms by conducting internal reliability analyses on participants with more than one symptom, who had a symptom combination shared by at least four other participants. This reduced the number of participants to 49 for reliability analyses. In this way they obtained coefficient alphas of between .52 to .88. Vollrath et al. (1998) reported reliability coefficients of .64 to .88 for their 4 rationally-based coping

subscales based upon the 15 COPE subscales. In contrast, Hoffmann et al. (2000) report Cronbach's alphas of .92 for each of their 2 coping dimensions derived from 17 of the coping factors within the SCQ by Janke et al. (1985 as cited in Hoffmann et al., 2000). Unfortunately, Bak et al. (2001a) conducted internal reliability analyses for their MACS-I appraisal variables but the internal reliability of the five coping subscales was not examined.

The internal reliabilities of the ACNSQ factors also compare favourably with those of other generic coping instruments such as the COPE (range .45 to .92, Carver et al., 1989), the A-COPE (range .5 to .76, Patterson et al., 1987), and the WCQ with coefficient alphas ranging from .56 to .85 (Folkman & Lazarus, 1988). A more recent large scale confirmatory factor analysis of the WCQ found reliabilities of the subscales ranged from .39 to .79 with a mean of .65 (Edwards & O'Neill, 1998). The authors report that only 38% of the reliability estimates from the WCQ subscales exceeded the conventional standard of .70 for reliability estimates. In comparison, 80% of the ACNSQ reliability estimates exceeded .70.

The Nature of Coping Across Symptoms

The fourth aim of Study 2A was to compare and contrast coping with different negative symptoms. Overall, the existence of differences in the nature of coping across symptoms provides support for the multidimensionality of the negative symptom construct, and the negative symptom-specific nature of the vulnerability-stress-coping model proposed. When item means were examined to compare the most and least frequently used coping responses, there were many similarities both within and across symptoms. For example, the same two avoidant strategies 'I eat or make a cup of tea or coffee' (item 24) and 'I reduce or stop taking my medication' (item 28) were the most and least frequently used items respectively, across all symptoms. Correlational analyses of item use within and across symptoms indicated the presence of both similarities and differences in associations.

Within individual negative symptoms, subscale intercorrelations were very similar. For all four symptoms with separate active and emotional coping subscales, these two subscales were positively correlated, two significantly. With the exception of avolition, avoidant forms of coping were generally unrelated to active and emotional coping dimensions. For anhedonia, correlational analyses indicated that all three of the coping subscales represented independent dimensions ($r < .05$).

Across symptoms, the relationships between subscales varied according to the two negative symptoms in question. In nearly all cases, use of active and emotional coping responses was strongly positively related across negative symptoms. The exceptions to this trend were for several relationships between active and emotional coping for blunting and those for alogia, attention problems and avolition. Similarly, avoidance subscales tended to be moderately to strongly positively associated with each other across symptoms.

The relationships between active and emotional subscales and those containing avoidant strategies varied substantially according to the negative symptoms in question. These correlations ranged from positive, such as between Emotional coping for alogia and Avoidance for blunting and attention, to significantly negative, such as between Avoidance for blunting and Active Coping with attention and avolition. For the 15 participants with anhedonia and alogia, greater reliance on Resigned Avoidance was strongly, although nonsignificantly associated with greater reliance on Active Coping but there was no relationship with Emotional Coping. This pattern was similar for the 16 participants with anhedonia and blunting. Greater reliance on Resigned Avoidance was associated with greater reliance on Active Coping but the relationship with Emotional Coping was moderately, but nonsignificantly, negative. In contrast, for the 17 participants coping with both anhedonia and attention problems, Active Coping with attention was unrelated to Resigned Avoidance but significantly negative correlated with Palliative Avoidance. Emotional Coping for attention was not related to either type of avoidance.

While the correlations provided a measure of the similarity in the pattern of participant use of subscales across pairs of symptoms, paired sample t-tests provided a measure of the magnitude of subscale use across symptoms. A large number of significant results provided evidence that the degree to which a participant used a particular type of coping was frequently determined by the nature of the negative symptom they were responding to. This was particularly the case for use of avoidant coping responses. However, as both the item and subscale correlations, and the t-tests, were based upon a reduced sample of 63 participants who reported more than one symptom, these results need to be confirmed by further research.

Despite the small sample size, these symptom-specific coping findings mirror those from other research where coping with negative symptoms has been examined (Boker et al., 1984; Mueser et al., 1997b; Takai et al., 1990; Wiedl, 1992). These authors

also concluded that different negative symptoms tended to elicit different coping responses. Unlike these previous studies which employed an interview-based measure of coping and rational methods of determining underlying coping dimensions, the use of a standardised instrument in this study allowed for a more detailed empirical analysis of the negative symptom specific nature of coping.

The present study's findings are only partly congruent to those of Carr and Katsikitis (1987) who examined coping with seven symptoms of schizophrenia, including a negative symptom dimension labelled 'retardation'. Using a yes/no format, participants were asked about whether they used each of 57 coping items. The authors conducted multiple analyses of all possible pairs of the seven symptoms examined and found that the concordance rate for item use was 100% for symptom pairs which included retardation. The authors report that despite conducting more than a thousand analyses, none of the one tailed tests failed to reach significance at the .05 level.

The present study also found positive associations between use of the same item or subscale for different negative symptoms. The concordance rate in the present study was far from 100% and many correlations did not reach significance at the .05 level. In addition, differences in the pattern of coping item use and subscale use across symptom pairs indicates that participants do respond differently to different symptoms. Thus, findings from the ACNSQ do not support the conclusion by Carr and Katsikitis (1987) that 'Overall, the data strongly suggest that individuals employ particular groups of techniques regardless of the type of symptom with which they are trying to cope and do not employ different techniques for different symptoms' (p. 168).

The lack of research on negative symptom coping makes comparison of these patterns of use difficult. When measuring general coping style, van den Bosch and Rombouts (1997) found similar associations between their three coping factors based on the data of all participants (including 19 normal controls). A factor containing problem solving, distraction, and comforting cognition coping styles negatively correlated with the factor containing avoidance and worrying (r = -.21), while the third factor containing support-seeking and emotional expression forms of coping correlated at the level of .23 with the first factor and - .02 with the second (van den Bosch & Rombouts, 1997).

Hoffmann et al. (2000) reported a positive correlation of .34 between their active-change oriented coping factor and their depressive-resigned coping factor. Yanos et al. (2003) found positive correlations between all three of their rationally-based subscales. These correlations were significant for neutral coping and both problem-centred and

avoidant coping. Meyer (2001) found a significant positive correlation between two rationally derived COPE subscales adaptive and maladaptive coping, as did Ventura et al. (2004) for CRI approach and avoidance coping. Bak et al. (2001a) did not report any correlations between the five MACS-I subscales.

The evidence in the general coping literature is mixed concerning these associations. Some investigators, such as Cook and Heppner (1997) and Lyne and Roger (2000) have found positive correlations between problem or task focused coping and emotional coping. Conversely, associations have also been found between emotional and avoidance coping. Roger, Jarvis, and Najarian (1993) found a strong positive correlation between emotional coping and avoidance in their factor analysis of the CSQ, as did Lyne and Roger (2000) in their re-assessment of the COPE (Carver et al., 1989), and Endler and Parker (1990) in their construction of the MCI.

Cook and Heppner (1997) found an overlap between active and emotional coping in their large scale psychometric examination of three coping inventories: the Coping Inventory for Stressful Situations (CISS, Endler and Parker, 1994), the COPE (Carver et al., 1989), and the Coping Strategies Inventory (CSI, Tobin et al., 1989). Simultaneously factor analysing data from all three inventories, they derived a three factor solution with the factor that they called Problem Engagement (primarily concerned with problem-focused, task-orientated strategies) correlated with three emotion-management type strategies: Reinterpretation and Growth, Cognitive Restructuring, and Acceptance. The authors proposed that cognitive and emotional elements are highly intertwined with the frequently identified task-oriented coping. Furthermore, they conclude that the traditional conceptualisation of coping in terms of problem- versus emotion-focused is an oversimplification of the true nature of coping (Cook & Heppner, 1997).

In their psychometric re-assessment of the COPE questionnaire (Carver et al., 1989) Lyne and Roger (2000) derived a three factor solution with subscales very similar to those found for the ACNSQ. They labelled their first subscale Rational or Active Coping and also found that there was an overlap between items on this subscale and emotional coping, such as those strategies concerned with seeking instrumental support. Unlike the present results, the authors reported that emotional coping was also significantly positively correlated with avoidance coping (Lyne & Roger, 2000). In their comparison of the three coping scales, Cook and Heppner (1997) found an emotion-focused dimension that was focused on avoidance strategies.

Traditionally, instruments such as the WCQ (Folkman & Lazarus, 1988) and the

A-COPE (Patterson & McCubbin, 1987) have separated coping strategies focused on seeking social support from those concerned with emotional regulation. However, the presence of a combined emotional/social support coping dimension has emerged with the use of empirical methods in several recent coping studies.

One such example is the factor analytic results of a Dutch study by Olff, Brosschot, & Godaert (1993) investigating coping and health in 254 high school teachers. It also found a mixed seeking social support/expressing emotions subscale. This subscale, which they labelled emotion focused coping also contained responses such as seeking distraction and trying to feel better by smoking/drinking/relaxation. The other subscales emerging in the Dutch study are also very similar to the subscales derived from the ACNSQ. Olff et al. (1993) found four subscales in total, incorporating data from the German UCL (Schreurs, et al., 1993 cited in Olff et al., 1993) and a number of other questionnaires. The first subscale, labelled Instrumental Mastery-orientated coping, contained items aimed at active coping and a sense of personal control. The second subscale, which they labelled Cognitive Defence, contained coping items focusing on self-encouragement, considering the problem in a relative way, and positive reframing of the situation. Their third subscale was titled Defensive Hostility and contained elements of anger, hostility and acting out. It is interesting to note that none of the items from the coping scale used, the UCL, loaded on this subscale.

In his three factor solution of the CSI, Amirkhan (1990) described what he referred to as three fundamental strategies: Problem solving, Seeking Social Support, and Avoidance. The subscale termed Seeking Social Support closely resembles the Emotional Coping subscales in the ACNSQ with coping items focused on talking to others, seeking reassurance and making oneself feel better. Cook and Heppner (1997) called the second of their three subscales Social/Emotional as it contained both social support scales from the CISS (Endler & Parker, 1994), the COPE (Carver et al., 1989), and CSI (Tobin et al., 1989) as well as an emotional management scale. Consequently, this Social/Emotional also closely resembles the ACNSQ subscales labelled Emotional Coping.

As for the Active and Emotional Coping subscales, the Avoidance subscales closely resemble those found by others, such as the avoidance subscales outlined by Cook and Heppner (1997) and Lyne and Roger (2000). In their examination of three coping questionnaires, Cook and Heppner (1997) derived an Avoidance subscale which contained strategies that people use to distance themselves from or avoid problems. Although the authors had hypothesised that emotion management and avoidance were two

separate constructs, their results indicated that some emotional activities were interrelated with avoidance (Cook & Heppner, 1997). As was found in the present study, Cook and Heppner (1997) found that their avoidance dimension incorporated both cognitive and behavioural emotional coping items such as denial, mental disengagement, and social withdrawal. Unlike the avoidance subscales of the ACNSQ, Lyne and Roger's (2000) Avoidance subscale also contained an item concerned with acceptance 'I learn to live with it'. This item resembles item 12 'I accept it and get on with it' from the ACNSQ which loaded negatively on to Resigned Avoidance for anhedonia, and Emotional Coping for both alogia and blunting.

The findings concerning mean differences in item and subscale use, and differences in patterns of item and subscale relations across symptoms, suggests that coping with negative symptoms is at least partially negative symptom specific. Symptom-specific patterns of coping responses provide support for transactional models of stress and coping which emphasise the importance of the stressor-person interaction and cognitive processes when responding to a stressor. In addition, these results reinforce the need to investigate negative symptoms individually in order to examine the interplay between specific symptoms and underlying coping dimensions, and to fully understand their impact on adjustment to schizophrenia.

Limitations and Future Research

Despite the significant results obtained, and many similarities that mirror the results of other research, the exploratory nature of Study 2A dictates that findings may only be considered preliminary. Replication of the factor structure using larger numbers of participants is required to confirm these findings. Further, it must be emphasised that the process of selecting a factor solution, and the interpretation and labelling of factors is not an exact science, and has been described as 'a process that involves art as well as science' (p. 640, Tabachnick and Fidell, 1989).

Future modification and testing of the ACNSQ is also required to extend the composition of coping subscales. The additional coping responses provided by a small number of participants suggest that items incorporating a religious coping component are necessary in order to improve the comprehensiveness of the ACNSQ. The exclusion of religious coping items from the ACNSQ was an unfortunate oversight. There is some evidence from the literature that religious coping may constitute an important coping dimension for some people (Carver et al., 1989). Apart from the exclusion of religious

coping, the limited number of additional responses supplied, and the similarity in content to items already within the questionnaire, suggests that the ACNSQ contains a comprehensive list of the coping strategies used in response to negative symptoms.

Many of the methodologic limitations of Study 2A stem from low participant numbers for individual symptoms. Despite sampling a reasonable number of people with negative symptoms, the proportion of participants that acknowledged the presence of each symptom was unexpectedly low. One likely impact of the small number of participants with each symptom was a reduction in spread of responses and the nonnormal distributions of some variables. The low sample sizes also led to a low ratio of cases to variables which fell below that considered optimal for factor analyses. A further impact of the small sample is low power, a consequence of which may be a greater number of Type II errors. Because of this, apart from increasing alpha levels to .01, multiple comparisons were not statistically controlled for, for example by using a Bonferroni correction. The view was taken that as an exploratory study, the occurrence of Type II errors would be more detrimental than an inflated the Type I error rate.

All of the above mentioned problems are commonly encountered in schizophrenia research. Because of the difficulty in obtaining a sample of individuals who are able and willing to participate in research, studies involving people with schizophrenia tend to be small unless large amounts of funding or staff resources are available. The inherent difficulties in obtaining sufficient numbers within this clinical group is reflected in the many published schizophrenia studies with small sample sizes. For example, the Rosenfarb et al. (1999) study on coping obtained data on only 22 patients to examine the role of coping with a major stressor in recent-onset schizophrenia. Similarly, the validation of the MACS-1 (Bak et al., 2001a) was carried out on only 21 patients with schizophrenia. Meyer's (2001) examination of coping with severe mental illness, including schizophrenia, contained a total of 70 participants, 39 of whom were diagnosed with schizophrenia. Lastly, in their comparison of coping across schizophrenia, depression, a clinical control group, and normal controls, group sample sizes on which van den Bosch and Rombouts (1997) conducted their comparisons were 20, 14, 19, and 19 respectively.

In addition, the task of recruiting adequate numbers of participants for this study was compounded by the need to find people with one or more negative symptoms which, while having an impact on their life, were not severe enough to prevent them from taking part. Logically, those with severe avolition and anhedonia tend to be unwilling to

participate in research, while those with severe alogia and inattention may be unable to meet the assessment requirements. In a number of instances, after a discussion of study requirements, prospective participants with more severe negative symptoms were not included in the study sample. The exploratory nature of this study justified the selection of a restricted community sample of people with schizophrenia. However, the skew towards less severe negative symptoms in the present study limits its generalizability, as does the non-random selection of participants and the exclusion of people with dual diagnoses, who make up a significant proportion of people with schizophrenia (Carr et al., 2002). Further, relying on the diagnoses of treating psychiatrists, a diagnostic checklist, and information contained in medical charts, rather than conducting full diagnostic interviews for schizophrenia, may have resulted in the erroneous inclusion of some participants.

In addition to the absence of a diagnostic assessment, several other measures omitted from the present study are limiting factors. These include an evaluation of neurocognitive deficits, clinical depression, and medication side-effects. In addition, some theorists have emphasised the importance of distinguishing between participants with and without the deficit syndrome in order to make a distinction between primary and secondary negative symptoms (Carpenter et al., 1988; Kirkpatrick et al., 1989). As discussed in Chapter 2, there is mounting evidence that participants with the DS may differ in important ways from other people with schizophrenia (Kirkpatrick et al., 1996). After consultation Professor B. Kirkpatrick (personal communications, February 11 & 24, 1999), it was decided that the diagnosis of the DS could not be made with enough reliability to warrant its inclusion in the present research program.

Several limitations relate specifically to the content and structure of the ACNSQ. An inability to randomise the presentation of symptoms in the electronic version meant that there was a potential for ordering effects. The high face validity of the appraisal and coping questions may also have led to some element of response bias. In addition, the ACNSQ did not contain questions measuring participant appraisals of the efficacy of coping responses nor attributions about the cause of negative symptoms. Findings suggest that both causal attributions and efficacy appraisals may be influential in the coping process (Hoffmann et al., 2000; Roesch & Weiner, 2001). These aspects were omitted to ensure that the preliminary draft of the ACNSQ was a manageable size and not excessively demanding on participants. However, the inclusion of these variables in future versions of the ACNSQ is being considered.

In summary, the present study describes the process of constructing and administering the ACNSQ. It provides further evidence of the utility of the proposed vulnerability-stress-coping model in relation to coping with these specific stressors. A major finding from Study 2A is that participants reported symptom specific coping responses, confirming the importance of examining negative symptoms individually. This study builds on Study 1 by providing a preliminary qualitative and quantitative investigation of the coping dimensions associated with the negative symptoms of alogia, anhedonia, attention problems, avolition, and emotional blunting. Study 2B, contained in the next chapter, continues the psychometric evaluation of the ACNSQ begun in the present study. Despite a range of limitations, findings from Study 2A indicate that the ACNSQ may be a useful and reliable instrument with which to assess coping with specific SANS symptoms of schizophrenia. It is acknowledged that replication of the empirically derived coping dimensions and some adjustment of content is required to ensure that the ACNSQ is a reliable and valid tool.

CHAPTER 6

STUDY 2B: PSYCHOMETRIC PROPERTIES OF THE APPRAISAL AND COPING WITH NEGATIVE SYMPTOMS QUESTIONNAIRE

This chapter continues the exploration a vulnerability-stress-coping model and two types of subjective experience variables proposed to be influential in adjustment to the negative symptoms schizophrenia: appraisal and coping. The previous chapter containing Study 2A described the development and administration of the Appraisal and Coping with Negative Symptoms Questionnaire (ACNSQ). Study 2A also focused on examining the coping component of the ACNSQ. Results suggested that awareness of the presence of individual SANS symptoms was moderate and variable. Empirical methods were used to determine that coping was multidimensional and derive three symptom-specific coping dimensions for each symptom. These ACNSQ subscales were generally demonstrated to be independent, internally reliable, and symptom-specific. Study 2B evaluates the appraisal component of the ACNSQ by examining three aspects of negative symptom appraisal proposed to be influential in the subjective experience of negative symptoms: primary appraisals of severity and distress, and secondary appraisals of control. Study 2B also presents preliminary evidence of the retest reliability and validity of the ACNSQ.

Study 2B had three aims. The first was to explore the nature of ACNSQ appraisals in relation to each of the five SANS symptoms. Descriptive data and the relationships between the three appraisal variables was examined. The second aim was to provide a preliminary evaluation of the retest reliability of the ACNSQ appraisal and coping variables. The third and final aim was to explore the construct validity of the ACNSQ. Evidence for the construct validity of an instrument can be obtained by examining its associations with other theoretically related variables (Cronbach & Meehl, 1955). Validation examining an instruments' association with related variables has been variously referred to in the stress and coping field as concurrent validity (Bak et al., 2001a; Roger et al., 1993), criterion validity (Endler & Parker, 1990), and convergent or divergent validity (Amirkhan, 1990), as well as construct validity (Lyne & Roger, 2000).

As discussed previously, the ACNSQ is grounded in a vulnerability-stress-coping model of adjustment to individual negative symptoms. Accordingly, it would be expected that an individuals' coping responses would be related to their appraisal of a stressor as

well as the hypothesised consequences of that stressor. The source of stress which forms the basis of this research program is the presence and intensity of the five SANS symptoms of alogia, anhedonia, attention problems, avolition, and emotional blunting. The consequences of stress may be specific, such as the development of psychopathology (eg. anxiety and depression) or generalised, such as a reduction in quality of life. Thus, to examine the validity of the ACNSQ, correlations will be conducted between the ACNSQ appraisal and the coping variables and a range of other variables previously associated with appraisal and coping with schizophrenia.

Within the proposed vulnerability-stress-coping model, three separate domains of adjustment have been postulated to be relevant to the impact of negative symptoms stressors in schizophrenia. These domains involve of both objective indicators of adjustment, in the form of other positive and negative symptoms of schizophrenia, and the subjective experience of adjustment in the form of self-reported psychopathology and quality of life. All three domains have been investigated previously as outcomes within stress and coping research in schizophrenia (for example, Patterson et al., 1997a; MacDonald et al., 1998 #247; Lysaker, 2003b; Lecomte & Mercier, 2005; Lobban et al., 2005).

Chapter 3 contains a review of the literature pertaining to the objective and subjective correlates of appraisal and coping. In brief, previous research has reported significant associations between aspects of appraisal and coping and SQOL for people with schizophrenia (Lee et al., 1993; Lobban et al., 2004; Ritsner et al., 2000). To a lesser extent, evidence of relations between appraisal and coping in schizophrenia and measures of stress (Myin-Germeys, Krabbendam, Jolles, Delespaul, & van Os, 2002; Rivera-Mindt & Spaulding, 2002) and insight (Middelboe, 1997; Smith et al., 2000) have also been reported.

In relation to appraisal, findings concerning theoretically related variables have been inconsistent. Several studies have found a discrepancy between clinician ratings and subjective appraisals of negative symptoms and have concluded that the two assessments are largely unrelated (Selten et al., 2000b; Selten et al., 2000c; Yon et al., 2005). However, others have found a positive correlation between clinician ratings and subjective appraisals of schizophrenic and other symptoms (Mass et al., 2000). One study found a link between negative symptom distress appraisals, insight, and depression but not objective measures of negative symptom severity or level of psychiatric disability (Selten et al., 2000a).

Results have also been inconsistent and at times contradictory for coping associations. Strous and his colleagues (Strous et al., 2005) found that insight, emotional distress, and quality of life were significant predictors of coping strategy use, while clinician ratings of negative symptoms were predictive of only some types of coping. In contrast, Yanos et al. (2003) reported that insight was unrelated to coping with the symptoms of severe mental illness. Some studies have found that appraisals of self-efficacy or control were also significantly associated with coping (MacDonald et al., 1998), while others have not found any association (Yanos et al., 2001).

Similarly, a lack of association between coping and schizophrenic symptoms has been found in some studies (Patterson et al., 1997a; MacDonald, et al., 1998), but not others (Rudnick, 2001). Other research has found that subjective appraisals and control were significantly associated with quality of life, but that coping was not (Lobban et al., 2004). A lack of association between coping and quality of life has also been reported elsewhere (Boschi et al., 2000). Finally, one research team found that coping types were differentially associated with quality of life, while subjective appraisals were largely unrelated (Ritsner et al., 2000).

However, little of the research reviewed has specifically focused on appraisal and coping with individual negative symptoms. Further, as discussed in Chapter 2 and Chapter 3, research investigating the correlates of the subjective experience of negative symptoms has produced contradictory findings. This prevents precise hypotheses about the retest reliability of the ACNSQ variables or the nature of relationships with other variables. With regard to retest reliability, there is evidence that at least some aspects of appraisal and coping with negative symptoms may be stable over very short time periods (Bak et al., 2001a).

With regards to construct validity, it was hypothesised that individual negative symptom appraisal and coping variables would demonstrate a differential pattern of relationships with each other and with other objective indicator and subjective experience variables contained within the vulnerability-stress-coping model of adjustment to negative symptoms. To make the evaluation of the ACNSQ as comprehensive as possible, these variables included both objective and subjective evaluations of individual functioning.

Method

Data was collected simultaneously for both parts of Study 2 using the same sample of 119 people with schizophrenia (92%) and schizoaffective disorder (8%). See Chapter

5 for details concerning recruitment procedure and method. In brief, the assessment process consisted of a single session during which participants were interviewed and completed a number of self-report electronic and/or paper and pencil questionnaires, including the ACNSQ. Four to six weeks following initial testing, a random sample of participants completed the ACNSQ for a second time. Of a total of 34 questionnaires sent out via the mail, 30 were returned complete.

Measures and Procedure

In total, data was collected on two clinician administered instruments, and four self-report questionnaires. During a semi-structured interview, a participant profile and the two clinician administered scales, the SANS (Andreasen, 1984a) and the SAPS (Andreasen, 1984b) were completed. The SANS was used to provided an objective measure of individual negative symptom levels and total SANS and SAPS scores were included as measures of adjustment. Self-report measures of appraisal and coping, insight, and adjustment measures were completed following the interview. In total, three domains of adjustment were measured, containing a total of nine individual variables. The domains were objective schizophrenic symptomatology, subjective psychopathology, and subjective quality of life. Presentation orders of the self-report measures were randomised to limit order effects. In the majority of cases, participants completed an electronic version of all self-report measures apart from the SQOL. A small number of participants completed a paper and pencil version of the other measures due to unavoidable circumstances, such as a lack of power source at the interview site.

Participant demographic and clinical history information was collected during a semi-structured interview. Information about recruitment procedure and sample characteristics are contained in the previous chapter. As for all analyses conducted in this research program, SPSS 9.0 (Norusis, 1998) was used to examine data.

Clinician Administered Instruments

Negative Symptoms

A detailed description of the SANS was provided in Chapter 2. In brief, item scores on symptom subscales are summed to provide two types of scores, individual SANS symptom scores or a total SANS summary score. In the present study, the two types of SANS scores represented different constructs within the vulnerability-stress-coping model under investigation. SANS symptom scores were used to provide an

objective measure of stressor severity, with each of the five negative symptoms representing a separate stressor. SANS symptom scores were only calculated for those symptoms appraised as present by participants. Conversely, SANS summary scores were included as a measure of adjustment and were unrelated to participant reported symptoms. The relationships between SANS summary scores and appraisal and coping were examined in relation to the construct validity of the ACNSQ. Global severity ratings were excluded from both individual symptom scores and summary scores.

The SANS and the SAPS were completed during an initial semi-structured interview, prior to the symptom appraisals made by participants who were blind to these symptom assessments. The researcher received training in the assessment of positive and negative symptoms. As for Study 1, the sexual activity item from the anhedonia subscale was deemed to be too intrusive and was omitted from the SANS. Reliability analyses for the present sample indicated a high level of internal consistency for the symptom subscales (range .86 to .96) and summary score (.83).

Positive Symptoms

The SAPS (Andreasen, 1984b) provided a measure of positive or psychotic symptoms. The SAPS measures four categories of psychotic or positive symptom features: hallucinations (6 items), delusions (12 items), bizarre behaviour (4 items), and positive formal thought disorder (8 items) (Andreasen, 1984b). Each of the symptoms is rated on a six point Likert scale from 0 “none” to 5 “severe”. Each category also contains a global rating of overall severity of that symptom. For the purposes of the present research, a SAPS summary score was calculated by adding together the symptom item scores from each of the four subscales, excluding symptom global severity ratings.

The SAPS has been extensively used in schizophrenia research and found to have sound psychometric properties. A high degree of convergent validity with another well used measure of positive symptomatology (r = .89), and sound interrater reliabilities (r = .83) have been reported (Norman, Malla, Cortese, & Diaz, 1996). Internal consistencies reported for the SAPS have been low, in the .30 to .48 range (Andreasen & Olsen, 1982b). The SAPS summary score internal consistency for the present study was .51 and is consistent with the belief that the SAPS is multifactorial rather than measuring a single dimension (Norman et al., 1996).

Self-Report Instruments

Insight

The self-report Insight Scale (IS, Birchwood et al., 1994) was used to provide a measure of how participants evaluate their experiences. Developed specifically for people with schizophrenia, the IS has a total of eight items divided into three subscales. The Relabel subscale has two items and measures appropriate relabelling of symptoms; the Awareness subscale has two items and measures the degree to which an individual is aware of the fact that they are suffering from a mental illness. The third subscale, Treatment Need, contains four items and measures the individuals' perceived need for treatment. Scores on Treatment Need are halved so that each of the three subscales contribute equally to the total score. One question on the treatment need subscale was changed to the past tense for the present sample to read "My last stay in hospital was necessary". Items are rated on a 3-point scale (0 'Disagree', 1 'Unsure', 2 'Agree'). Higher scores indicate greater insight, with a maximum score of 12. The authors suggest that total scores of 9-12 represent high levels of insight (Birchwood et al., 1994). The entire questionnaire takes approximately five minutes to complete.

The IS was validated on a sample of 133 chronic and acute patients with schizophrenia and found to have good internal consistency (Cronbach's alpha= .75), high test-retest reliability (r = .90) and concurrent validity (Birchwood et al., 1994). The IS has been used in numerous studies investigating subjective beliefs and cognitions about schizophrenia as well as other forms of severe mental illness (for example, Ritsner et al., 2000; Tait et al., 2003; Yanos et al., 2003). Cronbach's alpha reliabilities for the IS for the present sample ranged from a low of .30 for the Relabel subscale, to a high of .65 for Treatment Need.

Appraisal

Detail concerning the three ACNSQ appraisal questions are contained in Chapter 5. In brief, the ACNSQ requires participants to make three appraisal ratings about each negative symptom stressor that they are experiencing. Two aspects of primary appraisal are measured: severity of the stressor, and degree of distress caused by the stressor. The third item measures one aspect of secondary appraisal, namely degree of control over the stressor. The three ACNSQ appraisal questions appear immediately following the acknowledgement of the presence of a symptom, and prior to the coping items. A

description of each of the five negative symptoms of alogia, anhedonia, attention problems, avolition, and emotional blunting is presented separately. In essence, the acknowledgment of the presence of a negative symptom is in itself the first stressor appraisal participants are required to make. However, unlike the other three appraisals, the symptom presence appraisal takes the form of a yes/no decision rather than a rating. Each of the three ratings are measured on a five point Likert scale with one representing low levels of each of the variables. For severity, the range is 1 'mild' to 5 'severe'; for distress, 1 'very little' to 5 'a great deal'; and for control, 1 'no control' to 5 'a great deal of control'.

Coping

As for appraisal, coping was measured using the ACNSQ. A full description of the coping items and subscales derived from factor analyses were presented in Chapter 5. Table 5.8 contains the ACNSQ subscales for each negative symptom. In brief, the ACNSQ evaluates coping responses separately for five negative symptoms. Following acknowledgement of the presence of a symptom and three appraisal ratings, participants are presented with a number of coping items. Twenty-nine coping items are common to all five symptoms, while four symptoms also contain a number of symptom-specific coping items. Participants are asked to rate how often they have used individual coping items over the last month from 1 ' not at all' to 5 'used a great deal'.

Following factor analyses of coping responses, three coping dimensions emerged for each negative symptom. These dimensions make up the fifteen coping subscales contained within the ACNSQ. Three coping subscale scores are derived for each negative symptom reported as present by a participant. A mean score is calculated for each subscale within a symptom, with higher scores indicating greater use of the coping strategies on that subscale.

Subjective Psychopathology

The Brief Symptom Inventory (BSI, Derogatis and Spencer, 1982) was used to provide a measure of subjective psychopathology by measuring different dimensions of subjective distress. It was developed as a shortened version of the widely used Symptom Checklist-90-Revised (SCL90-R, Derogatis and Melisartos, 1983). The BSI is a self-report questionnaire which uses 53 problem statements to measure nine psychological symptom dimensions: somatization, obsessive-compulsive, interpersonal sensitivity,

depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Respondents are asked to rate how much they were distressed by each of problem statements over the previous week. Ratings are made on a five point Likert scale ranging from 0 'not at all' to 4 'extremely'. Symptom scores were calculated by summing items on the individual symptom subscales. Symptom scores are not intended as a diagnostic measure but rather represent the magnitude of a particular range of problematic symptoms.

The BSI has been demonstrated to have sound psychometric properties with alpha reliabilities ranging from .74 to .85 (Derogatis & Melisartos, 1983). The BSI has been validated on and used in research for a range of psychiatric populations such as a mixed sample of forensic psychiatric inpatients and outpatients (Boulet & Boss, 1991), and as an assessment tool for people with schizophrenia (Ritsner et al., 2000; Shahar, Chinman, Sells, & Davidson, 2003). Individual subscales from both the BSI and the SCL-90-R have also been used to provide measures of specific pathology for psychiatric populations (for example, Ritsner et al., 2000; Shahar et al., 2003). For example, the depression subscale has been used as a measure of depressive symptomatology for people with schizophrenia (Patterson et al, 1997a, Patterson et al., 1997b). For the present research, three symptom dimensions from the BSI were excluded from analyses due to overlap with other measures: paranoid ideation, psychoticism, and the obsessive-compulsive subscale. Reliability analyses for the present sample were high (range .75 to .9).

Subjective Quality of Life

Quality of life was measured by the use of a self-rated visual analogue scale, the Satisfaction with Life Domains Scale (SLDS, Baker & Intagliata, 1982). The SLDS was adapted for use with psychiatric patients based upon the popular Delighted-Terrible scale by Andrews and Withey (1976). It is a 15-item questionnaire which asks respondents to indicate how they feel about aspects of their life by choosing one of seven faces. Domains covered include food, clothing, accommodation, daily activities, social relationships, health, and economic situation. The faces range from a "delighted" face with a large upturned smile (scored 7), to a "terrible" face with a down turned mouth (scored 1). These items are summed to form a single score with higher numbers representing greater levels of satisfaction, range 15 to 105.

The SLDS was validated on 118 community based chronically mental ill patients, of which more than half (55.9%) were diagnosed with schizophrenia. The authors

reported a satisfactory level of convergent validity for the SLDS (Baker & Intagliata, 1982). Alpha coefficients of .84 have been reported (Tempier, Caron, Mercier, & Leouffre, 1998). The SLDS has since been used as a measure of SQOL for people with schizophrenia as well as other forms of psychiatric disorders (Lehman, Ward, & Linn, 1982; Mercier, Peladeau, & Tempier, 1998; Tempier et al., 1998). Internal reliability for the present sample was satisfactory (.84) and item-total correlations ranged from .26 to .57.

Results

Preliminary Analyses

Missing Data

Prior to analysis, the data was examined to check for missing and out of range values. In a number of cases, accurate information was not available from medical records, clinicians, or participants on several illness variables. Accurate data was not available on length of illness for five participants and an estimation was made following discussion with case managers and participants. Similarly, an estimation of number of hospitalisations was used for 19 participants. Mean substitution was used for medication level for five participants where medical records were unavailable or contact with the treating medical officer was impossible. Data on antipsychotic medication level must be treated with caution as a number of participants indicated that they were not adhering to their medication regime. For example, when asked what medication they were on, several participants responded with what they were "supposed to" take and then stated that they didn't always take it, were having a break from it, or only took their medication at specific times, for example when their symptoms got worse or they heard voices. One participant reported that they had "run out" and hadn't obtained more. Four participants were not on prescribed antipsychotic medication at the time of testing.

Distribution and Nature of Variables

Analyses were conducted using SPSS (Norusis, 1998) to provide measures of central tendency, variability and shape of distribution for all variables. Univariate distributions were inspected for outliers and marked deviations from normality. A number of variables were initially transformed to correct for skewness and non-normality using square root and logarithm transformations (Tabachnick & Fidell, 1989). For

example, scores on the BSI symptom dimensions and the SAPS were positively skewed as a substantial number of participants had little or no symptoms on these measures. This skew partly occurred due to selection criteria excluding participants with dual diagnoses or other symptoms that would severely impede the assessment process. Transformations were conducted according to Tabachnick and Fidell (1989). However, transformed distributions were not normally distributed and the original data were used. Subsequent analyses must therefore be viewed with caution.

Following descriptive analyses, further preliminary investigations were performed to examine the reliability of measures and the interrelationships amongst variables. These results are presented separately below for each variable group. Following presentation of these preliminary analyses, the results of analyses examining the reliability and validity of the ACNSQ are detailed.

Participant Characteristics

Participant demographic and illness characteristics were presented in Chapter 5. Table 5.1 contains a summary of participant characteristics for the total sample and the retest subgroup. To determine whether the two samples varied in terms of participant characteristics, a series of analyses were conducted. Chi-square analyses were conducted on categorical variables and one-way ANOVAs were performed on continuous variables. Due to small cell numbers in the married/de facto and separated/divorced groups and the primary school education level group, it was necessary to combine some cells for chi-quare analyses. Appendices 6A and 6B contain the results of these comparisons. Appendix 6C contains a table of the means and standard deviations for adjustment variables for the total sample and that of the retest subgroup, while Appendix 6D contains the results of adjustment variable ANOVA comparisons for the two samples. To determine whether the two samples varied in terms of participant characteristics or adjustment levels, a series of analyses were conducted. Chi-square analyses were conducted on categorical variables and one-way ANOVAs were performed on continuous variables. Results indicate that participant characteristics and mean adjustment scores for the retest subgroup were not significantly different from those in the total sample.

Following the sample comparisons, chi-square, ANOVA, and correlation analyses were performed to examine the relationships between participant characteristics for the total sample. Results of these analyses are contained in Appendix 6E. Results indicated that age, age at onset of illness, and length of illness were highly correlated ($p < .005$). To

reduce the number of variables, age and age at onset were excluded from all subsequent analyses.

Descriptive Statistics

Schizophrenic Symptoms

To allow for comparisons of subjective and objective ratings of negative symptoms, SANS symptom scores were calculated for all symptoms appraised as present by participants. Table 6.1 contains the participant numbers, intercorrelations, SANS symptom score means, standard deviations, number of items, means, and standard deviations, and Cronbach's alpha for each negative symptom reported by participants. The number of SANS items per SANS symptom score varied from two for attention problems to six for blunting. When the item means are compared, attention problems had the highest mean rating, and alogia the lowest.

Means and standard deviations for SANS and SAPS summary scores are contained on the diagonal in the first two columns of Table 6.2. For the SANS, a total of 74 participants were assessed as having some degree of alogia, 64 anhedonia, 80 attention problems, 88 avolition, and 52 emotional blunting. The total number of negative symptoms for each participant ranged from 1 to 5, with a total score range of 2 to 52. For the SAPS, 32% of participants had some degree of positive symptoms, with a SAPS summary score range of 4 to 37.

Insight

Appendix 6F contains the intercorrelations, means, standard deviations, and internal reliabilities for total score and the three insight subscales for the total sample. This sample's mean total score of 9.58 (*SD* = 2.75), with a range from 0 to 12, indicated that on average, participants had a high amount of insight into aspects of their illness. The proportion of participants who answered every question on the IS correctly, indicating full insight, varied across the three subscales. Fifty-one percent of participants scored the maximum for Relabel, 66% for Awareness, and 56% for Treatment Need. A total of 33% received the maximum of 12 for total insight, while 71% received a score of 9 or above, indicating a high level of insight. In comparison, 81% of the original IS validation sample scored in the 9-12 range on discharge from hospital (Birchwood et al., 1994).

Despite the substantial number of participants who could be classified as having

Table 6.1

Negative Symptom Numbers, Intercorrelations, Mean SANS Symptom Scores, Standard Deviations, SANS Item Number, Item Means and Standard Deviations, and Cronbach's Alpha for Negative Symptoms Acknowledged by Participants Only

Negative Symptom	*N*	SANS Symptom Score Correlations				SANS Symptom Score		SANS Symptom Items			
		Alogia	Anhedonia	Attention	Avolition	*M*	*SD*	Item *n*	*M*	*SD*	α
Alogia	57					5.44	2.46	4	1.36	.62	.74
Anhedonia	30	.23 *n* = 15				7.13	2.40	3	2.38	.80	.75
Attention	48	-.26 *n* = 23	.20 *n* = 17			4.94	1.44	2	2.47	.72	.53
Avolition	65	.24 *n* = 30	.35 *n* = 23	.34 *n* = 23		6.68	2.49	3	2.23	.83	.64
Blunting	35	.41 *n* = 15	.22 *n* = 16	.24 *n* = 15	.36 *n* = 22	9.37	5.31	6	1.56	.88	.86

SANS = Scale for the Assessment of Negative Symptoms All tests two-tailed
Higher SANS scores indicate higher levels of symptoms
Note. Participant numbers for each symptom pair are contained directly below each correlation coefficient

Table 6.2

Adjustment Variable Intercorrelations and Cronbach's Alpha for the Total Sample. Variable Means (Standard Deviations) are Displayed on the Diagonal (N=119)

Adjustment Variable	Schizophrenic Symptoms		Subjective Psychopathology (BSI)					Quality of Life	
	SANS Summary Score	SAPS Summary Score	Somatisation	Interpersonal Sensitivity	Depression	Combined Anxiety	Hostility	SLDS	α
Schizophrenic Symptoms									
SANS Summary Score	19.17 (12.02)								.83
SAPS Summary Score	.16	4.62 (8.34)							.51
Subjective Psychopathology									
BSI Somatisation	-.02	.05	11.27 (4.90)						.83
BSI Interpersonal Sensitivity	.05	.08	.46****	7.86 (3.58)					.81
BSI Depression	.10	.02	.46****	.73****	10.12 (4.70)				.84
BSI Combined Anxiety	.17	.18*	.46****	.57****	.76****	19.44 (8.40)			.90
BSI Hostility	.07	.08	.48****	.70****	.63****	.66****	7.61 (3.18)		.75
Quality of Life									
SLDS	-.13	-.12	-.38****	-.51****	-.52****	-.36****	-.29***	78.56 (13.27)	.84

*p < .05 **p < .01 ***p < .005 ****p < .0005 All tests two-tailed

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms, BSI = Brief Symptom Inventory
SLDS = Satisfaction with Life Domains Scale
Higher scores on all symptom dimensions indicate higher symptom levels, higher scores for quality of life indicate greater satisfaction

high insight, the proportion of participants who failed to report the presence of a negative symptom assessed as present using the SANS was 23% for alogia, 53% for anhedonia, 40% for attention problems, 26% for avolition, and 33% for blunting. These results suggest that the process of appraising negative symptoms may be a separate construct from that of global insight, as has been suggested by Iancu et al. (2005). However, results indicate that only a little over half of participants (51%) scored the maximum score for appropriate relabelling of symptoms, a finding not incongruent with the discrepancy between symptom presence appraisals and objective SANS assessments.

Coping

ACNSQ preliminary analyses, frequencies, factor analytic results, and internal reliability analyses for coping were all examined in the previous chapter. Subscale means and standard deviations, item numbers and means, and Cronbach's alpha for the negative symptoms were presented in Table 5.8.

Subjective Psychopathology

Preliminary analyses were conducted on the BSI symptom dimensions of somatization, anxiety, depression, interpersonal sensitivity, and hostility. To reduce the number of variables, items from the subscales of anxiety and phobic anxiety were combined to produce 1 anxiety subscale containing 11 items. The internal reliability of the combined anxiety subscale was .90. One question on the depression scale asking about suicidality was omitted due to overlap with a similar items on the avoidance subscales for alogia and anhedonia. A correlation was conducted between the original six item depression subscale containing the item "Thoughts of ending your life", and the five item depression subscale with the suicide question removed. The highly significant correlation ($r = .988$, $p < .0005$) indicated that the two subscales were measuring the same dimension.

In total, five self-rated symptom scores were retained from the BSI: somatization (7 items), interpersonal sensitivity (4 items), depression (5 items), combined anxiety (11 items), and hostility (5 items). Mean total scores and intercorrelations for symptom dimensions are presented in Table 6.2. Mean item scores for each symptom dimension were calculated by dividing the symptom total score by the number of items for that symptom dimension. Appendix 6G contains the mean item scores for each symptom. On average, depression was the most frequently reported symptom and hostility the least. As

can be seen from Table 6.2, all symptom dimensions were highly correlated with each other. Higher levels of all symptoms were significantly related to lower levels of SQOL.

Subjective Quality of Life

Total scores on the SLDS (Baker & Intagliata, 1982) ranged from 36 to 105, with a mean of 78.56 (*SD* = 13.27).

The Nature of Appraisal of Negative Symptoms

Table 6.3 contains the means, standard deviations and intercorrelations for the three appraisal variables of severity, distress, and control, for the negative symptoms appraised as present by participants. As outlined in the previous chapter, 57 participants reported the presence of alogia, 30 anhedonia, 48 attention problems, 65 avolition, and 35 emotional blunting. Frequency data indicated differences in appraisal ratings according to symptom.

Appraisal Ratings

Examining mean ratings across symptoms, participants with blunting rated it as the most severe with a mean of 3, *moderate* on the scale (Table 6.3). Alogia was appraised as the least severe with a mean of 2.44. Similarly, alogia was appraised as the least distressing symptom (*M* = 2.51), and blunting the most distressing (*M* = 2.91). On average, participants reported that they had the greatest control over attention problems (*M* = 2.69), and the least over anhedonia (*M* = 2.27), although mean control over alogia was only slightly higher (*M* = 2.30).

Table 6.4 contains the percentage and numbers of participants making the lowest and highest ratings for ACNSQ severity, distress, and control appraisals according to negative symptom. As can be seen from the table, appraisal ratings varied greatly according to negative symptom. Only 5% of participants with avolition appraised the symptom as *severe* compared to 20% reporting blunting as *severe*. Seven percent of participants with anhedonia reported that the symptom caused them *a great deal* of distress compared to 13% with attention problems. Finally, only 11% of participants with avolition appraised themselves as having *no control* over the symptom compared to 26% with alogia.

Table 6.3

Intercorrelations, Means, Standard Deviations, and Participant Numbers for ACNSQ Appraisal Variables of Severity, Distress, and Control

	Alogia			Anhedonia			Attention			Avolition			Blunting		*M*	*SD*
Appraisal	S	D	C	S	D	C	S	D	C	S	D	C	S	D		
Alogia	*N* = 57															
Severity															2.44	1.32
Distress	.56***														2.51	1.28
Control	-.04	-.04													2.30	1.16
Anhedonia	*n* = 15			*N* = 30												
Severity	.51*	-.01	-.11												2.83	1.18
Distress	.29	.05	.00	.57***											2.90	.99
Control	-.16	-.25	.14	-.18	-.05										2.27	.91
Attention	*n* = 23			*n* = 17			*N* = 48									
Severity	.59***	.72***	-.43*	.38	.21	.06									2.75	1.33
Distress	.20	.49**	-.13	.11	.40	.59*	.62***								2.79	1.32
Control	.05	-.29	.63***	.34	.35	.64**	-.27	-.14							2.69	1.24
Avolition	*n* = 30			*n* = 23			*n* = 23			*N* = 65						
Severity	.54***	.23	-.06	.61***	.36	.07	.70***	.28	.28						2.52	1.24
Distress	.29	.38*	-.24	.27	.41*	-.12	.53**	.28	.13	.48***					2.75	1.23
Control	-.37*	-.44*	.59***	-.08	.24	.38	-.37	-.20	.39	-.40***	-.36***				2.57	.98
Blunting	*n* = 15			*n* = 16			*n* = 15			*n* = 22			*N* = 35			
Severity	.47	.16	-.37	.57*	.30	-.61*	.61*	.07	-.38	.34	.17	-.23			3.00	1.35
Distress	.04	-.13	-.29	.26	.36	-.40	.35	.27	-.42	.10	.31	-.27	.51***		2.91	1.12
Control	.07	.02	.49#	-.07	-.24	.05	-.36	-.19	.36	-.07	.03	.21	.07	-.17	2.57	.95

*p < .05 **p < .01 ***p < .005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

Note. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control

Individual closed-in cells contain participant numbers for the respective symptom pair

Appraisal Correlations Within Symptoms

As seen in Table 6.3, there was some variation in the intercorrelations of the appraisal variables according to symptom. For each negative symptom, primary distress appraisals were significantly positively correlated with the other primary appraisal, severity. Severity appraisals were negatively correlated with control for all symptoms except blunting. This relationship was significant for avolition and approached significance for the relationship between attention appraisals of severity and control (p = .07). Distress appraisals were negatively correlated with control for all symptoms, however this relationship was only significant for avolition. On average there were very strong relationships between primary and secondary appraisals of avolition, but little or no relationship between these subjective symptom assessments for alogia, anhedonia, and blunting.

Appraisal Correlations Across Symptoms

To examine the similarity in participant appraisals across symptoms, appraisal ratings for all 10 symptom pairs were correlated. Table 6.3 contains the results of these correlations. Participants' appraisal ratings of their negative symptoms were highly related in the majority of cases. That is, there were positive correlations between all severity appraisals for all symptom pairs and 7 of these were significant at the $p < .05$ level. All but two distress appraisals were positively related and three reached significance. The exceptions were for correlations between distress appraisals made by participants with alogia and anhedonia (r = .05), and alogia and blunting (r = -.13). Control appraisals were also positively related across all symptom pairs, and significant in three cases. This pattern suggests that participants with several symptoms tend to make very similar primary and secondary appraisals about their negative symptoms. However, these conclusions may be sample related. Symptom pair correlations are based upon only 52.9% of participants with two or more symptoms. In addition, 31% had only one symptom pair, whilst 21.8% of participants (N = 26) contributed data to two or more symptom pair comparisons.

Table 6.4

Percentage of Lowest and Highest Ratings for ACNSQ Severity, Distress, and Control Appraisals According to Negative Symptom

Negative Symptom	Severity Appraisal				Distress Appraisal				Control Appraisals			
	1 *mild*		5 *severe*		1 *very little*		5 *a great deal*		1 *no control*		5 *a great deal*	
	%	(*n*)	%	(*n*)	%	(*n*)	%	(*n*)	%	(*n*)	%	(*n*)
Alogia	33	(19)	9	(5)	28	(16)	11	(6)	26	(15)	7	(4)
Anhedonia	10	(3)	13	(4)	10	(3)	7	(2)	13	(4)	3	(1)
Attention	23	(11)	13	(6)	21	(10)	13	(6)	21	(10)	10	(5)
Avolition	29	(19)	5	(3)	19	(12)	9	(6)	11	(7)	3	(2)
Blunting	20	(7)	20	(7)	9	(3)	9	(3)	14	(5)	3	(1)

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

Relationship Between Appraisal and Participant Characteristics

To determine whether appraisal varied as a function of participant demographic and illness variables, a series of one-way ANOVAs and correlations were calculated for each negative symptom. One-way ANOVAs were performed on the categorical data for gender, marital status, education level, employment status, and diagnosis. Correlation analyses were conducted on the continuous variables of length of illness, number of hospitalisations, and antipsychotic medication level in chlorpromazine equivalents. Although $p < .05$ alpha levels are indicated on the tables, an alpha level of $p < .01$ was chosen to represent a significant result in order to limit Type I errors. Appendix 6H contains the results of participant characteristic and appraisal comparisons. One ANOVA was significant at the $p < .01$ level. Marital status was significantly related to distress appraisals for avolition. Post hoc contrasts of mean scores indicated that mean distress appraisals for the 53 single participants reporting avolition (2.55) were significantly lower than mean distress for the 12 married, de facto, separated or divorced participants reporting avolition (3.67), F (1, 63) = 9.22 (p =.003).

Reliability and Validity

Despite the large number of analyses performed to test hypotheses, an alpha level of $p < .05$ was set. A more stringent alpha level minimizes the probability of Type I errors while increasing the likelihood of a greater number of Type II errors (Tabachnick & Fidell, 1989). The latter outcome was considered more problematic in light of the exploratory nature of the present research, the low participant numbers, and the paucity of studies investigating both appraisal and coping with specific negative symptoms. However, given the relaxed alpha level, the reader should view the present findings as only preliminary.

Retest Reliability

Evidence concerning the test-retest reliability of the subscales comes from the retesting of 30 participants 6 weeks following initial testing. Evidence for the representativeness of the retest subgroup in terms of participant characteristics and adjustment level is contained in Appendices 6A, 6B, and 6D. Due to the low retest sample numbers for individual symptoms, retest reliability analyses must be only be considered exploratory. Of the re-test sample, 18 reported alogia, 9 anhedonia, 12 attention problems, 18 avolition, and 7 blunting.

Appraisal

Table 6.5 contains the retest correlations for the three participant appraisal variables of severity, distress and control, for each negative symptom. Seven of the 15 retest correlations were statistically significant. The stability of appraisals over time varied widely according to symptom. Appraisal of attention problems was the most stable with all three appraisal variable retest correlations significant, while blunting was the least stable with no significant associations between the two assessment points.

Table 6.5

ACNSQ Retest Reliability for the Appraisal Variables of Severity, Distress, and Control, and the Coping Subscales for each Negative Symptom

Symptom	Retest *n*	Appraisal	*r*	Coping	*r*
Alogia	18	Severity	.10	Active Coping	.61**
		Distress	-.05	Avoidance	.56*
		Control	.53*	Emotional Coping	.59*
Anhedonia	9	Severity	.82**	Active/Emotional	.30
		Distress	.76*	Resigned Avoidance	.86**
		Control	.41	Palliative Avoidance	.87**
Attention	12	Severity	.75**	Emotional Coping	.77**
		Distress	.58*	Active Coping	.75**
		Control	.59*	Avoidance	.64*
Avolition	18	Severity	.43	Active Coping	.51*
		Distress	.53*	Avoidance	.86**
		Control	.37	Emotional Coping	.76**
Blunting	7	Severity	-.25	Avoidance	.79*
		Distress	.44	Emotional Coping	.62
		Control	.42	Active Coping	.62

*$p < .05$ **$p < .01$ All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

Appraisals of severity and distress were also significantly positively related for anhedonia on retesting. Appraisals of distress caused by avolition and degree of control of alogia were also significant. When reliability is examined according to type of appraisal, mean retest reliability across symptoms was .37 for severity, .45 for distress, and .46 for control. Low participant numbers, and therefore power, meant that many retest correlations were not significant despite correlation coefficients above .35.

Coping

Coping subscale test-retest reliability coefficients were calculated for each of the five negative symptoms. These results are also contained in Table 6.5. Despite the low number of participants with each symptom, 12 of the 15 coping subscale retest coefficients were significant at the .05 level. For alogia, all three coping subscales were significantly consistent over time. For anhedonia, Resigned Avoidance and Palliative Avoidance were reliable while Active /Emotional Coping was not. All three were significant for attention problems and avolition. For blunting, Avoidance was reliable over time, while Emotional Coping and Active Coping were not. In terms of coping dimensions, avoidant forms of coping demonstrated the greatest degree of retest reliability. Overall, results indicate that the use of different types of coping in response to negative symptoms is generally stable over the short term for most negative symptoms.

Construct Validity

Empirical validation of the ACNSQ is divided into two parts, the first part examines the relationships between appraisal and related variables, and the second investigates coping subscale associations.

Appraisal

Tables 6.6 to 6.12 contain the results of correlations between appraisal and related variables. The three ACNSQ appraisal variables of severity, distress and control showed a differential pattern of associations with theoretically related stress and coping variables. However, the pattern of these associations varied across symptoms. Despite the fact that many of the relationships between appraisal and stress and coping variables failed to reach significance, several trends emerged. In addition, this absence of significant relationships between appraisal and theoretically related variables in themselves provide valuable information about the nature of subjective experience in schizophrenia.

Table 6.6

Correlations between ACNSQ Appraisals, SANS Symptom Scores, and IS Insight Subscales

		ACNSQ Appraisal Variables		
	N	Severity	Distress	Control
Alogia	57			
SANS Alogia score		.16	.04	-.13
IS Relabel		-.15	.08	.03
IS Awareness		-.15	-.03	.04
IS Treatment Need		-.03	.03	.22
Anhedonia	30			
SANS Anhedonia score		-.05	-.05	.09
IS Relabel		-.17	.03	-.36#
IS Awareness		.05	.25	-.19
IS Treatment Need		-.10	-.14	-.29
Attention	48			
SANS Attention score		.18	.17	.13
IS Relabel		-.16	-.25	-.18
IS Awareness		-.09	-.18	.00
IS Treatment Need		-.35*	-.35*	.12
Avolition	65			
SANS Avolition score		.11	-.00	-.19
IS Relabel		-.07	.02	.13
IS Awareness		.08	.23	.29*
IS Treatment Need		-.09	.13	.30*
Blunting	35			
SANS Blunting score		.17	.08	.03
IS Relabel		-.06	.02	.00
IS Awareness		-.07	-.13	.14
IS Treatment Need		.26	-.09	.33#

# $p < .06$ *$p < .05$ All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

SANS = Scale for the Assessment of Negative Symptoms IS = Insight Scale

Note. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control. Higher insight scores indicate greater insight.

Appraisal and SANS Symptom Scores

Table 6.6 contains the results of correlations between appraisal and SANS symptom scores. Severity appraisal and SANS symptom score correlations indicated a low level of agreement between all objective and subjective ratings of negative symptoms. These findings are in contrast to Study 1 results where a significant positive correlation was found between anhedonia severity appraisals and interviewer ratings.

There was also a lack of association between distress and control appraisals and objective SANS symptom scores.

Appraisal and Insight

Table 6.6 also contains the results of correlations between appraisal and insight. There were surprisingly few significant relations between the three types of appraisals and the insight dimensions of Relabel, Awareness, and Treatment Need. The direction of associations between appraisal and insight varied according to negative symptom. The relation between appraised control of anhedonia and Relabel approached significance, with greater control related to lower appropriate relabelling of symptoms. For participants with attention problems, higher appraised severity and distress were significantly related to reduced awareness of the need for treatment. For avolition, higher appraised control was significantly related to both greater Awareness and Treatment Need. For participants reporting emotional blunting, higher control appraisals were related to a greater awareness of the need for treatment ($p = .05$).

Appraisal and Coping

Tables 6.7 to 6.11 contain the results of correlations between appraisal and the ACNSQ coping subscales for each negative symptom. Some of the correlations contained in these tables have also appeared in previous tables, however the results are repeated for ease of comparison. Although many of the relationships were not statistically significant, some consistent patterns emerged, providing support for the construct validity of the ACNSQ.

The majority of severity and distress appraisals were inversely related to the use of active and emotional coping for each of the negative symptoms. This inverse relationship was significant for two severity appraisals. These were for anhedonia and the mixed Active/Emotional Coping subscale (Table 6.8), and for attention and the use of Emotional Coping (Table 6.9). In contrast, the use of Avoidance was generally positively correlated with severity and distress appraisals and was significant for appraised severity of attention problems (Table 6.9), severity and distress appraisals of avolition (Table 6.10) and distress appraisals of blunting (Table 6.11). Thus, participants who appraised their symptoms as more severe and more distressing tended to rely more heavily on avoidant forms of coping than those who appraised their symptoms as less severe and less distressing.

Table 6.7

Correlations between SANS Symptom Score, IS Insight, and ACNSQ Appraisals and Coping Subscales for Alogia (N = 57)

	SANS	IS Insight			ACNSQ Appraisal			ACNSQ Coping	
	Alogia score	Relabel	Awareness	Treatment	Severity	Distress	Control	Active	Avoidance
Stressor									
SANS Alogia score									
IS Insight									
IS Relabel	-.21								
IS Awareness	-.22	.61****							
IS Treatment Need	-.09	.39**	.37**						
ACNSQ Appraisal									
Severity Appraisal	.16	-.15	-.15	-.03					
Distress Appraisal	.04	.08	-.03	.03	.56***				
Control Appraisal	-.13	.03	.04	.22	-.04	-.04			
ACNSQ Coping									
Active Coping	-.42***	.18	.38**	-.01	-.23	-.11	.16		
Avoidance	.37***	-.13	-.08	.08	.16	.23	-.26#	.09	
Emotional Coping	-.14	.23	.35**	.34**	-.17	.07	.27*	.33*	.06

# p <.06 *p < .05 **p < .01 ***p < .005 ****p <.0005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

SANS = Scale for the Assessment of Negative Symptoms IS = Insight Scale

Note. Higher SANS scores indicate higher levels of symptoms. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control. Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater use of coping strategies.

Table 6.8

Correlations between SANS Symptom Score, IS Insight, and ACNSQ Appraisals and Coping Subscales for Anhedonia (N = 30)

	SANS	IS Insight			ACNSQ Appraisal			ACNSQ Coping	
	Anhedonia score	Relabel	Awareness	Treatment	Severity	Distress	Control	Active/Emotional	Resigned Avoidance
Stressor									
SANS Anhedonia score									
IS Insight									
IS Relabel	.05								
IS Awareness	-.33	.34							
IS Treatment Need	-.23	.48**	.40*						
ACNSQ Appraisal									
Severity Appraisal	-.05	-.17	.05	-.10					
Distress Appraisal	-.05	.03	.25	-.14	.57***				
Control Appraisal	.09	-.36#	-.19	-.29	-.18	-.05			
ACNSQ Coping									
Active/Emotional Coping	.04	.32	-.02	-.07	-.37*	-.05	.12		
Resigned Avoidance	.13	-.02	.21	.21	.23	.04	.04	.04	
Palliative Avoidance	.11	-.54***	-.25	-.10	.03	-.20	.14	-.02	-.01

# p <.06 *p < .05 **p < .01 ***p < .005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

SANS = Scale for the Assessment of Negative Symptoms IS = Insight Scale

Note. Higher SANS scores indicate higher levels of symptoms. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control. Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater use of coping strategies.

Table 6.9

Correlations between SANS Symptom Score, IS Insight, and ACNSQ Appraisals and Coping Subscales for Attention (N = 48)

	SANS	IS Insight			ACNSQ Appraisal			ACNSQ Coping	
	Attention score	Relabel	Awareness	Treatment	Severity	Distress	Control	Emotional	Active
Stressor									
SANS Attention score									
IS Insight									
IS Relabel	-.12								
IS Awareness	-.16	.42**							
IS Treatment Need	-.25	.32*	.50****						
ACNSQ Appraisal									
Severity Appraisal	.18	-.16	-.09	-.35*					
Distress Appraisal	.17	-.25	-.18	-.35*	.62****				
Control Appraisal	.13	-.18	.00	.12	-.27	-.14			
ACNSQ Coping									
Emotional Coping	.09	.21	.18	.29*	-.31*	-.16	.23		
Active Coping	-.12	.09	.29*	-.04	-.04	.12	.21	.27	
Avoidance	.31*	-.09	-.02	-.16	.30*	.23	.20	.02	.07

*$p < .05$ **$p < .01$ ***$p < .005$ ****$p < .0005$ All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

SANS = Scale for the Assessment of Negative Symptoms IS = Insight Scale

Note. Higher SANS scores indicate higher levels of symptoms. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control. Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater use of coping strategies.

Table 6.10

Correlations between SANS Symptom Score, IS Insight, and ACNSQ Appraisals and Coping Subscales for Avolition (N = 65)

	SANS	IS Insight			ACNSQ Appraisal			ACNSQ Coping	
	Avolition score	Relabel	Awareness	Treatment	Severity	Distress	Control	Active	Avoidance
Stressor									
SANS Avolition score									
IS Insight									
IS Relabel	-.16								
IS Awareness	-.16	.48****							
IS Treatment Need	-.30*	.51****	.58****						
ACNSQ Appraisal									
Severity Appraisal	.11	-.07	.08	-.09					
Distress Appraisal	-.00	.02	.23	.13	.48****				
Control Appraisal	-.19	.13	.29*	.30*	-.40***	-.36***			
ACNSQ Coping									
Active Coping	-.36***	.32**	.36***	.48****	-.11	-.04	.37***		
Avoidance	.17	-.19	-.03	-.10	.44****	.42****	-.35***	-.14	
Emotional Coping	-.33**	.12	.24#	.31*	-.21	-.03	.37***	.54****	-.04

 # p <.06 **p* < .05 ***p* < .01 ****p* < .005 *****p* <.0005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

SANS = Scale for the Assessment of Negative Symptoms IS = Insight Scale

Note. Higher SANS scores indicate higher levels of symptoms. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control. Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater use of coping strategies.

Table 6.11

Correlations between SANS Symptom Score, IS Insight, and ACNSQ Appraisals and Coping Subscales for Blunting (N = 35)

	SANS	IS Insight			ACNSQ Appraisal			ACNSQ Coping	
	Blunting score	Relabel	Awareness	Treatment	Severity	Distress	Control	Avoidance	Emotional
Stressor									
SANS Blunting score									
IS Insight									
IS Relabel	.07								
IS Awareness	-.11	.12							
IS Treatment Need	-.12	.19	.44**						
ACNSQ Appraisal									
Severity Appraisal	.17	-.06	-.07	.26					
Distress Appraisal	.08	.02	-.13	-.09	.51***				
Control Appraisal	.03	.00	.14	.33#	.07	-.17			
ACNSQ Coping									
Avoidance	.18	-.14	.11	.13	.24	.41*	-.17		
Emotional Coping	-.30	.17	.20	.13	.14	.05	.02	-.04	
Active Coping	-.11	-.04	.20	.09	-.15	-.04	.22	.10	.21

# p <.06 *p < .05 **p < .01 ***p < .005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

SANS = Scale for the Assessment of Negative Symptoms IS = Insight Scale

Note. Higher SANS scores indicate higher levels of symptoms. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control. Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater use of coping strategies.

A consistent pattern was also evident in the relationship between control and coping. For all five negative symptoms, level of appraised control was positively associated with use of both Active and Emotional Coping, and was significant for Emotional Coping and control for alogia (Table 6.7), and both Active and Emotional Coping for avolition (Table 6.10). Participants who believed they had greater control over their negative symptoms also reported greater use of Active and Emotional Coping responses. Conversely, appraised control was significantly negatively associated with use of Avoidance for avolition and approached significance for alogia ($p < .06$).

Appraisal and Adjustment

The results of correlations between appraisal and adjustment measures are presented in Table 6.12. First, regarding the domain of schizophrenic pathology in the form of SANS and SAPS summary scores, all associations between these variables and appraisals of severity and distress were in a positive direction. That is, for all five negative symptom groups, higher clinician ratings of schizophrenic symptoms were related to higher participant appraisals of negative symptom severity and distress. This association was significant for appraisals of severity and distress and SAPS for alogia, severity and both SANS and SAPS for attention, and severity appraisals and SAPS for blunting. Participant control appraisals were unrelated to the severity of their schizophrenic symptoms.

Correlations between subjective ratings on the BSI symptom dimensions and severity and distress appraisals were generally positive or very small ($r < .10$). For participants with alogia, higher distress appraisals were significantly associated with higher depressive and anxious symptoms. For attention problems, higher severity and distress appraisals were significantly related to greater self-reports of somatization. The appraised severity of attention problems was also significantly associated with higher levels of depression and anxiety. For participants reporting avolition, distress appraisals were significantly positively associated with all BSI symptom dimensions, however severity and control ratings tended to be unrelated ($r < .10$). For participants reporting blunting, all severity and distress appraisals were positively related to psychopathology. This relationship was significant for distress appraisals and interpersonal sensitivity, and approached significance for distress appraisals and depression ($p = .05$).

Associations between individual negative symptom appraisals and SQOL are

contained in the last column of Table 6.12. For all five negative symptoms, higher severity and distress appraisals were related to lower levels of SQOL. These relationships were significant for attention problems and avolition, and approached significance for blunting. Conversely, higher control appraisals were related to greater SQOL for participants reporting avolition.

Coping

Coping and SANS Symptom Score

Correlations between ACNSQ coping subscales and SANS symptom scores are contained in Tables 6.7 to 6.11. With only two exceptions, the relationships between coping and SANS symptom scores follow the same trend for all five negative symptoms. For active and emotional coping, participants with higher symptom scores tended to report less reliance on active and emotional coping responses. This pattern was significant for alogia and Active Coping, and avolition and both Active and Emotional Coping. Conversely, higher SANS symptom scores were related to greater avoidant coping for all symptoms. This relationship was significant for alogia and attention problems.

Coping and Insight

The relationships between ACNSQ coping subscales and Relabel, Awareness, and Treatment Need on the IS were very similar across symptoms. With only a few exceptions, greater use of Active Coping and Emotional Coping was positively associated with insight. This trend was significant for Active Coping and Awareness for alogia, attention, and avolition, and Active Coping, Relabelling and Treatment Need for avolition. Greater reliance on Emotional Coping, was significantly related to higher levels of Awareness and Treatment Need for alogia, Treatment Need for attention, and Treatment Need for avolition, and approached significance for Awareness and avolition ($p < .06$). Thus, participants with more understanding or insight about aspects of their schizophrenia tended to rely more on active and emotional responses to cope with their symptoms than those with poorer insight.

In contrast, a pattern of inverse relationships was found between use of Avoidance and insight for alogia, attention, and avolition, and use of Palliative Avoidance for anhedonia. Palliative Avoidance was significantly negatively associated with Relabel for anhedonia, indicating that participants with lower scores relied more heavily on coping

strategies such as smoking cigarettes, eating or drinking, or lying down and having a rest or sleep, when coping with anhedonia.

Coping and Adjustment

Table 6.12 contains the results of correlations between coping and adjustment. Despite the lack of significance for many of the correlations, coping was demonstrated to be differentially related to a range of adjustment measures. In addition, several recurring patterns of associations provide support for the construct validity of the ACNSQ coping subscales.

There was a pattern of relationships between coping and schizophrenic symptoms across all five negative symptoms, although many of these correlations were nonsignificant. These associations mirror the relations between coping and individual negative symptom scores discussed in a previous section. As for symptom score, SANS and SAPS summary scores were generally positively correlated with Active and Emotional Coping for all symptoms. This association was significant for SANS score and Active Coping for alogia. As for the pattern of correlations between symptom scores and avoidance, correlations between avoidance and the SANS and SAPS were generally in a positive direction. These correlations were significant for avoidance and the SAPS for alogia, and avoidance and the SANS for blunting.

Correlations between the coping subscales and the BSI symptom dimensions produced more evidence for the construct validity of the ACNSQ. However, the pattern of associations was unexpected. Unlike for schizophrenic symptoms, the majority of correlations between subjective pathology and Active and Emotional Coping tended to be in a positive direction. Significant associations were found between greater Active/Emotional Coping for anhedonia and higher levels of somatization, and depression, and greater Emotional Coping and higher interpersonal sensitivity for avolition.

The positive relationship between symptoms and coping was particularly evident for use of avoidant forms of coping. This trend was strongest for symptoms of depression and the combined anxiety subscale, and was significant for participants reporting alogia, attention, avolition, and blunting. The relationship was also significant for Palliative Avoidance for anhedonia and anxiety. For participants reporting alogia, greater use of avoidant coping responses was significantly associated with higher levels of all BSI

Table 6.12

Correlations between ACNSQ Appraisal and Coping and Measures of Adjustment

		Schizophrenic Symptoms		Subjective Psychopathology (BSI)					Quality of Life
		SANS Summary Score	SAPS Summary Score	Somatisation	Interpersonal Sensitivity	Depression	Combined Anxiety	Hostility	SLDS
Alogia	(N = 57)								
ACNSQ Appraisal	Severity	.18	.35**	-.11	.00	.05	.23	.07	-.13
	Distress	.07	.31*	.04	.11	.27*	.27*	.11	-.18
	Control	-.09	-.09	.09	-.02	-.06	-.01	.07	-.03
ACNSQ Coping	Active	-.29*	-.24	.04	.21	.17	-.03	.06	-.03
	Avoidance	.11	.26*	.31*	.39***	.48****	.43***	.35**	-.11
	Emotional	-.19	-.08	.16	.23	.17	.17	.20	.07
Anhedonia	(N = 30)								
ACNSQ Appraisal	Severity	.23	.08	.04	.01	.04	.04	.05	-.10
	Distress	.12	.04	.11	.10	.34	.25	.11	-.12
	Control	.26	-.01	.01	.01	.06	-.11	-.11	-.22
ACNSQ Coping	Active/Emotional	-.17	-.18	.45*	.27	.45*	.30	.29	-.05
	Resigned Avoidance	.21	-.22	.00	.40*	.21	-.10	.44*	-.04
	Palliative Avoidance	.25	.30	.01	.02	.19	.43*	.07	-.15
Attention	(N = 48)								
ACNSQ Appraisal	Severity	.29*	.44***	.35*	.26	.29*	.37**	.09	-.37**
	Distress	.22	.02	.35*	.12	.20	.18	.03	-.41***
	Control	-.06	.01	.13	-.06	.04	.04	-.03	.07
ACNSQ Coping	Emotional	-.05	-.23	.19	.06	.03	.06	.13	.21
	Active	-.26	-.20	.07	.15	.05	-.19	.06	-.00
	Avoidance	.19	-.00	.38**	.20	.43***	.36*	.18	-.21

# p <.06 *p < .05 **p < .01 ***p < .005 ****p <.0005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms, BSI = Brief Symptom Inventory

SLDS = Satisfaction with Life Domains Scale

Table 6.12 continued.

Correlations between ACNSQ Appraisal and Coping and Measures of Adjustment

		Schizophrenic Symptoms		Subjective Psychopathology (BSI)					Quality of Life
		SANS	SAPS		Interpersonal		Combined		
		Summary Score	Summary Score	Somatisation	Sensitivity	Depression	Anxiety	Hostility	SLDS
Avolition	(N = 65)								
ACNSQ Appraisal	Severity	.11	.06	.08	-.08	.08	.12	.01	-.27*
	Distress	.13	.12	.32**	.29*	.54****	.47****	.34**	-.32**
	Control	-.27*	-.03	.01	.14	-.06	-.16	-.05	.36***
ACNSQ Coping	Active	-.11	-.14	-.01	.21	.13	.04	.01	.20
	Avoidance	.20	.03	.03	.26*	.28*	.37***	.18	-.37***
	Emotional	-.23	-.01	.08	.34**	.13	.02	.03	.08
Blunting	(N = 35)								
ACNSQ Appraisal	Severity	.10	.40*	.21	.24	.13	.16	.08	-.27
	Distress	.31	.06	.25	.34*	.33#	.19	.06	-.33#
	Control	-.07	-.07	-.07	-.05	-.06	-.07	.10	.22
ACNSQ Coping	Avoidance	.37*	.18	.16	.31	.56****	.58****	.18	-.29
	Emotional	-.27	.03	-.06	.04	.21	.07	.03	.17
	Active	.01	-.16	-.10	-.03	-.04	-.15	.06	.07

# p <.06 *p < .05 **p < .01 ***p < .005 ****p <.0005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms, BSI = Brief Symptom Inventory

SLDS = Satisfaction with Life Domains Scale

subscales. For anhedonia, greater use of Resigned Avoidance was significantly related to greater interpersonal sensitivity and hostility. Attention problems avoidance was significantly associated with higher levels of somatization, as was Avoidance and interpersonal sensitivity for avolition.

Overall, correlations between coping and quality of life tended to be small. The most consistent pattern to emerge was that increased use of Avoidance was related to reduced ratings of SQOL for all symptoms. This pattern of associations was significant for avolition.

Discussion

The three aims of Study 2B were to examine appraisals of individual negative symptoms, and to evaluate the re-test reliability and the validity of the ACNSQ. The results presented here assess the psychometric properties of this negative symptom specific coping instrument for people with schizophrenia. Although exploratory in nature, preliminary evidence was provided of the internal reliability of appraisal variables, and the retest reliability and construct validity of the ACNSQ. Differences in results across negative symptoms support the importance of examining these related but unique stressors separately. Only separate analyses of negative symptoms can clarify their individual impact within the stress and coping process, and suggest symptom-specific interventions where required. Taken together, the findings of the present study provide further support for the utility of proposed vulnerability-stress-coping model, and suggest that the objective indicator and subjective experience components which make up the model are relevant to the investigation of individual differences in adjustment to negative symptoms. In the discussion below, each of the three aims of Study 2B will be considered in turn.

Appraisal of Negative Symptoms

There was some evidence of symptom specific differences in the primary and secondary appraisal of negative symptoms. On average, participants in this study appraised blunting, and then anhedonia as the most severe and the most distressing. Attention problems were rated the next most severe and distressing. Participants who appraised alogia as present rated this negative symptom as the least severe and distressing. Similarly, Study 1 participants rated alogia as the least severe and distressing, while anhedonia was appraised as

the most severe and distressing. There is some past research in support of these findings. Of the two negative symptoms examined, Wiedl (1992) reported that outpatients with schizophrenia rated anhedonia as the most stressful and alogia the least. Results reported by Selten et al. (1993) differed somewhat with the highest distress ratings most frequently assigned to avolition items, followed by anhedonia and then impaired attention.

The pattern of participants' secondary appraisals of negative symptoms differed from their of primary appraisals. On average, participants appraised their level of control over anhedonia and alogia as the lowest, and believed they had the greatest control over attention problems. For all negative symptoms, mean control appraisals were between *a little* and *moderate* control. In comparison, Study 1 participants also believed they had the greatest degree of control over attention. However, on average Study1 participants appraised blunting as the least controllable, followed by anhedonia and then alogia. There is no published data available from other studies on control of individual negative symptoms for comparison. However, Wiedl (1992) reported that 49% reported a high degree of control over all their symptoms using a three point scale. In the present sample, 33% of control ratings for all symptoms indicated *considerable* or *a great deal* of control and 34.5% of all control ratings indicated no control over the symptom at all.

With regards to the relationships among appraisal variables, there was a strong positive relationship between primary appraisals of severity and distress across all symptoms. However, the relationship between primary and secondary appraisals differed across symptoms. For participants reporting the presence of avolition, there was a significant relationship between high levels of severity and distress and lower perceived control. In contrast, there was very little relationship ($r < .1$) between both primary appraisals and secondary control appraisals for alogia, distress and control for anhedonia, and severity and control for blunting. Symptom pair correlations suggest that for the 53% of participants who contributed one or more pairs of appraisal ratings, their appraisals were highly related across symptoms. However, these results may be related to negative symptom sample sizes and need to be replicated with larger samples.

Retest Reliability

The second aim of Study 2B was to provide a preliminary evaluation of the retest reliability of ACNSQ appraisal and coping variables. Retest sample sizes were smaller than

required for conventional retest-reliability analyses and were therefore considered exploratory only. Even with the small sample sizes, reliability analyses provided evidence that many of the ACNSQ appraisal and coping variables may be relatively stable across time. The majority of coping subscales were significantly correlated between the two assessment periods while the stability of appraisal was very much symptom dependent. Of the five negative symptoms, appraisals and coping with attention problems demonstrated the greatest level of stability, with all six ACNSQ variables significantly associated at the two assessment points. Retest reliabilities were poorest for emotional blunting appraisals and coping strategies. Avoidance was the only blunting coping subscale to demonstrate adequate retest reliability. Severity appraisals of anhedonia and attention problems demonstrated the strongest reliability, while distress appraisals were the most reliable form of appraisal for avolition and blunting. Overall, retest reliability could not be demonstrated for 8 of the 15 appraisal comparisons, indicating that participants' appraisals of their negative symptoms varied substantially across time.

Comparison of the present results with similar research is difficult as few studies have examined the retest reliability of appraisals or coping with negative symptoms. Of the studies that have examined these constructs, there are methodological differences and/or lack of detail in published reports. For example, Selten et al. (1993) described the combined stability of severity and frequency appraisals for the same five negative symptoms as fair. Using their Subjective Experience of Negative Symptoms (SENS) scale, they found mean retest reliabilities across all symptoms of .56 for 5 to 7 day intervals, and .43 for a 2 month interval. For distress appraisals, the mean percent of perfect agreement for all items across both time intervals was 40%. In a later study, Selten et al. (2000a) reported the retest reliability of distress appraisals for all five symptoms, over a 2 month period, as moderate, with a mean reliability of .53 ($p < .001$). The mean retest reliability found for distress appraisals in the present study was .45.

Others have provided some evidence of the retest reliability of subjective symptom assessments for schizophrenia over much shorter time periods. For example, Stip et al. (2003) found that subjective assessments of the frequency of cognitive complaints showed temporal stability. Using their subjective measure containing many items resembling alogia and attention problems, the authors reported a retest reliability over a mean interval of 11

days for the global score of .82.

Very short term temporal stability for appraisal variables has also been reported for the Dutch MACS I (Bak et al., 2001a; Bak et al., 2001b), a semi-structured coping interview for people with schizophrenia. Distress and control appraisals for thirteen symptoms, including five negative symptoms, were rated on seven point Likert scales. The authors calculated intraclass correlation coefficients to assess retest reliability. Mean retest reliability was .85 for distress and .75 for control. Appraisal data and analyses for the individual symptom groups are not reported.

In contrast to the low proportion of significant retest comparisons for ACNSQ appraisals, the majority of test-retest reliabilities for the coping subscales were moderate to high, with 80% of correlations statistically significant. It is notable that the retest correlations for avoidant coping were significant across all negative symptoms. However, the relative strength of these significant associations differed according to symptom. For participants with anhedonia, avolition and blunting, their use of avoidant coping in response to these symptoms was markedly more consistent than their use of other types of coping. However, across time, participants used active and emotional coping responses more consistently in response to alogia and attention problems.

In comparison, Van den Bosch and Rombouts (1997) reported that all retest correlations on the seven subscales of the Utrecht Coping List were significant, with a range of .32 for distraction to .75 for problem solving. However, the authors did not specify if these calculations included all participants, of which 26% were normal controls, or just the clinical group, of which 59% had schizophrenia and 41% major depression. Tait et al. (2003) examined the temporal stability of recovery styles, a concept closely resembling coping. They found that ‘integration’ recovery styles characterised by active coping attempts were most prevalent during an acute psychotic phase. However, at the 3 and 6 month follow-up, ‘sealing over’, characterised by cognitive and behavioural avoidance, was the most used type of coping. The authors reported very little change in recovery style between the 3 and 6 month time points (Tait et al., 2003).

For the MACS I (Bak et al., 2001a), clinicians independently classified coping into five rational domains of coping originally developed by Carr (Carr, 1988). To examine the stability of coping over time using the MACS I, two types of retest calculations were made.

For the number of coping mechanisms per symptom group, the mean retest reliability for two interviewers ranged from .75 to .80. For the number of coping mechanisms per coping type, mean retest coefficients were .77 for both clinicians (Bak et al., 2001a; Bak et al., 2001b). Again, no separate symptom type or coping category data is reported, making specific comparisons impossible.

It should be noted that the usefulness of test-retest reliability has been challenged by Folkman and Lazarus (1985). These leading coping researchers have argued that as coping is a process that changes over time, retest reliability has limited applicability in coping measurement (Folkman & Lazarus, 1985). As a result they did not include retest data in their WCQ manual (Folkman & Lazarus, 1988). It is important to note that the retest results presented here may be a function of the low numbers of retest participants. As a result, the veracity of Folkman and Lazarus' argument cannot be refuted in regards to appraisals of some negative symptoms. However, despite the low numbers, ACNSQ results suggest that coping at least is relatively consistent in the short term for people with schizophrenia. This generalisation applies for most negative symptoms, and seems to be particularly the case for avoidant coping. In addition, it can be argued that the low participant numbers give greater weight to the consistency of ACNSQ coping factors across time. It is notable that the three nonsignificant coping retest correlations were from the two symptoms with the lowest retest numbers.

Construct Validity

Overall, the differential pattern of associations between negative symptom appraisals and coping and other theoretically related variables contained within the vulnerability-stress-coping model provide supportive evidence for the construct validity of the ACNSQ. Results provide evidence of both symptom-specific associations and those occurring for all negative symptoms. In general, these associations were in the direction expected.

Appraisal

Evidence for the construct validity of the three appraisal variables of severity, distress and control was mixed. First, in regards to the relationship between appraisal and coping, primary appraisals of severity and distress were generally negatively associated with active and emotional coping responses and positively associated with avoidant forms of coping. As

for retest comparisons, differences in the operationalization and analyses of variables make comparisons with other research results difficult. In addition, very few studies have simultaneously examined appraisal and coping with negative symptoms. One such study was by Wiedl and Schottner (1991). Their findings indicated that participants who appraised their schizophrenic symptoms (including some negative symptoms) as more stressful used less problem-centered and more nonproblem-centered coping than those that rated their symptoms as less distressing. No differentiations between symptom type and distress appraisals and coping were made.

With regard to secondary appraisals of control, there was a trend for greater degree of control to be positively associated with greater use of active and emotional coping responses. This association was significant for alogia and Emotional Coping, and avolition and both Active and Emotional Coping. These results are consistent with other schizophrenia coping research where control has been examined. As discussed in Chapter 3, a range of different conceptualisations of appraised control have been used in schizophrenia coping studies. However, their similarity to control appraisals allows some comparisons to be made.

Bak et al. (2001b) reported that patients that experienced control over their psychotic symptoms mainly used active strategies as opposed to symptomatic coping. Hoffmann et al. (2000) also found a significant positive correlation between high levels of internal control and use of active-change coping. Further, high internal control was negatively, although nonsignificantly related to depressive-resigned coping. depressive-resigned coping was significantly positively related to appraisals of lack of individual control (Hoffmann et al., 2000). These findings mirror those of the present study for participants with alogia, avolition and blunting. Participants reporting high levels of control over these symptoms also reported less use of avoidant types of coping.

The Relation between ACNSQ Appraisals and Clinician Rated Symptoms

Unlike Study 1 findings, there was a general lack of association between observed symptoms and subjectively experienced negative symptoms, particularly for anhedonia severity appraisals. The reason for the discrepancy between Study 1 findings and those in the present study is unclear and further investigation is needed with larger sample sizes. The lack of a consistent relationship between appraisals and objective ratings was particularly striking for individual SANS symptom scores, but also occurred for many of the comparisons

between appraisal and SANS and SAPS summary scores. However, as for Study 1, a substantial proportion of participants appraised a negative symptom as absent when it was assessed as present by the interviewer.

These results replicate previous findings and highlight the importance of evaluating appraisal in the coping process for people with schizophrenia. Others have also found that clinician assessed schizophrenic symptoms differ from those reported by participants. For example, Selten et al. (2000b) found that the proportion of patients who failed to report the presence of negative symptoms using the SENS was generally high. The mean proportion of patients who failed to report symptoms assessed as present by a psychiatrist using the SANS was 58.52% (Selten et al., 2000b). Selten et al. (2000c) found that higher subjective severity ratings for negative symptoms were associated with higher SANS scores. This finding mirrors the trend found in the present study, which was significant for participants with attention problems. Conversely, Iancu et al. (2005) found a negative relationship between SANS summary scores and the negative subscale of their self-report Positive and Negative Symptoms Questionnaire (PNSQ). The SAPS score was positively but nonsignificantly correlated with the positive subscale.

T.E. Smith et al., (1998) found a correlation of .08 between objective SANS ratings and patient awareness of negative symptoms. In an early evaluation of the SANS where subjective ratings of symptoms were included, Andreasen (1982c) reported that these negative symptom appraisals tended to correlate poorly with both individual symptom scores and total SANS scores. Mueser et al. (1997b) reported a correlation of .45 between clinician and patient negative symptom severity ratings, indicating that 80% of the variance in participant scores could not be accounted for by clinician SANS ratings.

In contrast, two studies have found significant positive correlations between scores on a subjective measure of the presence of non-psychotic cognitive symptoms and SANS summary scores (Pallanti, Quercioli, & Pazzagli, 1999) and PANSS negative, positive and cognitive subscales (Mass et al., 2000). Others have found subjective ratings of negative symptoms or cognitive disturbance were unrelated to objective ratings of negative symptoms, but were related to objective positive symptom assessments (Iwawaki et al., 1998; Jaeger et al., 1990; Liddle & Barnes, 1988). Finally, a number of researchers used exploratory principal components analyses to examine the relationships between objective and subjective

schizophrenic symptomatology, and concluded that subjective experience is a specific dimension largely unrelated to objective symptomatology, particularly negative symptoms (Nakaya, Kusumoto, & Ohmori, 2002; Yon et al., 2005).

Thus, the discrepancy between clinician symptom assessments and subjective appraisals of symptoms seems to be common. The lack of association between symptom appraisals and objective assessments of symptoms found in Study 2 does not undermine the construct validity of the ACNSQ appraisal variables. The same argument may be made for the small proportion of significant associations found between negative symptom appraisals and insight found in the present study. In fact, the discrepancy between objective measures and the subjective perception of symptoms has been referred to as a lack of insight (Selten et al., 2000c).

The Relation between ACNSQ Appraisals and Insight

Previous research has produced mixed results regarding subjective symptom appraisals and insight. However, these studies have compared (or reported) global insight or general appraisals of the presence or absence of negative symptoms, rather than primary or secondary appraisals with specific negative symptoms. Peralta and Cuesta (1994) found lack of insight was related to reduced subjective reports of cognitive symptoms, while Kim et al. (1997) found no such association. Iancu et al. (2005) found a nonsignificant negative relationship between appraisals of the presence of negative symptoms and global insight. Selten et al. (2000c) found insight did not predict discrepancies between SENS appraisals of the severity of negative symptoms and SANS summary scores. However, they only used a single item objective measure of insight into the presence of psychotic symptoms.

It is possible that combining individual negative symptoms or failing to examine individual dimensions of appraisal or insight may have masked associations between the variables in these studies. In the present study, examining these individual dimensions separately resulted in seven significant or near significant ($p < .06$) associations between negative symptom types, subjective appraisals and aspects of insight.

The Relation between ACNSQ Appraisals and Subjective Measures of Adjustment

With regard to the relationships found between appraisal and subjective adjustment, control of individual negative symptoms were largely unrelated to the BSI symptom

dimensions. However, there was a strong trend for appraisals of greater severity and/or distress to be related to higher levels of self-reported pathology. A number of these associations were significant or approached significance. This pattern was particularly apparent for reports of depressive and anxious symptomatology.

Lecomte and Mercier (2005) also found that higher total scores on a self-report subscale measuring frequency and severity of negative symptoms was associated with higher total scores on a self-report measure which included anxious and depressive symptoms. Selten et al. (2000c) found that objective measures of depression and anxiety were also linked to subjective severity appraisals of negative symptoms. As found in the present study, Selten et al. (2000c) reported that higher levels of depression were associated with greater appraised severity of negative symptoms. However, contrary to the findings here, the authors found that higher subjective severity was significantly associated with lower levels of anxiety.

The consistent pattern of higher severity and distress appraisals and reduced satisfaction with life for all five negative symptoms provides further support for the validity of these appraisals. The link between distress or stress appraisals and lower subjective reports of satisfaction with quality of life has also been observed by Ritsner et al. (2006a) who found that lower self-ratings of total severity of symptoms and emotional distress were associated with improvements in quality of life.

For control appraisals, higher levels of control were strongly associated with higher levels of SQOL for participants with avolition. These results are consistent with those of Ritsner et al. (2006a) and Pratt et al. (2005) who also found that self-efficacy was associated with improved quality of life. However, neither examined self-efficacy beliefs towards specific negative symptoms. Boschi et al. (2000) reported a lack of association between stress and control ratings, and between stress and control ratings and measures of pathology and quality of life for participants coping with psychotic symptoms.

Coping

Overall, the pattern of correlations between the ACNSQ coping subscales and criterion measures were in the direction expected, although as with the relationships between the coping subscales themselves, findings varied across negative symptoms. Several consistent trends and numerous significant associations provide evidence for the construct validity of the subscales and are generally congruent with the findings of other research.

The Relation between ACNSQ Coping and Clinician Rated Symptoms

Associations between coping and the objective indicator of schizophrenic symptoms provide support for the construct validity of the ACNSQ subscales. In nearly all cases, greater use of active and emotional coping was associated with lower SANS and SAPS summary scores, while use of avoidance was associated with greater schizophrenic symptoms. These findings are similar to those found by others. Wilder-Willis Shear, Steffen, and Borkin (2002) found that more prominent negative symptoms as measured by the SANS (Andreasen, 1989) were significantly correlated with reduced coping strategies involving action and help seeking. Using the WCQ (Folkman & Lazarus, 1985), Rudnick (2001) also found that negative symptoms were significantly negatively associated with problem-focused coping.

Middelboe and Mortensen (1997) reported that greater number of active coping strategies were significantly related to lower SANS and SAPS scores, but that passive coping strategies were not. Parker and Endler (1992) found that emotion-orientated coping was highly related to psychiatric symptoms, while low to moderate correlations were found between the Distraction subscale of their Avoidance scale and psychiatric symptoms. Amirkhan (1990) found that both avoidant coping and social support seeking were related to increased symptom levels.

The Relation between ACNSQ Coping and Insight

With regard to the relationships between insight and coping, significant associations were found for all negative symptoms except blunting. In all cases, greater use of active or emotional coping was associated with higher levels of insight across one or more of the insight domains, regardless of negative symptom type. Conversely, reliance on Palliative Avoidance for anhedonia was related to reduced insight. Overall, the pattern of these associations support the proposal that insight may be an important additional subjective experience variable related to symptom-specific coping within the vulnerability-stress-coping model.

Study 3B results extend the limited nature of past research on the associations between coping and insight. Tait et al.(2003) examined mean IS scores (Birchwood et al., 1994) and coping in schizophrenia. They did not find any association between insight and

use of sealing-over or integration recovery styles measured at three different times (Tait et al., 2003). Similarly, Yanos et al. (2003) failed to find any association between total scores on the IS and both Problem-Centered Coping and Avoidant Coping with symptoms. The nonsignificant results of these previous studies suggest that the multidimensional approach to insight employed in the proposed vulnerability-stress-coping model may offer greater utility than the unidimensional one used by these investigators.

Lysaker et al. (2003a) found that those with less awareness of schizophrenic symptoms in general had higher levels of positive reappraisal coping than those with more awareness. Reduced awareness of the consequences of schizophrenia was associated with more reliance on escape-avoidance coping. Takai et al. (1990) found a significant association between greater insight and both behaviour change and strategic intervention forms of coping. However, it is important to note that none of these studies specifically examined appraisal and coping in relation to negative symptoms.

The Relation between ACNSQ Coping and Subjective Measures of Adjustment

Results concerning coping and subjective psychopathology were in contrast to the differential pattern of relationships between coping type and schizophrenic symptoms, providing further support for the multidimensional conceptualisation of adjustment proposed within the vulnerability-stress-coping model. A particularly notable finding was that all significant associations between coping and self-reports of psychopathology were positive, regardless of type of coping. Greater use of all types of coping were associated with greater subjective psychopathology for all five negative symptoms. There was a particularly strong association between greater reliance on avoidance and higher levels of depressive and anxious symptoms.

These findings are in accord with stress and coping theory which emphasises the central role of emotional responses to stress within the stress-coping process (Lazarus, 1999). According to Lazarus (1999), negative forms of emotion, such as anxiety and depression, in response to a stressor appraised as threatening, are intrinsically linked with attempts to cope. Further, he proposes that in any single stressful encounter, an individual will use almost all coping strategies available to them. Thus, based on this theoretical framework, the association between various forms of emotional distress, as measured by the BSI subscales, indicates that participants experience the negative symptom as a stressor, and that as a result,

use all forms of coping strategies in response.

Patterson et al. (1997a) also found a significant positive correlation between avoidant coping and the depression scale of the BSI (Derogatis & Melisartos, 1983). In their re-assessment of the COPE, Lyne and Roger (2000) also reported significant positive correlations between both Emotion Coping and Avoidance and psychological distress. However, Lecomte and Mercier (2005) did not find any association between psychological distress scores, including depression and anxiety, and accommodation coping. Objective measures of anxiety and depression have also been associated with coping type in one of the few studies that specifically assessed coping in relation to negative symptoms. Mueser et al (1997b) found that greater use of all types of coping were related to greater levels of depression and anxiety, although nonsignificantly.

The only consistent trend of associations between ACNSQ coping subscales and SQOL was between avoidant coping and satisfaction levels. For all five negative symptoms, greater use of avoidant forms of coping were associated with lower ratings of satisfaction with life domains. This trend was only significant for avolition. There was a lack of significant association between Active and Emotional Coping and SQOL. This pattern of associations is congruent with some schizophrenia studies examining coping and quality of life, but not others.

Research by Rudnick (2001), based upon 58 outpatients with schizophrenia, did not find any association between quality of life and emotion-focused or problem-focused coping as measured by the WCC (Folkman & Lazarus, 1980). Patterson et al. (1997a) found a nonsignificant negative correlation between avoidant coping as measured by the WCQ (Folkman & Lazarus, 1988) and quality of wellbeing scores. Boschi et al. (2000) also failed to find an association between both active and avoidant coping styles and two different wellbeing scales: the Quality of Life Scale (Heinrichs, Hanlon, & Carpenter, 1984) and the Bradburn Happiness Scale (Bradburn, 1969).

Study 2B results concerning avoidant coping and SQOL are at odds with those of Lysaker et al. (2001). These authors investigated one type of coping, avoidant coping, and measures of hope, self-efficacy, and well-being in forty-nine outpatients with schizophrenia. The Attitude Questionnaire (AQ) asks the respondent how they feel about aspects of their life and their ability to achieve things, and in some ways could be viewed as similar to measuring

quality of life. The authors correlated total scores from the escape-avoidance subscale of the WCQ (Folkman & Lazarus, 1988) with the AQ and found that higher levels of escape-avoidance predicted higher levels of hope, self-efficacy and well-being. The authors hypothesised that factors which interfere with an accurate perception of reality, such as an avoidant coping style, may shield a mentally ill person from subjective distress. However, Ritsner et al. (2000) found that of five coping subscales, including Avoidance, greater use of task-focused coping was the strongest predictor of overall self-reported quality of life.

Limitations and Future Research

The psychometric and methodological weaknesses of the ACNSQ were discussed in the previous chapter and will not be repeated here. The use of additional specialised instruments to measures aspects of functioning may have clarified the relationships between appraisal and coping and adjustment found in Study 2B. Due to resource constraints, diagnostic schedules to evaluate depression, the deficit syndrome, medication side-effects, and neurocognitive functioning were not employed. While the depression scale of the BSI provided a measure of depressive symptoms, it is not a diagnostic tool. Further, no attempt was made to differentiate between primary and secondary negative symptoms, nor antipsychotic side effects. It is possible that the presence of these factors may have had an impact upon results. The lack of cross validation data from an alternative coping measure is another shortcoming of Study 2B. Further research rectifying these limitations is essential before the ACNSQ can be considered a valid coping instrument.

Due to the exploratory nature of the study, multiple comparisons used to investigate associations between appraisal, coping, and related variables were not controlled for statistically, and this may have inflated the Type I error rate. The use of a lone experimenter to recruit participants, conduct interviews, and provide assistance where required, may have impacted upon results. For example, social desirability may have influenced responses on the ACNSQ and the BSI subscales. The use of a single researcher also precluded the assessment of interrater reliability on SANS and SAPS ratings.

The exploratory nature of this study has been emphasised. Further research evaluating the psychometric properties of the ACNSQ is required to confirm and expand on the present findings. In particular, the extremely low retest sample sizes dictate that additional retest-reliability analyses are conducted using larger participant numbers. It would

be informative to conduct these analyses across multiple occasions varying the time intervals. It is acknowledged that larger-scale studies involving more inclusive samples of people with schizophrenia and including alternative measures are required to fully confirm the construct validity of the ACNSQ. Prospective studies are required to accurately assess the causal relationships between appraisal and coping and related variables. As has been outlined by others previously, "construct validity ideally requires a pattern of consistent findings involving different researchers using different theoretical constructs across a number of different studies" (p. 24, Carmines & Zeller, 1974).

In summary, Study 2A and 2B provides preliminary evidence for the reliability and validity of the ACNSQ and provides further support for the utility of the vulnerability-stress-coping model which forms the basis of this research program. Time and resource constraints, and the cross-sectional design of these investigations, make the findings preliminary in nature. Despite these limitations, the investigation represents the important first stages in the development of an illness and symptom-specific coping measure for schizophrenia. Results presented here suggest differences in how the five negative symptoms of alogia, anhedonia, attention problems, avolition, and emotional blunting are subjectively experienced. These differences emphasise the importance of a multidimensional approach to the investigation of negative symptoms in order to fully decipher their impact on an individuals' level of adjustment.

There are a number of potential uses of the ACNSQ, such as its use as a research tool examining vulnerability-stress paradigms, and its use in clinical settings to evaluate and enhance negative symptom awareness and appraisals as well as coping responses. Replication of the findings presented here are required. However, results indicate that the ACNSQ offers great promise as both an experimental and clinical instrument for the negative symptoms of schizophrenia. Subsequent chapters offer more support for the validity of the ACNSQ by examining evidence in support of two types of associations that may exist between objective indicators and subjective experience variables within the proposed model: direct and mediating effects.

CHAPTER 7

STUDY 3: TESTING A VULNERABILITY-STRESS-COPING MODEL OF ADJUSTMENT TO THE INDIVIDUAL NEGATIVE SYMPTOMS OF SCHIZOPHRENIA

Introduction to Study 3

Study 2, presented in the previous two chapters, concerns the development and evaluation of the ACNSQ. The nature of appraisal and coping with five SANS symptoms was examined, and preliminary evidence concerning the reliability and validity of the ACNSQ was presented. This study further builds upon the investigation of the subjective experience of negative symptoms by examining the nature of associations between these and other variables contained within the vulnerability-stress-coping model of adjustment to individual negative symptoms.

The individual SANS (Andreasen, 1984a) symptoms which form the basis for this research program are conceptualised as distinct, although related, stressors. However, ratings of negative symptom severity alone have been unable to account for the wide variation in impairment caused by the presence and severity of negative symptoms (Davidson & McGlashan, 1997). In addition, there is now wide acceptance that subjective experience factors may play a prominent role in the heterogeneous nature of adjustment to schizophrenia (Liberman & Kopelowicz, 2002; Mueser et al., 2002; Nuechterlein et al., 1992a).

There is a growing body of evidence that the subjective experience of people with schizophrenia may have both direct and more complex effects on individual adaptation to schizophrenia (for example see Andres et al., 2003; Bechdolf et al., 2003; Lecomte and Mercier, 2005; Lysaker et al., 2005a; Ritsner, 2003b). A much smaller amount of research has examined negative symptoms in relation to subjective appraisals and coping. This research has found some evidence that these factors may play a role in adjustment in schizophrenia (Lobban et al., 2004; Lysaker, 2005b). Several studies have linked insight to both the appraisal of negative symptoms and the coping process (Ritsner et al., 2000; Smith et al., 2004). However, there has yet to be any comprehensive investigation of the relationships between the objective factors and subjective experience variables which may be

influential in adjustment to individual SANS symptoms. The empirically based Study 3 represents the first investigation of this kind.

Study 3 had two objectives. The first was to examine support for two alternative mechanisms of association between objective indicators and subjective experience variables contained within the proposed vulnerability-stress-coping model of adjustment to individual negative symptoms. Two the forms of association, direct and mediated effects, are presented in separate chapters. The second goal of Study 3, within the context of examining support for the models, is to further investigate the construct validity of the ACNSQ and its appraisal and coping variables.

Full details concerning the vulnerability-stress-coping model which forms the basis of this research program were presented in Chapter 3. The model proposes that the impact of negative symptom stressors on adjustment will be related to the individual negative symptom stressor level, insight, primary and secondary appraisal, and specific symptom-related coping dimensions.

STUDY 3A. EXAMINING THE DIRECT EFFECTS OF STRESSOR LEVEL, INSIGHT, APPRAISAL AND COPING ON ADJUSTMENT TO INDIVIDUAL NEGATIVE SYMPTOMS

The direct effects model, also referred to as the main effect or additive model, will be examined in this chapter. The majority of studies investigating the impact of psychological factors in schizophrenia examine the direct effects of variables on adjustment indices. A direct effects relationship exists between variables when each predictor variable has an independent direct effect on the dependent variable. This model is summarised in Figure 7.1. This model postulates that stressor levels, insight, and the ACNSQ appraisal and coping variables will have independent and additive effects on adjustment to schizophrenia, after controlling for influential participant characteristics. As outlined in Chapter 3, the model examines adjustment to each of the five SANS negative symptoms separately. Evidence from Study 1, Study 2, and the literature, indicates that negative symptoms are multidimensional and that important differences may exist in how an individual experiences these specific symptoms.

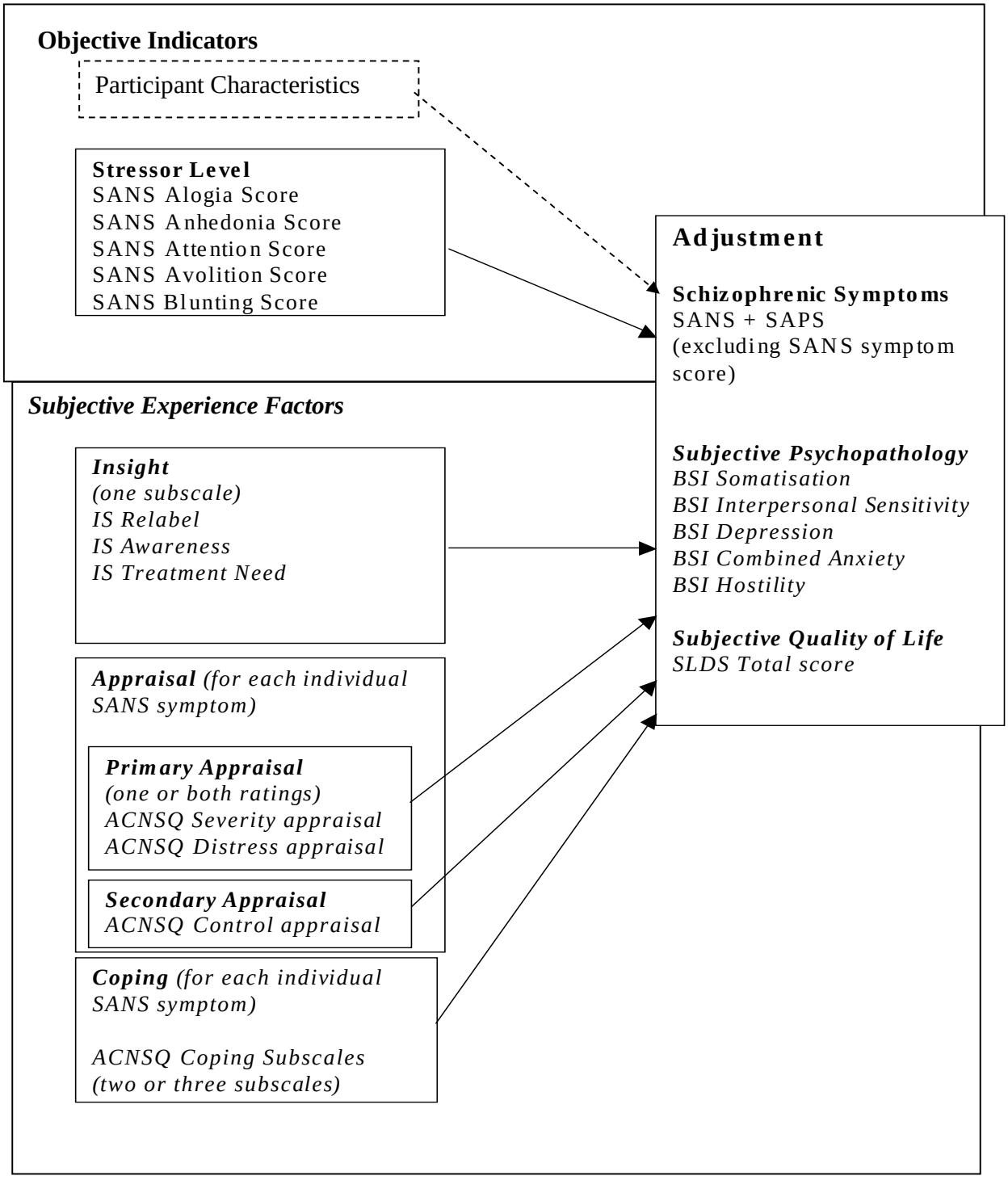

Figure 7.1. *Vulnerability-stress-coping direct effects model of objective indicators and subjective experience factors associated with adjustment to individual negative symptoms.*

Thus, separate examination is essential in order to fully understand the nature of each SANS symptom and the influence that symptom-related objective and subjective factors have on adjustment for people with schizophrenia.

A review of evidence in support of the direct effects model was presented in Chapter 3. In brief, the direct effects model underlies much of the early stress and coping research, and remains the most commonly investigated model in this field (Edwards et al., 1990). However, research concerning the direct effects of stress, insight, appraisal, and coping variables on adjustment in schizophrenia has produced highly contradictory findings. For example, some researchers have concluded that objective, or clinician-rated, symptoms have little predictive value for SQOL (Lasalvia et al., 2002; Rudnick, 2001). Others have reported that, of the SANS symptoms, only anhedonia is significantly related to SQOL (Huppert, Weiss, Lim, Pratt, & Smith, 2001; Orsel, Akdemir, & Dag, 2004). Lysaker et al. (2001) reported that objective ratings of both negative and positive symptoms were unrelated to subjective measures, including self-efficacy and well-being.

More favourable primary appraisals of symptoms have been related to better SQOL, and found to be unrelated to measures of pathology such as anxiety and depression (Lobban et al., 2004). Others have reported that more accurate appraisals of the presence of negative symptoms are related to higher levels of depression but lower anxiety (Selten et al., 2000c). One study found that control appraisals of general life stress were highly predictive of adjustment to schizophrenia (Lecomte & Mercier, 2005), while another found no such association (Ritsner et al., 2006a).

With regard to coping, some research has found that greater use of active or problem focused forms of coping is associated with better adjustment (Andres et al., 2000; Middelboe, 1997), while others have found that neither problem-focused nor emotion-focused coping predicted quality of life (Rudnick, 2001). Avoidance-based coping has been found to be either unrelated to a range of adjustment outcomes (Andres et al., 2003), or somewhat incongruently, associated with both better quality of life and increased emotional distress during an exacerbation phase of schizophrenia (Strous et al., 2005). Others have also reported that use of emotion-related coping was associated with reductions in quality of life, or higher anxiety (Lobban et al., 2004), while greater

Avoidance-related coping predicted improvements in quality of life (Ritsner et al., 2006a). Yet others have found no association between coping and quality of life (Rudnick, 2001).

One study found that total negative symptoms were predictive of only one of six coping dimensions investigated (Lysaker et al., 2005b), while another found that negative symptoms were related to Task and Emotional coping but not Avoidance (Strous et al., 2005). Others have found no association between coping and psychopathology (Horan & Blanchard, 2003), or coping and positive symptom scores (MacDonald et al., 1998; Rudnick, 2001). Conversely, another study found that more active coping and less depressive coping predicted lower levels of both general psychopathology and negative symptoms one year later (Andres et al., 2000). In relation to insight, a number of recent studies have found evidence that insight may have direct effects on coping and adjustment to schizophrenia, although evidence concerning the direction of this effect has been inconsistent (Lysaker et al., 2003a; Lysaker et al., 2005a; Ritsner et al., 2000; Strous et al., 2005; Tait et al., 2003).

This study is largely exploratory due to the lack of previous multivariate tests of models of the relations between objective and subjective factors in the prediction of adjustment to individual negative symptoms. In addition, previous findings concerning the strength and direction of relations between negative symptoms, insight, appraisal, coping, and/or various dimensions of adjustment have been inconsistent.

Method

Participants

The same participants were used to collect data for both Study 2 and Study 3. Chapters 5 and 6 contain information concerning participant recruitment, sample characteristics and assessment method.

Measures and Procedure

Data for Study 2 and 3 were collected simultaneously. Details concerning measures and preliminary analyses are presented in Chapters 5 and 6. In summary, the predictor variables measured were: five negative symptoms, in the form of individual

SANS symptom scores (Andreasen, 1984a); insight, using the three IS subscales of Relabel, Awareness, and Treatment Need (Birchwood, 1994); appraisal in the form of ACNSQ severity, distress and control appraisal ratings for each of the five negative symptoms (range 1 to 5); and coping measured by the three coping subscales for each of the five ACNSQ negative symptoms. The dependent variables (DVs) consisted of three domains of adjustment to schizophrenia. The first was an object measure of schizophrenic symptoms in the form of combined SANS and SAPS summary scores. The second domain was subjective psychopathology and was measured using the BSI (Derogatis and Spencer, 1982) subscales of somatization, interpersonal sensitivity, depression (suicide item excluded), anxiety and phobic anxiety combined, and hostility. The third adjustment domain measured was subjective quality of life (SQOL) in the form of total scores on the SLDS (Baker & Intagliata, 1982).

Statistical Analyses

All analyses were performed with SPSS 9.0 (Norusis, 1998). Preliminary analyses concerning descriptive statistics and the distribution of all measures are presented in Chapters 5 and 6. To reduce the number of analyses, SANS and SAPS summary scores were summed for each participant to produce one adjustment measure of objectively rated schizophrenic symptoms. As SANS symptom scores were used to provide a measure of individual negative symptoms, this score was excluded from the schizophrenic symptom score for the symptom under investigation in each model.

Prior to conducting the principal analyses, a series of analyses were conducted to determine whether predictors or DVs differed as a function of participant characteristics, and therefore needed to be controlled for in regression analyses. Pearson correlations were conducted on continuous data and one-way ANOVAs on categorical data. A significance level of $p < .01$ was set. Appendices 7A and 7B contain the results of comparisons between participant characteristics and SANS negative symptom score, IS Relabel, Awareness, and Treatment Need, and ACNSQ coping subscales. One comparison was significant. A greater number of hospitalisations was negatively related to the use of Active Coping for attention problems ($r = -.46$, $p < .005$). Appraisal comparisons are discussed below. Appendices 7C to 7G contain the results of

comparisons between participant characteristics and adjustment variables for each negative symptom. Two analyses were significant. For participants reporting avolition, marital status was significantly related to combined anxiety and hostility. In both cases, the 43 never married participants reported significantly less anxious and hostile symptoms than the 17 participants in the married/de facto/separated/divorced group.

Analyses between participant characteristics and appraisal were performed in the previous study and these results are presented in Appendix 6F. Results indicated that for avolition, distress appraisals made by single participants were significantly lower than those of married, de facto, separated or divorced participants (p =.003). To control for the above significant associations, the two covariates of number of hospitalisations and marital status were entered on the first step of regression analyses for attention problems and avolition respectively. Where they were not significant in the equation, a regression was repeated without use of the covariate, and this is the one reported. Successive regressions were deemed appropriate due to the large numbers of variables and relatively small numbers of participants.

In addition to the participant characteristic comparisons, Pearson correlations were conducted between the predictor variables of negative symptom stressor, insight, appraisal, and coping, and the DVs of schizophrenic symptoms (with the appropriate SANS symptom score excluded), subjective psychopathology of somatization, interpersonal sensitivity, depression, anxiety, and hostility, and SQOL. Details of these tables are presented in the relevant sections below.

Comparison Between Total Sample and other Schizophrenia Studies for Adjustment Variables

To provide an indication of the generalizability of Study 3 results, adjustment data in the present sample was compared with other schizophrenia studies. Appendix 7H contains the adjustment variable results from the present study (first column) and those reported from a range of other schizophrenia studies where the same instruments were administered. Direct comparisons are difficult due to differences in the adjustment measures (addition or subtraction of items) and the calculation of scores, and differences in the way data was collated and analysed. However, as can be seen from the table there is a wide range in mean scores for samples reported in the literature. Differences is

scores on the various instruments are also likely to reflect the wide heterogeneity in impairment and illness course observed for people with schizophrenia .

The present study's mean SANS summary score most closely resembles that of MacDonald et al. (1998). Mean symptom scores from the present study were higher than those reported by Mueser et al. (1994). However, this finding is not unexpected given that participants in the study were recruited according to the presence of negative symptoms. As a result of the selection criteria used in Study 2, SAPS summary scores are less that those reported elsewhere (MacDonald et al., 1998; Patterson et al., 1997a).

For the BSI, individual subscale scores were lower, and total BSI scores were higher than results reported by Morlan and Tan (1998). However, the present sample's mean total BSI score was very similar to that reported by Kingsep et al. (2003), who failed to report symptom totals. Mean scores on the symptom dimensions ranged between a low of 1.53 for hostility to a high of 2.02 for depression. The present sample's mean SLDS quality of life score closely resembles those reported elsewhere for people with schizophrenia living in the community (for example, Lenzi, Maltinti, Poggi, Fabrizio, & Coli, 2003; Tempier et al., 1998).

Results

Preliminary Analyses

Analyses to examine the data for missing values and measures of central tendency and distribution were reported in Chapters 5 and 6. As described in these chapters, a number of variables were demonstrated to have positively skewed and kurtosed distributions. However, little was achieved by transforming variables and the decision was taken to retain the original variables for the sake of comprehensibility. A number of further analyses were undertaken to determine whether the assumptions of regression were met.

Squared multiple correlations were examined for the presence of multicollinearity and singularity. Neither was detected. Multivariate distributions were inspected by use of residual plots to ensure that there were no marked deviations from normality and the correlation matrix contained potentially interpretable information. Several of the distributions for each negative symptom indicated that the relationship between predictors

and adjustment measures were slightly curvilinear in nature, however this pattern was not uniform across negative symptoms. In order to maintain clarity of the meaning of variables, and to allow for comparison across negative symptoms, the decision was again made not to transform variables. As Tabachnick and Fidel (1989) indicate, when residuals are not linear in regression the analysis is weakened rather than invalidated. Casewise diagnostics indicated that there was one multivariate outlier in excess of the $p < .001$ criterion used for the significance of Mahalanobis distance. The case involved a participant with alogia. As an extreme case with too great an influence on the regression solution, the decision was taken to remove the case from analyses, as suggested by Tabachnick and Fidel (1989).

Direct Effects Models

Hierarchical multiple regression (HMR) analyses were used to examine data for evidence of direct relationships between individual negative symptom related predictors and three domains of adjustment. Five groups of regression analyses were carried out separately, one group for each negative symptom. Separate regressions were carried out for each adjustment measure DV. The order of entering of the predictors was determined by stress and coping theory. Any relevant covariates were entered on the first step of the initial round of regressions. The stressor, SANS symptom score, was entered next, followed by insight, appraisal, and then coping variables. However, some alterations were made to the originally proposed direct effects models.

As discussed in Study 2, a substantial number of participants appraised one or more negative symptoms as absent when they were objectively assessed as being present based upon the SANS. This led to a problematic ratio of independent variables to cases within the model, and resulted in fewer cases than recommended for a reliable multiple correlation coefficient (Howell, 1997). The suggested ratio of cases to predictors for regression analyses varies. Tabachnick and Fidell (1989) indicate that 5 times more cases than IVs is a bare minimum requirement, while Howell (1997) suggests that the formula of $N >= p + 40$, where p is the number of predictors (p. 523) may provide the best minimum guide. However, it has been argued that regression analyses on any samples of less than 100 may have unacceptably low power regardless of the cases to IV ratio (Tabachnick & Fidell, 1989). This view reinforces the exploratory nature of this study

and highlights the importance of replicating results with a much larger sample.

The deletion of independent variables is one strategy recommended for improving the ratio of cases to IVs and thus increasing the power of the regression analysis to detect a small effect size (Tabachnick & Fidell, 1989). With this recommendation in mind, a number of predictors were removed from regression models while ensuring that all four steps in the direct effects model were retained. As the role of negative symptoms and the ACNSQ appraisal and coping variables were the main predictors of interest in this research program, only one insight subscale was included at the insight step of the model, for all negative symptoms. In addition to the reduction in the number of insight predictors, further IV deletion was used to improve the power of the regression models for the three negative symptoms with the smallest sample sizes: anhedonia, attention problems, and blunting. For these three negative symptoms, just one of the two primary appraisal variables, and two of the three coping subscales were included in the regression models. Single order correlations were examined to select the predictors with the strongest relationship with the DV for inclusion in the regression model.

As for Study 2, a significance level of .05 was set due to the lack of other research on appraisal and coping with negative symptoms. The words 'predictor' and 'prediction' have been used as statistical terms common to regression analysis and are not intended to imply causal relationships. All correlation coefficients reported are standardized betas (β).

Alogia

Correlations between alogia predictors and adjustment variables are presented in Table 7.1. Regression diagnostics indicated one multivariate outlier, which was therefore excluded from all regression analyses. Table 7.2 contains the results of the hierarchical regression analyses for the remaining 56 participants reporting alogia. Standardized coefficient β's are the unit of association reported. The variables entered at each step of the alogia models were, in the following order: *stressor*- SANS alogia score; *insight*- one IS subscale; *ACNSQ appraisal*- severity, distress, and control; *ACNSQ coping*- Active Coping, Avoidance, and Emotional Coping. When all the variables were in the equation, significant amounts of total variance were accounted for in the DVs of schizophrenic

Table 7.1

Correlations between Stressor Symptom Score, Insight, Appraisal, Coping, and Adjustment for Alogia (N = 56)

	Schizophrenic Symptoms	Subjective Psychopathology (BSI)					Quality of Life
Predictor Variable	SANS + SAPS (minus SANS Alogia score)	Somatisation	Interpersonal Sensitivity	Combined Depression	Anxiety	Hostility	SLDS
Stressor							
SANS Alogia score	.48****	.18	.20	.22	.42***	.29*	-.08
IS Insight							
IS Relabel	-.20	.07	.07	.05	.00	.10	.14
IS Awareness	-.30*	.16	.19	.22	.06	.22	-.06
IS Treatment Need	-.04	.01	.05	.05	.05	-.01	.08
ACNSQ Appraisal							
Severity Appraisal	.30*	-.11	.00	.05	.24	.07	-.16
Distress Appraisal	.21	.04	.12	.27*	.28*	.11	-.20
Control Appraisal	-.11	.09	-.03	-.07	-.03	.07	.02
ACNSQ Coping							
Active Coping	-.26*	.04	.25	.19	-.01	.07	-.13
Avoidance	.26*	.35**	.49****	.57****	.58****	.41***	-.29*
Emotional Coping	-.15	.15	.24	.18	.20	.21	.04

*p < .05 **p < .01 ***p < .005 ****p <.0005 All tests two-tailed

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms,
BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale
ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

Table 7.2

Hierarchical Regression Analyses of the Direct Effects of Objective Indicators and Subjective Experience Variables on Adjustment for Alogia (N = 56)

	Schizophrenic Symptoms		Subjective Psychopathology (BSI)										Quality of Life	
	SANS+SAPS (excluding SANS Alogia score		Somatisation		Interpersonal Sensitivity		Depression		Combined Anxiety		Hostility		SLDS	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Stressor	.23***		.03		.04		.05		.18***		.09*		.01	
SANS Alogia score		.48***		.18		.20		.23		.42***		.30*		-.09
IS Insight	.04		.04		.06		.08*		.03		.09*		.02	
IS Relabel														.13
IS Awareness		-.20		.21		.25		.29*		.17		.30*		
IS Treatment Need														
ACNSQ Appraisal	.05		.04		.02		.09		.08		.02		.04	
Severity Appraisal		.15		-.21		-.10		-.15		.08		.01		-.00
Distress Appraisal		.11		.16		.17		.35*		.23		.11		-.20
Control Appraisal		-.05		.11		.01		-.04		.02		.09		-.00
ACNSQ Coping	.01		.12		.30***		.29***		.26***		.15*		.10	
Active Coping		-.12		-.03		.33*		.28*		.21		.12		-.27
Avoidance		.04		.38*		.43***		.49***		.43***		.36**		-.21
Emotional Coping		-.00		.03		.14		.04		.19		.12		.08
Total Adjusted R^2	.22		.10		.32		.43		.46		.23		.02	
Total *F*	(8, 47)= 2.90**		(8, 47)= 1.76		(8, 47)= 4.25***		(8, 47)= 6.15***		(8, 47)= 6.80***		(8, 47)= 3.09***		(8, 47)= 1.17	

* $p < .05$ ** $p < .01$ *** $p < .005$

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms, BSI = Brief Symptom Inventory
SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale, ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire
Note : Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of symptoms, higher scores on SLDS indicate greater satisfaction. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control. Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater mean use of coping strategies.

symptoms (22%), interpersonal sensitivity (32%), depression (43%), combined anxiety (46%), and hostility (23%).

SANS alogia scores accounted for significant variance in schizophrenic symptoms, combined anxiety, and hostility. Higher levels of alogia were associated with a greater degree of other schizophrenic symptoms, and self-reports of anxiety and hostility. For insight, greater awareness of illness was significantly associated with higher levels of depression and hostility, accounting for 8% and 9% of the variance respectively. The only significant association between appraisal and adjustment was for depression. Higher distress appraisals for alogia were related to higher levels of depression, however when all appraisal variables were in the equation, the appraisal step did not account for significant variance in depression. When all other variables were entered into the respective equations, coping had significant direct effects on interpersonal sensitivity, depression, anxiety, and hostility. Greater use of Avoidance was related to higher levels of psychopathology all four BSI subscales. In addition, greater use of Active Coping was related to higher levels of both interpersonal sensitivity and depression.

Anhedonia

Correlations between anhedonia predictors and adjustment variables are presented in Table 7.3. Anhedonia HMR analyses are summarised in Table 7.4. As outlined above, due to the small sample size (30) a more parsimonious direct effects model was tested for participants reporting anhedonia. The variables entered at each step of the direct effects models for anhedonia were, in the following order: *stressor*- SANS anhedonia score; *insight*- one IS subscale; *ACNSQ appraisal*- either severity or distress, and control; *ACNSQ coping*- only two of the coping subscales of Active/Emotional Coping, Resigned Avoidance, and Palliative Avoidance. Correlations were used to select predictors most related to DVs for inclusion in the models. Using this method, the reduced direct effects models for anhedonia accounted for a significant amount of variance in somatization (26%), depression (39%), combined anxiety (41%), and hostility (29%).

For each of the HMR analyses, it was the final coping stage of the models which accounted for significant amounts of variance in somatization, depression, combined

Table 7.3

Correlations between Stressor Symptom Score, Insight, Appraisal, Coping, and Adjustment for Anhedonia (N = 30)

	Schizophrenic Symptoms	Subjective Psychopathology (BSI)					Quality of Life
	SANS + SAPS (minus		Interpersonal		Combined		
Predictor Variable	SANS Anhedonia score)	Somatisation	Sensitivity	Depression	Anxiety	Hostility	SLDS
Stressor							
SANS Anhedonia score	.04	.26	-.12	-.08	.01	.10	-.07
IS Insight							
IS Relabel	-.29	-.04	-.07	-.18	-.23	-.13	.25
IS Awareness	.04	-.32	.08	-.08	-.24	-.19	.12
IS Treatment Need	-.12	-.38*	.07	.00	.00	-.10	.39*
ACNSQ Appraisal							
Severity Appraisal	.24	.04	.01	.04	.04	.05	-.10
Distress Appraisal	.13	.11	.10	.34	.25	.11	-.12
Control Appraisal	.19	.01	.01	.06	-.11	-.11	-.22
ACNSQ Coping							
Active/Emotional Coping	-.25	.45*	.27	.45*	.30	.29	-.05
Resigned Avoidance	.02	.00	.40*	.21	-.10	.44*	-.04
Palliative Avoidance	.36*	.01	.02	.19	.43*	.08	-.15

*$p < .05$ All tests two-tailed

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms,
BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale
ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

Table 7.4

Hierarchical Regression Analyses of the Direct Effects of Objective Indicators and Subjective Experience Variables on Adjustment for Anhedonia (N = 30)

	Schizophrenic Symptoms		Subjective Psychopathology (BSI)										Quality of Life	
	SANS+SAPS (excluding SANS Anhedonia score)		Somatisation		Interpersonal Sensitivity		Depression		Combined Anxiety		Hostility		SLDS	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Stressor	.00		.07		.02		.01		.00		.01		.01	
SANS Anhedonia score		.04		.26		-.12		-.08		.01		.10		-.07
IS Insight	.08		.11		.00		.03		.07		.03		.15*	
IS Relabel		-.29						-.18						
IS Awareness						.05				-.27		.-18		
IS Treatment Need				-.34										.40*
ACNSQ Appraisal	.06		.01		.01		.12		.13		.05		.02	
Severity Appraisal		.25		-.01										
Distress Appraisal						.08		.35		.34		.17		-.07
Control Appraisal		.17		-.12		.03		.02		-.17		-.15		-.11
ACNSQ Coping	.12		.22*		.25*		.36***		.33***		.35***		.02	
Active/Emotional Coping		-.23		.52**		.26		.63***		.37*		.30		-.03
Resigned Avoidance						.44*		.17				.52***		
Palliative Avoidance		.38		-.02						.49***				-.12
Total Adjusted R^2	.07		.26		.09		.39		.41		.29		0	
Total *F*	(6, 23)= 1.37		(6, 23)= 2.65*		(6, 23)= 1.45		(6, 23)= 4.14**		(6, 23)= 4.36***		(6, 23)= 2.95*		(6, 23)= .88	

* $p < .05$ ** $p < .01$ *** $p < .005$

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms, BSI = Brief Symptom Inventory
SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale, ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire
Note : Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of symptoms, higher scores on SLDS indicate greater satisfaction.
Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control.
Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater mean use of coping strategies.

anxiety, and hostility. There were no significant effects at the stressor level (SANS anhedonia score). Insight only asserted a significant direct effect on SQOL. Participants with anhedonia who had a greater awareness of the need to treat their schizophrenic symptoms reported higher levels of satisfaction, however overall this model was nonsignificant. For the somatization, depression, and anxiety subscales, greater use of Active/Emotional Coping predicted higher subjective pathology. For anxiety, Palliative Avoidance was also significantly associated with greater levels of anxiety. When all the variables were in the equation for hostility, greater use of Resigned Avoidance was significantly related to reports of more hostile symptoms.

Attention Problems

Correlations between predictors and adjustment variables for the participants reporting attention problems are presented in Table 7.5. Results of HMR analyses are summarised in Table 7.6. Due to the number of participants reporting attention problems (48), models were reduced to include only one measure of primary appraisal and two coping variables. The illness variable, number of hospitalisations, was initially entered on the first step of each regression equation as a covariate. However, it did not account for a significant amount of variance in any of the DVs and regressions were repeated excluding this participant variable. Thus, variables entered in the models were: *stressor*- SANS attention score; *insight*- one IS subscale; *ACNSQ appraisal*- either severity or distress, and control; *ACNSQ coping*- only two of the coping subscales of Emotional Coping, Active Coping, and Avoidance.

Direct effects models for participants with attention problems accounted for a significant amount of the total variance in schizophrenic symptoms (21%), somatization (29%), combined anxiety (14%), and life satisfaction (17%). At the stressor entry level, SANS attention scores predicted significant variance in somatization and life satisfaction. A greater degree of objective attention problems was associated with a higher level of subjective somatization, but poorer SQOL. There were no significant direct effects of insight. The next step in HMR models, appraisal, accounted for significant variance in total schizophrenic symptoms, anxiety, and life satisfaction. Participants with attention problems who appraised their symptom as more severe tended to have a greater degree of objective schizophrenic symptoms and subjective anxiety. Participants with attention problems who

Table 7.5

Correlations between Stressor Symptom Score, Insight, Appraisal, Coping, and Adjustment for Attention (N = 48)

	Schizophrenic Symptoms	Subjective Psychopathology (BSI)					Quality of Life
	SANS + SAPS (minus		Interpersonal	Combined			
Predictor Variable	SANS Attention score)	Somatisation	Sensitivity	Depression	Anxiety	Hostility	SLDS
Stressor							
SANS Attention score	.10	.39**	.03	.08	.16	.19	-.30*
IS Insight							
IS Relabel	-.11	-.08	.01	-.11	-.11	.10	.26
IS Awareness	.06	-.23	.08	.09	-.04	.05	-.03
IS Treatment Need	-.11	-.30*	-.09	.04	.05	.00	.11
ACNSQ Appraisal							
Severity Appraisal	.45***	.36*	.26	.29*	.37**	.10	-.37**
Distress Appraisal	.16	.35*	.12	.20	.18	.04	-.41***
Control Appraisal	-.06	.13	-.06	.04	.04	-.03	.07
ACNSQ Coping							
Emotional Coping	-.18	.19	.06	.03	.06	.13	.21
Active Coping	-.30*	.07	.15	.05	-.19	.07	.00
Avoidance	.11	.38**	.20	.43***	.36*	.18	-.21

*$p < .05$ **$p < .01$ ***$p < .005$ All tests two-tailed

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms,
BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale
ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

Table 7.6

Hierarchical Regression Analyses of the Direct Effects of Objective Indicators and Subjective Experience Variables on Adjustment for Attention (N = 48)

	Schizophrenic Symptoms		Subjective Psychopathology (BSI)										Quality of Life	
	SANS+SAPS (excluding SANS Attention score		Somatisation		Interpersonal Sensitivity		Depression		Combined Anxiety		Hostility		SLDS	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Stressor	.01		.15**		.00		.01		.02		.04		.09*	
SANS Attention score		.10		.39**		.03		.08		.16		.19		-.30*
IS Insight	.01		.04		.01		.01		.01		.02		.05	
IS Relabel								-.10		-.10		.12		.23
IS Awareness														
IS Treatment Need		-.10		-.22		-.08								
ACNSQ Appraisal	.20**		.08		.06		.09		.13*		.01		.11*	
Severity Appraisal		.49***		.30*		.26		.32*		.39*		.08		
Distress Appraisal														-.32*
Control Appraisal		.07		.19		.01		.11		.13		-.02		.08
ACNSQ Coping	.10		.10*		.04		.12*		.09		.03		.02	
Emotional Coping		.03		.30*				.03				.14		.14
Active Coping		-.33*				.17				-.22				
Avoidance				.16		.14		.40*		.26		.13		-.07
Total Adjusted R^2	.21		.29		0		.11		.14		0		.17	
Total *F*	(6, 41)= 3.02*		(7, 40)= 4.20***		(6, 41)= .85		(6, 41)= 1.99		(6, 41)= 2.30*		(6, 41)= .66		(6, 41)= 2.55*	

* p <.05 **p <.01 ***p <.005

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms, BSI = Brief Symptom Inventory
SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale, ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire
Note: Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of symptoms, higher scores on SLDS indicate greater satisfaction.
Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control.
Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater mean use of coping strategies.

appraised their symptom as more distressing also tended to rate their quality of life as poorer.

When all other predictors were entered into the model, coping accounted for significant variance in scores on the somatization and depression subscales. Greater use of Emotional Coping predicted higher levels of somatization, while greater use of Avoidance was associated with higher levels of depression. In addition, reduced Active Coping was significantly related to more schizophrenic symptoms, however the coping step did not account for significant variance in this domain of adjustment.

Avolition

Correlation results for avolition are summarised in Table 7.7. Results of HMR analyses are presented in Table 7.8. All appraisal and coping variables in the direct effects model were included for avolition. The variables entered at each step were: *stressor*- SANS avolition score; *insight*- one IS subscale; *ACNSQ appraisal*- severity, distress, and control; *ACNSQ coping*- Active Coping, Avoidance, and Emotional Coping. With all the predictors in the direct effects model for avolition, significant variance was accounted for by interpersonal sensitivity (23%), depression (29%), combined anxiety (32%), hostility (25%), and life satisfaction (24%). Of these models, the two level covariate of marital status accounted for significant variance in all DVs apart from SQOL. In each case, participants who were married, living in a de facto relationship, separated or divorced reported significantly greater levels of symptoms than single participants. Marital status was the only significant predictor for hostility.

Of the model predictors, SANS avolition scores only accounted for significant variation in satisfaction with life, with higher levels of avolition related to lower levels of satisfaction. Insight was not significantly related to any DVs. At the appraisal step, distress appraisals were associated with significant increments in variance for interpersonal sensitivity, depression, anxiety, and life satisfaction. Participants who appraised their avolition as more distressing also tended to report a greater degree of other symptoms and reduced SQOL. With all other variables entered into the model, coping accounted for further significant variation in interpersonal sensitivity and anxiety. In both cases, greater reliance on the use of Avoidance was related to higher levels of these subjective symptoms.

Table 7.7

Correlations between Stressor Symptom Score, Insight, Appraisal, Coping, and Adjustment for Avolition (N = 65)

	Schizophrenic Symptoms	Subjective Psychopathology (BSI)					Quality of Life
	SANS + SAPS (minus		Interpersonal	Combined			
Predictor Variable	SANS Avolition score)	Somatisation	Sensitivity	Depression	Anxiety	Hostility	SLDS
Stressor							
SANS Avolition score	.12	.17	-.04	-.12	-.16	.03	-.35***
IS Insight							
IS Relabel	-.11	.12	-.03	-.03	-.01	-.02	.22
IS Awareness	-.07	.19	.10	.24	.21	.17	.08
IS Treatment Need	-.11	.00	.04	.14	.18	-.03	.28*
ACNSQ Appraisal							
Severity Appraisal	.12	.08	-.08	.09	.12	.00	-.27*
Distress Appraisal	. 19	.32**	.29*	.54****	.47****	.34**	-.32**
Control Appraisal	-.23	.01	.14	-.06	-.16	-.05	.36***
ACNSQ Coping							
Active Coping	-.10	-.01	.21	.13	.04	.01	.20
Avoidance	.17	.03	.26*	.28*	.37***	.18	-.37***
Emotional Coping	-.14	.08	.34**	.13	.02	.03	.08

*p < .05 **p < .01 ***p < .005 ****p <.0005 All tests two-tailed

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms,
BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale
ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

Table 7.8

Hierarchical Regression Analyses of the Direct Effects of Objective Indicators and Subjective Experience Variables on Adjustment for Avolition (N = 65)

	Schizophrenic Symptoms		Subjective Psychopathology (BSI)										Quality of Life	
	SANS+SAPS (excluding SANS Avolition score		Somatisation		Interpersonal Sensitivity		Depression		Combined Anxiety		Hostility		SLDS	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Martital Status[a]					.07*	.26*	.11**	.33**	.16***	.40***	.27***	.52***		
Stressor	.01		.03		.00		.01		.02		.00		.13***	
SANS Avolition score		.12		.17		-.04		-.11		-.16		.04		-.35***
IS Insight	.01		.05		.00		.03		.02		.01		.03	
IS Relabel														
IS Awareness				.23		.06		.19		.14		.12		
IS Treatment Need		-.09												.19
ACNSQ Appraisal	.06		.10		.14*		.21***		.12*		.04		.14*	
Severity Appraisal		-.03		-.08		-.19		-.17		-.11		-.16		-.03
Distress Appraisal		.16		.38*		.43**		.58***		.38**		.24		-.28*
Control Appraisal		-.15		.12		-.27		.06		-.09		.02		.13
ACNSQ Coping	.01		.03		.13*		.03		.09*		.03		.04	
Active Coping		.06		-.07		.07		.06		.02		-.10		-.02
Avoidance		.08		-.15		.29*		.20		.35**		.16		-.15
Emotional Coping		-.10		.16		.22		-.02		-.12		-.05		-.14
Total Adjusted R^2	0		.09		.23		.29		.32		.25		.24	
Total *F*	(8, 56)= .64		(8, 56)= 1.76		(9, 55)= 3.07***		(9, 55)= 3.95***		(9, 55)= 4.38***		(9, 55)= 3.40***		(8, 56)= 3.48***	

* $p < .05$ ** $p < .01$ *** $p < .005$ [a] Marital status coded (1) single/never married , $n = 53$; (2) married/defacto/separated/divorced, $n = 12$

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms, BSI = Brief Symptom Inventory
SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale, ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire
Note : Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of symptoms, higher scores on SLDS indicate greater satisfaction.
Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control.
Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater mean use of coping strategies.

Blunting

Table 7.9 contains the results of correlations between predictors and DVs for participants reporting blunting. HMR results are summarised in Table 7.10. As above, variables entered into the reduced models for the 35 participants reporting blunting were: *stressor*- SANS blunting score; *insight*- one IS subscale; *ACNSQ appraisal*- either severity or distress, and control; *ACNSQ coping*- only two of the coping subscales of Avoidance, Emotional Coping, and Active Coping. These blunting models accounted for a significant amount of variance in schizophrenic symptoms (21%), depression (30%), and combined anxiety (28%).

Neither objective blunting scores nor insight accounted for significant variance in adjustment variables. At the appraisal step, higher distress appraisals were significantly related to greater levels of schizophrenic symptoms, interpersonal sensitivity and depression, and produced a significant increment in the total variance of schizophrenic symptoms (14%). When all steps were entered in the models, coping had direct effects on depression and anxiety. For both DVs, greater use of Avoidance in response to blunting was associated with higher levels of subjective psychopathology.

A Comparison of Results Across Negative Symptoms

Across all five negative symptoms, a number of similarities emerged. The direct effects models accounted for significant variance in levels of schizophrenic symptoms for alogia, attention problems, and blunting. A significant amount of variance in somatization was predicted by anhedonia and attention problem models. Direct effects models for alogia and avolition accounted for significant variance in interpersonal sensitivity. However, the direct effects models accounted for significant variance in self ratings of depression and anxiety for all five negative symptoms, with the exception of the depression model for attention problems. For the hostility subscale, significant models emerged for participants reporting alogia, anhedonia, and avolition. Finally, for quality of life, direct effects models only accounted for significant variance in SLDS scores for participants reporting attention problems and avolition.

Table 7.9

Correlations between Stressor Symptom Score, Insight, Appraisal, Coping, and Adjustment for Blunting (N = 35)

	Schizophrenic Symptoms	Subjective Psychopathology (BSI)					Quality of Life
	SANS + SAPS (minus		Interpersonal		Combined		
Predictor Variable	SANS Blunting score)	Somatisation	Sensitivity	Depression	Anxiety	Hostility	SLDS
Stressor							
SANS Blunting score	.32#	-.03	-.09	.06	.10	.20	.04
IS Insight							
IS Relabel	.10	-.06	-.17	-.19	-.21	-.23	.08
IS Awareness	.09	.03	.18	.30	.14	.16	-.10
IS Treatment Need	.23	.12	.23	.11	.15	.16	-.06
ACNSQ Appraisal							
Severity Appraisal	.30	.21	.24	.13	.16	.08	-.27
Distress Appraisal	.32#	.25	.34*	.33	.19	.06	-.33
Control Appraisal	-.13	-.07	-.05	-.06	-.07	.10	.22
ACNSQ Coping							
Avoidance	.42*	.16	.31	.56****	.58****	.18	-.29
Emotional Coping	-.11	-.06	.04	.21	.07	.03	.17
Active Coping	-.04	-.10	-.03	-.04	-.15	.06	.07

 # p <.06 **p* < .05 ***p* < .01 ****p* < .005 *****p* <.0005 All tests two-tailed

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms,
BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale
ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

Table 7.10

Hierarchical Regression Analyses of the Direct Effects of Objective Indicators and Subjective Experience Variables on Adjustment for Blunting (N = 35)

	Schizophrenic Symptoms		Subjective Psychopathology (BSI)										Quality of Life	
	SANS+SAPS (excluding SANS Blunting score		Somatisation		Interpersonal Sensitivity		Depression		Combined Anxiety		Hostility		SLDS	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Stressor	.11		.00		.01		.00		.01		.04		.00	
SANS Blunting score		.33*		-.03		-.09		.06		.10		.20		.04
IS Insight	.07		.01		.05		.10		.05		.06		.01	
IS Relabel										-.22		-.25		
IS Awareness								.31						-.10
IS Treatment Need		.27		.12		.23								
ACNSQ Appraisal	.14*		.07		.14		.14		.04		.01		.15	
Severity Appraisal												.02		
Distress Appraisal		.29*		.25		.36*		.36*		.18				-.32
Control Appraisal		-.22		-.08		-.07		-.05		-.04		.09		.19
ACNSQ Coping	.03		.01		.02		.19*		.31***		.02		.08	
Avoidance		.20		.06		.17		.47**		.63***		.13		-.14
Emotional Coping		-.07				-.04		.18						.26
Active Coping				-.10						-.24		.03		
Total Adjusted R^2	.21		0		.06		.30		.28		0		.08	
Total *F*	(6, 28)= 2.54*		(6, 28)= .51		(6, 28)= 1.34		(6, 28)= 3.45**		(6, 28)= 3.20*		(6, 28)= .68		(6, 28)= 1.48	

* $p < .05$ ** $p < .01$ *** $p < .005$

SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms, BSI = Brief Symptom Inventory
SLDS = Satisfaction with Life Domains Scale, IS = Insight Scale, ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire
Note: Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of symptoms, higher scores on SLDS indicate greater satisfaction.
Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control.
Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater mean use of coping strategies.

However, the step in the model and variable/s which accounted for significant amounts of variance in adjustment differed both within and across symptoms. Negative symptom stressor levels accounted for significant variance in adjustment for alogia, attention problems and avolition, but not for anhedonia or blunting. In each case, SANS symptom scores were positively associated with greater levels of pathology for alogia, attention problems and avolition, and negatively associated with life satisfaction for attention problems and avolition. Insight only made a significant contribution to predictive models for depression and hostility for alogia, and life satisfaction for anhedonia. For alogia, higher awareness of illness significantly predicted higher levels of both depression and hostility. For anhedonia, greater awareness of the need for treatment predicted higher levels of satisfaction with life.

ACNSQ appraisal variables only predicted significant variance in adjustment variables for attention problems, avolition, and blunting. Severity appraisals only made significant contributions to the prediction of adjustment for attention problems. Higher distress appraisals significantly predicted higher levels of other pathology for avolition and blunting. Conversely, lower appraised distress significantly predicted higher levels of SQOL for both attention problems and avolition. When all other predictors were in the model, ACNSQ coping variables provided a significant increment in the variance of one or more DVs for all five negative symptoms. For all negative symptoms, greater reliance on avoidant coping responses was significantly associated with higher levels of one or more measures of psychopathology. There were direct effects for Active and/or Emotional Coping responses for participants reporting alogia, anhedonia, and attention problems.

Discussion

Using a vulnerability-stress-coping framework, Study 3A represents the first investigation of a direct effects model of adjustment to individual SANS negative symptoms. Cross-sectional supporting evidence was found for the contribution of both components of the model: the objective indicator of stressor level; and the subjective experience factors of insight, appraisal, and coping. These findings support the proposal that negative symptom-related factors, including ACNSQ appraisals and coping dimensions, have significant direct effects upon both objective and subjective domains of

adjustment for people with schizophrenia. As such, Study 3A makes a unique contribution to the understanding of individual differences in the impact of negative symptoms, and supports the importance of considering the impact of subjective experience on the adjustment for people with schizophrenia.

There were two aims of Study 3A. The first was to examine data for the fit of a model examining the direct effects of negative symptom stressor levels, insight, appraisal, and coping on three domains of adjustment to schizophrenia. Regression results provided evidence that for each of the five negative symptoms under investigation, a cross sectional test of the direct effects model was able to account for significant variance in one or more domains of adjustment. The second aim of Study 3A, closely related to the first, was to provide further evidence of the construct validity of the ACNSQ. This aim was achieved by demonstrating that the negative symptom appraisal and coping variables contained within the ACNSQ accounted for significant amounts of variance in adjustment levels when all predictors were entered into direct effects models.

In the following discussion, each of these two aims will be discussed separately and findings from past research compared. However, as for Study 2, comparisons with previous studies are limited by a lack of research in the area of individual differences in the evaluation and response to specific negative symptoms. In fact, the author is not aware of any published studies which have separately examined the direct effects of individual negative symptom appraisals or negative symptom coping dimensions in the prediction of adjustment to schizophrenia.

The Fit of the Direct Effects Model

In total, the direct effects of objective indicator factors and subjective experience variables within the vulnerability-stress-coping model significantly accounted for between 14% and 46% of variance in one or more adjustment domains. Of the 35 regression analyses conducted, the direct or additive effects of predictor variables accounted for significant variance in 21 (60%) of the models tested. With all predictors in the equation, direct effects models demonstrated utility in the prediction of three adjustment variables for blunting, four for anhedonia and attention problems, and five for alogia and avolition. Results indicated that the direct effects of predictors varied somewhat across negative symptoms and adjustment variables. In most cases, only one or two steps in the four or

five step regression models accounted for significant variance in adjustment measures.

Across symptoms, each step in the regression equations accounted for significant variance in at least one adjustment variable. Of the two participant characteristics examined, marital status emerged as having significant direct effects on psychopathology for avolition. For these participants, the dichotomised variable of marital status accounted for significant variance in all measures of subjective psychopathology, apart from somatization. In each case, participants who were in a permanent relationship, or had been in the past, reported higher levels of symptoms than those who were single and had never married. However, these results must be viewed with caution due to the small sample size in the non-single category (17), and the necessity of grouping participants in married or de facto relationships with those who were separated or divorced.

With regard to the predictive utility of stressors, objective negative symptom levels had direct effects on adjustment for alogia, attention problems, and avolition. Higher levels of SANS symptoms were associated with higher levels of pathology for alogia and attention. Higher SANS symptom levels were also associated with poorer SQOL for attention and avolition. With regard to the predictive value of insight, the present study found that in the majority of cases, insight was unrelated to adjustment. The only exception was for participants reporting alogia. For these participants, greater awareness of illness was associated with reports of greater depressive and hostile symptoms. The direct effects of appraisal and coping are discussed in detail in the next section.

The degree to which the direct effects models accounted for significant variance both objective and subjective adjustment domains supports the use of a multidimensional approach to the assessment of adjustment in schizophrenia. The direct effects models most consistently predicted levels of schizophrenic, depressive and anxious symptoms. At the individual predictor level, there were consistent patterns of association across negative symptoms models for subjective pathology and SQOL but not schizophrenic symptoms.

The Prediction of Objective Schizophrenic Symptoms

For participants with alogia, higher objective ratings of negative symptoms were the only significant predictor of schizophrenic symptoms. In contrast, for participants with attention problems and blunting, their own primary appraisals of their negative symptom asserted the strongest direct effects on clinician rated schizophrenic symptoms.

As discussed in the previous chapters, research examining the relation between negative symptom appraisals and objective schizophrenic symptoms has produced conflicting evidence.

Some research has demonstrated a positive correlation between clinician ratings and subjective appraisals of negative symptoms levels (Mass et al., 2000) while others have not (Iancu et al., 2005; T.E.Smith et al., 1998). Stip et al. (2003) found a positive association between total scores on a measure subjective appraisals of cognitive problems, including poor attention and alogia symptoms, and the general psychopathology and negative symptom subscales of the PANSS (Kay et al., 1987). The authors also found that appraisals of more severe impairments in executive functions (incorporating aspects of both alogia and inattention) were positively correlated with depression levels (Stip et al., 2003).

The Prediction of Subjective Psychopathology

When it came to the prediction of subjective pathology in the present study, a more consistent pattern of results emerged. Across most symptoms, higher severity and distress appraisals, and greater reliance on avoidant forms of coping, were associated with higher levels of psychopathology. The author is unaware of any published findings of the direct effects of individual negative symptom appraisals in the prediction of subjective psychopathology. However, Maggini and Raballo (2006) reported that higher distress appraisals for anhedonia, attention, avolition and blunting were all positively correlated with higher levels of clinician rated depression, but that alogia distress appraisals were not. One study found that more accurate appraisals of the severity of negative symptoms as a whole predicted objective ratings of greater depression and reduced anxiety (Selten et al., 2000c).

A number of studies have examined the direct effects of coping with other types of stressors, but not individual negative symptoms. Some of these studies have also found that avoidant forms of coping were related to subjective pathology in schizophrenia. Patterson et al. (1997a) found that avoidant coping, but not approach coping, was correlated with BSI depression scores. Lysaker et al. (2001) reported that Escape Avoidance coping had significant direct effects in the prediction of subjective wellbeing in schizophrenia, but that total PANSS negative symptoms did not. In a reversal of the

model tested here, Strous et al. (2005) evaluated the predictive value of total scores on the TBDI (Ritsner et al., 2002). They found that higher levels of global subjective pathology significantly predicted greater reliance on both Emotional-related coping and Avoidance-related coping, but not Task-related coping (Strous et al., 2005).

The findings by Strous et al. (2005) have some similarity with those of the present study. Study 3 participants' use of Active Coping, Emotional Coping, and Active/Emotional Coping, predicted higher levels of subjective pathology associated with adjustment to alogia, anhedonia, and attention problems. Similarly, Lobban et al. (2005) reported that higher levels of both 'positive' and 'negative' coping strategies were correlated with higher levels of both depression and anxiety. However, when entered into prediction models, only one type of coping, Emotion focused coping, was found to have direct effects on pathology. Higher use of Emotion focused strategies was associated with greater levels of anxiety. In contrast to Study 3A's findings, others have found that Active forms of coping with general stressors were associated with better adjustment and enhanced wellbeing (Ritsner et al., 2006a; Ritsner et al., 2000), or not associated with poor adjustment (Strous et al., 2005).

One further finding in the prediction of subjective pathology warrants discussion. For participants with alogia, Awareness of illness insight had significant direct effects on depression and hostility, with greater awareness associated with greater pathology. Previous research findings concerning the associations between insight and measures of psychopathology are contradictory. For example, the results for alogia are partly in accord with those of Smith et al. (2000) who also found that better awareness of symptoms was related to higher levels of depression in a sample of 46 outpatients with schizophrenia. Others have also found evidence that greater insight was associated with higher levels of depression (Mintz et al., 2003) and lower scores on an emotional wellbeing dimension of SQOL (Hasson-Ohayon et al., 2006). However, in contrast, a substantial number of studies have failed to find an association between insight and negative symptoms or other measures of psychopathology (Amador et al., 1994; Kim et al., 1997; Middelboe, 1997; Schwartz, 1998a).

The Prediction of Subjective Quality of Life

The direct effects model was only moderately successful in the prediction of

SQOL. Only the models for attention problems and avolition were able to account for significant variance in participant ratings of quality of life. For both negative symptoms, an identical pattern emerged with both SANS symptom scores and distress appraisals having direct effects on satisfaction levels. Higher objective ratings for attention problems and avolition, as well as higher subjective appraisals of distress caused by the respective negative symptoms, were related to poorer SQOL.

Several studies have found that objectively rated negative symptoms were unrelated to quality of life (for example, Carpiniello et al., 1997; Corrigan & Buican, 1995). Others have found limited associations between negative symptoms and SQOL (Heslegrave, Awad, & Voruganti, 1997; Ritsner et al., 2000). Lasalvia et al. (2002) found that clinician ratings of total negative symptoms failed to predict global SQOL, but that there was a significant effect from negative symptoms on a general wellbeing dimension of quality of life. Ritsner et al. (2006a) found that lower total anergia (avolition) scores predicted improvements in SQOL at two of three follow-up points. Global emotional distress, measured by total scores on the TBDI (Ritsner et al., 2002) was also a significant predictor of improvements in SQOL at two of the three follow-up assessments. Higher levels of global emotional distress were negatively associated with improvements in quality of life (Ritsner et al., 2006a).

In their study, Orsel et al. (2004) found a limited association between SANS symptom scores and total scores on the Worth Health Organization Quality of Life scale (WHOQOL-100, WHO, 1998). There were significant correlations between anhedonia and avolition scores and WHOQOL-100 scores. However, results of stepwise regressions indicated that only anhedonia scores had direct effects on quality of life. Higher levels of anhedonia were associated with lower scores on three of the six WHOQOL-100 subscales (Orsel et al., 2004). Thus, few studies have found consistent associations between negative symptom levels and SQOL. None have examined the direct effects of specific negative symptom appraisals in their predictive models.

The present study's inclusion of specific symptom-related distress appraisal predictors to the SANS symptom score predictors may be responsible for the difference in Study 3A findings and those of Orsel et al. (2004). Logically, if there is little distress associated with a stressor, it is unlikely to prove problematic for an individual, and

therefore, its impact on the individuals' SQOL is likely to be negligible. This conclusion is supported by the findings of Lobban et al. (2005). They found that appraisal of low negative consequences of symptoms (positive, negative, and affective combined) was the strongest predictor of higher subjective appraisals of quality of life in schizophrenia. In addition, primary appraisals of not having a problem, that is, appraising all positive, negative and affective symptoms as absent, accounted for a significant amount of the variance in SQOL scores (Lobban et al., 2005).

Thus, the inclusion of subjective appraisals of negative symptoms may be central to understanding the relations between negative symptoms and SQOL. As such, these Study 3 results make an important contribution to the understanding of the processes involved in the impact of negative symptoms on subjective wellbeing. Further research using a more comprehensive scale assessing multiple quality of life dimensions is required to clarify the relationships between negative symptom levels, distress appraisals and this important domain of adjustment.

Evidence of the Construct Validity of the ACNSQ

In general, the results provided some support for the validity of ACNSQ appraisal and coping variables as predictors within the direct effects model. However, due to small sample sizes, reduced direct effects models were tested for anhedonia, attention, and blunting. For each of these symptoms, two ACNSQ variables, one primary appraisal and one coping subscale, were excluded from analyses. Overall, significant direct effects of appraisal and coping were found for all three adjustment domains. Across all negative symptoms, avoidant forms of coping emerged as the most valid, consistently predicting poorer adjustment. Similarly, where appraisal asserted a significant direct effect, severity and distress appraisals were positively associated with all forms of pathology, and negatively associated with SQOL.

Many negative symptom appraisals and coping dimensions failed to have a direct effect on individual adjustment variables. For example, for participants reporting alogia, anhedonia, and avolition, there were no direct effects of appraisal or coping on total schizophrenic symptoms when entered into regression models. Similarly, there were no direct effects of appraisal and coping on SQOL for participants reporting alogia, anhedonia, and blunting.

In addition, regression results indicated that within the direct effects model, ACNSQ control appraisals were not valid predictors of adjustment for any of the negative symptoms. With one exception, this lack of association mirrors results at the univariate level. A positive correlation was found between appraised control of avolition and SQOL for the 65 participants reporting avolition ($r = .36$, $p < .005$). However, when SANS symptom score, insight, and primary appraisal variables were entered into the HMR equation, the relation between control appraisals and SLDS was considerably reduced and nonsignificant.

Although no published research has directly examined the predictive value of appraised control of individual negative symptoms on adjustment, these findings are in contrast with a number of previous studies which have found significant direct effects for concepts similar to control, such as general self-efficacy beliefs (for example, Lecomte & Mercier, 2005; Lobban et al., 2004; Ritsner et al., 2000). However, others have also failed to find any association between perceived level of control over stressors and outcome (Ritsner et al., 2006a). Despite others' nonsignificant findings, the pervasive lack of association found is unexpected, and it is unclear why these secondary appraisals demonstrated so little utility, both at the univariate and multivariate level. Further research is required to clarify this issue before further testing of the direct effects model is undertaken.

Despite the abovementioned similarities in results, there were some differences in the direct effects of appraisal and coping on adjustment across the five negative symptoms. For participants reporting alogia, no evidence emerged of the validity of any ACNSQ appraisals nor Emotional Coping in relation to all indices of adjustment. However, both Active Coping and Avoidance were shown to be valid predictors of pathology within the direct effects models. As for alogia, there were no significant direct effects of appraisal on adjustment for anhedonia. However, all three types of coping with anhedonia asserted direct effects on at least one measure of subjective psychopathology. In support of the validity of anhedonia coping subscales, in all significant models, greater reliance on any form of coping was significantly associated with higher self-reports of psychopathology.

The pattern of direct effects for appraisal and coping was different again for

participants with attention problems. Primary appraisal asserted significant direct effects on all three domains of adjustment. Higher severity and distress appraisals were both associated with poorer adjustment. All three types of coping were significantly related to adjustment within the direct effects model. However, not all models were significant.

For avolition, the only ACNSQ variables which were demonstrated to have validity within the direct effects models were distress appraisals and Avoidance. Higher distress appraisals were consistently associated with poorer adjustment. Greater reliance on Avoidance was also associated with poorer adjustment for two BSI subscales. Lastly, as for avolition, only ACNSQ distress appraisals and Avoidance were demonstrated to be valid predictors of adjustment for participants reporting blunting. In both cases, higher levels were associated with higher levels pathology.

General Discussion

A total of 14 out of the 35 direct effects models tested (40%) failed to reach significance. In addition, four significant models only accounted for very modest amounts of variance in adjustment variables (less than 20%). Several explanations may be proposed for the nonsignificant models and the low amounts of variance accounted for in some DVs. The first is that the null hypothesis is true and that for these samples of participants suffering from specific negative symptoms, the direct effects stressor, insight, appraisal and coping models were unrelated to the adjustment variables examined. However, there is some evidence from a number of previous studies to suggest that these predictors may be related to similar measures of adjustment.

This raises the possibility that there may be other explanations for the nonsignificant or modest predictive utility of the models. One possibility is that small sample sizes and the resulting low power of the analyses failed to detect true relationships (Type II error). Another possibility is that objective and subjective factors contained within the vulnerability-stress-coping model are highly predictive of adjustment, but a direct effects analysis fails to adequately capture the nature of underlying relations. Study 3B, presented in the next chapter, investigates this possibility by examining evidence of the presence of another model of association, mediating effects.

This study represents the first attempt to provide a multidimensional test of a vulnerability-stress-coping model of adjustment to individual negative symptoms for

people with schizophrenia. As such, a number of methodological concessions were made in recognition of Study 3A's exploratory nature. For example, a less stringent alpha level was employed despite multiple analyses, increasing the risk of Type I errors. The practice of using a $p < .05$ significance level despite multiple analyses is not uncommon in this relatively new field of schizophrenia coping research (for example, Andres et al., 2003; Lobban et al., 2005; Ritsner et al., 2006a; Ventura et al., 2004), and significance levels have been set as high as $p < .15$ in exploratory regression analyses (Milev et al., 2005). In addition, to improve the ratio of cases to predictors in Study 3A, a number of predictors were excluded from the direct effects model using univariate correlations as a guide.

Exploratory techniques were used with restraint in the present study. As for Study 2, the lack of correction for the large number of analyses conducted (and the increased risk of Type I errors) means that these results must be interpreted with caution. Despite the potential risk of rejecting the null hypothesis incorrectly, and the very small sample sizes, aspects of the methodology used in Study 3A are strengths which lend weight to its results. For example, when reducing the number of predictors in the analyses, at least one variable was retained in the model at each step, regardless of the lack of significant correlations between predictors and DVs at the univariate level. In addition, the use of hierarchical multiple regression for model testing provides a more rigorous test of the model than the stepwise alternatives that have often been used to examine adjustment models in schizophrenia.

It has been argued that some of these exploratory techniques, such as nonsignificant variable deletion, and the forward selection, backward deletion, and stepwise statistical regression methods, capitalise on chance and allow statistical criteria to overshadow the meaning and interpretation of variables (Tabachnick & Fidell, 1989). Yet much of the published research investigating coping with schizophrenia has relied upon these more controversial techniques to examine adjustment models. For example, Ritsner et al. (2000) measured a total of 47 variables in a sample of 210 inpatients with schizophrenia (and 175 nonpatient controls) to examine the role of psychosocial factors in predicting quality of life. The authors used the stepwise backward selection method of multiple regression to exclude all statistically insignificant variables from their model (Ritsner et al., 2000).

In fact, stepwise, backward and forward selection procedures seem to be the regression methods of choice for much of the schizophrenia research reviewed for the present research program (for example, Bechdolf et al., 2003; Lobban et al., 2004; Lysaker et al., 2005b; Orsel et al., 2004; Ponizovsky, Grinshpoon, Sasson, & Levav, 2004; Rocca et al., 2005; Selten et al., 2000a; van den Bosch et al., 1992). Examining univariate correlations to exclude variables or select significantly related variables for inclusion in analyses is also common practice (for example Brekke et al., 2005; Eklund and Backstrom, 2005; Lecomte and Mercier, 2005; Lobban et al., 2004; Lysaker et al., 2001; Romney, 1995).

In terms of small sample sizes, Andres et al. (2003) conducted a factor analysis of their new coping measure, and subsequent multiple regression analyses, using a sample of 32 people with schizophrenia spectrum disorders. Finally, MacDonald (1997) conducted structural equation modelling on just 46 early psychosis patients in order to examine a stress and coping model of social networks and perceived social support in schizophrenia. Thus, the use of exploratory techniques and suboptimal sample sizes have been employed in numerous published studies examining models of adjustment to schizophrenia. This practice highlights the preliminary nature of this field of study, as well as the difficulty of obtaining the large sample sizes that are recommended for stringent model testing. Further, the inherent complexity of multidimensional vulnerability-stress models of outcome in schizophrenia justify the use of exploratory techniques to enhance preliminary model-building and testing. However, future research employing larger numbers of participants and a more stringent methodology is required in order to validate and extend the results of Study 3A.

Limitations and Future Research

Many of the psychometric and methodological limitations outlined in previous chapters also apply to Study 3A and will not be repeated here. However, two previously discussed limitations warrant further discussion. First, as for Study 2, the inclusion of additional measures may have enhanced or clarified the results of Study 3A. For example, previous research has found that a range of other variables may have direct effects upon negative symptoms and adjustment levels in schizophrenia. These variables include premorbid personality (Solano & De Chavez, 2000), poor self-esteem (Barrowclough et

al., 2003), presence of the deficit syndrome (Carpenter et al., 1988), and social support (Hultman et al., 1997; Ritsner et al., 2000).

Second, despite the inadequate numbers of participants, both the proportion of significant models, and the models' applicability to three separate domains of adjustment, was very encouraging. As Tabachnick and Fidell (1989) argue, for large participant numbers, the test of the null hypothesis that no relationships exist between dependent and independent variables "becomes trivial because it is almost certain to be rejected. Testing multiple R is more interesting with fewer cases" (p. 154). Thus, the evidence supporting the direct effects model found in the present study suggests it has promising utility for understanding adjustment to negative symptoms and indicates further testing on larger samples is warranted.

The cross-sectional nature of Study 3A provides only a limited test of the proposed direct effects model of adjustment to negative symptoms. A longitudinal study employing a prospective design is required in order to fully examine the role of both objective symptom level and subjective experience variables in adjustment. In addition, the amount of significant variance accounted for in adjustment variables was fairly modest in many cases. This suggests that future research incorporating additional negative symptom-related objective and subjective factors may enhance the predictive value of the direct effects model. Future testing may well benefit from excluding the direct effects of control appraisals from the vulnerability-stress-coping model.

In conclusion, Study 3A provided evidence that the direct effects of negative symptom stressor level, insight, appraisal, and coping accounted for significant variance in vulnerability-stress-coping models of adjustment to all five negative symptoms. Further, findings from the present study provided support for the predictive utility of the direct effects model for one or more adjustment domains across all five SANS symptoms. However, the presence and degree of direct effects varied considerably according to the negative symptom under investigation, the contribution of predictor variables, and the adjustment variable in question. Across negative symptoms, primary appraisals and avoidant forms of coping emerged as the most consistent predictors of adjustment. Generally, insight and the secondary appraisal of control contributed little to prediction, and may need to be excluded from future investigations of the vulnerability-stress-coping

model. The direct effects model provided the most consistent fit for the distribution of depressive and anxious symptoms. Notably, the direct effects model of objective factors and subjective experience variables provided the greatest predictive utility for alogia and avolition, the negative symptoms with the largest sample sizes. This finding raises the possibility that the direct effects model may demonstrate greater utility for anhedonia, attention, and blunting, if larger sample sizes are employed.

CHAPTER 8
STUDY 3B: EXPLORING THE MEDIATING EFFECTS OF APPRAISAL AND COPING WITHIN A MODEL OF ADJUSTMENT TO INDIVIDUAL NEGATIVE SYMPTOMS OF SCHIZOPHRENIA

Study 3 investigates the role of objective and subjective factors in relation to a vulnerability-stress-coping model adjustment to individual SANS symptoms. It has been proposed that four types of factors influence adjustment to negative symptoms: objective stressor level, in the form of clinician-rated SANS negative symptom scores, insight, and ACNSQ appraisal and coping. Two different mechanisms of association may exist between variables within the negative symptom vulnerability-stress-coping model. In the previous chapter, Study 3A examined evidence for the direct effects of objective and subjective factors on three different domains of adjustment. Study 3B investigates a second, more complex type of linear relationship that may exist between the stress and coping variables, a mediating relationship.

As stated previously, a mediating relationship is said to exist if one variable has an impact on another through its influence on a third variable, the mediator (Baron & Kenny, 1986). It is proposed that, in addition to the direct effects observed between variables, appraisal and coping may have a mediational role in the associations between objective and subjective factors within the model. Chapter 8 presents a cross-sectional exploratory study of the mediating effects of negative symptom appraisal and coping in schizophrenia. Three different mediating models of appraisal and coping are investigated: Model A, appraisal mediates the relationship between insight and coping; Model B, coping mediates the relationship between objective stressor level and adjustment; and Model C, coping mediates the relationship between appraisal and adjustment. In addition to exploring potential mediating effects, Study 3B seeks to further investigate the construct validity of the ACNSQ, and its appraisal and coping variables.

As reviewed in Chapter 3, vulnerability-stress models of schizophrenia propose that subjective factors, such as appraisal and coping, may have an important beneficial effect on the relation between stress and adjustment in schizophrenia. Despite a

substantial increase in research examining psychological factors associated with schizophrenia in recent years, the mechanisms of effect have defied simple explanation. As a result, there is a strong need to develop and explore more complex models of individual person-factors hypothesised to effect adjustment to schizophrenia. In their model, Lazarus and Folkman (1984) propose that appraisal acts as mediator in the relationship between stress-related factors and coping. In addition, it has been suggested that coping may act as mediator in the relation between antecedent stress and psychopathology (Parker & Endler, 1992) in the stress and coping process.

Few previous studies that examined appraisal and coping in schizophrenia have gone beyond direct effects models to examine data for more complex indirect relationships. Of these, the majority have investigated the presence of interactive or buffered effects. Only a small number of researchers have developed theoretical models to investigate potential mediators in the associations between individual psychological factors in schizophrenia (Brekke et al., 2005; Holloway & Carson, 2002; Liberman, 1986; Mann, 2003; Ritsner et al., 2003a; Strauss, 1989a; Zissi et al., 1998). Findings from these studies have been inconsistent, and the differences in methodology and focus makes comparing results difficult.

Potential mediators investigated have included symptom severity, appraisal variables such as symptom distress, mastery, control and self-efficacy, and various coping paradigms (for example, Eklund and Backstrom, 2005; Pratt et al., 2005; Vollrath et al., 1998; Yanos et al., 2001). A small number of studies have investigated these variables as potential mediators within a stress and coping framework. Evidence has been presented to suggest that coping may mediate the influence of appraisal on adjustment (Ritsner et al., 2003a; Ritsner et al., 2006a; Zissi et al., 1998), and the effect of objective vulnerability indicators on adjustment (Vollrath, et al. 1998). Further, previous findings indicate that appraisals may mediate the relation between objective factors and adjustment (Brekke et al., 2005). However, the author is not aware of any published research that has empirically examined SANS negative symptoms and the existence of mediated effects between objective stressor levels, insight, appraisal or coping in relation to adjustment.

As for all the studies in this research program, the lack of prior research in this area dictates that Study 3B is largely exploratory. As a result, no specific hypotheses were

made about the nature of mediating effects between objective indicators and subjective experience variables. Due to small sample sizes, it was only possible to examine simple, single-stage mediating effects models, rather than models incorporating all of the negative symptom-related variables contained within the vulnerability-stress-coping model which forms the basis of this research program.

Method

Participants

As outlined previously, the same participants were used for Study 2 and Study 3, with one exception. A multivariate outlier was detected in Study 3A and was dropped from all further analyses, reducing the alogia sample size to 56 participants. This reduced alogia sample was also used for Study 3B.

Measures and Procedure

Chapters 6 and 7 contain details of the method of administration of the objective and subjective variables examined within the model. In brief, objective stressor levels were total scores on the five SANS symptom dimensions. Insight was measured by the IS subscales of Relabel, Awareness, and Treatment Need. Two aspects of appraisal were measured for each of the 5 negative symptoms. Primary appraisal consisted of ACNSQ severity and distress appraisals while secondary appraisal was measured by a control rating. Coping was measured by mean scores on the three ACNSQ coping subscales for each negative symptom. Adjustment variable measures were: schizophrenic symptoms, combined total scores on the SANS and SAPS, excluding the symptom score for the symptom under investigation; subjective psychopathology, individual BSI subscale total scores for interpersonal sensitivity, somatization, depression, combined anxiety and phobic anxiety, and hostility. Lastly, subjective quality of life was measured using total scores on the SLDS.

Statistical Analyses

Preliminary screening procedures were presented in Chapters 6 and 7. To examine evidence for the presence of mediator variables, the insight, appraisal, and coping variables for each symptom were examined separately to avoid partialling their effects

from one another. Prior to conducting the main analyses, it was necessary to examine the first order correlations between the independent, dependent and mediator variables for evidence of significant relationships. If all three variables were significantly related to each other, regression analyses could then be conducted for evidence of mediation.

Figure 8.1 contains the model of hypothesised relationships in a mediational model presented in Figure 3.3 (repeated here for ease of reference). To provide support for a mediational model, it is necessary to demonstrate four patterns of relationships within the regression sequence. (1) The independent variable (IV) and the dependent variable (DV) should be related (path a in Figure 8.1). (2) The IV and the mediator variable should be related (path b). (3) The mediator variable and the DV should related (path c). (4) When the mediator variable is controlled, the previous relationship between the IV and DV should diminish or disappear (Baron & Kenny, 1986).

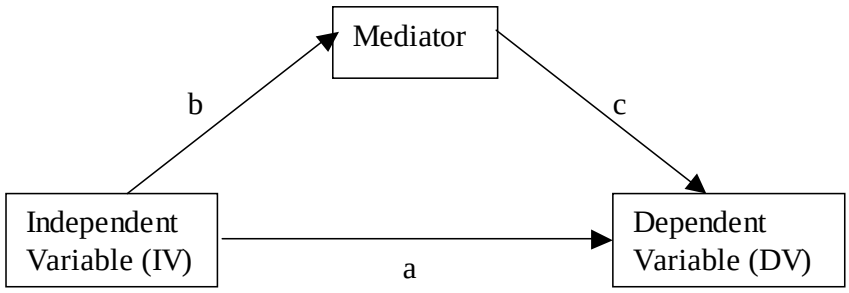

Figure 8.1. The paths of association between variables within a mediating model.

These four patterns of relationships can be examined in a three-stage sequence by conducting two separate regression analyses. In stage 1, the mediator under investigation is regressed onto the IV. In stage 2, the DV is regressed onto the IV. In stage 3 the mediator is then added as a predictor on the second step of the regression so that the DV is regressed onto both the IV and mediator. Specifically, support for the presence of mediation is obtained by: (1) significant effects for the IV in the first regression (path b), (2) significant effects for the IV on the first step of the second analysis (path a), (3) a reduction in significance for the IV on the second step, and (4) significant effects for the mediator in the second step of the second regression analysis (path c) (Baron & Kenny, 1986). The standardized regression coefficient β was used as the unit of association in all

models.

According to Baron and Kenny (1986), strong support for a mediational model exists when the standardised β coefficient for the effect of the IV on the DV is reduced to zero after controlling for the mediator. However, the authors argue that the multi-causal nature of most psychological phenomena make it unrealistic to expect to find a mediator that accounts for the entire variance in an outcome measure, thus eliminating the relationship between IV and DV entirely (Baron & Kenny, 1986). Instead, a more reasonable goal is to demonstrate a reduction in the relationship, either by a decrease in the size of β or the loss of significance.

A brief discussion is required of two other statistics reported in Study 3B. The first is Adjusted R^2 which represents the amount of total variance accounted for in the DV after controlling for error variance. According to Tabachnick and Fidell (1989) *R* tends to be overestimated, and the smaller the sample size, the greater is this overestimation. Given the small sample sizes in Study 3, Adjusted R^2 measure of variance employed in the present study. The second is R^2 Change, which represents the unique contribution than an IV makes to the prediction of a DV. When an IV is entered on the second step of a regression equation, R^2 Change represents the amount of total variance in the DV that an IV accounts for after the influence of the IV entered first is removed from the second IV. However, R^2 Change fails to account for overestimations in R^2. Thus, the unique contribution of the IVs entered in stage 3, the mediators, is calculated as the difference between stage 2 Adjusted R^2 and stage 3 Adjusted R^2.

Four mediating models were originally to be investigated in this study, however first order correlations indicated that the necessary preliminary relationships were not present in the data to examine one of the appraisal mediating models. This was the proposal that appraisal may mediate the impact of objective stressor level on coping. Correlation analyses revealed nonsignificant relationships between each of the five SANS symptom score stressors and their respective ACNSQ appraisal variables. However, the necessary preliminary relationships were present to conduct limited testing of the other mediating models proposed, one for appraisal and two for coping. Thus the models investigated in Study 3B were whether appraisal mediates the relation between insight and coping, and whether coping mediates the relationship between objective stressor level and

adjustment, or between appraisal and adjustment.

Results

As for Study 3A, the present study only provided a cross-sectional test of the associations between variables. Consequently, the use of the standard regression terms of predictor and prediction are not meant to indicate a causal relationship between IVs and DVs.

Correlations

Correlations between the IVs of SANS symptom score; IS insight subscales Relabel, Awareness, and Treatment Need; ACNSQ appraisals of severity, distress, and control; and ACNSQ coping subscales; were presented in Tables 6.7, 6.8, 6.9, and 6.10. Due to the removal of one participant from the alogia sample, new correlations between IVs for alogia were conducted. Table 8.1 contains these correlations. Pearson correlations between negative symptom- related factors and the three domains of adjustment: objective schizophrenic symptoms, subjective psychopathology, and SQOL, are contained in Tables 7.1, 7.3, 7.5, 7.7, and 7.9.

Where the necessary significant associations were found, correlations between participant characteristics and IVs (Appendices 6F, 7A, and 7B), and participant characteristics and DVs (Appendices 7C, 7D, 7E, 7F, and 7G) were examined to determine whether participant characteristics needed to be controlled for in the mediating models. There was one significant association. Marital status was significantly related to distress appraisals for avolition, and was entered first as a covariate in the analysis examining the impact of distress appraisals on SQOL for participants with avolition. It did not impact upon results and was excluded from the final equation.

Table 8.1

Correlations between SANS Symptom Score, Appraisal, Insight, and Coping Subscales for Alogia (N = 56)

	SANS	IS Insight			ACNSQ Appraisal			ACNSQ Coping	
	Alogia score	Relabel	Awareness	Treatment	Severity	Distress	Control	Active	Avoidance
Stressor									
SANS Alogia score									
IS Insight									
IS Relabel	-.24								
IS Awareness	-.24	.60****							
IS Treatment Need	-.11	.39***	.36**						
ACNSQ Appraisal									
Severity Appraisal	.15	-.15	-.15	-.03					
Distress Appraisal	.03	.08	-.03	.03	.56****				
Control Appraisal	-.11	.05	.05	.24	-.03	-.04			
ACNSQ Coping									
Active Coping	-.51****	.15	.38***	-.03	-.26*	-.14	.22		
Avoidance	.32*	-.21	-.14	.04	.16	.23	-.21	-.06	
Emotional Coping	-.17	.22	.34**	.34*	-.18	.07	.29*	.31*	-.01

 # p <.06 **p* < .05 ***p* < .01 ****p* < .005 *****p* <.0005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire

SANS = Scale for the Assessment of Negative Symptoms IS = Insight Scale

Note . Higher SANS scores indicate higher levels of symptoms. Higher scores for severity and distress appraisals indicate higher levels, higher scores for control appraisals indicate greater control. Higher insight scores indicate greater insight. Higher coping subscale scores

Mediating Models

Model A. Appraisal Mediates the Effects of Insight on Coping

The first group of analyses examined whether the direct effect of insight on coping was mediated by appraisal. Model A is depicted in Figure 8.2. Correlation analyses were conducted to determine which of the 27 potential models (3 ACNSQ appraisal variables x 3 IS insight subscales x 3 ACNSQ coping subscales) for each negative symptom met the necessary preliminary associations, as outlined above. Significant associations between IVs, and IVs and DVs were present to test four versions of Model A: one for attention problems and three for avolition. The three-stage process as outlined above, involving two separate regression analyses, was conducted separately for each of the four versions of Model A tested. Table 8.2 contains the results of the four individual regression sequences (A1, A2, A3, A4) conducted to determine whether appraisal mediates the effect of insight on coping.

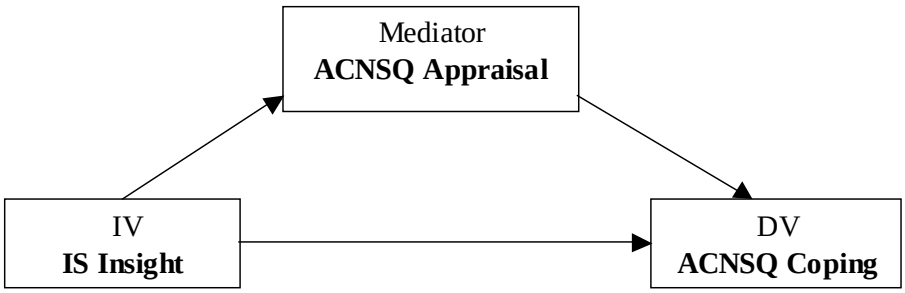

Figure 8.2. Model A: ACNSQ Appraisal as a mediator in the relationship between insight and ACNSQ coping.

The test of significance for the full model, for each version of Model A examined, is displayed on the fourth line of each model in the last three columns (in bold font). Of the four models examined, one model failed to meet all criteria for a mediating model.

Attention

Model A1 tested the proposal that for the 48 participants reporting attention problems, the direct effect of Treatment Need insight on Emotional Coping was mediated by severity appraisals. This model was partially supported. As can be seen from Model A1 in Table 8.2, stage 1 (first regression) results demonstrated that higher levels of Treatment Need insight predicted lower severity appraisals for attention problems. Stage 2 (second regression, first step) demonstrated that higher levels of Treatment Need also predicted greater use of Emotional Coping, accounting for 7% of variance in Emotional Coping scores. Stage 3 (second regression, second step) results indicated that when controlling for severity appraisals, there was a reduction in the direct effect of Treatment Need on Emotional Coping, indicating the presence of mediation.

The test of significance for the full model for A1 (displayed on the fourth line of model) indicated that together Treatment Need and severity appraisals accounted for significant variance in Emotional Coping with attention problems, F (2, 45) = 3.57, $p <$ .05. However, when the effect of Treatment Need on Emotional Coping was controlled, the effect of severity appraisals on Emotional Coping failed to reach significance, $\beta = -.24$ ($p = .109$). The addition of severity appraisal to the second step of the second regression equation (stage 3) only added an additional 3% increment to the total variance accounted for in use of Emotional Coping (calculated as the difference between stage 2 Adjusted R^2 and stage 3 Adjusted R^2). Thus, path c from Figure 8.1 above was not significant at the $p < .05$ level set, and Model A1 therefore failed to meet criteria for the presence of mediation (Baron & Kenny, 1986).

Avolition

In Models A2, A3, and A4, contained in Table 8.2, evidence was found for the mediating effects of control appraisals in the relation between insight and coping. These models are also depicted in Figure 8.2. In Model A2, control appraisals mediated the effect of Awareness of illness on Active Coping. Results indicated that for participants reporting avolition, greater Awareness of having a mental disorder predicted appraisals of greater control over their avolition (stage 1, first regression).

Table 8.2

Model A Regression Sequences [a] : ACNSQ Appraisal as a Mediator in the Relationship between IS Insight and ACNSQ Coping

Model Number	Negative Symptom	Stage	Independent Variable	Dependent Variable	β	Adjusted R^2	R^2 Change	*F*
A1	Attention	Stage 1	IS Treatment Need	ACNSQ Severity Appraisal	-.35*	.10		6.48*
	(*N* = 48)	Stage 2	IS Treatment Need	ACNSQ Emotional Coping	.29*	.07	.09*	4.32*
		Stage 3	IS Treatment Need and	ACNSQ Emotional Coping	.21	.10	.05^	
			ACNSQ Severity Appraisal		-.24^		**A1 *F* (2, 45) =**	**3.57***
A2	Avolition	Stage 1	IS Awareness	ACNSQ Control Appraisal	.29*	.07		5.87*
	(*N* = 65)	Stage 2	IS Awareness	ACNSQ Active Coping	.36***	.11	.13***	9.25***
		Stage 3	IS Awareness and	ACNSQ Active Coping	.27*	.18	.08*	
			ACNSQ Control Appraisal		.29*		**A2 *F* (2, 62) =**	**7.97*****
A3		Stage 1	IS Treatment Need	ACNSQ Control Appraisal	.30*	.08		6.36*
		Stage 2	IS Treatment Need	ACNSQ Active Coping	.48****	.22	.23****	18.77****
		Stage 3	IS Treatment Need and	ACNSQ Active Coping	.40***	.26	.06*	
			ACNSQ Control Appraisal		.25*		**A3 *F* (2, 62) =**	**12.34********
A4		Stage 1	IS Treatment Need	ACNSQ Control Appraisal	.30*	.08		6.36*
		Stage 2	IS Treatment Need	ACNSQ Emotional Coping	.31*	.08	.10*	6.73*
		Stage 3	IS Treatment Need and	ACNSQ Emotional Coping	.22	.15	.08*	
			ACNSQ Control Appraisal		.30*		**A4 *F* (2, 62) =**	**6.77*****

^*p* < .11. **p* < .05. ***p* < .01. ****p* < .005. *****p* <.0005 All tests two-tailed

ACNSQ = Appraisal and Coping with Negative Symptoms Questionnaire IS = Insight Scale

Note. Higher severity appraisals indicate higher levels, higher control appraisals indicate greater control. Higher insight scores indicate greater insight. Higher coping subscale scores indicate greater use.

[a] Each individual model (for example, A1, B2, C9) consists of a sequence of two regression analyses. Stage 1 = first regression, Stage 2 & 3 = second regression

High levels of Awareness also predicted greater reliance on Active Coping in response to avolition (stage 2, first step of second regression). However, this direct effect was reduced substantially when control appraisals for avolition were added to the equation (stage 3, second step of second regression). Appraised control contributed an additional 7% to the prediction of Active Coping when the contribution of Awareness was removed from control. Despite the mediating effect of control appraisals, Awareness remained a significant predictor of Active Coping and accounted for 11% of the 18% total variance in Active Coping accounted for. The full test of Model A2 was significant, F (2, 62) = 7.97, $p < .005$.

The results of Model A3 in Table 8.2 provided evidence that another component of insight, Treatment Need, may be influential in the relation between control appraisals and coping for people aware of their avolition. In this model, the direct effect of Treatment Need on use of Active Coping was mediated by control. Greater understanding about the need to treat their illness predicted greater use of Active Coping strategies in response to avolition, and accounted for 22% of total variance in Active Coping. This association was only partly mediated by control appraisals, with the relation between Treatment Need and use of Active Coping remaining highly significant in the final equation ($p < .06$). Control accounted for relatively little (4%) of the total variance of Active Coping when the influence of Treatment Need on control was removed. The full test of Model A3 was significant.

In the final appraisal mediating model, Model A4, avolition control appraisals also mediated the relation between Treatment Need insight and use of Emotional Coping in response to avolition. Greater Treatment Need predicted greater use of Emotional Coping, a direct effect moderately mediated by the association between greater appraised control and increased reliance on Emotional Coping.

Model B. Coping Mediates the Effects of Stressor Level on Adjustment

The model of coping as a mediator in the relation between stressor level and adjustment is depicted in Figure 8.3. Objectively rated SANS symptom scores provided a measure of the negative symptom stressors under investigation. For each negative symptom, there were a possible 21 models (1 SANS score x 3 coping subscales x 7 adjustment variables). Prior to model testing, Pearson correlations were again examined.

A total of five models met the preliminary criteria of associations for potential mediation, four for alogia, and one for attention problems. As outlined, each model was tested by conducting a three stage regression sequence consisting of two separate regression analyses. Stage 1 consists of the first regression analysis, and stages 2 and 3 are the first and second parts of the second regression analysis. Of the five versions of Model B tested, two for alogia and the one for attention met full criteria for the presence of mediation. Table 8.3 contains the results of the mediating effects of coping on the relation between stressor level and adjustment.

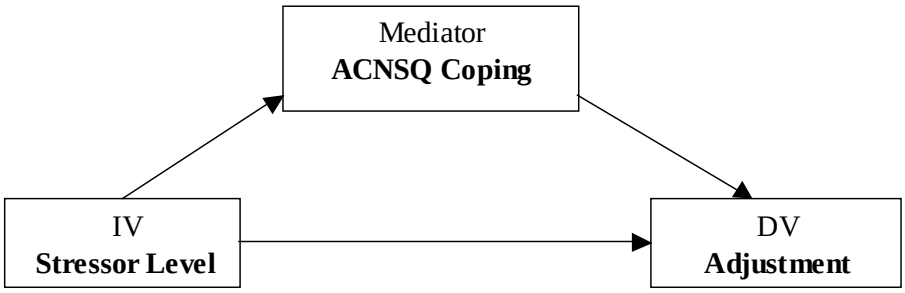

Figure 8.3. Model B: ACNSQ coping as a mediator in the relationship between SANS symptom stressor level and adjustment.

Alogia

The results suggested that coping with alogia acted as a partial mediator between stressor level and adjustment in two of the four regression sequences conducted (B1, B2, B3, B4). Higher levels of alogia significantly predicted greater subjective psychopathology as measured by scores on the combined anxiety and hostility subscales of the BSI. The relation between greater reliance on Avoidance and more anxious and hostile symptoms partially mediated this effect. Use of Avoidance contributed an additional 21% and 10% to the prediction of anxiety and hostility respectively. However, neither Active Coping nor Avoidance had a significant mediating effect on the relation between alogia and other schizophrenic symptoms.

Table 8.3

Model B Regression Sequences: ACNSQ Coping as a Mediator in the Relationship between Stress and Adjustment

Model Number	Negative Symptom	Stage	Independent Variable	Dependent Variable	β	Adjusted R^2	R^2 Change	*F*
B1	Alogia	Stage 1	SANS Alogia Score	ACNSQ Active Coping	-.51****	.25		19.39****
	(*N* = 56)	Stage 2	SANS Alogia Score	Schizophrenic Symptoms[a]	.48****	.21	.23****	15.90****
		Stage 3	SANS Alogia Score and	Schizophrenic Symptoms[a]	.47***	.20	.00	
			ACNSQ Active Coping		-.02		**B1 *F* (2, 53) =**	**7.81*** **
B2		Stage 1	SANS Alogia Score	ACNSQ Avoidance	.32*	.08		6.00*
		Stage 2	SANS Alogia Score	Schizophrenic Symptoms[a]	.48****	.21	.23****	15.90****
		Stage 3	SANS Alogia Score and	Schizophrenic Symptoms[a]	.44***	.21	.01	
			ACNSQ Avoidance		.12		**B2 *F* (2, 53) =**	**8.42*** **
B3		Stage 1	SANS Alogia Score	ACNSQ Avoidance	.32*	.08		6.00*
		Stage 2	SANS Alogia Score	BSI Combined Anxiety	.42***	.16	.18***	11.46***
		Stage 3	SANS Alogia Score and	BSI Combined Anxiety	.26*	.37	.22****	
			ACNSQ Avoidance		.49****		**B3 *F* (2, 53) =**	**17.24*****
B4		Stage 1	SANS Alogia Score	ACNSQ Avoidance	.32*	.08		6.00*
		Stage 2	SANS Alogia Score	BSI Hostility	.30*	.07	.09*	5.15*
		Stage 3	SANS Alogia Score and	BSI Hostility	19	.17	.11**	
			ACNSQ Avoidance		35**		**B4 *F* (2, 53) =**	**6.45*** **
B5	Attention	Stage 1	SANS Attention Score	ACNSQ Avoidance	.31*	.08		4.97*
	(*N* = 48)	Stage 2	SANS Attention Score	BSI Somatization	.39**	.13	.15**	8.18**
		Stage 3	SANS Attention Score and	BSI Somatization	.30*	.19	.07*	
			ACNSQ Avoidance		.29*		**B5 *F* (2, 45) =**	**6.53*** **

^ $p < .10$. # $p < .06$. *$p < .05$. **$p < .01$. ***$p < .005$. ****$p < .0005$ All tests two-tailed [a] SANS alogia score excluded

ACNSQ= Appraisal and Coping with Negative Symptoms Questionnaire, BSI = Brief Symptom Inventory Schizophrenic symptoms=SANS+SAPS

Attention

As can be seen from Table 8.3, Model B5 examined whether coping acts as a mediator between stress and adjustment for attention problems. The results provided evidence that Avoidance partially mediated the direct effect of SANS attention scores on somatization. While higher levels of attention remained a significant predictor of greater somatic complaints, greater use of Avoidance partially mediated this effect. Avoidance accounted for an additional 6% of the variance in somatization scores when entered into the equation (controlling for the influence of attention score on Avoidance).

Model C. Coping Mediates the Effects of Appraisal on Adjustment

The final mediating model examined tested the proposal that coping mediates the relationship between appraisal and adjustment. Model C is represented in Figure 8.4. Pearson correlations indicated that prerequisite relationships were present to examine 10 of the 315 potential mediating models across all symptoms. Of the 10 versions of Model C examined (again, each based on a regression sequence of two separate regressions), one was for alogia, three for attention problems, and six for avolition. Of these, several of the attention and avolition models met the full criteria for the presence of mediation. Table 8.4 contains the results of the regression sequences examined to test the mediating effects of coping on the relation between appraisal and adjustment.

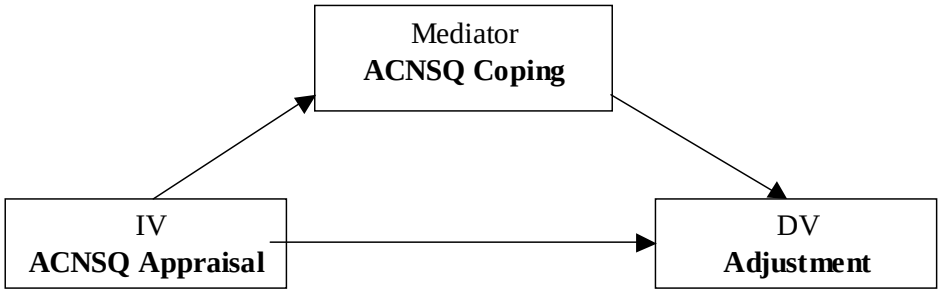

Figure 8.4. Model C: ACNSQ coping as a mediator in the relationship between ACNSQ appraisal and adjustment.

Alogia

The model tested for alogia failed to meet the full criteria for mediation. As can be seen in Model C1 from Table 8.4, these results demonstrated that appraisals of greater alogia severity significantly predicted both lower levels of Active Coping responses and the severity of total clinician rated schizophrenic symptoms (excluding alogia). Although the strength of the relation between severity appraisals and schizophrenic symptoms was reduced when level of Active Coping was accounted for, Active Coping did not add a significant increment to the prediction of schizophrenic symptoms.

Attention

Models C2, C3 and C4 in Table 8.4 examined the mediating effects of coping with attention problems in the relation between appraisals of severity of attention problems and adjustment. Of the three mediation models tested, C2 and C3 were supported while C4 just failed to reach significance. For Models C2 and C3, the relation between higher severity appraisals and reports of more somatic and depressive symptoms was partly mediated by use of Avoidance. In both models, the relation between severity and psychopathology lost significance when Avoidance was added in the final equation. Greater use of avoidant coping responses significantly predicted higher scores on both BSI symptom dimensions but the relation was particularly strong for depressive symptoms. In Model C4, Avoidance partly mediated the relation between appraisals of greater severity of attention problems and higher anxiety, although the relation between Avoidance and anxiety only approached significance ($p < .06$). Avoidance accounted for between 5% and 11% of the total variance in subjective pathology when controlling for the influence of severity appraisals on Avoidance.

Avolition

Models C5 to C10, also presented in Table 8.4, examined whether the use of Avoidance in response to avolition mediated the effects of avolition appraisals on adjustment. For all models, greater reliance on Avoidance was associated with poorer adjustment. Of the six models tested, three models (C5, C6, and C7) met full criteria for mediation. In each case, Avoidance mediated the relationship between appraisal and

Table 8.4

Model C Regression Sequences: ACNSQ Coping as a Mediator in the Relationship between ACNSQ Appraisal and Adjustment

Model Number	Negative Symptom	Stage	Independent Variable	Dependent Variable	β	Adjusted R^2	R^2 Change	*F*
C1	Alogia	Stage 1	ACNSQ Severity Appraisal	ACNSQ Active Coping	-.26*	.07		3.90*
	(*N* = 56)	Stage 2	ACNSQ Severity Appraisal	Schizophrenic Symptoms[a]	.30*	.07	.09*	5.34*
		Stage 3	ACNSQ Severity Appraisal	Schizophrenic Symptoms[a]	.25	.09	.04	
			and ACNSQ Active Coping		-.19		**C1 *F* (2, 53) = 3.79***	
C2	Attention	Stage 1	ACNSQ Severity Appraisal	ACNSQ Avoidance	.30*	.07		4.65*
	(*N* = 48)	Stage 2	ACNSQ Severity Appraisal	BSI Somatization	.35*	.10	.12*	6.37*
		Stage 3	ACNSQ Severity Appraisal	BSI Somatization	.26	.17	.08*	
			and ACNSQ Avoidance		.30*		**C2 *F* (2, 45) = 5.78****	
C3		Stage 1	ACNSQ Severity Appraisal	ACNSQ Avoidance	.30*	.07		4.65*
		Stage 2	ACNSQ Severity Appraisal	BSI Depression	.29*	.07	.09*	4.32*
		Stage 3	ACNSQ Severity Appraisal	BSI Depression	.18	.18	.13**	
			and ACNSQ Avoidance		.38**		**C3 *F* (2, 45) = 6.21*****	
C4		Stage 1	ACNSQ Severity Appraisal	ACNSQ Avoidance	.30*	.07		4.65*
		Stage 2	ACNSQ Severity Appraisal	BSI Combined Anxiety	.37**	.12	.14**	7.17**
		Stage 3	ACNSQ Severity Appraisal	BSI Combined Anxiety	.29*	.17	.07#	
			and ACNSQ Avoidance		.27#		**C4 *F* (2, 45) = 5.66****	
C5	Avolition	Stage 1	ACNSQ Severity Appraisal	ACNSQ Avoidance	.44****	.18		15.34****
	(*N* = 65)	Stage 2	ACNSQ Severity Appraisal	SLDS Quality of Life	-.27*	.06	.07*	4.85*
		Stage 3	ACNSQ Severity Appraisal	SLDS Quality of Life	-.13	.12	.08*	
			and ACNSQ Avoidance		-.31*		**C5 *F* (2, 62) = 5.38****	

^ $p < .10$ # $p < .06$ *$p < .05$ **$p < .01$ ***$p < .005$ ****$p < .0005$ All tests two-tailed [a] SANS alogia score excluded

ACNSQ=Appraisal and Coping with Negative Symptoms Questionnaire, BSI=Brief Symptom Inventory, SLDS=Satisfaction with Life Domains Scale

Table 8.4 continued.

Model C Regression Sequences: ACNSQ Coping as a Mediator in the Relationship between ACNSQ Appraisal and Adjustment

Model Number	Negative Symptom	Stage	Independent Variable	Dependent Variable	β	Adjusted R^2	R^2 Change	*F*
C6	Avolition	Stage 1	ACNSQ Distress Appraisal	ACNSQ Avoidance	.42***	.16		13.46***
	(N = 65)	Stage 2	ACNSQ Distress Appraisal	SLDS Quality of Life	-.32**	.09	.10**	7.15**
		Stage 3	ACNSQ Distress Appraisal	SLDS Quality of Life	-.20	.14	.07*	
			and ACNSQ Avoidance		-.28*		**C6 *F* (2, 62) =**	**6.23*** **
C7		Stage 1	ACNSQ Control Appraisal	ACNSQ Avoidance	-.35***	.11		8.53***
		Stage 2	ACNSQ Control Appraisal	SLDS Quality of Life	.36***	.11	.13***	9.15***
		Stage 3	ACNSQ Control Appraisal	SLDS Quality of Life	.26*	.17	.07*	
			and ACNSQ Avoidance		-.28*		**C7 *F* (2, 62) =**	**7.46*** **
C8		Stage 1	ACNSQ Distress Appraisal	ACNSQ Avoidance	.42***	.16		13.46***
		Stage 2	ACNSQ Distress Appraisal	BSI Interpersonal Sensitivity	.29*	.07	.08*	5.62*
		Stage 3	ACNSQ Distress Appraisal	BSI Interpersonal Sensitivity	.22	.08	.02	
			and ACNSQ Avoidance		.17		**C8 *F* (2, 62) =**	**3.65***
C9		Stage 1	ACNSQ Distress Appraisal	ACNSQ Avoidance	.42***	.16		13.46***
		Stage 2	ACNSQ Distress Appraisal	BSI Depression	.54****	.28	.29****	25.76****
		Stage 3	ACNSQ Distress Appraisal	BSI Depression	.51****	.27	.00	
			and ACNSQ Avoidance		.07		**C9 *F* (2, 62) =**	**12.91****
C10		Stage 1	ACNSQ Distress Appraisal	ACNSQ Avoidance	.42***	.16		13.46***
		Stage 2	ACNSQ Distress Appraisal	BSI Combined Anxiety	.47****	.21	.23****	18.24****
		Stage 3	ACNSQ Distress Appraisal	BSI Combined Anxiety	.39***	.24	.04^	
			and ACNSQ Avoidance		.21^		**C10 *F* (2,62) =**	**10.93****

^ p < .10. # p < .06. *p < .05. **p < .01. ***p < .005. ****p <.0(All tests two-tailed

ACNSQ=Appraisal and Coping with Negative Symptoms Questionnaire, BSI=Brief Symptom Inventory, SLDS=Satisfaction with Life Domains Scale

Note. Higher scores for Schizophrenic Symptoms and BSI subscales indicate higher levels of symptoms, higher scores on SLDS indicate greater satisfaction.

SQOL. For Models C5 and C6, higher avolition severity and distress appraisals predicted poorer SQOL. Higher severity and distress appraisals also predicted greater use of Avoidance in response to avolition. The relation between appraisal and quality of life was not longer significant when participants use of Avoidance was controlled. In Model C7, the relation between appraisals of greater control over avolition and more satisfaction with quality of life was only partially mediated by use of Avoidance. Overall, in Avoidance accounted for 5% to 6% of total variance in subjective adjustment when acting as a mediator. Greater use of Avoidance was negatively related to level of control and SQOL.

In the three remaining avolition models, Avoidance partly mediated the effect of appraised distress on psychopathology. As can be seen from Table 8.4, the relation between greater use of Avoidance and higher levels of interpersonal sensitivity and depressive symptoms was not significant in stage 3 of the models. The contribution of Avoidance to the prediction of anxiety in model C10 (3%) approached significance ($p < .10$).

Discussion

This study represents the first attempt to examine the mediating effects of negative symptom-specific appraisal and coping within a vulnerability-stress-coping model of adjustment to individual SANS negative symptoms. Partial support was found for all three of the mediating models able to be investigated. The results indicate that for people suffering from the negative symptoms of alogia, attention problems, and avolition, appraisal and coping may have mediating as well as direct effects within the stress and coping process. In the limited number of models that could be tested, there was evidence that appraisal served as a partial mediator in the relation between insight and coping. Further, coping partially mediated the relations between both objective stressor level and adjustment, and appraisal and adjustment. The findings suggest that the mediating effects of appraisal and coping vary according to both individual negative symptoms and the individual dimensions of insight, appraisal, coping and adjustment variables under investigation.

Study 3B results indicate the importance of investigating beyond direct effects models to explore more complex associations between subjective experience variables

and other factors associated with adjustment to individual negative symptoms of schizophrenia. In addition to supporting the proposal that mediating effects may operate in the relations between negative symptom-specific appraisals and coping responses and other variables within the vulnerability-stress-coping model, Study 3B provides further evidence of the construct validity of the ACNSQ. The following discussion will review findings for each of the three mediating models investigated and discuss them in relation to past research. As has been the case with findings from previous studies within the present research program, there is very little past research with which to make direct comparisons with the mediating effects found in Study 3B.

Model A. Appraisal Mediates the Effects of Insight on Coping

The first mediational model examined was the proposal that stressor appraisals may mediate the effects of insight on coping. This model was partially supported for people reporting avolition, with 15 to 26% of total variance in two dimensions of coping accounted for by the mediating models. It was found that two of the three components of insight investigated had both direct and indirect effects on coping with avolition. Only one aspect of appraisal, the secondary appraisal of control, was found to act as a mediator in the relation between insight and coping for people with avolition. None of the three dimensions of insight were associated with coping for alogia, anhedonia or blunting. For attention problems, the mediating model that was examined approached significance.

Specifically, for participants with avolition, a greater awareness that they were suffering from a mental disorder, and a greater understanding of the need for medical treatment of their disorder, was directly associated with greater reliance on active and emotional forms of coping. Indirectly, greater insight predicted higher appraised control over avolition which, in turn, predicted greater use of active and emotional forms of coping. Overall, the results indicate that control is a relatively weak mediator of the effect of insight on Active Coping, with the impact of insight remaining significant in both models after control was entered into final equations.

These findings concur with a recent review of vulnerability-stress models of schizophrenia. Azorin and Naudin (2002) emphasise the importance of subjective evaluations and coping with stress in differences observed in the adjustment of people with a vulnerability to schizophrenia. A sense of mastery or control, as well as

attributions about the meaning of experience, are some of the subjective evaluations believed to have a protective effect for people with schizophrenia (Azorin & Naudin, 2002). The findings of Study 3B suggest that for people with avolition, the measurement of insight may need to be included in evaluations of the protective benefits of subjective control and attributions in schizophrenia.

The author is unaware of any comparable published studies simultaneously investigating insight, control appraisals and coping. Lysaker et al. (2005a) examined associations between insight, coping and level of hope, a construct similar to control over life events. It was found that the combination of a high level of insight and a high degree of hope was associated with greater use of active coping. Yet, when the two groups of participants classified as having either high or low insight were compared, there were no main effects for coping type across six different coping categories (Lysaker et al., 2005a). In another study, Lysaker et al. (2003a) concluded that different types of coping strategies appear to be differentially related to deficits in different domains of insight. Unlike the present findings, the authors found that Treatment Need was unrelated to coping preference and low levels of awareness of symptoms were associated with higher levels of positive reappraisal coping.

In partial support of the present results, Donohoe et al. (2004) found that better insight was related to appraisals of greater self-control over health-related outcomes, and poorer insight was associated with attributing health and well-being to chance. In contrast, Donohoe et al. (2004) found that insight was not associated with coping, as was the case for many of the correlations conducted between insight and ACNSQ coping subscales in the present study.

Model B. Coping Mediates the Effects of Stressor Level on Adjustment

The second mediational model examined in Study 3 investigated whether coping mediated the effects of individual negative symptom stressor level on adjustment. Of the mediating models tested, Model B accounted for between 17 to 37% of total variance in subjective adjustment variables for participants with alogia and attention problems. Only one of the three ACNSQ dimensions of coping, Avoidance, appeared to act as a mediator. Findings indicated that the relation between the stressor measure of SANS symptom scores, and a small number of BSI dimensions, were partially mediated by use of

Avoidance. For these two groups of participants, there was evidence that objective stressor level is related to psychopathology both directly, and indirectly, via greater use of Avoidance which, in turn, was related to greater psychopathology.

Specifically, for participants reporting alogia, higher SANS alogia scores were directly associated with greater anxious and hostile symptoms. Greater reliance on Avoidance in response to higher levels of alogia partially mediated this association. For participants reporting attention problems, higher SANS attention scores were significantly directly related to somatic symptoms, as well as indirectly via the increased use of Avoidance. Greater use of Avoidance in response to higher levels of attention problems only partially mediated the impact of attention problems on somatic complaints. For the relationship between alogia and anxiety, and attention problems and somatization, stressor level remained a significant predictor of adjustment when controlling for the impact of Avoidance, indicating that the mediating effect of coping was relatively weak in these models.

Based on a mixed sample of past psychiatric outpatients, Vollrath et al. (1998) conducted a prospective study to determine whether coping mediated or buffered the relation between the personality trait of neuroticism and change in the nine clinical scales of the Millon Clinical Multiaxial Inventory (MCMI-II cited in Vollrath et al., 1998). Amongst other things, neuroticism may be characterised as vulnerability to stress. Some support was found for the mediating effects of coping type on the neuroticism for four of nine MCMI-II scales. In particular, the results indicated that the effect of neuroticism on somatization was mediated by reduced reliance on active coping and increased venting of emotions. Little support was found for the buffered effects model (Vollrath et al., 1998).

In their study based on a large sample of psychology students, Connor-Smith and Compas (2002) concluded that the effect of coping on the relation between stress and psychopathology was so small that there was no evidence of mediation. Rather, their results suggested that disengagement coping, similar to ACNSQ avoidant subscales, and secondary control coping, analogous to ACNSQ active and emotional subscales, were significant independent predictors of anxiety/depression. As found in Study 3B, disengagement coping was positively associated with higher levels of pathology.

Model C. Coping Mediates the Effects of Appraisal on Adjustment

The final mediating model investigated whether coping mediated the effect of appraisal on adjustment. Significant mediating models were found for participants reporting attention problems and avolition, accounting for between 12% and 18% of total variance in subjective adjustment variables. Evidence was found for a limited number of direct and indirect effects for all three aspects of appraisal on subjective psychopathology. In each case, only avoidant coping responses acted as a mediator of the effects of appraisal on adjustment.

For participants with attention problems, appraisals of greater severity were directly associated with greater levels of somatization, depression, and anxiety, and indirectly by greater use of Avoidance. For participants with avolition, both primary and secondary appraisals were both found to impact upon quality of life. Higher severity and distress appraisals were associated with greater use of Avoidance, which in turn was associated with poorer SQOL. When use of Avoidance Coping was controlled, the previously significant relationship between higher severity and distress appraisals and poorer SQOL were no longer significant. Conversely, higher control appraisals were associated with less reliance on Avoidance, while less reliance on Avoidance was associated with higher SQOL ratings. The impact of higher appraised control on better SQOL was only partially mediated by participants' use of Avoidance, as the association between control and SQOL remained significant when controlling for coping.

In a study similar Study 3B, Ritsner et al. (2003a) tested the possibility that coping has a mediating role in the relation between objective symptom levels, distress appraisals and adjustment to schizophrenia. Eight PANSS symptom dimensions and scores on the TBDI (Ritsner et al., 2002) were the IVs, while SQOL was the DV. Each potential predictor and mediator that met the prerequisite association requirements were examined separately in regression analyses. Of a potential 36 regression models, only 4 combinations of variables met preliminary criteria for possible mediation effects. Emotional and avoidant forms of coping mediated the relationship between three of nine PANSS symptom measures, total TBDI distress, and quality of life (Ritsner et al., 2003a). Total negative symptom scores and individual anergia (avolition) scores were unrelated to total subjective distress or any of the four coping dimensions examined.

Findings from the Vollrath et al. (1998) study discussed in the previous section also have some parallels with Model C results from Study 3B. The authors found that the impact of the stressor neuroticism on dysthymia was partially mediated by greater use of disengagement coping, analogous to ACNSQ avoidant forms of coping. Similarly, for participants with attention problems, Avoidance partially mediated the impact of negative symptom stressor level on depression, anxiety and somatization.

Roesch and Weiner (2001), used path-analyses to conduct a meta-analytic review of 27 studies to investigate whether eight categories of coping mediated the impact of control appraisals on adjustment to medical conditions. Results indicated that high internal locus of control and appraisals of greater controllability had significant indirect effects on better adjustment via the coping dimensions of approach, cognitive approach, behavioural approach, problem-focused and emotion-focused coping (Roesch & Weiner, 2001). In addition, low levels of controllability were indirectly related to poor adjustment through greater use of avoidance.

A recent review of coping research concluded that coping acts as a stabilising factor, helping to maintain psychological adjustment when an individual is placed in a situation requiring high adaptive demands (Moos & Holahan, 2003). In support of this argument, the authors reviewed a number of studies which found that approach or active coping was most helpful when there was a high level of stressors (Moos & Holahan, 2003). Further, the presence of psychiatric symptoms tend to be associated with less use of active coping responses and greater use of avoidance (Moos & Holahan, 2003), as was found for participants with alogia and attention problems in the present study.

Limitations and Future Research

In many of the significant models examined in Study 3B, appraisal and coping had only minor mediating effects. In many cases, the direct effect of the independent variable on the dependent variable remained significant after the effect on the mediator was controlled. Yet, implicit in mediating models is the assumption that the independent variable causes the mediator, which then goes on to cause the dependent variable (Baron & Kenny, 1986). As discussed above, Baron and Kenny (1986) argue that it is unrealistic to expect one mediator to account for the entire effect of the independent variable on the dependent variable.

Further, the transactional component of the stress and coping model proposes that appraisal and coping operate within a feedback loop where an individual continually re-evaluates the nature and impact of a stressor taking into account previous attempts at coping. Thus, in the present model of stressor level, insight, appraisal, and coping of adjustment to negative symptoms, it is assumed that just as more than one variable may have a mediating role at any point in time, a variable may simultaneously assert both direct and indirect effects on other variables. While Study 3 provides an important starting point to examine these potentially very complex associations within the model, it is acknowledged that the pared down models tested here are fairly limited in scope.

In addition, the cross-sectional nature of the design does not allow for conclusions regarding causality. Nor does the study design allow for clarification of potential confounding effects, such as overlap between distress appraisals, Avoidance and subjective psychopathology. Thus, prospective longitudinal studies are required to clarify the temporal nature of variables and issues of causality. Further, the models tested above need to be combined to form a fully integrated model. Only then will a comprehensive understanding be gained about the mediational processes involved in stress and coping with specific negative symptoms.

The use of terminology such as mediation and mediators in empirical studies is by no means consistent in schizophrenia research. Many of the models tested in the present study failed to meet criteria specified by Baron and Kenny (1986). A number of published studies examining mediational models of adjustment to schizophrenia diverge from these benchmark criteria in their methodology or conclusions. The lack of consistency in investigations of the mediating effects of personal factors in schizophrenia makes comparison difficult and at times, confusing.

For example, Zissi et al. (1998) attempted to test a mediational model of SQOL for people with severe mental illness. The authors proposed that the three self-related constructs would mediate the relation between IVs of objective life indicators and the DV, quality of life. However, although none of the five IVs were significantly correlated to the DV, and they did not explain significant variance in one of the mediators, the authors concluded that their findings were supportive of a mediating model. In addition, several schizophrenia stress and coping studies have concluded that their results support the

presence of mediating effects despite only employing direct effects analyses (for example, Jackson, Knott, Skeate, & Birchwood, 2004; Singh et al., 2003).

As for the previous studies in this research program, low participant numbers may have limited the findings of Study 3B. The lack of association between variables at the univariate level precluded testing of one of the proposed models and any mediating models for anhedonia or blunting. The absence of significant correlations may indicate a true lack of association. The pattern of mediator models that were able to be tested in Study 3B casts doubt over this interpretation, however, with significant mediating models present for the three negative symptoms with the largest sample sizes. Furthermore, data trends amongst the single order correlations suggest that low power was a factor in many of the nonsignificant associations.

There are several methodological weaknesses of Study 3B, primarily in relation to the analyses conducted. Low participant numbers restricted the number of variables included in mediational models to a single IV, DV and mediator. These limited models do not allow for a full exploration of the direct and mediating relationships that may exist between variables. This pared down approach to testing for mediating effects is not uncommon (for example, Ritsner et al., 2003a), as much larger samples are required to simultaneously test multiple variables, such as with structural equation modelling (SEM). Other Study 3B methodological weaknesses include failing to control for measurement error in mediators, the potential presence of feedback and the lack of multiple measures of mediating constructs, all recommended in mediational analyses (Baron & Kenny, 1986). Baron and Kenny (1986) recommend the use of SEM rather than multiple regression as a method of overcoming some of these weaknesses. More recently, others have suggested the use of advanced methods to test the significance of mediational analyses (Mallinckrodt, Abraham, Wei, & Russell, 2006). These methods were beyond the scope of this research program and were not employed here. It is acknowledged that they may have produced alternative findings to those reported.

As discussed in previous chapters, variables that may have been potentially important were left out of the models. The voluminous body of schizophrenia research includes numerous variables that have been linked to negative symptoms, outcome or psychological factors in people with schizophrenia. For example, some previous research

has indicated that neurocognitive functioning may mediate the relationship between psychosocial functioning and subjective experience (Lysaker et al., 2001), and that social support may provide a buffer between stress and adjustment in schizophrenia (Hultman et al., 1997). The relatively small amounts of total variance accounted for by the mediating models presented here suggests that other important factors need to be included in future models.

In conclusion, the results of Study 3B indicate that the subjective experience variables of appraisal and coping may both play a mediating role in adjustment to alogia, attention problems, and avolition. The direction and strength of this effect varied according to negative symptom as well as the different dimensions of appraisal and coping investigated. Limited evidence was found of mediating effects of all three types of appraisal measured by the ACNSQ, as well as the three types of ACNSQ coping subscales, providing further evidence of the construct validity of the questionnaire.

The findings from Study 3B illustrate the importance of investigating whether more complex associations exist in the relations between objective indicators and subjective experience variables in adjustment models for people with schizophrenia. These findings must be considered preliminary and need replication in future research correcting for the numerous limitations outlined above. Despite these drawbacks, the present study offers a unique exploration of the mediating effects of negative symptom-specific appraisal and coping factors within a vulnerability-stress-coping model of schizophrenia. As such, the present study offers greater understanding of the underlying process involved in adjustment to individual negative symptoms than can be gained from investigation of direct effects models alone.

CHAPTER 9
SUMMARY AND DISCUSSION

This research program represents the first systematic investigation of objective and subjective factors associated with adjustment to the SANS negative symptoms of alogia, anhedonia, attention problems, avolition, and emotional blunting. Of primary interest was how people with schizophrenia appraise and cope with these negative symptoms. Vulnerability-stress models of schizophrenia propose that both objective indicators and subjective variables are related to adjustment to the disorder. Stress and coping theory conceptualises adjustment to stress as a process influenced by primary and secondary appraisal and coping responses. This series of exploratory studies combined the two theoretical frameworks to investigate a vulnerability-stress-coping model of stressor level, insight, appraisal, and coping, with specific negative symptoms. Two models of the associations between these variables and adjustment to SANS symptoms were investigated: a direct effects model and a mediating model.

This final chapter is divided into a number of sections. In the first section, a summary is provided of the aims, methods, and principal findings of each of the three studies conducted. In the second and third sections, the theoretical and clinical implications of findings are discussed respectively. The fourth section of this chapter contains a discussion of methodological issues related to this research program. Finally, the last section of this chapter contains concluding remarks.

STUDY 1

Study 1 used a rationally derived semi-structured interview, the Appraisal and Coping with Negative Symptoms Interview Scale (ACNSIS), to conduct a qualitative examination of how 20 people with schizophrenia appraised and responded to negative symptoms. In terms of the general goals of the study, the subjective experience variables of primary and secondary appraisal and coping, were found to be relevant to the investigation of negative symptoms, and a large number of coping responses were gathered to enable the construction of a coping questionnaire. In terms of specific aims, the findings suggest that the ability to accurately gauge the presence and severity of negative symptoms differed according to symptom. Participants were least aware of the presence of blunting and most

aware of avolition. For symptoms that participants were aware of, the level of agreement between severity appraisals and objective ratings of negative symptoms were highest for anhedonia and lowest for blunting.

The nature of and relationships between primary appraisals of severity and distress, and secondary appraisals of control also differed across negative symptoms, as did the type and number of coping responses utilised. Participants rated alogia as the least severe and distressing, and reported the fewest number of coping responses in relation to this symptom. On average, participants with avolition were most aware of the presence of this symptom, and reported the most coping strategies in response to it. In terms of the type of coping strategies used, the majority of responses to alogia and attention problems were cognitive, while for avolition and blunting the majority were behavioural. The differences in the number of behavioural, cognitive, and socialisation strategies reported was significant for alogia and avolition.

Finally, there was evidence that the number of ACNSIS coping responses reported for individual symptoms was differentially related to participant variables such as objective negative symptom severity, age, number of years education, and length of illness, but not gender. Due to the small sample sizes these results must be viewed with caution. Overall, Study 1 findings suggested that there seemed to be substantial differences in the how individuals subjectively appraised and responded to specific negative symptoms, and that these differences warranted a larger scale investigation.

STUDY 2

Building on the findings of Study 1, Study 2 reported the use of rational and empirical methods to develop and evaluate the first negative symptom specific questionnaire of its kind, the Appraisal and Coping with Negative Symptoms Questionnaire (ACNSQ). It was argued that the development of a reliable and valid instrument to evaluate the subjective experience of negative symptoms was a necessary precursor to the empirical exploration of the proposed vulnerability-stress-coping model models of adjustment to individual negative symptoms. Study 2 was presented in two stages presented in two separate chapters.

Study 2A Summary

Study 2A reported the development and empirical investigation of the ACNSQ. The questionnaire was designed to measure three aspects of appraisal, as well as general and negative symptom-specific coping items, derived from Study 1 and a literature review. The questionnaire and a range of other instruments were administered to 119 people with schizophrenia living in the community. For each of the five negative symptoms they appraised as present, participants were required to make individual severity, distress, and control appraisals, and rate the frequency of use of between 29 and 49 coping responses. The results suggested that, as for Study 1, a substantial proportion of the participants were unaware of negative symptoms objectively rated as present by the interviewer.

Exploratory factor analyses of coping items resulted in three empirically derived coping dimensions for each of the five negative symptoms. With some variations, these dimensions were similar across symptoms and were categorised as active coping, emotional coping, and forms of avoidance. Mean subscale scores were calculated based on these dimensions and subscale correlations indicated that they were generally empirically distinct. There are similarities between the ACNSQ coping subscales and those of previous studies examining coping with the symptoms of severe mental illness (Andres et al., 2003; Bak et al., 2001a; van den Bosch & Rombouts, 1997; Yanos et al., 2003). Cronbach's alpha, item total correlations, and mean inter-item correlations indicated a moderate to high degree of internal reliability for the coping subscales.

The degree of reliance on a particular type of coping was found to be closely related to negative symptom type, mirroring the findings of several previous studies (Boker et al., 1984; Mueser et al., 1994; Takai et al., 1990; Wiedl, 1992). For example, for participants reporting anhedonia, mean scores for Palliative Avoidance indicated this form of response was used *sometimes* to *often* to cope with anhedonia, and that it was the most utilised form of coping for this symptom. In comparison, participants with attention problems indicated that, on average, they used Avoidance *very little* to cope with the symptom, while Active Coping was relied upon the most heavily. Comparison of subscale use based upon paired t-tests indicated that there were significant differences in the degree to which the same participants relied upon similar strategies in response to different negative symptoms. In contrast, there was also correlational evidence that participants often used the same types of

coping in response to more than one negative symptom.

Overall, the findings of Study 2A demonstrated that ACNSQ coping subscales were relevant and internally reliable for this sample of people with schizophrenia. In addition, coping with negative symptoms was found to be multidimensional and partly symptom-specific, supporting the importance of examining individual negative symptoms separately.

Study 2B Summary

Using the same participant sample, Study 2B further investigated the psychometric properties of the ACNSQ by examining 1) the nature of primary and secondary appraisals of negative symptoms 2) the retest reliability of appraisal and coping variables, and 3) the construct validity of appraisal and coping by the strength and direction of associations with other related stress and coping variables.

As for coping, there was evidence of symptom specific differences in the primary and secondary appraisal of negative symptoms. For example, for severity appraisals, 33% of participants with alogia rated the severity of the symptom as mild compared to 11% for anhedonia, while 5% of participants reporting avolition indicated the symptom was severe, 20% of those with blunting indicated a high level of severity. In terms of appraised distress, 28% reported that alogia caused them very little distress, compared to 9% for blunting. In contrast, 13% of participants with attention problems indicated that this symptom caused them a great deal of distress while only 4% of those suffering from anhedonia considered the amount of distress they felt to be high. Finally, control appraisals varied from 26% with no control over alogia to 11% with no control over avolition. The proportion of participants rating their degree of control over their symptoms as high or a great deal, ranged from 11% with attention problems to 3% for avolition and blunting. Correlations between appraisals for pairs of negative symptoms indicated that some participant appraisals were highly related across symptoms, but not all. While there was a strong positive relationship between severity appraisals and distress appraisals within symptoms, the relationship between these appraisals and secondary control appraisals differed across symptoms.

Retest reliability analyses were based upon 30 participants readministered the ACNSQ 4 to 6 weeks following initial testing. Retest findings must be treated with caution as symptom sample numbers were extremely low, particularly for anhedonia and

blunting. The results indicated that negative symptom appraisals were only moderately stable, and varied according to symptom. Appraisals of attention problems were most reliable while those for blunting were the least. In terms of the type of appraisal, severity appraisals showed the most change across time, and distress and control appraisals were the most consistent. In general, the coping subscales demonstrated a higher degree of retest reliability. As for appraisals, the retest reliability for coping was lowest for blunting. The avoidant coping subscales were the most consistently reliable across symptoms.

Evidence of the construct validity of the ACNSQ was demonstrated by the differential patterns of relationships between appraisal and coping variables and SANS symptom scores, insight, and three domains of adjustment. Many of these relationships resembled those previously reported by others investigating appraisal and coping with the symptoms of schizophrenia (for example, Lecomte & Mercier, 2005; Mueser et al., 1997b; Ritsner et al., 2006a; Selten et al., 2000c; Wilder-Willis et al., 2002).

A number of limitations of Study 2 have been discussed including relatively small sample sizes, the use of a less stringent alpha level for statistical significance, and the failure to conduct diagnostic screening for schizophrenia and depression. Despite these limitations, the preliminary findings presented in Study 2A and B suggest that the ACNSQ is generally reliable and valid, and holds great promise as an illness and symptom-specific coping measure for the negative symptoms of schizophrenia.

STUDY 3

Study 3 expanded the investigation of appraisal and coping with negative symptoms by exploring evidence to support two models of the relations between objective and subjective factors. Using a cross-sectional design, Study 3 was conducted simultaneously with Study 2 and based upon the same sample of 119 people with schizophrenia. Within the vulnerability-stress-coping model, the variables proposed to be related to adjustment to negative symptoms were: objective stressor severity, insight, primary and secondary appraisals, and coping. A multidimensional approach was used to the measurement of focal variables within the model, including one objective and two subjective domains of adjustment. Another group of objective factors, pre-existing participant demographic and illness characteristics, were controlled in models where a

significant association was found with other variables. In parallel with examining support for the models, Study 3 further evaluated the construct validity of the ACNSQ.

Study 3A Summary

Study 3A examined data for evidence in support of a direct effects model of adjustment to individual negative symptoms of schizophrenia and involved conducting a series of hierarchical multiple regression analyses. It was proposed that SANS symptom scores, Insight Scale subscales, ACNSQ severity, distress and control appraisals, and ACNSQ coping would have independent and additive effects on seven indices of adjustment. Separate analyses were carried out for each of the variables within the adjustment domains of objective schizophrenic symptoms, subjective psychopathology, and subjective quality of life. The results of Study 3A indicated that the direct effects model had predictive utility for one or more adjustment domains for all five negative symptoms. Further, the presence and degree of direct effects varied considerably according to the negative symptom stressor under investigation, the contribution of objective and subjective variables, and the domain of adjustment examined.

Regression analyses provided further support for the ACNSQ, although the predictive utility of the appraisal and coping variables varied considerably. Overall, primary appraisals and avoidant forms of coping emerged as the most consistent predictors of adjustment while control appraisals were not significant predictors of adjustment. Across all negative symptoms, greater reliance on avoidant forms of coping was associated with higher levels of subjective psychopathology, as were appraisals of greater symptom severity and distress. Conversely, higher severity and distress appraisals were associated with lower SQOL. Active Coping, Emotional Coping, and Active/Emotional Coping were also associated with higher levels of subjective pathology for some negative symptoms.

There was very limited evidence of the predictive utility of the third subjective variable investigated, insight. With only three exceptions, the dimensions of insight were not significantly related to models of adjustment to individual negative symptoms. For participants with alogia, greater awareness of illness significantly predicted higher levels of depression and hostility. For participants with anhedonia, higher awareness of the need for treatment was significantly related to higher SQOL although the full direct

effects model failed to account for significant variance in SQOL.

Results concerning the predictive utility of objective factors also indicated negative symptom-specific differences. For objective stressor levels, higher SANS symptom scores were associated with higher levels of pathology for alogia and attention. Higher SANS symptom levels were also associated with poorer SQOL for attention and avolition. One participant characteristic had a significant direct effect on negative symptom adjustment: for participants with avolition, being single was associated with lower levels of psychopathology.

Across all negative symptoms, the direct effects model was demonstrated to have the most utility in explaining individual differences in subjective pathology, particularly depressive and anxious symptoms, with nine of the ten models significant for these affective symptoms. The direct effects model successfully accounted for variance in schizophrenic symptoms for alogia, attention, and blunting. Only the models for avolition and attention problems were able to account for significant variance in SQOL. In summary, the findings of Study 3A indicate that the direct effects of ACNSQ appraisal and coping with specific negative symptoms, in conjunction with other factors, were moderately successful in accounting for variations in adjustment to schizophrenia.

Study 3B Summary

Study 3B investigated data for evidence of mediation in the relations between mediating objective stressor level and subjective experience variables contained within the vulnerability-stress-coping model of adjustment to individual negative symptoms. Three different mediating models of appraisal and coping were investigated: Model A, ACNSQ appraisal mediates the relationship between insight and ACNSQ coping; Model B, ACNSQ coping mediates the relationship between stressor level and adjustment; and Model C, ACNSQ coping mediates the relationship between ACNSQ appraisal and adjustment.

There was evidence of mediating effects for both appraisal and coping for participants reporting alogia, attention problems, and avolition. As would be expected given the complexity of the psychological factors investigated, results indicated the presence of partial mediation only. As for other findings in the research program, the direction and strength of these mediating effects varied according to negative symptom,

as well as the dimensions of appraisal and coping being investigated. Model A explored whether appraisal mediated the effect of insight on coping. Three analyses were significant, all for avolition. For participants with avolition, there was evidence that control appraisals partly mediated the relation between two aspects of insight, awareness of mental illness and insight into the need for treatment, and reliance on active and emotional forms of coping. In all three tests of Model A, greater insight was related to appraisals of greater control over avolition, which in turn was related to greater reliance on Active Coping and Emotional Coping in response to avolition.

Model B explored whether the impact of stressor levels on adjustment was mediated by coping. Three analyses indicated the presence of mediation, two for the symptom of alogia, and one for attention problems. In all three cases, there was evidence that Avoidance partially mediated the relation between SANS symptom scores and levels of subjective psychopathology. Greater objective levels of the negative symptoms were associated with greater reliance on Avoidance which in turn was associated with higher self-reports of anxious, hostile or somatic symptoms.

The third mediating model, Model C, explored was whether the effects of negative symptom appraisals on adjustment were mediated by coping. Two of the analyses for attention problems, and three for avolition suggested that coping asserted an indirect effect on subjective psychopathology, while two more approached significance. For participants reporting attention problems, higher appraisals of severity were associated with greater reliance on Avoidance which, in turn, was associated with greater reports of depressive and somatic symptoms. For participants with avolition, the impact of both primary and secondary appraisals on SQOL was mediated by Avoidance. Higher severity and distress appraisals were associated with greater use of Avoidance which, in turn, was associated with poorer SQOL. Conversely, higher control appraisals were associated with less Avoidance, which was associated with higher ratings of SQOL.

Mediating effects were found for both primary and secondary appraisals, as well as the three types of ACNSQ coping subscales, providing further, although limited, evidence of the construct validity of the questionnaire. Further, in contrast to the absence of direct effects for control appraisals in Study 3A, there was evidence that control appraisals may act as a mediator in the relations between insight and coping, and may be

implicated in the relations between Avoidance and SQOL, for participants reporting avolition. These findings illustrate the importance of considering more complex associations between personal protective factors such as appraisals and coping, and outcome in schizophrenia.

The limitations of Study 3 are similar to those already discussed for Study 2. Low participant numbers were the major limitation. For Study 3A, the direct effects models accounted for the most variation in adjustment for the symptoms with the largest samples, alogia and avolition. This suggests that sample sizes may have limited the results. For Study 3B, small samples prevented the use of structural equation modelling and more comprehensive tests of models of mediational processes involving all the stress and coping variables. In addition, the pattern of significant models suggests that the models that were examined may have been restricted by small sample sizes. Mediating effects were unable to be detected for the symptoms with the two smallest samples. These results emphasise the need to conduct further research using larger samples. Further, the cross-sectional designs of Study 3A and 3B, and the exploratory nature of analyses mean that results may only be considered preliminary and no conclusions regarding causality may be drawn.

THEORETICAL IMPLICATIONS

The theoretical contributions of this research program can be grouped into a number of domains of interest. The first is the utility of the vulnerability-stress-coping framework in the prediction of adjustment to negative symptoms. The second is the nature of objective and subjective variables in the process of adjustment to negative symptoms.

The Utility of the Vulnerability-Stress-Coping Model in the Prediction of Adjustment to Negative Symptoms

As far as the author is aware, this research program represents the first application of a combined vulnerability-stress and stress and coping framework to examine adjustment to individual SANS negative symptoms. Overall, the present research provided evidence in support of the utility of this theoretical framework for guiding research in this specialised domain. The theoretical contributions of the model may be divided into two areas: the identification of factors relevant to negative symptom adjustment, and the development and

testing of models of associations between these factors and adjustment to negative symptoms.

The Identification of Influential Factors

Based upon both vulnerability-stress models of schizophrenia and stress and coping theory, two types of variables were examined in relation to negative symptom adjustment: objective indicators and subjective experience variables. The findings indicated that both groups of factors have some utility in explaining adjustment to individual negative symptoms. As stated previously, the cross-sectional nature of this research does not allow for conclusions concerning causality to be drawn in relation to the role of these factors. In addition, the relatively small amounts of total variance accounted for within direct effects models suggests that one or more other variables influential in the adjustment to negative symptoms were excluded from the vulnerability-stress-coping model.

Objective Factors

According to the proposed model, two forms of objective factors may be relevant to adjustment to negative symptoms: pre-existing participant characteristics and stressor level. Participant characteristics were considered to be of secondary importance, and controlled for in analyses when required. The two alternative theoretical frameworks on which the present research is based both view participant characteristics as of secondary importance in the stress and adjustment process. This position was supported by the findings of the present research which found a general lack of association between participant characteristics and adjustment to negative symptoms. Although not examined within a full mediating effects model of adjustment to negative symptoms due to the low participant numbers, only one variable, marital status, was influential in any of the direct effects models. Further, this result must be treated with caution due to the small sample size (n = 12) within the non-single marital status category for the symptom in question (avolition).

The other objective indicator included within the model, stressor severity, was a focal variable within the model, and was measured using clinician-rated SANS symptom levels. The two theories on which the research is based offer conflicting views regarding the importance of stressor characteristics in adjustment to negative symptoms. Vulnerability-stress models of schizophrenia view stress as a central determinant of

outcome, and symptom levels have been conceptualised as an indicator of biological vulnerability (Lecomte & Mercier, 2005; Nuechterlein & Dawson, 1984; Zubin & Spring, 1977). Therefore, according to this theoretical outlook, it would be expected that objective SANS symptom levels would be significantly associated with adjustment to specific negative symptoms. This perspective received moderate support with direct effects models for alogia, attention, and avolition indicating that objective SANS symptom levels were significantly associated with one or more indices of adjustment. In all cases, higher stressor levels were associated with poorer objective and subjective measures of adjustment.

Conversely, the contextual model of stress and coping theory adopted by Lazarus and Folkman (1984) views situational appraisals and coping responses as being of primary importance in the stress process. The objective nature of stressors are viewed as being of secondary importance. Thus, based on stress and coping theory, objective symptom levels would not have a significant role in adjustment to negative symptoms. While results were mixed, tests of direct effects models offered greater support for the proposal that the objective nature of negative symptom stressors are influential in the process of stress and coping with negative symptoms. Objective symptom levels were significantly associated with one or more domains of adjustment for alogia, attention problems, and avolition.

In contrast to the present research, within both theoretical models, sources of stress are usually conceptualised to be environmental in origin, and thus external to an individual. In the last two decades, a growing number of studies have adopted a similar approach, and provided evidence that schizophrenic symptoms have a role as internal sources of stress in models of adjustment to the disorder (for example, Bak et al., 2001a; Boschi et al., 2000; Brekke et al., 1993; Lecomte & Mercier, 2005; Mann, 2003; Middelboe, 1997; Wiedl & Schottner, 1991). The findings from the present research also support the proposal that symptoms may be accurately conceptualised as internal sources of stress, and that when examined in this way, both theoretical models retain their descriptive and predictive utility in explaining individual variations in stress-related outcome.

Subjective Factors

The vulnerability-stress-model demonstrated variable utility in identifying the subjective factors associated with adjustment to negative symptoms. In accord with both vulnerability-stress models and stress and coping theory, there was evidence that the

subjective factors of appraisal and coping were both significantly associated with adjustment to SANS symptoms. In line with the vulnerability-stress framework, there was evidence that both objective indicators and subjective experience variables were influential in adjustment. Further, substantial support was found for relation to most of the subjective factors proposed to be of central importance within a stress and coping framework (Lazarus, 1999; Lazarus & Folkman, 1984). A central tenant of this theory is that subjective emotional responses to stress are integral to the stress process.

Two conceptualisations of distress were examined within the model. Distress appraisals in relation to individual SANS symptoms were examined as a predictor, while non-negative symptom subjective emotional responses to stress were examined as a domain of adjustment. With regard to the latter, findings from many of the direct effects analyses provided strong support for the stress and coping theory emphasis on emotional responses to stress. It was consistently found that the vulnerability-stress-coping models of adjustment to negative symptoms demonstrated the greatest utility in the prediction of the subjective pathology domain of adjustment. The predictors objective stressor levels, primary appraisals, and coping dimensions all accounted for a greater proportion of variance in subjective pathology than in the other two domains of adjustment.

In relation to insight, there was limited evidence that the dimensions of insight were directly associated with adjustment to negative symptoms. This result is in accord with previous studies which have concluded that insight is not closely related to negative symptoms (Kim et al., 1997; Schwartz, 1998a). The present findings partially support the suggestion made by Iancu and his colleagues (Iancu et al., 2005) that insight and the symptom appraisals may represent separate constructs.

The contextual nature of stress and coping theory proposes that stressor-related cognitions are influential in the adjustment process. Thus, it was proposed that beliefs concerning the presence, symptoms, and treatment of schizophrenia would be related to appraisal and coping with negative symptoms. Partial support for this prediction was found at the univariate level. Significant correlations were found between the dimensions of insight and primary appraisals and/or secondary appraisals, and a range of coping dimensions across all symptoms except blunting.

Conversely, results from direct effects analyses did not support this prediction with

insight failing to account for significant variance in adjustment to negative symptoms with only two exceptions. It could be argued that this finding is not inconsistent with stress and coping theory which emphasises the stressor-specific nature of appraisals. The insight dimensions examined were not strictly stressor-specific as they did not relate directly to awareness or treatment of individual negative symptoms. Further, the results need to be viewed with caution as small sample sizes meant that only a limited number of insight variables were included within the regression analyses.

The Development and Testing of Models of Association

Based on the theoretical frameworks which informed the present research, it was proposed that two types of associations may be influential in adjustment to negative symptoms: direct and mediated effects. There was evidence to support the presence of both types of associations, although small sample sizes meant that the mediating effects of subjective factors within the model were only partially tested. The author is unaware of any vulnerability-stress models of schizophrenia that have made specific proposals regarding the nature of associations between objective and subjective factors in adjustment to specific negative symptoms. Generally, investigators have examined models of direct effects, and to a lessor extent, interactive effects, between proposed vulnerability and stress factors and adjustment (for example, Nuechterlein et al., 1992a). Testing models of interactive effects was beyond the scope of the present research.

Vulnerability stress models of schizophrenia offer two alternative predictions regarding the influence of subjective variables on adjustment. Subjective factors are conceptualised within vulnerability-stress models as either protective factors which reduce the risk of relapse by mediating the effects of vulnerability to stress on adjustment, or alternatively, poor coping ability is seen as a potential vulnerability factor which may have a detrimental impact on adjustment to stressors (Lukoff et al., 1984). The latter conceptualisation of the role of coping in adjustment was supported by the findings of this study. With only a few exceptions, appraisals of greater severity and distress, and greater reliance on most coping dimensions were significantly associated with higher levels of both objective and subjective pathology. This trend was also supported by the two models which indicated a significant direct effect of insight on adjustment. In both cases, greater awareness of the need for treatment was associated with higher levels of depression and

hostility in models of adjustment to alogia.

More recently, a very small number of studies have proposed that subjective factors may have a mediating effect on the relations between objective factors and adjustment in schizophrenia (Brekke et al, 2005; Eklund and Backstrom, 2005; Zissi et al., 1998). The mediational effects found in the present research support the findings of these recent studies, and demonstrate the need to go beyond direct effects models to examine more complex models of associations in adjustment to negative symptoms. For example, Eklund and Backstrom (2005) also found support for the proposal that subjective experience mediated the influence of objective factors on adjustment. As in the present research, the authors also found that the objective and subjective variables asserted significant direct effects on adjustment.

Brekke et al. (2005) recently tested a model proposing that subjective factors may mediate the impact of an objective indicator of vulnerability on adjustment. The authors found that the relation between the objective indicator (neurocognition) and functional outcome was mediated by social cognition, social competence, and social support. The subjective factors examined by Brekke et al. (2005) are conceptually related to the insight, appraisal, and coping variables examined in the present research, although the authors adopted a social focus rather than a subjective focus. The negative symptom focus taken in the present research supports the importance of examining the role of subjective experience in measures of adjustment in schizophrenia.

The numerous significant direct effects of stressor, appraisal, and coping on adjustment to negative symptoms do not directly accord with the model of stress and coping proposed by Lazarus and Folkman (1984). Generally, variables within the model are viewed as having an interactive or mediational association (Lazarus, 1999). In particular, stress and coping theory proposes that the relation between stressor and coping response is mediated by appraisal, and that ‘coping is a powerful mediator of the emotional outcome of a stressful encounter’ (p. 121, Lazarus, 1999). The small number of mediated effects found for appraisal and coping in the present research provide theoretical support for the latter proposal. For alogia and attention problems, there was evidence that coping mediated the effect of objective indicators of stressor level (SANS symptom scores) on emotional responses (subjective psychopathology). A lack of association at the single order level

prevented the investigation of the former prediction.

The Nature of Objective Indicators and Subjective Experience Variables

Factors within the vulnerability-stress-coping model were divided into two conceptually distinct categories at both the predictor and adjustment level: objective indicators and subjective experience variables. The results suggest that the two types of variables have utility in relation to both roles within the model. The following discussion will focus on the nature of these variables in relation to prediction.

The Nature of Objective Indicators

Stressor level, in the form of individual SANS symptom levels, was the focal objective indicator examined within the model. A major contribution of this research program was the multidimensional approach taken to the investigation of negative symptom-related stress. Specifically, individual SANS symptom dimensions were examined separately within their own vulnerability-stress-coping framework, rather than simply investigating appraisal and coping with global negative symptoms. The findings of the present research program support this approach. A range of symptom-specific differences were found in the relations between objective indicators and subjective experience variables and their utility within the direct effects and mediating models. These differences support the existence of separate, although related, negative symptom dimensions, as has been found in previous research (Keefe et al., 1992; Kelly et al., 1999; Mueser et al., 1994; Peralta & Cuesta, 1995a). This research program extends these findings by providing some evidence to suggest that the subjective experience of negative symptoms is also multidimensional.

The Nature of Subjective Experience Variables

Three types of subjective experience variables were examined as predictors within the model: insight, appraisal, and coping.

The Nature of Insight

The inclusion of dimensions of insight as subjective experience variables within the model makes an important theoretical contribution to the negative symptom and insight research domains. As discussed previously, there was evidence at the univariate level that

greater insight was associated with greater reliance on active and emotional forms of coping while reduced insight was related to more avoidant forms of coping. The utility of insight in direct effects models of adjustment was disappointingly small. Results from mediating effects analysis suggest that for some negative symptoms, aspects of insight may have an influential indirect role to play in adjustment to negative symptoms. These findings suggest that nature of insight in the negative symptom adjustment process is worthy of further investigation.

The Nature of Negative Symptom Appraisals

As far as the author is aware, the present research represents the first attempt to apply both primary and secondary appraisals to the subjective experience of individual negative symptoms. The two levels of appraisal are proposed to be interdependent and equally relevant within stress and coping theory (Lazarus, 1999). Contrary to stress and coping formulations, the importance of secondary appraisal was largely unsubstantiated in the present research. Appraised control did not significantly contribute to any of the direct effects models of adjustment for the five negative symptoms. There was a limited amount of evidence at the univariate level that control appraisals were associated with some objective indicators and subjective experience variables. The most interesting finding was the small number of analyses which demonstrated that appraised control of avolition partially mediated the effect of two dimensions of insight on coping. Results from another mediating effects model also hinted at the possibility that control may have a more complex association with SQOL for participants with avolition. The direct effect of control appraisals on SQOL was partially mediated by greater reliance on avoidant forms of coping in response to avolition.

Another important theoretical contribution was the inclusion of alternative measures of negative symptom presence and severity: one objective and one subjective. The discrepancies found between objective and subjective evaluations of SANS symptoms has important theoretical implications for the research domains of coping with schizophrenia and negative symptom. Within schizophrenia coping research, it cannot be assumed that objective perceptions of stressors are closely related to those of participants, and it may be important to provide a form of reliability check to fully investigate predictive models of adjustment. Investigators studying the subjective experience of negative symptoms have

been divided over the degree to which people with negative symptoms are aware of their impairments. The moderate to large discrepancies found with regard to the presence and severity of individual symptoms supports the finding by some researchers that subjective appraisals of negative symptoms may be relatively inaccurate (for example, Hamera et al., 1996; Selten et al., 2000b).

This finding does not discount the importance of considering the subjective appraisal of negative symptoms. On the contrary, differences found in the objective and subjective evaluations of negative symptoms draws attention to the need for clinicians to avoid making assumptions about the experience of their clients. Further, these findings reinforce the importance of discussing clients' experience of their symptoms and taking a consultative approach to the treatment of negative symptoms. Importantly, it would be incorrect to interpret the present results as evidence that that only objective evaluations of negative symptoms are correct or accurate. Rather they highlight the fact that clinicians and clients have different sources of information available to them. Within the SANS, the clinician rates observable phenomena, such as emotional blunting, by examining facial expressions and listening to vocal inflections. However, these behavioural indicators may not be a true reflection of how a person is feeling, a source of information that only clients are privy to. As discussed in Chapter 2, participants in a number of studies, clinically rated as manifesting emotional blunting, report experiencing the same range and intensity of emotions as non-blunted individuals (Kring et al., 1993; Kring & Neale, 1996; Sweet et al., 1998).

Thus, the low level of agreement between the researcher and participants in the present study draws attention to the importance of including both objective indicators and subjective experience in theoretical models of adjustment to negative symptoms. This argument is further supported by the results of direct effects models in the present research. Only appraised severity of attention problems was significantly associated with greater levels of schizophrenic symptoms and subjective pathology. Conversely, appraisals of distress caused by negative symptoms had significant direct effects on schizophrenic symptoms, subjective pathology, and SQOL, for alogia, attention problems, avolition or blunting. Higher distress was associated with poorer adjustment in all cases. These findings suggest that appraisals of symptom-related distress may be a more important

indicator of the impact of negative symptoms on adjustment than either objective or subjective levels of symptom severity.

The Nature of Negative Symptom Coping

The present studies extend current understanding regarding the subjective responses made to specific negative symptoms by providing both qualitative and quantitative detail about the nature of these responses and their associations with other objective and subjective factors. Previous studies examining the subjective experience of negative symptoms have relied upon rationally derived coping dimensions (for example, Carr, 1988; Carr & Katsikitis, 1987; Mueser et al., 1997b; Wiedl & Schottner, 1991), or the use of generic coping instruments (for example, MacDonald et al., 1998; Meyer, 2001; Ritsner et al., 2003a). The present research makes of significant theoretical contribution by deriving empirical-based coping dimensions for individual SANS symptoms.

Negative symptom coping responses were found to be multidimensional, and although there were some similarities, they did not conform to the dimensions previously used to categorise coping responses. Cross-sectionally, greater reliance on forms of avoidant coping was significantly related to poorer adjustment, with the most consistent association between greater use of avoidance and higher subjective psychopathology levels. This pattern of association was evident across all five SANS symptoms. This finding is in accord with the stress and coping theory emphasis on the importance of emotional responses in relation to stressors appraised as threatening or negative.

There was a notable difference in the associations between the dimensions of coping and objective versus subjective indices of adjustment. There was a trend for greater reliance on active and emotional forms of coping to be related to lower objective schizophrenic symptoms, although all but one of these associations failed to reach significance. In contrast, active and emotional forms of coping tended to be related to greater subjective pathology. Greater use of avoidance was consistently associated with higher pathology levels regardless of whether the evaluation was objective or subjective.

Further, the relative lack of association between active and emotional forms of coping and improved adjustment to SANS symptoms makes an important theoretical contribution to negative symptom research. Cognitive and behavioural responses involving positive reappraisals, problem solving, and social support seeking are generally seen as

more adaptive and likely to enhance adjustment to a stressor (Penley et al., 2002). Yet in the present research, these forms of coping were significant predictors of greater levels of subjective pathology in adjustment to alogia, anhedonia, and attention problems. The only model for which these 'adaptive' forms of coping acted a significant predictor of better adjustment was for Active Coping with attention problems and objective levels of schizophrenic pathology. This divergent finding for attention problems lends support to the argument that this cognitive symptom may not belong within the SANS as a negative symptom dimension (Andreasen et al., 1995).

Although only cross-sectional in nature, the results suggest that avoidant forms of coping may have a much more influential role in the process of adjusting to these SANS symptoms. This finding is particularly noteworthy in light of the fact that Study 2A mean ACNSQ subscale scores indicated that participants generally relied more heavily on active and emotional forms of coping. Further, findings concerning the stronger association between avoidance and adjustment imply that vulnerability-stress proposal that effective coping acts as a protective factor is generally not applicable to adjustment to negative symptoms. Others have also found that avoidant or 'negative' forms of coping were the strongest determinants of adjustment to stressors for people with schizophrenia (for example Bechdolf et al., 2003). Conversely, other investigators have found the opposite, with objective and subjective factors significantly related to active forms of coping but not passive or avoidant forms (for example Middelboe, 1997). Clearly, more research using a longitudinal design is needed to explore this association between coping and adjustment to negative symptoms. The findings of the present study concerning avoidant forms of coping and adjustment also have important clinical implications which will be addressed in the following section.

CLINICAL IMPLICATIONS

The results of this research program have important implications for mental heath workers committed to enhancing the lives of clients living with negative symptoms. As discussed in Chapter 2, until relatively recently, very few effective non-pharmacological treatment options were available to ameliorate the impact of negative symptoms. As a result, despite their widely acknowledged side-effects and lack of efficacy for many clients, antipsychotic medications have remained the treatment of choice for negative symptoms.

The significant findings concerning the role of subjective experience variables in adjustment to negative symptoms supports growing evidence that psychosocial interventions offer a valuable alternative for reducing the impact of negative symptoms on the lives of people with schizophrenia. Furthermore, findings concerning the nature of associations between objective and subjective variables and different domains of adjustment have clinical relevance to the treatment of negative symptoms.

Perhaps the most valuable clinical implication to emerge from the present research is simply the importance of examining an individuals' subjective experience of their negative symptoms. There was ample cross-sectional evidence to suggest that negative symptom appraisals and coping responses were strongly related to subjective adjustment dimensions such as anxiety and depression. To a much lesser extent, subjective experience variables were also significant predictors of another subjective wellbeing variable, SQOL, as well as objective adjustment in the form of schizophrenic pathology. All but two participants in Study 2 and 3 were prescribed antipsychotic medication, and the majority of participants had a moderate level of one or more negative symptoms. These findings indicate that simply dispensing medication can no longer be considered a satisfactory solution to treating negative symptoms, particularly for clinicians genuinely interested in improving the subjective wellbeing of clients.

Another related finding which has clinical implications is that objective symptom measures may provide a poor index of subjective wellbeing, and that a multidimensional approach is needed to comprehensively measure adjustment or recovery. Additionally, clinicians may no longer assume that their perceptions of the presence and severity of negative symptoms mirror those of their clients, nor that clinical judgements of pathology necessarily provide the most important indicator of adjustment. Thus, the present findings provide strong support for the recovery movement which emphasises the central role that individuals play in adjustment to their mental illness (Resnick, Fontana, Lehman, & Rosenheck, 2005). Evidence gained from the present research program suggests that with further refinement, the ACNSQ will provide a reliable and valid tool with which to assess individual appraisal and coping responses to negative symptoms.

Further, findings regarding the associations between appraisal and coping and negative symptom adjustment have direct relevance to coping enhancement programs

targeting negative symptoms. In particular, the strong association between reliance on avoidant forms of coping and greater subjective pathology offers an important avenue of intervention in these programs. These cross-sectional results suggest that behaviourally, clients should be taught to modify their passive responses to their negative symptoms and resist the temptation to avoid constructive activities and social contact. Cognitive interventions aimed at enhancing coping with negative symptoms must focus on addressing negative and self-critical cognitions by teaching clients to identify and change these unhelpful cognitions.

There is also some evidence to support teaching more efficacious active and emotional forms of coping. Detailed pre-program evaluations are required to assess individual associations between active and emotional forms of coping, negative symptom appraisals, and subjective pathology. Clinical interventions must be individually tailored so that they address the clients' pattern of appraisal and coping responses as well as specific negative symptoms.

In relation to symptom appraisals, the results indicate that it would be highly beneficial to use cognitive restructuring and other techniques to modify the maladaptive impact of negative symptom distress appraisals on subjective wellbeing. The modification of distress appraisals should occur in conjunction with coping enhancement. For example, by using therapeutic techniques such as pleasure planning and distraction to improve mood and quality of life, in parallel with an ongoing record of negative symptom appraisals, clients may learn that subjective wellbeing and negative symptom distress may be improved while severity appraisals may remain relatively unchanged. In this way, clients may learn that can improve their level of control over the adverse effects of their negative symptoms on their mood even though they may not be able to control the presence or severity of the symptom.

Findings concerning the association between greater insight and higher subjective pathology levels also have important implications for clinical interventions. The results suggest that interventions designed to enhance insight or coping must be used with caution. As already stated for interventions in general, the delivery of symptom and illness psychoeducation must be individually adapted to client needs. In particular, great care must be taken to ensure that improvements in insight or more accurate appraisals of negative

symptom presence or severity are not accompanied by higher levels of subjective distress or subjective symptoms such as anxiety or depression.

METHODOLOGICAL ISSUES

The design and implementation of this research program raises a number of important methodological issues which require discussion. While many issues may be categorised as belonging to more than one type, for ease of presentation they have been allocated to one of three sections. The first section is related to sampling issues, the second to assessment issues, and the third to design issues. Each will be discussed in turn and this section will end with a discussion of suggestions for future research aimed at remedying these methodological issues.

Sampling Issues

Perhaps the biggest limitation of this research program was the relatively small negative symptom sample sizes. As has been discussed above and throughout the earlier chapters, low participant numbers were problematic for a number of reasons including limiting the type of analyses which could be conducted and reducing the power of analyses. As has also been discussed previously, this problem is not uncommon in research requiring participants with schizophrenia. A further sampling issue relates to the recruitment procedure and non-random selection of participants. People with severe positive symptoms, dual diagnoses, and those that were judged to be unable to complete the taxing assessment procedure were excluded. This restrictive selection criteria, which was used in both samples, may have led to non-representative samples and limited the generalizability of the findings.

In addition to author imposed sampling bias, participant self-selection may have had a direct influence on results. It is probable that the people with schizophrenia who volunteered to participate in these coping studies, and indeed those who actively support research of any type, may differ along important dimensions, such as insight or beliefs about appraisal and coping, compared to non-participants. Self-selection may also account for the higher proportion of males found in the present studies, although the gender imbalance is relatively minor compared to other schizophrenia coping studies (for example, see Lysaker et al., 2005b; Ritsner et al., 2003a). One possible consequence of this

imbalance in the present research may have been a reduction in the power to detect gender differences.

Finally, discussion is required about an important issue which may be considered a sampling, assessment or design issue. While the two samples selected for the present research were all suffering from negative symptoms, the selection criteria did not include any attempt to select participants with primary rather than secondary negative symptoms.

There is considerable evidence that the origin of negative symptoms may have an important impact on the stress response and adjustment in schizophrenia. The concept of the deficit syndrome was developed in an attempt to differentiate between primary negative symptoms and those considered secondary to other factors such as depression, psychotic symptoms, and antipsychotic side effects (Carpenter et al., 1988). Patients with the deficit syndrome have been demonstrated to differ from non-deficit patients in relation to anhedonia (Kirkpatrick & Buchanan, 1990), emotional blunting (Kirkpatrick et al., 1996), affective stress responses (Cohen & Docherty, 2004), depression (Kirkpatrick et al., 1994), and higher negative symptoms generally (Bustillo, Kirkpatrick, & Buchanan, 1995).

Thus, a significant methodological weakness of this research program was the inability to distinguish between participants in relation to the nature of their negative symptoms. It is possible that the applicability of the proposed vulnerability-stress-coping model differs for primary as opposed to secondary negative symptoms. However, as discussed in previous chapters, after discussion with one of the founders of the DS, it was decided that resource constraints prevented the author from making a reliable and valid assessment of the deficit syndrome (B. Kirkpatrick, personal communications, February 11 & 24, 1999). The ramifications of being unable to conclusively distinguish between the source and nature of negative symptoms will be discussed in more detail in later sections.

Assessment Issues

A number of issues related to the assessment of individual variables and the process of assessment require discussion, including a number of potentially important variables not assessed. The first assessment issue concerns response bias, a potential problem associated with the use self-report instruments such as questionnaires. The first type of response bias which may have been problematic is social desirability bias. Due to the already lengthy assessment schedule, a separate social desirability scale was not included. It is

acknowledged that one needs to be included in a future study further evaluating the psychometric properties of the ACNSQ. The author made an attempt to limit this bias during testing by sitting in a position where participant responses were not visible, by answering any questions related to the assessment in a neutral manner, and by emphasising individual differences and the absence of right and wrong answers in the introduction.

Another form of potential response bias in the present studies is also referred to as a testing effect. Testing effects may have been a factor due to the lack of randomisation in the presentation of negative symptoms on the computerised version of the ACNSQ, and the fact that different methodologies were used with some participants completing a paper version of the questionnaire.

In addition, a marked discrepancy between Study 1 and Study 2 results regarding the presence of coping responses may be due to testing effects rather than indicate a true difference in participant samples. A large proportion of participants (38%) from Study 1 were unable to identify any coping strategies in response to one or more negative symptoms. In contrast, only one participant (.8%) indicated that they did not use any of the ACNSQ coping items for any particular symptom. These results may reflect the nature of neurocognitive impairments present in schizophrenia which make it easier for participants to identify the coping responses they do use, rather than the more difficult task of having to recall and then verbalise them. This discrepancy may be a consequence of the checklist approach and a response bias unrelated to this population. Regardless, it is not possible to determine the degree to which this discrepancy in the lack of coping responses is a true reflection of individual coping.

Another important assessment issue, also design-related, concerns the use of a single interviewer (the author) to recruit participants, conduct symptom evaluations, and administer all other measures. This was problematic for a number of reasons including the potential to increase social desirability bias, the lack of interrater reliability checks for SANS and SAPS assessments, and the impact that this restriction had on the number of measures that could be administered to participants. As has been discussed previously, a number of potentially important assessment measures were not included in the present research. These included a diagnostic schedule for schizophrenia and an objective measure of depression. Previous schizophrenia coping research has indicated that additional factors

that were not examined here, such as level of social support (Bechdolf et al., 2003) and various personality dimensions (Lysaker et al., 2003b), may be influential in the stress and coping process for people with schizophrenia. All would have been valuable additions to the research protocol.

In regard to assessment issues, individual differences in emotional response or positive emotion were also not assessed in the present studies. As there is accumulating evidence within the literature to suggest that emotional regulation may be closely related to the coping process (Folkman & Moskowitz, 2004), these aspects should be considered in further trials of the ACNSQ. Further, the findings suggest that differences in emotional regulation may be related to memory (Richards & Gross, 2000), a finding clearly relevant in relation to the study of negative symptoms. In addition, there is evidence that subjectively experienced negative emotional states may exacerbate pre-existing problems related to schizophrenia such as social skills deficits (Mueser et al., 1993) and thought and language dysfunctions (Dochterty, 1996). It has been argued that people with schizophrenia may be particularly impaired in their ability to recognise and respond to negative affect (Bellack, Mueser, Wade, Sayers, & Morrison, 1992) and demonstrate heightened emotional reactivity to daily stressors (Myin-Germeys et al., 2002; Myin-Germeys et al., 2001). It is unclear how these findings relate to the subjective experience of negative symptoms, particularly emotional blunting.

Horan and Blanchard (2003) used a laboratory setting to examine the relations between personality differences in affective response, coping and affective stress responses in a small sample of 36 male outpatients with schizophrenia. The authors found that trait negative affect was positively associated with maladaptive coping, and that both variables significantly predicted higher levels of artificially induced negative mood. Contrary to their expectations, the authors also found that negative mood was associated with greater use of adaptive coping.

Finally, related to individual differences in emotional regulation, there has been recent interest in the role of positive emotion in the stress process (Folkman & Moskowitz, 2000). The present research program focused on the measurement of negative emotional responses such as subjective levels of depression and anxiety and failed to assess any positive emotional responses. Research has produced some evidence that positive emotion

may occur at a similar level of intensity to negative emotions in relation to some chronic illnesses (Viney, Henry, Walker, & Crooks, 1989). In the study by Horan and Blanchard (2003) outlined above, the authors found that positive mood was positively, although nonsignificantly, associated with maladaptive coping (r = .28) but largely unrelated to adaptive coping (r = .07).

Design Issues

As its name implies, an important component of transactional stress and coping theory is that the coping process changes over time. Transactions or feedback occurs between different stages of the process and impact upon subsequent stages of the process. Thus, the cross-sectional nature of this research could only provide a limited test of the models, and does not allow for conclusions regarding causality or even the temporal nature of variables. In addition, confounding effects cannot be excluded with cross-sectional designs which seek to draw conclusions concerning the nature of associations between independent and dependent variables.

A related issue concerns the nature of individual negative symptoms and their conceptualisation as stressors within the proposed model. As argued throughout this research program, negative symptoms are multidimensional, complex constructs which are likely to have multiple causes. The cross-sectional design makes it impossible to accurately determine whether the negative symptoms on which the present research is based were in fact stressors which participants were responding to. There are a number of variables which may confound both objective and subjective evaluations of negative symptoms. For example, it is possible that distress appraisals were influenced to some degree by distress caused by other factors, and it was these factors which led to the observed negative symptoms. As discussed in Chapter 2, numerous factors such as medication side effects, positive symptoms, and depression have all been suggested as causes of secondary negative symptoms (Carpenter et al., 1988; Earnst & Kring 1997; Kirkpatrick et al., 1989; Schooler, 1994). As stated previously, it was not possible to distinguish between primary and secondary negative symptoms in this research program. The cross-sectional design also meant that the presence and nature of negative symptoms were potentially confounded with avoidant forms of coping, in addition to the aforementioned factors. A longitudinal design is required before it can be concluded with certainty that the proposed vulnerability-stress-

coping model is an accurate representation of the process involved in adjustment to this complex phenomenon.

Despite these methodological problems, a number of design aspects of the present research program helped to strengthen the conclusions drawn, and support the validity of the vulnerability-stress-coping model. The first of these was the use of a theory driven approach. The combined rational-empirical approach employed throughout each of the studies adds weight to the present findings. While exploratory techniques were employed with restraint, they occurred within a theoretical framework. Second, the small symptom sample sizes, while reducing the power of analyses to reject null hypotheses, lend weight to those findings which were significant. As has been argued previously, it is relatively easy to reject the null hypothesis with large sample sizes (Tabachnick and Fidell, 1989).

Another design limitation concerned how the direct effects and mediating models were tested. As discussed in Chapter 7, the use of structural equation modelling, which could not be used because of small sample sizes, offers several advantages over hierarchical multiple regression analyses when examining multivariate models. A further methodological limitation was the change in appraisal requirements from Study 1 to Study 2. The ACNSIS required Study 1 participants to appraise the average severity of the symptom over the previous week, while the ACNSQ requires participants to rate the average severity of symptoms over the past month. As discussed in an earlier section, there was a marked difference in the level of agreement between objective and subjective ratings of negative symptoms from Study 1 and Study 2.

Two possible explanations may account for this difference in the level of agreement. First, as many of the SANS ratings concern directly observable phenomena such as the presence of alogia, blunting, and attention during testing, the level of symptoms observed and rated during the interview for Study 2 may have substantially differed from average levels over the past month. This explanation is fairly unlikely as there is some evidence to suggest that negative symptoms are fairly stable across time, and are not likely to have fluctuated to a large degree over the period of a month (Mueser et al., 1994; Sayers et al., 1996).

The other possibility is that the extended time period over which the appraisal was made in Study 2 introduced greater error into all appraisal and coping data. That is, by

requiring participants to remember specific aspects of their emotional and cognitive functioning over the previous month, the appraisal rating may have been confounded by memory deficits, which have been well documented in schizophrenia (Walker et al., 2004). The potential impact that neurocognitive impairments may have in the study of subjective experience in schizophrenia is enormous, and represents a challenging methodological hurdle. As outlined in Chapter 2, there is well documented evidence of impairments in nearly every area of cognitive functioning in relation to schizophrenia (Kurtz, 2005), and negative symptoms in particular (Andreasen et al., 1992; Perlick et al., 1992). The use of additional tests to measure neurocognition may have helped to clarify the relation between these impairments and the present findings but was beyond the scope of this research program. Another potential solution to reducing the impact of memory impairments in evaluating appraisal and coping in schizophrenia will be discussed below.

DIRECTIONS FOR FUTURE RESEARCH

Remedies exist for most of the methodological issues raised above, and need to be employed in future research. For example, many of the sampling and assessment limitations may be directly addressed by using less restrictive selection criteria and having access to a much larger potential-participant population, and the use of multiple interviewers to provide reliability checks. Employing more stringent empirical methods such as the randomisation of materials and the use of multiple assessment sessions would be beneficial to allow for the administration of additional measures such as diagnostic interviewing and neurological assessments. The evidence presented above has indicated that there is a wide range of potentially relevant factors that may be explored in relation to the stress process and negative symptoms, including individual differences in emotional regulation or trait affectivity, positive affective responses, and the presence of the deficit syndrome. In addition, a prospective longitudinal design is required to clarify the transactional nature of the coping process in relation to the subjective experience of negative symptoms, and to fully evaluate the validity of the ACNSQ. As has been argued by others, while quantitative coping measures such as the ACNSQ have some advantages, they are unable to completely capture the dynamic, continually changing nature of the

coping process (Oakland & Ostell, 1996).

An important methodological issue discussed in a previous section was the presence of neurocognitive impairments in people with schizophrenia, and particularly negative symptoms. The potential impact of these impairments on the present findings is related to a long standing criticism directed at coping research employing similar methodologies. Folkman and Moskowitz (2004) have suggested that, of the many criticisms levelled at the coping checklist approach, the most prominent is the problem of retrospective report and the accuracy of recall about specific appraisals and responses that may have occurred up to a month ago. While problematic in non-psychiatric coping research, this issue is even more pertinent to the study of coping in relation to negative symptoms. Narrative approaches such as momentary coping assessments have been developed as a potential remedy to the problem of retrospective coping accounts (Folkman & Moskowitz, 2004). However, results from a comparative study suggested that there is some overlap between narrative and quantitative approaches, and that both offer advantages and disadvantages to the measurement of the coping process (Folkman & Moskowitz, 2004). The use of a narrative approach to investigate appraisal and coping with negative symptoms may provide a valuable avenue for future research.

Finally, in addition to clarifying the direct and mediation effects of negative symptom related variables, future research should investigate the presence of interactive or buffered effects. There is evidence to suggest that in combination several of the variables contained in the stress and coping model may have interactive effects on adjustment (Brekke et al., 2005; Lecomte & Mercier, 2005).

CONCLUDING REMARKS

A much more comprehensive understanding is needed about individual variations in adjustment to negative symptom stressors for people with schizophrenia. Evidence suggests that, regardless of the development of second generation antipsychotics, people with predominantly negative symptoms continue to have chronic disability, lower levels of functioning, and poorer quality of life than other subgroups with schizophrenia (Erhart et al., 2006; Kirkpatrick et al., 2006a). Thus, there is a pressing need for the development and testing of more alternatives to pharmacological interventions to improve the adjustment and wellbeing of people with negative symptoms. This must be achieved by

tailoring interventions to target individual variations in subjective experience. Despite evidence of a small number of effective negative symptom psychosocial interventions (for example Mueser et al., 2006), not enough is known about the impact that individual subjective experience has in relation to adjustment to these symptoms.

More research is required to develop a valid instrument with which to measure negative symptom-related subjective experience, and to investigate how these factors are related to multiple domains of adjustment. The findings presented here suggest that, with further research and some modifications, the ACNSQ may be a useful instrument to fulfil this requirement. A large range of suggestions have been made to improve the methodological limitations of the present research. Substantially greater resources than those afforded to this author will be required to address all of the recommendations made.

This research program makes a unique contribution by examining subjective experience of individual negative symptoms, and examining data for both direct and mediating effects within a vulnerability-stress-coping model of adjustment to those symptoms. The findings presented provided preliminary evidence that an individuals' subjective appraisals and coping responses in relation to the symptoms of alogia, anhedonia, attention problems, avolition, and emotional blunting may have an important impact upon their level of adjustment. Evidence was also presented to support the proposal that the subjective experience of these SANS symptoms differ in important ways which merit a multidimensional approach to their investigation. This research program provides an essential foundation for future study of the impact of negative symptoms.

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APPENDICES

Appendix 4A

The Appraisal and Coping with Negative Symptoms Interview Schedule (ACNSIS)

ACNSIS

Introduction

I am interested in finding out what problems or symptoms you experience, how severe and distressing they are and how much control you have over them. I would also like to know what coping strategies you use with these symptoms.

I'm going to ask you about each symptom separately. First I'll give you a description of the symptom and then I'll get you to make some ratings for me. After that I'll ask you about how you cope with the symptom. You can ask me questions at any time. If you don't understand something please let me know so that I can explain.

Everybody copes in different ways so there are no right or wrong answers.

Symptom Descriptions

Decreased Emotional Range

Description

The first symptom that I want to ask you about is called decreased range and intensity of emotional response. This is when people do not express much emotion. They may feel empty or flat. They rarely or never laugh or smile. They do not have much emotional involvement in life and may have a feeling of emotional detachment from family and friends.

Slowed Thinking

Description

The next symptom is called poverty of thought. This is when people have slowed thinking. They have difficulty solving problems, making decisions, or answering questions. They may feel like their mind is blank. People may notice that they talk a lot less than usual or talk without really giving any information.

Loss of Motivation

Description

The next symptom is called loss of motivation or drive. This is when people feel like they have no interest in anything. They cannot be bothered to do much and may not feel like having a shower or looking after their appearance. They feel like they have no energy or or interest in going out, preparing meals or doing the housework.

Social Withdrawal and Reduced Pleasure

Description

The next symptom is called social withdrawal and reduced ability to experience pleasure.

This is when people have difficulty having any fun or pleasure. They have a reduced ability to enjoy the things they used to such as hobbies, interests, relationships, or sex. They do not feel much like spending time with family or friends and may want to shut themselves away from other people.

Attention Problems

Description

The next symptom is called attention problems. This is when people have trouble focusing their attention. They have difficulty paying attention to what other people are saying or following a story. They may realise that someone has been talking to them but they cannot recall anything that person has said. They may feel "spaced out" and vague.

Appraisals

Symptom Presence

Have you experienced this symptom in the last week?

1. Yes. Please answer the following questions
2. No. Please go on to the next symptom

Severity Appraisal

On average, how severe has this symptom been over the past week?

1 - mild

2 - mild to moderate

3 - moderate

4 - moderate to severe

5 - severe

Distress Appraisal

On average, how much does this symptom bother or distress you?

1 - very little distress

2 - a little distress

3 - moderate distress

4 - considerable distress

5 - a great deal of distress

Control Appraisal

On average, how much control do you feel you have over this symptom?

1 - no control

2 - a little control

3 - moderate control

4 - considerable control

5 - a great deal of control

Coping Responses

Now I would like to ask you about coping with this symptom.

What do you do in response to this symptom? How do you react to this symptom?

Are there any (other) things you do to cope with this symptom?

Are there any (other) things you tell yourself to cope with this symptom?

Appendix 4B

Participant Coping Responses from the Appraisal and Coping with Negative Symptoms Interview Schedule (N=20)

Participant Number	Symptom Reported	Coping Response
1	Anhedonia	I go to sleep
		Make a cup of tea
	Attention	Go for a walk
		Make a cup of tea
		Relax or sleep
	Avolition	Have a sleep
		Go out
		Have a shower
		Go downstairs to airconditioning
2	Alogia	nil
	Anhedonia	Talk to friends/counsellor
		Go out and break the cycle and do new things
		Tell myself it's just the illness
		Go out and visit somebody
		Make a cup of tea
	Attention	nil
	Avolition	Force self to do things that need to be done
		Ask friend to take me shopping
		Try and keep moving all the time
	Blunting	Telephone someone and explain how I am feeling
		Reassure myself that it is part of the illness
		Use distraction, have a cup of tea or eat
		Put the TV on
3	Alogia	nil
	Anhedonia	Tell myself that people will have to take me as I am
		I tell myself I can make them laugh
	Avolition	Make self do the housework
		Tell myself that if I don't do it (housework) nobody else will
		Tell myself that this is my house and I have to make it look nice
4	Alogia	I try to remember where I put things
		I say to myself- "If not, go without"
	Anhedonia	Don't go out
	Avolition	Go to the gym
		I make myself do things, push myself
		I tell myself "Get your finger out"
5	Avolition	nil

Appendix 4B continued

Participant Coping Responses from the Appraisal and Coping with Negative Symptoms Interview Schedule (N=20)

Participant Number	Symptom Reported	Coping Response
6	Alogia	Try to overpower it, get rid of the feeling
	Attention	Walk away from the TV
		Try reading my book
	Blunting	Try and be as happy as possible
7	Alogia	I take my medication earlier
		I have 3 cups of coffee and 3 cigarettes in rapid succession
	Anhedonia	Get up and go and buy a newspaper
		Stop and have a chat with a group of old friends who go and buy the paper in the morning
	Attention	Tell my wife to stop asking questions and be quiet
		Reread the paper
		Watch news on TV more than once
	Avolition	Walk down the road and buy a paper
		Go to events happening in town
		Walk to town and talk to the shop owners
		Talk to my psychiatrist or case manager
	Blunting	Go out and have a smoke
		Take a vitamin B pill knowing I'll have more energy in an hour
8	Alogia	nil
	Avolition	nil
	Blunting	Go for a drive
9	Alogia	nil
	Anhedonia	nil
	Attention	nil
	Avolition	Make a sandwich
		Play the piano
	Blunting	nil
10	Alogia	nil
	Avolition	nil
	Blunting	Accept it and get on with things
11	Alogia	Ask my mum or brother for help
	Avolition	Make myself get up and do something
12	Alogia	nil
	Attention	Read the same thing twice
		Drink a lot of coffee
		Take my book and go into town

Appendix 4B continued
Participant Coping Responses from the Appraisal and Coping with Negative Symptoms Interview Schedule (N=20)

Participant Number	Symptom Reported	Coping Response
12 cont.	Avolition	Buy a packet of cigarettes
		Think about something for a long time
		Make myself do things
		Read a book
		Go to sleep
		Go to the library
	Blunting	Read to take my mind off things
		I get angry and try to fight it
		I talk to the neighbours
13	Alogia	Rake up the lawn or other gardening
	Attention	Read books
	Avolition	nil
	Blunting	I smoke
		Get out and do something
		Go swimming
14	Alogia	Ring people up and have a conversation to get my mind going
	Attention	Read something twice if it's important
		Put in a big effort to concentrate
		Break reading material down into components
	Avolition	Go to art classes
		Go to the movies every week
		Play games with people- cards, scrabble
		Make a list of things to do each day
		Participate in research studies
		Invite people over so I have to tidy up the flat and have a shower and shave
		Force myself to do things
		I want my sons to be proud of me so I show them that I'm doing well
		I walk to the city and back every day
15	Anhedonia	Give myself time to let the feeling pass
		I go home
		Have a change of scene
	Attention	Accept it, I'm not perfect
		Re-read things
	Avolition	I have a sleep and make a fresh start when I get up
		I write letters to my mum
		Write songs or poems
		I reassure myself that it won't last forever

Appendix 4B continued
Participant Coping Responses from the Appraisal and Coping with Negative Symptoms Interview Schedule (N=20)

Participant Number	Symptom Reported	Coping Response
16	Alogia	I try and tell myself it will be OK- its not a big drama
		Limit the number of drinks if out socially
		I avoid stressful situations
		Reduce the amount of time spent in social settings
	Anhedonia	I avoid going out
		I limit the amount of alcohol I drink if I go out
		I tell myself it's no drama
	Attention	Write lists of things to remember
	Avolition	I remind myself that I'm responsible for getting my son to daycare
		Have a few cups of coffee
		Remind myself that I have things to accomplish
		I go to bed early, don't allow myself to stay up late
		Make lists of things to do
		Go to the gym to get regular exercise to fill in time
		Stretch out activities to fill in the day
		Do volunteer work
		Go out to lunch
17	Alogia	I take control of my life
		I think of myself & try to make a home for my son
		Think of things to do in the garden
		I think positive thoughts
		I make my bedroom a safe place where I can go to sleep and relax
	Avolition	I take pride in my work and enjoy it
		I know that once I get to work things will be OK
		I think of my responsibilities, like putting food on the table for my son
		I concentrate on one thing at a time
		I stop and evaluate the situation
		I think of my goals
		I get involved in hobbies like cooking and gardening
		I use a diary
18	Anhedonia	Limit time spent in social situations
		When out in public I focus on talking to one person at a time
	Attention	Avoid watching TV
	Avolition	Get more sleep
		Deliberately saturate my consciousness with uplifting and motivating books and tapes
		Remind myself that past experience has shown that once I get going I'll feel like it
		Force myself to make new friends and continue to ring them

Appendix 4B continued

Participant Coping Responses from the Appraisal and Coping with Negative Symptoms Interview Schedule (N=20)

Participant Number	Symptom Reported	Coping Response
18 cont.	Avolition	Keep a telephone list by the phone of people to ring
		Keep a journal of the positive things I have achieved for the day
		Try everything to get well
		Attend natural therapy centre and use herbal remedies
		Arrange for friends to visit in the morning so I have to get up
		I get my mother to phone first thing so I have to get up and answer it
		Collect objects with special meaning and use them to promote happy thoughts (eg shells from beach)
		Form positive connections between memories and movements and use the movements to feel better
		Make motivating list of things to achieve and look at them when I'm lacking motivation
		Calendar with things planned for each day
		I change my mood by heightening sensuality with music or aromotherapy
		Use aids such as “rescue drops” and relaxation tapes
		Keep exercise book of positive thoughts and material
		Visit counsellor/minister/masseur to talk to people
		Make it my responsibility to cook for my husband each night
		Focus on each day
		Read inspirational books to find meaning in life
		Seek out and spend time with people who have recovered
19	Alogia	I slow down reading something
		I read things twice
	Attention	Make sure the book I’m reading is interesting
	Avolition	Force myself to get out of bed
		I make myself stay awake until I'm really tired
		I concentrate on the here and now
	Blunting	I cut myself off and think of other things
		I watch children’s TV programs
20	Alogia	I think positive thoughts
		I accept the way I am
		I try to establish more power and control
		I turn off to negative stimuli
	Attention	I try and cut out any distractions
		I turn up the TV if I’m trying to listen to it

Appendix 4C

Examples of Participant Coping Responses According to Category

Category	Coping Example
Behaviour Change	
1. Distraction	
a). Passive diversion	Put the TV on
b). Active diversion	I get involved in hobbies like cooking and gardening
c). Environmental change	I go out
2. Physical Change	
a). Inactivity/passivity	I go to sleep and make a fresh start when I get up
b). Activity	I go to the gym to work out
c). Postural change	Make myself get up and do something
3. Indulgence	Make a sandwich
4. Task Performance	Make it my responsibility to cook for my husband each night
5. Non-specific	Stretch out activities to fill in the day
Socialisation	
1. Increase	I walk into town and talk to the shop owners
2. Decrease	I avoid going out
Cognitive Control	
1. Shifted Attention	I reassure myself that it is just part of the illness
2. Problem Solving	I try to overpower it, get rid of the feeling
Medical Care	I talk to my psychiatrist or case manager

Appendix 5A
The Appraisal and Coping with Negative Symptoms Questionnaire

Coping Questionnaire

I am interested in finding out what symptoms you experience and how you feel about them. I would also like to know what coping strategies you use with these symptoms.

For each question, please circle the number that most applies to you. Everybody is different so there are no right or wrong answers.

All the answers you give are completely confidential.

Please ask questions at any time. Let me know if there is something that you don't understand.

Thank you for your time.

Symptom 1

The first symptom that I want to ask you about is called:
poverty of thought.

This is when people have slowed thinking. They have difficulty solving problems, making decisions, or answering questions. They may feel like their mind is blank. People may notice that they talk a lot less than usual or talk without really giving any information.
Have you experienced this symptom in the last month?

1. Yes.
2. No. ⟶ Please go to the next symptom.

On average, how **severe** has the symptom of poverty of thought been over the last month?

1 - mild
2 - mild to moderate
3 - moderate
4 - moderate to severe
5 - severe

On average, how much does this symptom **bother** or **distress** you?

1 - very little distress
2 - a little distress
3 - moderate distress
4 - considerable distress
5 - a great deal of distress

On average, how much **control** do you feel you have over the symptom of poverty of thought?

1 - no control
2 - a little control
3 - moderate control
4 - considerable control
5 - a great deal of control

You will now be asked about ways in which people might respond to the symptom of **poverty of thought**.

Please read each statement carefully. Indicate how often you have responded in this way to the symptom.

Circle a number to show how often respond in each way to the symptom: **poverty of thought.**

	Not At All	Very Little	Sometimes	Often	A Great Deal
1. I lie down and have a rest or sleep.	1	2	3	4	5
2. I watch TV or listen to music.	1	2	3	4	5
3. I do some physical activity, eg, go for a walk or exercise.	1	2	3	4	5
4. I smoke cigarettes.	1	2	3	4	5
5. I drink alcohol or take drugs such as marijuana.	1	2	3	4	5
6. I increase the amount of medication I take, or take my medication early.	1	2	3	4	5
7. I give up.	1	2	3	4	5
8. I follow the advice of my doctor, therapist, case manager, or other health professional.	1	2	3	4	5
9. I avoid other people.	1	2	3	4	5
10. I do nothing and hope that it goes away.	1	2	3	4	5
11. I say reassuring or comforting things to myself.	1	2	3	4	5
12. I accept it and get on with things	1	2	3	4	5
13. I try to be or stay cheerful.	1	2	3	4	5
14. I try to get on top of the feeling.	1	2	3	4	5
15. I spend time with other people or talk to people on the telephone.	1	2	3	4	5
16. I think of ending my life.	1	2	3	4	5
17. I try to behave like people who do not have this symptom.	1	2	3	4	5
18. I concentrate on my work, study, or leisure activities.	1	2	3	4	5
19. I dwell on my problems or how bad I feel.	1	2	3	4	5
20. I talk to other people about the problem.	1	2	3	4	5
21. I think positive thoughts.	1	2	3	4	5
22. I go out and do things, eg, go to town or shopping, eat out, go to the library or the cinema.	1	2	3	4	5

Circle a number to show how often respond in each way to the symptom: **poverty of thought.**

	Not At All	Very Little	Sometimes	Often	A Great Deal
23. I think of jobs to do in the house or garden.	1	2	3	4	5
24. I eat or make a cup of tea or coffee.	1	2	3	4	5
25. I read, or write things like letters, poems, or stories.	1	2	3	4	5
26. I analyse the problem and think of ways to solve it.	1	2	3	4	5
27. I think about how I would like things to be.	1	2	3	4	5
28. I reduce or stop taking my medication.	1	2	3	4	5
29. I criticize myself or think negative thoughts about myself.	1	2	3	4	5
30. I force myself to think more clearly.	1	2	3	4	5
31. I avoid situations that make me feel worse.	1	2	3	4	5
32. I reduce the amount of time I spend in social situations.	1	2	3	4	5
33. I use techniques to improve my memory, eg, making lists or notes to myself, rereading or repeating things or reading more slowly.	1	2	3	4	5
34. I turn off to negative things around me.	1	2	3	4	5

35. Over the last month, are there any other ways you have responded to the symptom of **poverty of thought?**

please turn the page

Symptom 2

The next symptom that I want to ask you about is called:
social withdrawal and reduced ability to experience pleasure.

This is when people have difficulty having any fun or pleasure. They have a reduced ability to enjoy the things they used to such as hobbies, interests, relationships, or sex. They do not feel much like spending time with family or friends and may want to shut themselves themselves away from other people.
Have you experienced this symptom in the last month?

1. Yes.
2. No. ⟶ Please go to the next symptom.

On average, how **severe** has the symptom of social withdrawal been over the past month?

1 - mild
2 - mild to moderate
3 - moderate
4 - moderate to severe
5 - severe

On average, how much does this symptom **bother** or **distress** you?

1 - very little distress
2 - a little distress
3 - moderate distress
4 - considerable distress
5 - a great deal of distress

On average, how much **control** do you feel you have over the symptom of social withdrawal and reduced ability to experience pleasure?

1 - no control
2 - a little control
3 - moderate control
4 - considerable control
5 - a great deal of control

You will now be asked about ways in which people might respond to the symptom of **social withdrawal and reduced ability to experience pleasure.**

Please read each statement carefully. Indicate how often you have responded in this way to the symptom.

Circle a number to show how often respond in each way to the symptom:
social withdrawal and reduced ability to experience pleasure.

	Not At All	Very Little	Sometimes	Often	A Great Deal
1. I lie down and have a rest or sleep.	1	2	3	4	5
2. I watch TV or listen to music.	1	2	3	4	5
3. I do some physical activity, for example, go for a walk or exercise.	1	2	3	4	5
4. I smoke cigarettes.	1	2	3	4	5
5. I drink alcohol or take drugs such as marijuana.	1	2	3	4	5
6. I increase the amount of medication I take or take my medication early.	1	2	3	4	5
7. I give up.	1	2	3	4	5
8. I follow the advice of my doctor, therapist, case manager, or other health professional.	1	2	3	4	5
9. I avoid other people.	1	2	3	4	5
10. I do nothing and hope that it goes away.	1	2	3	4	5
11. I say reassuring or comforting things to myself.	1	2	3	4	5
12. I accept it and get on with things.	1	2	3	4	5
13. I try to be or stay cheerful.	1	2	3	4	5
14. I try to get on top of the feeling.	1	2	3	4	5
15. I spend time with other people or talk to people on the telephone.	1	2	3	4	5
16. I think of ending my life.	1	2	3	4	5
17. I try to behave like people who do not have this symptom.	1	2	3	4	5
18. I concentrate on my work, study, or leisure activities.	1	2	3	4	5
19. I dwell on my problems or how bad I feel.	1	2	3	4	5
20. I talk to other people about the problem.	1	2	3	4	5
21. I think positive thoughts.	1	2	3	4	5
22. I go out and do things, for example, go to town or shopping, eat out, go to the library or the cinema.	1	2	3	4	5

please turn the page

Circle a number to show how often respond in each way to the symptom:
social withdrawal and reduced ability to experience pleasure.

	Not At All	Very Little	Sometimes	Often	A Great Deal
23. I think of jobs to do in the house or garden.	1	2	3	4	5
24. I eat or make a cup of tea or coffee.	1	2	3	4	5
25. I read, or write things like letters, poems, or stories.	1	2	3	4	5
26. I analyse the problem and think of ways to solve it.	1	2	3	4	5
27. I think about how I would like things to be.	1	2	3	4	5
28. I reduce or stop taking my medication.	1	2	3	4	5
29. I criticize myself or think negative thoughts about myself.	1	2	3	4	5
30. I avoid situations that make me feel worse.	1	2	3	4	5
31. I reduce the amount of time spent in social settings.	1	2	3	4	5
32. I limit my intake of alcohol or other drugs if I go out socially.	1	2	3	4	5
33. When I'm with other people, I focus on talking to one person at a time.	1	2	3	4	5
34. I try to participate in new activities.	1	2	3	4	5

35. Over the last month, are there any other ways you have responded to the symptom: **social withdrawal and reduced ability to experience pleasure?**

please turn the page

Symptom 3

The next symptom that I want to ask you about is called:
attention problems.

This is when people have trouble focusing attention. They have difficulty paying attention to what other people are saying or following a story. They may realise that someone has been talking to them but they cannot recall anything the person has said. They may feel "spaced out" and vague.

Have you experienced this symptom in the last month?

1. Yes.
2. No. ⟶ Please go to the next symptom.

On average, how **severe** has the symptom of attention problems been over the past month?

1 - mild
2 - mild to moderate
3 - moderate
4 - moderate to severe
5 - severe

On average, how much does this symptom **bother** or **distress** you?

1 - very little distress
2 - a little distress
3 - moderate distress
4 - considerable distress
5 - a great deal of distress

On average, how much **control** do you feel you have over the symptom of attention problems?

1 - no control
2 - a little control
3 - moderate control
4 - considerable control
5 - a great deal of control

You will now be asked about ways in which people might respond to the symptom of **attention problems.**

Please read each statement carefully. Indicate how often you have responded in this way to the symptom.

Circle a number to show how often respond in each way to the symptom: **attention problems.**

	Not At All	Very Little	Sometimes	Often	A Great Deal
1. I lie down and have a rest or sleep.	1	2	3	4	5
2. I watch TV or listen to music.	1	2	3	4	5
3. I do some physical activity, for example, go for a walk or exercise.	1	2	3	4	5
4. I smoke cigarettes.	1	2	3	4	5
5. I drink alcohol or take drugs such as marijuana.	1	2	3	4	5
6. I increase the amount of medication I take or take my medication early.	1	2	3	4	5
7. I give up.	1	2	3	4	5
8. I follow the advice of my doctor, therapist, case manager, or other health professional.	1	2	3	4	5
9. I avoid other people.	1	2	3	4	5
10. I do nothing and hope that it goes away.	1	2	3	4	5
11. I say reassuring or comforting things to myself.	1	2	3	4	5
12. I accept it and get on with things.	1	2	3	4	5
13. I try to be or stay cheerful.	1	2	3	4	5
14. I try to get on top of the feeling.	1	2	3	4	5
15. I spend time with other people or talk to people on the telephone.	1	2	3	4	5
16. I think of ending my life.	1	2	3	4	5
17. I try to behave like people who do not have this symptom.	1	2	3	4	5
18. I concentrate on my work, study, or leisure activities.	1	2	3	4	5
19. I dwell on my problems or how bad I feel.	1	2	3	4	5
20. I talk to other people about the problem.	1	2	3	4	5
21. I think positive thoughts.	1	2	3	4	5
22. I go out and do things, for example, go to town or shopping, eat out, go to the library or the cinema.	1	2	3	4	5

please turn the page

Circle a number to show how often respond in each way to the symptom: **attention problems.**

	Not At All	Very Little	Sometimes	Often	A Great Deal
23. I think of jobs to do in the house or garden.	1	2	3	4	5
24. I eat or make a cup of tea or coffee.	1	2	3	4	5
25. I read, or write things like letters, poems, or stories.	1	2	3	4	5
26. I analyse the problem and think of ways to solve it.	1	2	3	4	5
27. I think about how I would like things to be.	1	2	3	4	5
28. I reduce or stop taking my medication.	1	2	3	4	5
29. I criticize myself or think negative thoughts about myself.	1	2	3	4	5
30. I make a special effort to listen or concentrate harder.	1	2	3	4	5
31. I use techniques to improve my attention, for example, asking people to repeat what they said, or reading something or listening to something twice.	1	2	3	4	5
32. I write lists of things to remember or keep a diary or calendar of things to remember.	1	2	3	4	5
33. I make sure that the activity I'm doing or the book I'm reading is interesting.	1	2	3	4	5
34. I reduce the stimulation or noise around me, for example, by turning the TV off or spending time in my room.	1	2	3	4	5

35. Over the last month, are there any other ways you have responded to the symptom: **attention problems?**

please turn the page

Symptom 4

The next symptom that I want to ask you about is called:
loss of motivation or drive.

This is when people feel like they have no interest in anything. They cannot be bothered to do much and may not feel like having a shower or looking after their appearance. They feel like they have no energy or interest in going out, preparing meals or doing housework.

Have you experienced this symptom in the last month?

1. Yes.
2. No. → Please go to the next symptom.

On average, how **severe** has the symptom of loss of motivation or drive been over the past month?

1 - mild
2 - mild to moderate
3 - moderate
4 - moderate to severe
5 - severe

On average, how much does this symptom **bother** or **distress** you?

1 - very little distress
2 - a little distress
3 - moderate distress
4 - considerable distress
5 - a great deal of distress

On average, how much **control** do you feel you have over the symptom of loss of motivation or drive?

1 - no control
2 - a little control
3 - moderate control
4 - considerable control
5 - a great deal of control

You will now be asked about ways in which people might respond to the symptom of **loss of motivation or drive.**

Please read each statement carefully. Indicate how often you have responded in this way to the symptom.

Circle a number to show how often respond in each way to the symptom:
loss of motivation or drive.

	Not At All	Very Little	Sometimes	Often	A Great Deal
1. I lie down and have a rest or sleep.	1	2	3	4	5
2. I watch TV or listen to music.	1	2	3	4	5
3. I do some physical activity, for example, go for a walk or exercise.	1	2	3	4	5
4. I smoke cigarettes.	1	2	3	4	5
5. I drink alcohol or take drugs such as marijuana.	1	2	3	4	5
6. I increase the amount of medication I take or take my medication early.	1	2	3	4	5
7. I give up.	1	2	3	4	5
8. I follow the advice of my doctor, therapist, case manager, or other health professional.	1	2	3	4	5
9. I avoid other people.	1	2	3	4	5
10. I do nothing and hope that it goes away.	1	2	3	4	5
11. I say reassuring or comforting things to myself.	1	2	3	4	5
12. I accept it and get on with things.	1	2	3	4	5
13. I try to be or stay cheerful.	1	2	3	4	5
14. I try to get on top of the feeling.	1	2	3	4	5
15. I spend time with other people or talk to people on the telephone.	1	2	3	4	5
16. I think of ending my life.	1	2	3	4	5
17. I try to behave like people who do not have this symptom.	1	2	3	4	5
18. I concentrate on my work, study, or leisure activities.	1	2	3	4	5
19. I dwell on my problems or how bad I feel.	1	2	3	4	5
20. I talk to other people about the problem.	1	2	3	4	5
21. I think positive thoughts.	1	2	3	4	5
22. I go out and do things, for example, go to town or shopping, eat out, go to the library or the cinema.	1	2	3	4	5

please turn the page

Circle a number to show how often respond in each way to the symptom:
loss of motivation or drive.

	Not At All	Very Little	Sometimes	Often	A Great Deal
23. I think of jobs to do in the house or garden.	1	2	3	4	5
24. I eat or make a cup of tea or coffee.	1	2	3	4	5
25. I read, or write things like letters, poems, or stories.	1	2	3	4	5
26. I analyse the problem and think of ways to solve it.	1	2	3	4	5
27. I think about how I would like things to be.	1	2	3	4	5
28. I reduce or stop taking my medication.	1	2	3	4	5
29. I criticize myself or think negative thoughts about myself.	1	2	3	4	5
30. I try and keep moving all the time.	1	2	3	4	5
31. I think about something for a long time until I work up the energy to do it.	1	2	3	4	5
32. I remind myself that the things I should do are important.	1	2	3	4	5
33. I force myself to do the things that need to be done.	1	2	3	4	5
34. I concentrate on one thing at a time.	1	2	3	4	5
35. I stop and evaluate the situation.	1	2	3	4	5
36. I set the alarm clock to make myself get u out of bed.	1	2	3	4	5
37. I try to keep healthy, eg., get plenty of sleep or eat a healthy diet.	1	2	3	4	5
38. I remind myself of my responsibilities and goals.	1	2	3	4	5
39. I remind myself that past experience has shown me that once I get going I'll feel better.	1	2	3	4	5
40. I try to set an example for other people or demonstrate to others that I'm doing OK.	1	2	3	4	5
41. I keep a journal or diary of the positive things I have achieved for the day.	1	2	3	4	5
42. I stay in bed all day or until I feel like getting up.	1	2	3	4	5

please turn the page

Circle a number to show how often respond in each way to the symptom:
loss of motivation or drive.

	Not At All	Very Little	Sometimes	Often	A Great Deal
43. I use inspirational material, such as positive books and tapes to motivate me.	1	2	3	4	5
44. I try to make myself feel better by using alternative approaches, for example, by doing yoga or relaxation or using herbal remedies or aromatherapy.	1	2	3	4	5
45. I keep a calendar with things planned for each day.	1	2	3	4	5
46. I stretch out activities or tasks to fill in the day.	1	2	3	4	5
47. I participate in group activities, for example, self help, social, or therapy groups, art classes, educational courses, or volunteer work.	1	2	3	4	5
48. I arrange for someone to visit or phone me in the morning so that I have to get up.	1	2	3	4	5
49. I arrange social activities or invite people over so that I have to make an effort with my appearance or tidy up my home.	1	2	3	4	5

50. Over the last month, are there any other ways you have responded to the symptom: **loss of motivation or drive?**

please turn the page

Symptom 5

The last symptom that I want to ask you about is called:
decreased range and intensity of emotional response.

This is when people do not express much emotion. They may feel empty or flat. They rarely or never laugh or smile. They do not have much emotional involvement in life and may have a feeling of detachment from family and friends.

Have you experienced this symptom in the last month?

1. Yes.
2. No. → You have reached the end of the questions. Thank you.

On average, how **severe** has the symptom of decreased range and intensity of emotional response been over the past month?

1 - mild
2 - mild to moderate
3 - moderate
4 - moderate to severe
5 - severe

On average, how much does this symptom **bother** or **distress** you?

1 - very little distress
2 - a little distress
3 - moderate distress
4 - considerable distress
5 - a great deal of distress

On average, how much **control** do you feel you have over the symptom of decreased range and intensity of emotional response.

1 - no control
2 - a little control
3 - moderate control
4 - considerable control
5 - a great deal of control

You will now be asked about ways in which people might respond to the symptom of **decreased range and intensity of emotional response.**

Please read each statement carefully. Indicate how often you have responded in this way to the symptom.

Circle a number to show how often respond in each way to the symptom:
decreased range and intensity of emotional response.

	Not At All	Very Little	Sometimes	Often	A Great Deal
1. I lie down and have a rest or sleep.	1	2	3	4	5
2. I watch TV or listen to music.	1	2	3	4	5
3. I do some physical activity, for example, go for a walk or exercise.	1	2	3	4	5
4. I smoke cigarettes.	1	2	3	4	5
5. I drink alcohol or take drugs such as marijuana.	1	2	3	4	5
6. I increase the amount of medication I take or take my medication early.	1	2	3	4	5
7. I give up.	1	2	3	4	5
8. I follow the advice of my doctor, therapist, case manager, or other health professional.	1	2	3	4	5
9. I avoid other people.	1	2	3	4	5
10. I do nothing and hope that it goes away.	1	2	3	4	5
11. I say reassuring or comforting things to myself.	1	2	3	4	5
12. I accept it and get on with things.	1	2	3	4	5
13. I try to be or stay cheerful.	1	2	3	4	5
14. I try to get on top of the feeling.	1	2	3	4	5
15. I spend time with other people or talk to people on the telephone.	1	2	3	4	5
16. I think of ending my life.	1	2	3	4	5
17. I try to behave like people who do not have this symptom.	1	2	3	4	5
18. I concentrate on my work, study, or leisure activities.	1	2	3	4	5
19. I dwell on my problems or how bad I feel.	1	2	3	4	5
20. I talk to other people about the problem.	1	2	3	4	5
21. I think positive thoughts.	1	2	3	4	5
22. I go out and do things, for example, go to town or shopping, eat out, go to the library or the cinema.	1	2	3	4	5

please turn the page

Circle a number to show how often respond in each way to the symptom: **decreased range and intensity of emotional response.**

	Not At All	Very Little	Sometimes	Often	A Great Deal
23. I think of jobs to do in the house or garden.	1	2	3	4	5
24. I eat or make a cup of tea or coffee.	1	2	3	4	5
25. I read, or write things like letters, poems, or stories.	1	2	3	4	5
26. I analyse the problem and think of ways to solve it.	1	2	3	4	5
27. I think about how I would like things to be.	1	2	3	4	5
28. I reduce or stop taking my medication.	1	2	3	4	5
29. I criticize myself or think negative thoughts about myself.	1	2	3	4	5

30. Over the last month, are there any other ways you have responded to the symptom: **decreased range and intensity of emotional response?**

That is the end of this questionnaire, thank you.

Appendix 5B

Item Mean Scores for the ACNSQ 29 General Coping Items and 5 Specific Coping Items for Alogia, in Descending Order of Frequency (N = 57)

Item Type, Number and Description	*M*
General Coping Items	
24. I eat or make a cup of tea or coffee.	3.77
12. I accept it and get on with things.	3.39
13. I try to be or stay cheerful.	3.33
14. I try to get on top of the feeling.	3.21
2. I watch TV or listen to music.	3.12
27. I think about how I would like things to be.	3.05
23. I think of jobs to do in the house or garden.	3.00
21. I think positive thoughts.	2.98
1. I lie down and have a rest or sleep.	2.96
18. I concentrate on my work, study, or leisure activities.	2.93
4. I smoke cigarettes.	2.84
8. I follow the advice of my doctor, therapist, case manager, or other health...	2.81
22. I go out and do things, eg., go to town or shopping, eat out, go to the library...	2.81
15. I spend time with other people or talk to people on the telephone.	2.74
11. I say reassuring or comforting things to myself.	2.68
3. I do some physical activity, for example, go for a walk or exercise.	2.61
20. I talk to other people about the problem.	2.61
26. I analyse the problem and think of ways to solve it.	2.58
9. I avoid other people.	2.39
19. I dwell on my problems or how bad I feel.	2.33
25. I read, or write things like letters, poems, or stories.	2.30
29. I criticize myself or think negative thoughts about myself.	2.30
17. I try to behave like people who do not have this symptom.	2.23
10. I do nothing and hope that it goes away.	2.21
7. I give up.	1.65
5. I drink alcohol or take drugs such as marijuana.	1.61
6. I increase the amount of medication I take, or take my medication early.	1.58
16. I think of ending my life.	1.54
28. I reduce or stop taking my medication.	1.19
Alogia Specific Coping Items	
31. I avoid situations that make me feel worse.	3.18
30. I force myself to think more clearly.	2.96
32. I reduce the amount of time I spend in social settings.	2.63
34. I turn off to negative things around me.	2.60
33. I use techniques to improve my memory, eg, making lists or notes to myself, re-reading or repeating things, reading more slowly.	2.30

Appendix 5C

Item Mean Scores for the ACNSQ 29 General Coping Items and 5 Specific Coping Items for Anhedonia in Descending Order of Frequency (N = 30)

Item Type, Number and Description	*M*
General Coping Items	
24. I eat or make a cup of tea or coffee.	3.70
27. I think about how I would like things to be.	3.50
2. I watch TV or listen to music.	3.40
12. I accept it and get on with things.	3.40
14. I try to get on top of the feeling.	3.33
13. I try to be or stay cheerful.	3.30
21. I think positive thoughts.	3.17
18. I concentrate on my work, study, or leisure activities.	3.03
4. I smoke cigarettes.	3.00
8. I follow the advice of my doctor, therapist, case manager, or other health...	3.00
9. I avoid other people.	2.93
11. I say reassuring or comforting things to myself.	2.93
1. I lie down and have a rest or sleep.	2.93
22. I go out and do things, eg., go to town or shopping, eat out, go to the library...	2.83
15. I spend time with other people or talk to people on the telephone.	2.77
3. I do some physical activity, for example, go for a walk or exercise.	2.73
10. I do nothing and hope that it goes away.	2.73
23. I think of jobs to do in the house or garden.	2.63
26. I analyse the problem and think of ways to solve it.	2.60
20. I talk to other people about the problem.	2.50
17. I try to behave like people who do not have this symptom.	2.47
19. I dwell on my problems or how bad I feel.	2.47
29. I criticize myself or think negative thoughts about myself.	2.47
25. I read, or write things like letters, poems, or stories.	2.40
7. I give up.	2.03
16. I think of ending my life.	1.77
5. I drink alcohol or take drugs such as marijuana.	1.57
6. I increase the amount of medication I take, or take my medication early.	1.47
28. I reduce or stop taking my medication.	1.10
Anhedonia Specific Coping Items	
30. I avoid situations that make me feel worse.	3.43
31. I reduce the amount of time spent in social settings.	3.20
32. I limit my intake of alcohol or other drugs if I go out socially.	2.87
33. When I'm with other people, I focus on talking to one person at a time.	2.77
34. I try to participate in new activities.	2.77

Appendix 5D

Item Mean Scores for the ACNSQ 29 General Coping Items and 5 Specific Coping Items for Attention, in Descending Order of Frequency (N = 48)

Item Type, Number and Description	*M*
General Coping Items	
24. I eat or make a cup of tea or coffee.	3.65
12. I accept it and get on with things.	3.38
21. I think positive thoughts.	3.35
13. I try to be or stay cheerful.	3.31
27. I think about how I would like things to be.	2.98
14. I try to get on top of the feeling.	2.96
18. I concentrate on my work, study, or leisure activities.	2.94
2. I watch TV or listen to music.	2.75
4. I smoke cigarettes.	2.75
15. I spend time with other people or talk to people on the telephone.	2.75
3. I do some physical activity, for example, go for a walk or exercise.	2.73
26. I analyse the problem and think of ways to solve it.	2.69
23. I think of jobs to do in the house or garden.	2.67
11. I say reassuring or comforting things to myself.	2.58
22. I go out and do things, eg., go to town or shopping, eat out, go to the library...	2.56
8. I follow the advice of my doctor, therapist, case manager, or other health...	2.54
20. I talk to other people about the problem.	2.54
17. I try to behave like people who do not have this symptom.	2.52
1. I lie down and have a rest or sleep.	2.35
9. I avoid other people.	2.33
29. I criticize myself or think negative thoughts about myself.	2.21
10. I do nothing and hope that it goes away.	2.21
25. I read, or write things like letters, poems, or stories.	2.15
19. I dwell on my problems or how bad I feel.	1.98
7. I give up.	1.88
5. I drink alcohol or take drugs such as marijuana.	1.63
6. I increase the amount of medication I take, or take my medication early.	1.46
16. I think of ending my life.	1.33
28. I reduce or stop taking my medication.	1.04
Attention Specific Coping Items	
30. I make a special effort to listen or concentrate harder.	3.56
31. I use techniques to improve my attention, eg. asking people to repeat what they said, or reading something or listening to something twice.	3.21
33. I make sure that the activity I'm doing or the book I'm reading is interesting.	3.17
34. I reduce the stimulation or noise around me, eg. by turning the TV off or spending time in my room.	3.00
32. I write lists of things to remember or keep a diary or calendar of things to remember.	2.65

Appendix 5E

Item Mean Scores for the ACNSQ 29 General Coping Items and 20 Specific Coping Items for Avolition, in Descending Order of Frequency (N = 65)

Item Type, Number and Description	*M*
General Coping Items	
24. I eat or make a cup of tea or coffee.	3.66
2. I watch TV or listen to music.	3.28
27. I think about how I would like things to be.	3.17
13. I try to be or stay cheerful.	3.14
1. I lie down and have a rest or sleep.	3.11
12. I accept it and get on with things.	3.02
14. I try to get on top of the feeling.	2.97
21. I think positive thoughts.	2.95
18. I concentrate on my work, study, or leisure activities.	2.95
4. I smoke cigarettes.	2.94
3. I do some physical activity, for example, go for a walk or exercise.	2.88
15. I spend time with other people or talk to people on the telephone.	2.82
8. I follow the advice of my doctor, therapist, case manager, or other health...	2.78
20. I talk to other people about the problem.	2.69
11. I say reassuring or comforting things to myself.	2.66
22. I go out and do things, eg., go to town or shopping, eat out, go to the library...	2.66
26. I analyse the problem and think of ways to solve it.	2.51
9. I avoid other people.	2.49
23. I think of jobs to do in the house or garden.	2.49
10. I do nothing and hope that it goes away.	2.42
19. I dwell on my problems or how bad I feel.	2.26
29. I criticize myself or think negative thoughts about myself.	2.25
25. I read, or write things like letters, poems, or stories.	2.11
17. I try to behave like people who do not have this symptom.	2.11
7. I give up.	2.08
16. I think of ending my life.	1.52
5. I drink alcohol or take drugs such as marijuana.	1.46
6. I increase the amount of medication I take, or take my medication early.	1.38
28. I reduce or stop taking my medication.	1.17
Avolition Specific Coping Items	
37. I try to keep healthy, eg., get plenty of sleep or eat a healthy diet.	3.20
33. I force myself to do the things that need to be done.	3.12
38. I remind myself of my responsibilities and goals.	2.89
39. I remind myself that past experience has shown me that once I get going I'll feel better.	2.89
32. I remind myself that the things I should do are important.	2.80
31. I think about something for a long time until I work up the energy to do it.	2.78
34. I concentrate on one thing at a time.	2.77

Appendix 5E continued

Item Mean Scores for the ACNSQ 29 General Coping Items and 20 Specific Coping Items for Avolition, in Descending Order of Frequency (N = 65)

Item Type, Number and Description	*M*
Avolition Specific Coping Items continued	
35. I stop and evaluate the situation.	2.65
42. I stay in bed all day or until I feel like getting up.	2.55
40. I try to set an example for other people or demonstrate to others that I'm doing OK.	2.51
47. I participate in group activities, for example, self help, social, or therapy groups, art classes, educational courses, or volunteer work.	2.46
30. I try and keep moving all the time.	2.43
46. I stretch out activities or tasks to fill in the day.	2.37
43. I use inspirational material, such as positive books and tapes to motivate me.	2.02
45. I keep a calendar with things planned for each day.	1.95
49. I arrange social activities or invite people over so that I have to make an effort with my appearance or tidy up my home.	1.92
44. I try to make myself feel better by using alternative approaches, eg., by doing yoga or relaxation or using herbal remedies or aromatherapy.	1.91
36. I set the alarm clock to make myself get up out of bed.	1.89
41. I keep a journal or diary of the positive things I have achieved for the day.	1.51
48. I arrange for someone to visit or telephone me in the morning so that I have to get up.	1.32

Appendix 5F

Item Mean Scores for the ACNSQ 29 General Coping Items for Blunting, in Descending Order of Frequency (N = 35)

Item Type, Number and Description	*M*
General Coping Items	
24. I eat or make a cup of tea or coffee.	3.71
21. I think positive thoughts.	3.43
1. I lie down and have a rest or sleep.	3.34
2. I watch TV or listen to music.	3.34
12. I accept it and get on with things.	3.31
11. I say reassuring or comforting things to myself.	3.31
27. I think about how I would like things to be.	3.26
22. I go out and do things, eg., go to town or shopping, eat out, go to the library...	3.26
18. I concentrate on my work, study, or leisure activities.	3.23
13. I try to be or stay cheerful.	3.23
14. I try to get on top of the feeling.	3.09
15. I spend time with other people or talk to people on the telephone.	3.09
23. I think of jobs to do in the house or garden.	3.03
26. I analyse the problem and think of ways to solve it.	2.97
3. I do some physical activity, for example, go for a walk or exercise.	2.91
20. I talk to other people about the problem.	2.91
8. I follow the advice of my doctor, therapist, case manager, or other health...	2.89
4. I smoke cigarettes.	2.83
17. I try to behave like people who do not have this symptom.	2.77
19. I dwell on my problems or how bad I feel.	2.71
9. I avoid other people.	2.60
10. I do nothing and hope that it goes away.	2.60
29. I criticize myself or think negative thoughts about myself.	2.54
7. I give up.	2.46
25. I read, or write things like letters, poems, or stories.	2.31
16. I think of ending my life.	1.94
5. I drink alcohol or take drugs such as marijuana.	1.89
6. I increase the amount of medication I take, or take my medication early.	1.77
28. I reduce or stop taking my medication.	1.17

Appendix 5G

Correlations of Mean Frequency of Use for the Five Most Used ACNSQ Coping Items: General Items 24, 12, 27, 2, 21

Symptom and	Alogia					Anhedonia					Attention				
Item Number	24	12	27	2	21	24	12	27	2	21	24	12	27	2	21
Alogia	*N* = 57														
24. 'eat'															
12. 'accept'	.10														
27. 'visualise'	.30*	.31*													
2. 'TV/music'	.07	.17	.07												
21. 'positive'	-.10	.21	.31*	.14											
Anhedonia	*n* = 15					*N* = 30									
24. 'eat'	.18	-.19	-.19	.30	.05										
12. 'accept'	-.13	.13	-.32	.52*	.62*	.14									
27. 'visualise'	-.14	-.10	.53*	-.40	-.39	-.11	-.49**								
2. 'TV/music'	.25	.20	-.18	.44	.13	.33	.39*	-.09							
21. 'positive'	-.37	.37	.37	.40	.62*	.04	.14	-.16	.17						
Attention	*n* = 23					*n* = 17					*N* = 48				
24. 'eat'	.31	-.14	.25	.42	.11	.68***	.08	-.03	.59*	.11					
12. 'accept'	.25	.66***	.40	.16	.39	-.18	.45	-.03	.56*	.21	.04				
27. 'visualise'	.23	.30	.69***	.03	.10	-.22	-.36	.74***	-.16	-.05	.02	.23			
2. 'TV/music'	-.15	.08	.28	-.01	.36	.10	.20	.39	.63**	.39	.19	.07	-.00		
21. 'positive'	-.15	.40	.24	.37	.67***	.08	.06	.23	.31	.74***	.27	.36*	.26	.53***	
Avolition	*n* = 30					*n* = 23					*n* = 23				
24. 'eat'	.77***	-.28	-.10	-.18	.14	.72***	.10	-.13	.02	-.21	.61***	-.23	-.44*	-.04	-.31
12. 'accept'	.09	.59***	.15	.23	.24	.16	.51*	-.11	.33	-.08	.17	.84***	-.03	.40	.37
27. 'visualise'	.17	.41*	.45*	.20	.00	-.01	-.49*	.64***	-.13	-.17	-.21	.19	.73***	.15	.24
2. 'TV/music'	.10	.27	.02	.54***	.25	-.04	.30	-.24	.51*	.18	.19	.52*	-.18	.41	.32
21. 'positive'	-.12	.36	.24	.05	.65***	-.28	-.08	.18	.18	.58***	.02	.47*	.03	.63***	.79

*p < 0.05. **p < 0.01. ***p < 0.005

Coping Items: 24. I eat or make a cup of tea or coffee. 12. I accept it and get on with things. 27. I think about how I would like things to be. 2. I watch TV or listen to music. 21. I think positive thoughts.

Appendix 5H

Verbatim Copy of Additional Coping Responses from the ACNSQ (N = 23)

Alogia

1. "I try and do things to stimulate my senses. For example put on an aromatherapy burner, music or go and look at the garden and birds. or have a bath with nice oils etc."

2. "I talk to God"

3. "I pray"

4. "I write down positive things that have occured during the day and positive things that will happen the next day. I try not to make decisions until all the information is in."

5. "I play my guitar or my drum kit, I may even write a song."

6. "I was physically beaten around the head in front of my family by an inlaw, humiliating myself, resulting in severe anger. This Has brought me out of my slowed thinking to a large degree, ie the resultant effect from open anger towards another and voicing it to my peer group."

7. "sit back and anylise the point of view"

8. "my faith in God attend AA and Salvation Army"

9. "dictionary-theasaurus"

Anhedonia

1. "Only go out in social settings with my wife"

2. "I pray a lot."

3. "Spend time with animals or children."

4. "by giving it a go"

Attention Problems

1. "I talk and listen to God."

2. "I repeat what people say to so that I am sure of what they want me to do."

3. "go for a drive"

4. "truly understanding in what is said"

5. "studying harder, apply myself harder, looking for challenges.looking for exciting and interesting people"

Appendix 5H continued

Verbatim Copy of Additional Coping Responses from the ACNSQ (N = 23)

Avolition

1. "write down lists of goals and things to do lists"

2. "I pace up and down the veranda and say positive afirmations to God. I pray for 3 hours every afternoon."

3. "i talk to God."

4. "Concentrate on my desires and hightened stimui.(senses such as audio, taste)"

5. "I force myself to start something and then feel motivated to complete the task at hand."

6. "thai chi for relaxation ignore people if they are anoying me or cant see sense"

7. "no longer medicated in the morning"

8. "Mental Hospital Study Buddhism Church Immersing in another culture-China"

9. "With a sense of loss and fear and often a loss of interest"

10. "I affirm to myself that I am not going to feel this way forever"

11. "reading has been a very satisfying activity. I even resorted to reading textbooks."

Blunting

1. "trying to increase my activities by doing things that would increase my brain functioning like reading hard books. Also trying to get beliefs and opinions about things like the universe and my attitude towards people. I also find it very useful to look at the positive symptons like delusions and reassess them into a more plassible solution with a more healthy belief about these I can face the world with a brighter face."

2. "Bible study and praying"

3. "Try to plan out what I will be doing in the days to come. I think of good things that I will be doing and try to make positive statements about myself and about work."

4. "lying down and listen to beautiful classical music, relaxing techniques akin to transcendmeditation biofeedback with reducing pulse rate"

5. "go for walks at Wellington Point for sheer ways to clear my thoughts in the open salty air"

6. "volunteer work"

7. "I go for a drive in my car,or play computer games or play my guitar, these are ways that fill in
my time. However, I don't believe I have schizophrenia because I don't here voices. I do very much
Appendix 5H continued
Verbatim Copy of Additional Coping Responses from the ACNSQ (N = 23)

feel slowed down, and have not found anything to help the flat feeling or emotion less state I'm in.
Clozapine and Olanzapine are both tranquilizers and they both only slow me down further, I feel more emotion when I'm off Clozapine and Olanzapine. These medications destroy or slow down myself to the point of being a human vegetable"
8. "joined a support group and took back my life"
9. "I pray"

Appendix 5I

Results of an Initial Principal Components Analyses for 29 ACNSQ Coping Items for Alogia

Item Number and Description	Factor		
	1	2	3
18. I concentrate on my work, study, or leisure activities.	**.72**	-.12	.12
26. I analyse the problem and think of ways to solve it.	**.69**	.35	.16
22. I go out and do things, eg., go to town or shopping, eat out…	**.69**	-.11	-.03
25. I read, or write things like letters, poems, or stories.	**.66**	.16	.13
13. I try to be or stay cheerful.	**.52**	-.02	.43
17. I try to behave like people who do not have this symptom.	**.51**	.29	.23
33. I turn off to negative things around me.	**.48**	.07	-.05
3. I do some physical activity, for example, go for a walk or exercise.	**.36**	.02	.21
8. I follow the advice of my doctor, therapist, case manager, or other…	**.35**	.31	.11
24. I eat or make a cup of tea or coffee.	**.25**	.18	.05
6. I increase the amount of medication I take, or take my medication ...	**.23**	-.07	.11
32. I reduce the amount of time I spend in social settings.	.09	**.69**	-.20
9. I avoid other people.	-.16	**.62**	.02
16. I think of ending my life.	.07	**.61**	.10
19. I dwell on my problems or how bad I feel.	.09	**.59**	.09
29. I criticize myself or think negative thoughts about myself.	.44	**.55**	.15
10. I do nothing and hope that it goes away.	-.17	**.54**	-.15
27. I think about how I would like things to be.	.40	**.52**	.36
31. I force myself to think more clearly.	.38	**.51**	.03
7. I give up.	-.07	**.50**	-.09
30. I avoid situations that make me feel worse.	.32	**.50**	.19
34. I use techniques to improve my memory, for example, making lists…	.23	**.48**	.19
15. I spend time with other people or talk to people on the telephone.	.20	-.25	**.73**
11. I say reassuring or comforting things to myself.	-.01	.21	**.57**
20. I talk to other people about the problem.	.07	.09	**.55**
21. I think positive thoughts.	.22	.22	**.53**
23. I think of jobs to do in the house or garden.	.05	-.09	**.43**
12. I accept it and get on with things.	.33	.13	**.40**
2. I watch TV or listen to music.	-.03	-.04	**.36**

Appendix 5J

Results of an Initial Principal Components Analyses for 30 ACNSQ Coping Items for Anhedonia

Item Number and Description	Factor		
	1	2	3
21. I think positive thoughts.	**.84**	.14	.16
13. I try to be or stay cheerful.	**.79**	.17	.17
22. I go out and do things, eg., go to town or shopping, eat out …	**.76**	.21	-.01
23. I think of jobs to do in the house or garden.	**.69**	.21	.22
14. I try to get on top of the feeling.	**.66**	.03	-.18
15. I spend time with other people or talk to people on the telephone.	**.62**	.20	-.27
10. I do nothing and hope that it goes away.	**-.57**	.26	.40
26. I analyse the problem and think of ways to solve it.	**.56**	.13	.09
25. I read, or write things like letters, poems, or stories.	**.43**	-.33	-.03
20. I talk to other people about the problem.	**.42**	-.22	-.11
18. I concentrate on my work, study, or leisure activities.	**.39**	.11	-.05
31. I reduce the amount of time spent in social settings.	**-.36**	.11	.10
11. I say reassuring or comforting things to myself.	**.32**	.09	.05
27. I think about how I would like things to be.	**.31**	.21	-.11
19. I dwell on my problems or how bad I feel.	-.23	**.73**	-.38
16. I think of ending my life.	-.17	**.64**	-.12
6. I increase the amount of medication I take, or take my medication ...	-.17	**.60**	.01
12. I accept it and get on with things.	.29	**-.59**	.01
29. I criticize myself or think negative thoughts about myself.	-.44	**.48**	-.06
28. I reduce or stop taking my medication.	-.01	**.42**	.22
33. When I'm with other people, I focus on talking to one person ...	.25	**.31**	-.19
17. I try to behave like people who do not have this symptom.	.18	**.22**	.09
24. I eat or make a cup of tea or coffee.	.02	.10	**.70**
4. I smoke cigarettes.	.04	-.03	**.69**
1. I lie down and have a rest or sleep.	-.14	.10	**.64**
5. I drink alcohol or take drugs such as marijuana.	-.38	.07	**.47**
2. I watch TV or listen to music.	.23	.18	**.38**
30. I avoid situations that make me feel worse.	-.09	.00	**.35**
32. I limit my intake of alcohol or other drugs if I go out socially.	.22	.17	**-.34**
7. I give up.	-.21	.11	**.24**

Appendix 5K

Results of an Initial Principal Components Analyses for 28 ACNSQ Coping Items for Attention Problems

Item Number and Description	Factor		
	1	2	3
21. I think positive thoughts.	**.73**	.12	-.19
13. I try to be or stay cheerful.	**.72**	.08	-.31
8. I follow the advice of my doctor, therapist, case manager, or other ...	**.70**	-.14	.25
11. I say reassuring or comforting things to myself.	**.67**	.02	.22
15. I spend time with other people or talk to people on the telephone.	**.66**	-.03	-.10
20. I talk to other people about the problem.	**.60**	.18	.22
25. I read, or write things like letters, poems, or stories.	**.48**	.33	-.14
22. I go out and do things, eg., go to town or shopping, eat out …	**.45**	.36	-.13
6. I increase the amount of medication I take, or take my medication ...	**.36**	.13	.16
31. I use techniques to improve my attention, eg., asking people to …	.18	**.70**	.02
26. I analyse the problem and think of ways to solve it.	.33	**.69**	-.09
32. I write lists of things to remember or keep a diary or calendar...	.13	**.64**	-.11
17. I try to behave like people who do not have this symptom.	-.01	**.61**	.20
33. I make sure that the activity I'm doing or the book I'm reading is ...	.41	**.60**	-.09
34. I reduce the stimulation or noise around me, eg., by turning the TV...	-.19	**.55**	.38
14. I try to get on top of the feeling.	.34	**.49**	-.17
4. I smoke cigarettes.	.08	**-.47**	.20
18. I concentrate on my work, study, or leisure activities.	.39	**.46**	-.23
30. I make a special effort to listen or concentrate harder.	-.10	**.36**	-.10
29. I criticize myself or think negative thoughts about myself.	.21	.30	**.65**
19. I dwell on my problems or how bad I feel.	.34	.25	**.62**
1. I lie down and have a rest or sleep.	-.37	.01	**.49**
7. I give up.	.01	-.10	**.46**
9. I avoid other people.	-.27	.31	**.43**
24. I eat or make a cup of tea or coffee.	.34	-.20	**.41**
12. I accept it and get on with things.	.30	.22	**-.40**
10. I do nothing and hope that it goes away.	-.01	-.14	**.29**
28. I reduce or stop taking my medication.	-.01	.19	**.28**

Appendix 5L

Results of an Initial Principal Components Analyses for 38 ACNSQ Coping Items for Avolition

Item Number and Description	Factor		
	1	2	3
20. I talk to other people about the problem.	**.74**	-.26	.19
27. I think about how I would like things to be.	**.67**	.17	.20
39. I remind myself that past experience has shown me that once I …	**.65**	-.08	.41
40. I try to set an example for other people or demonstrate to others ...	**.56**	-.14	.46
14. I try to get on top of the feeling.	**.56**	-.34	.33
35. I stop and evaluate the situation.	**.54**	-.13	.45
26. I analyse the problem and think of ways to solve it.	**.53**	.00	.35
6. I increase the amount of medication I take, or take my medication ...	**.49**	.15	-.13
8. I follow the advice of my doctor, therapist, case manager, or other …	**.47**	-.29	.39
21. I think positive thoughts.	**.45**	-.39	.39
25. I read, or write things like letters, poems, or stories.	**.37**	-.08	.25
33. I force myself to do the things that need to be done.	**.35**	-.16	.31
30. I try and keep moving all the time.	**.34**	-.32	.25
32. I remind myself that the things I should do are important.	**.33**	-.17	.29
2. I watch TV or listen to music.	**.29**	.06	.01
42. I stay in bed all day or until I feel like getting up.	-.10	**.72**	-.21
31. I think about something for a long time until I work up the energy ...	.12	**.71**	.29
10. I do nothing and hope that it goes away.	-.15	**.70**	-.08
9. I avoid other people.	.09	**.67**	.13
1. I lie down and have a rest or sleep.	.26	**.65**	-.20
19. I dwell on my problems or how bad I feel.	.00	**.49**	.30
7. I give up.	.09	**.47**	.26
18. I concentrate on my work, study, or leisure activities.	.22	**-.45**	.40
36. I set the alarm clock to make myself get up out of bed.	.37	**-.44**	.22
12. I accept it and get on with things.	.18	**-.43**	.41
24. I eat or make a cup of tea or coffee.	-.05	**.33**	.06
22. I go out and do things, eg., go to town or shopping, eat out …	.29	**-.32**	.11
49. I arrange social activities or invite people over so that I have to …	.13	**-.31**	.30
44. I try to make myself feel better by using alternative approaches...	.23	.07	**.72**
43. I use inspirational material, such as positive books and tapes ...	.27	-.02	**.70**
3. I do some physical activity, for example, go for a walk or exercise.	.46	-.23	**.65**
45. I keep a calendar with things planned for each day.	-.17	-.44	**.61**
41. I keep a journal or diary of the positive things I have achieved ...	-.11	.06	**.56**
47. I participate in group activities, for example, self help, social ...	.19	-.03	**.52**
11. I say reassuring or comforting things to myself.	.22	-.20	**.51**
17. I try to behave like people who do not have this symptom.	.35	.20	**.43**
48. I arrange for someone to visit or telephone me in the morning ...	.39	-.13	**.41**
46. I stretch out activities or tasks to fill in the day.	.20	.07	**.33**

Appendix 5M

Results of an Initial Principal Components Analyses for the 24 ACNSQ Coping Items for Blunting

Item Number and Description	Factor		
	1	2	3
7. I give up.	**.78**	-.04	-.21
9. I avoid other people.	**.66**	.17	.37
10. I do nothing and hope that it goes away.	**.66**	-.22	.01
4. I smoke cigarettes.	**.62**	-.29	-.03
29. I criticize myself or think negative thoughts about myself.	**.58**	.42	-.14
1. I lie down and have a rest or sleep.	**.54**	.11	.00
22. I go out and do things, eg., go to town or shopping, eat out …	**-.45**	.37	.20
17. I try to behave like people who do not have this symptom.	**.45**	.22	.28
16. I think of ending my life.	**.42**	.02	-.39
24. I eat or make a cup of tea or coffee.	**.41**	.10	-.02
3. I do some physical activity, for example, go for a walk or exercise.	.05	**.74**	-.04
23. I think of jobs to do in the house or garden.	.17	**.66**	.28
20. I talk to other people about the problem.	.08	**.62**	-.05
26. I analyse the problem and think of ways to solve it.	.06	**.59**	.28
8. I follow the advice of my doctor, therapist, case manager, or other …	.10	**.59**	-.33
25. I read, or write things like letters, poems, or stories.	-.21	**.54**	.15
18. I concentrate on my work, study, or leisure activities.	-.12	**.48**	.27
2. I watch TV or listen to music.	.15	**.35**	.28
5. I drink alcohol or take drugs such as marijuana.	.29	**-.33**	-.06
15. I spend time with other people or talk to people on the telephone.	-.22	**.31**	.22
14. I try to get on top of the feeling.	.06	.14	**.78**
13. I try to be or stay cheerful.	-.19	.07	**.75**
11. I say reassuring or comforting things to myself.	.31	-.06	**.74**
12. I accept it and get on with things.	-.19	-.01	**.67**
21. I think positive thoughts.	-.37	.16	**.61**

Appendix 6A

Results of Comparisons of Total Sample (N = 119) and Retest Subsample (n = 30) Participant Characteristics for Categorical Variables

Variable	χ^2	*df*	*p*
Gender	1.02	1	.35
Marital Status	.10	1	.75
Education	.55	1	.76
Employment Status	2.06	1	.17
Diagnosis	1.03	1	.45

All tests two-tailed

Gender 1= female, 2= male

Marital Status 1= never married, 2= married/defacto/separated/divorced

Education 1= primary or secondary, 2= tertiary

Employment Status 1= disability pension/unemployed, 2= employed/studying

Diagnosis 1= schizophrenia, 2= schizoaffective disorder

Appendix 6B

Results of Comparisons of Total Sample (N = 119) and Retest Subsample (n = 30) Participant Characteristics for Continuous Variables

Variable	*F*	*df*	*p*
Age	.07	1,147	.79
Age Diagnosed	.32	1,147	.58
Length of Illness	.50	1,147	.48
Number of Hospitalisations	.65	1,147	.42
Antipsychotic Medication[a]	1.10	1,147	.30

[a]in chlorpromazine equivalents

Appendix 6C

Means and Standard Deviations for Adjustment Variables in the Total Sample (N=119) and the Retest Subgroup (n =30)

	Total Sample		Retest Sample	
Adjustment Variable	*M*	*SD*	*M*	*SD*
Schizophrenic Symptoms				
SANS summary score	19.17	12.01	15.27	9.77
SAPS summary score	4.62	8.24	1.93	4.74
Subjective Psychopathology (BSI)				
Somatisation	.61	.70	.65	.72
Interpersonal Sensitivity	.96	.90	.99	.95
Depression	2.11	.98	2.07	.91
Combined Anxiety	.98	.97	.83	.88
Hostility	.51	.65	.41	.54
Quality of Life (SLDS)	78.56	13.27	79.93	11.34

SANS = Scale for the Assessment of Negative Symptoms
SAPS = Scale for the Assessment of Positive Symptoms BSI = Brief Symptom Inventory
SLDS = Satisfaction with Life Domains Scale

Appendix 6D

Results of Comparisons of Total Sample (N = 119) and Retest Subsample (n = 30) on Adjustment Variables

Adjustment Variable	*F*	*df*	*p*
Schizophrenic Symptoms			
SANS summary score	2.71	1,147	.10
SAPS summary score	2.94	1,147	.09
Subjective Psychopathology (BSI)			
Somatisation	.09	1,147	.77
Interpersonal Sensitivity	.02	1,147	.88
Depression	.03	1,147	.87
Combined Anxiety	.60	1,147	.44
Hostility	.61	1,147	.43
Quality of Life (SLDS)	.27	1,147	.60

SANS = Scale for the Assessment of Negative Symptoms
SAPS = Scale for the Assessment of Positive Symptoms BSI = Brief Symptom Inventory
SLDS = Satisfaction with Life Domains Scale

Appendix 6E

Chi-square and ANOVA Analyses of Gender Differences in Participant Characteristics and Intercorrelations of Continuous Variable Participant Characteristics (N = 119)

Variable	Gender			Correlations			
				Age	Age at onset	Length of illness	Number of hospitalisations
	χ^2	*df*	*p*				
Marital Status	.30	1	.55				
Education	1.50	1	.47				
Employment Status	.05	1	.57				
Diagnosis	.07	1	.72				
	F	*df*	*p*				
Age	.96	1, 117	.33				
Age at onset	8.17[b]	1, 117	.01	.28***			
Length of illness	.79	1, 117	.38	.78****	-.38****		
Number of hospitalisations	1.54	1, 117	.22	.18	-.24**	.32****	
Antipsychotic Medication[a]	.88	1, 117	.35	.08	-.08	.13	.16

*p < .05. **p < .01. ***p < .005. ****p <.0005 All tests two-tailed

[a]in chlorpromazine equivalents

[b]female M = 25.94, male M = 22.14

Gender 1= female, 2= male

Marital Status 1= never married, 2= married/defacto/separated/divorced

Education 1= primary or secondary, 2= tertiary

Employment Status 1= disability pension/unemployed, 2= employed/studying

Diagnosis 1= schizophrenia, 2= schizoaffective disorder

Appendix 6F

Correlations, Means, Standard Deviations, and Cronbach's Alpha for the Insight Scale Total Score and Subscales for the Total Sample (N = 119)

Insight Variable	Correlation					Cronbach's
	Total	Relabel	Awareness	*M*	*SD*	Alpha
Total Score				9.58	2.75	.77
Relabel	.82****			2.97	1.22	.30
Awareness	.85****	.51****		3.24	1.23	.61
Treatment Need	.76****	.44****	.52****	3.36	.92	.65

**** $p < .0001$

Appendix 6G

BSI Subscale Item Numbers and Mean Item Scores for the Total Sample (N = 119)

BSI Subscale	Item *n*	Item *M*
Somatisation	7	1.61
Interpersonal Sensitivity	4	1.97
Depression	5	2.02
Combined Anxiety	11	1.77
Hostility	5	1.52

Appendix 6H

Correlations and One-way ANOVAs between Participant Characteristics and ACNSQ Appraisal Variables

Symptom and Appraisal Variable	Gender		Marital Status		Education		Employment Status		Diagnosis		Length of Illness	Number of Hospitalisations	Chlorpromazine Equivalents
	F	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*r*	*r*	*r*
Alogia													
Severity Appraisal	.38	1, 55	1.01	1, 55	.34	1, 55	.57	1, 55	1.04	1, 55	.28*	.31*	.04
Distress Appraisal	.00	1, 55	2.19	1, 55	.27	1, 55	1.37	1, 55	1.29	1, 55	-.08	-.11	-.26
Control Appraisal	.68	1, 55	.28	1, 55	.65	1, 55	.31	1, 55	.75	1, 55	.15	.16	.26*
Anhedonia													
Severity Appraisal	1.21	1, 28	3.24	1, 28	1.84	1, 28	.17	1, 28	.59	1, 28	.12	.00	.10
Distress Appraisal	.15	1, 28	.54	1, 28	.09	1, 28	.02	1, 28	.18	1, 28	.07	-.08	-.11
Control Appraisal	2.10	1, 28	.13	1, 28	.33	1, 28	.14	1, 28	.64	1, 28	.14	.08	.05
Attention													
Severity Appraisal	.05	1, 46	.05	1, 46	.04	1, 46	.31	1, 46	.19	1, 46	.08	.28	-.08
Distress Appraisal	6.40[a]	1, 46	1.15	1, 46	1.90	1, 46	.53	1, 46	3.42	1, 46	-.10	.04	-.19
Control Appraisal	1.54	1, 46	.86	1, 46	.95	1, 46	.20	1, 46	.03	1, 46	.05	-.04	-.09
Avolition													
Severity Appraisal	.05	1, 63	.49	1, 63	1.06	1, 63	.56	1, 63	.27	1, 63	.00	.12	-.20
Distress Appraisal	2.46	1, 63	9.22**	1, 63	.37	1, 63	.02	1, 63	.08	1, 63	-.11	-.02	-.23
Control Appraisal	.00	1, 63	.84	1, 63	.27	1, 63	.18	1, 63	.01	1, 63	-.11	.04	.19
Blunting													
Severity Appraisal	.62	1, 33	1.15	1, 33	.78	1, 33	.56	1, 33	.20	1, 33	-.02	.22	-.08
Distress Appraisal	.00	1, 33	.06	1, 33	1.22	1, 33	.01	1, 33	.02	1, 33	-.06	.03	-.26
Control Appraisal	.48	1, 33	1.20	1, 33	.95	1, 33	2.44	1, 33	.03	1, 33	-.04	.10	.14

* $p < .05$ ** $p < .005$ All tests two-tailed

[a]Avolition distress levels- single $M = 2.55$ $SD = 1.19$, married/defacto/separated/divorced $M = 3.67$ $SD = .98$

Gender 1= female, 2= male

Marital Status 1= single, 2= married/defacto/separated/divorced

Employment Status 1= disability pension/unemployed, 2= employed/studying

Education 1= primary or secondary, 2= tertiary

Diagnosis 1= schizophrenia, 2= schizoaffective disorder

Appendix 7A

Correlations and One-way ANOVAs between Participant Characteristics and SANS Symptom Scores and IS Subscales

Negative Symptom SANS Symptom scores and IS Insight	Gender		Marital Status		Employment Status		Level of Education		Diagnosis		Length of Illness	Number of Hosp.	Chlorp. Equiv.
	F	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*r*	*r*	*r*
Alogia (N = 57)													
SANS Alogia score	.34	1, 55	.15	1, 55	2.51	1, 55	.21	1, 55	.06	1, 55	.09	.16	.21
IS Relabel	.36	1, 55	.62	1, 55	.20	1, 55	2.90	1, 55	1.36	1, 55	-.08	-.28 *	-.31
IS Awareness	.51	1, 55	.20	1, 55	1.76	1, 55	1.67	1, 55	.80	1, 55	-.05	-.20	-.23
IS Treatment Need	.00	1, 55	1.08	1, 55	3.32	1, 55	1.78	1, 55	.84	1, 55	-.07	-.21	-.13
Anhedonia (N = 30)													
SANS Anhedonia score	.00	1, 28	3.38	1, 28	.47	1, 28	5.54 *	1, 28	2.09	1, 28	.22	.26	-.07
IS Relabel	.11	1, 28	.49	1, 28	.38	1, 28	4.67 *	1, 28	1.08	1, 28	-.03	-.05	-.02
IS Awareness	.02	1, 28	.46	1, 28	.42	1, 28	1.53	1, 28	2.22	1, 28	-.01	-.30	.13
IS Treatment Need	1.23	1, 28	.01	1, 28	.99	1, 28	2.00	1, 28	.57	1, 28	-.05	-.36 *	.11
Attention (N = 48)													
SANS Attention score	4.93 *	1, 46	1.72	1, 46	2.59	1, 46	1.84	1, 46	.18	1, 46	.05	.14	.01
IS Relabel	.47	1, 46	.03	1, 46	1.15	1, 46	.97	1, 46	.23	1, 46	.02	-.03	-.16
IS Awareness	.45	1, 46	3.90	1, 46	.91	1, 46	.57	1, 46	.09	1, 46	.11	.08	-.10
IS Treatment Need	.00	1, 46	2.45	1, 46	1.23	1, 46	1.07	1, 46	.03	1, 46	.13	.06	-.09
Avolition (N = 65)													
SANS Avolition score	.76	1, 63	.02	1, 63	2.09	1, 63	2.88	1, 63	.07	1, 63	.24 *	.23	.24
IS Relabel	.09	1, 63	.34	1, 63	.00	1, 63	.86	1, 63	.68	1, 63	-.05	-.16	-.04
IS Awareness	2.29	1, 63	1.54	1, 63	1.01	1, 63	2.61	1, 63	1.77	1, 63	-.07	-.07	.06
IS Treatment Need	.11	1, 63	.15	1, 63	1.45	1, 63	.59	1, 63	1.04	1, 63	-.20	-.13	.07
Blunting (N = 35)													
SANS Blunting score	.32	1, 33	.01	1, 33	.41	1, 33	2.47	1, 33	.85	1, 33	.02	.01	.35 *
IS Relabel	1.12	1, 33	2.07	1, 33	4.01	1, 33	.71	1, 33	1.32	1, 33	-.16	-.13	.12
IS Awareness	1.03	1, 33	.71	1, 33	.30	1, 33	.15	1, 33	.12	1, 33	.33	.02	.17
IS Treatment Need	1.15	1, 33	.03	1, 33	.46	1, 33	.33	1, 33	1.51	1, 33	.17	-.01	.09

*$p < .05$. SANS = Scale for the Assessment of Negative Symptoms IS = Insight Scale All tests two-tailed

Higher SANS scores indicate greater pathology Higher insight scores indicate greater insight.

Appendix 7B

Correlations and One-way ANOVAs between Particpant Characteristics and ACNSQ Coping Subscales

Negative Symptom SANS Symptom scores and IS Insight	Gender		Marital Status		Employment Status		Level of Education		Diagnosis		Length of Illness	Number of Hosp.	Chlorp. Equiv.
	F	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*r*	*r*	*r*
Alogia (*N* = 57)													
Active Coping	.05	(1, 55)	.01	(1, 55)	2.17	(1, 55)	.11	(1, 55)	.02	(1, 55)	-.27*	-.31 *	-.09
Avoidance	.63	(1, 55)	.40	(1, 55)	3.23	(1, 55)	.28	(1, 55)	.05	(1, 55)	-.18	-.01	.01
Emotional Coping	2.49	(1, 55)	4.63 *	(1, 55)	.28	(1, 55)	.57	(1, 55)	.01	(1, 55)	-.07	-.12	-.03
Anhedonia (*N* = 30)													
Active/Emotional Coping	1.74	(1, 28)	.03	(1, 28)	2.38	(1, 28)	2.12	(1, 28)	2.95	(1, 28)	-.11	-.03	.16
Resigned Avoidance	.50	(1, 28)	.04	(1, 28)	.02	(1, 28)	1.70	(1, 28)	.23	(1, 28)	-.03	-.15	.01
Palliative Avoidance	.03	(1, 28)	.13	(1, 28)	.59	(1, 28)	2.92	(1, 28)	1.86	(1, 28)	.12	-.09	.23
Attention (*N* = 48)													
Emotional Coping	1.94	(1, 46)	.00	(1, 46)	.05	(1, 46)	.47	(1, 46)	4.08 *	(1, 46)	.07	-.25	.01
Active Coping	.21	(1, 46)	1.36	(1, 46)	2.62	(1, 46)	4.47	(1, 46)	.25	(1, 46)	-.23	-.46 ***	-.14
Avoidance	.13	(1, 46)	2.78	(1, 46)	.13	(1, 46)	2.18	(1, 46)	1.60	(1, 46)	.00	.23	-.20
Avolition (*N* = 65)													
Active Coping	.01	(1, 63)	1.68	(1, 63)	2.95	(1, 63)	1.73	(1, 63)	1.43	(1, 63)	-.14	-.08	.16
Avoidance	.39	(1, 63)	.43	(1, 63)	.54	(1, 63)	.44	(1, 63)	.37	(1, 63)	-.04	.01	-.09
Emotional Coping	4.68 *	(1, 63)	.82	(1, 63)	.86	(1, 63)	1.80	(1, 63)	.42	(1, 63)	-.05	.08	.05
Blunting (N = 35)													
Avoidance	4.56 *	(1, 33)	.00	(1, 33)	.89	(1, 33)	1.06	(1, 33)	1.30	(1, 33)	.08	.29	-.02
Emotional Coping	.51	(1, 33)	.13	(1, 33)	.01	(1, 33)	.27	(1, 33)	.98	(1, 33)	-.27	.11	.11
Active Coping	.04	(1, 33)	.41	(1, 33)	2.16	(1, 33)	1.00	(1, 33)	3.49	(1, 33)	-.10	.17	-.00

*p < .05. ***p < .005. ACNSQ = Appraisal and Coping with Negative Symptom Questionnaire All tests two-tailed

Gender 1= female, 2= male

Marital Status 1= single, 2= married/defacto/separated/divorced

Employment Status 1= disability pension/unemployed, 2= employed/studying.

Level of Education 1= primary or secondary, 2= tertiary

Diagnosis 1= schizophrenia, 2= schizoaffective disorder

Higher coping subscale scores indicate greater use of coping strategies.

Appendix 7C

Correlations and One-way ANOVAs between Particpant Characteristics and Adjustment Variables for Alogia (N = 57)

	Gender		Marital Status		Employment Status		Level of Education		Diagnosis		Length Illness	Number of Hosp.	Chlorp. Equiv.
Adjustment Measure	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*r*	*r*	*r*
Schizophrenic Symptoms (minus SANS Alogia score)	.09	1, 55	.00	1, 55	2.51	1, 55	1.48	1, 55	.37	1, 55	-.03	-.15	.26 *
Subjective Psychopathology (BSI)													
Somatisation	.65	1, 55	.68	1, 55	2.22	1, 55	2.05	1, 55	.00	1, 55	-.25	-.04	-.04
Interpersonal Sensitivity	4.11 *	1, 55	.16	1, 55	2.45	1, 55	1.36	1, 55	.02	1, 55	-.12	.-08	.02
Depression	2.09	1, 55	.06	1, 55	1.55	1, 55	1.31	1, 55	.02	1, 55	-.13	-.18	.00
Combined Anxiety	4.20 *	1, 55	.45	1, 55	1.73	1, 55	.60	1, 55	.34	1, 55	-.03	-.03	.00
Hostility	1.29	1, 55	1.21	1, 55	.41	1, 55	.25	1, 55	.46	1, 55	.06	.21	.20
Quality of Life (SLDS)	.39	1, 55	.00	1, 55	1.16	1, 55	.62	1, 55	.02	1, 55	-.14	-.10	-.03

*$p < .05$.

SANS = Scale for the Assessment of Negative Symptoms, BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale

Note: Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of pathology, higher scores on SLDS indicate greater satisfaction.

Gender 1= female, 2= male

Marital Status 1= single, 2= married/defacto/separated/divorced

Employment Status 1= disability pension/unemployed, 2= employed/studying

Level of Education 1= primary or secondary, 2= tertiary

Diagnosis 1= schizophrenia, 2= schizoaffective disorder

Appendix 7D

Correlations and One-way ANOVAs between Particpant Characteristics and Adjustment Variables for Anhedonia (N = 30)

	Gender		Marital Status		Employment Status		Level of Education		Diagnosis		Length Illness	Number of Hosp.	Chlorp. Equiv.
Adjustment Measure	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*r*	*r*	*r*
Schizophrenic Symptoms minus SANS Anhedonia score	.30	1, 28	.06	1, 28	.39	1, 28	1.92	1, 28	1.12	1, 28	-.19	.05	.20
Subjective Psychopathology (BSI)													
Somatisation	.48	1, 28	1.22	1, 28	1.28	1, 28	.88	1, 28	1.93	1, 28	.06	.01	.14
Interpersonal Sensitivity	.34	1, 28	.14	1, 28	.79	1, 28	.23	1, 28	.13	1, 28	-.05	-.32	-.07
Depression	.82	1, 28	.07	1, 28	.41	1, 28	.31	1, 28	6.36 *	1, 28	.00	-.14	.22
Combined Anxiety	1.45	1, 28	.05	1, 28	.36	1, 28	1.66	1, 28	6.02 *	1, 28	.01	-.15	.22
Hostility	.96	1, 28	.01	1, 28	.26	1, 28	1.16	1, 28	5.30 *	1, 28	.06	-.17	.10
Quality of Life (SLDS)	.11	1, 28	.78	1, 28	.71	1, 28	.93	1, 28	.09	1, 28	-.35	.10'	.08

*$p < .05$.

SANS = Scale for the Assessment of Negative Symptoms, BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale

Note: Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of pathology, higher scores on SLDS indicate greater satisfaction.

Gender 1= female, 2= male

Marital Status 1= single, 2= married/defacto/separated/divorced

Employment Status 1= disability pension/unemployed, 2= employed/studying

Level of Education 1= primary or secondary, 2= tertiary

Diagnosis 1= schizophrenia, 2= schizoaffective disorder

Appendix 7E

Correlations and One-way ANOVAs between Particpant Characteristics and Adjustment Variables for Attention (N = 48)

	Gender		Marital Status		Employment Status		Level of Education		Diagnosis		Length Illness	Number of Hosp.	Chlorp. Equiv.
Adjustment Measure	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*r*	*r*	*r*
Schizophrenic Symptoms minus SANS Attention score	.00	1, 46	.02	1, 46	.19	1, 46	.85	1, 46	1.34	1, 46	-.12	-.22	.14
Subjective Psychopathology (BSI)													
Somatisation	.07	1, 46	.03	1, 46	1.45	1, 46	1.53	1, 46	5.90 *	1, 46	-.06	.06	-.20
Interpersonal Sensitivity	.03	1, 46	.02	1, 46	.73	1, 46	.00	1, 46	.23	1, 46	-.10	-.15	-.06
Depression	.00	1, 46	.75	1, 46	.39	1, 46	1.44	1, 46	2.87	1, 46	-.03	.12	-.27
Combined Anxiety	.47	1, 46	.02	1, 46	.20	1, 46	1.84	1, 46	3.74	1, 46	.02	.24	-.25
Hostility	.90	1, 46	.82	1, 46	.03	1, 46	1.99	1, 46	1.43	1, 46	.12	.10	-.12
Quality of Life (SLDS)	.98	1, 46	.34	1, 46	.61	1, 46	1.18	1, 46	.40	1, 46	-.10	-.19	.09

*$p < .05$.

SANS = Scale for the Assessment of Negative Symptoms, BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale

Note: Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of pathology, higher scores on SLDS indicate greater satisfaction.

Gender 1= female, 2= male

Marital Status 1= single, 2= married/defacto/separated/divorced

Employment Status 1= disability pension/unemployed, 2= employed/studying

Level of Education 1= primary or secondary, 2= tertiary

Diagnosis 1= schizophrenia, 2= schizoaffective disorder

Appendix 7F

Correlations and One-way ANOVAs between Particpant Characteristics and Adjustment Variables for Avolition (N = 65)

	Gender		Marital Status		Employment Status		Level of Education		Diagnosis		Length Illness	Number of Hosp.	Chlorp. Equiv.
Adjustment Measure	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*r*	*r*	*r*
Schizophrenic Symptoms minus SANS Avolition score	.64	1, 63	.01	1, 63	1.05	1, 63	1.78	1, 63	.05	1, 63	-.11	-.07	.12
Subjective Psychopathology (BSI)													
Somatisation	.42	1, 63	.49	1, 63	.11	1, 63	.22	1, 63	.14	1, 63	.12	.06	.01
Interpersonal Sensitivity	.11	1, 63	2.36	1, 63	.01	1, 63	4.03 *	1, 63	.06	1, 63	.05	-.24	.03
Depression	.04	1, 63	5.05 *	1, 63	2.00	1, 63	.65	1, 63	1.86	1, 63	.00	-.20	-.09
Combined Anxiety	.47	1, 63	7.15 **	1, 63	5.10 *	1, 63	.35	1, 63	.67	1, 63	.05	-.14	-.13
Hostility	.12	1, 63	13.75 ***	1, 63	1.97	1, 63	1.51	1, 63	.07	1, 63	.15	-.04	.19
Quality of Life (SLDS)	2.52	1, 63	.76	1, 63	1.30	1, 63	.09	1, 63	.43	1, 63	-.27 *	.04	.04

*$p < .05$. **$p < .01$ ***$p < .005$.

SANS = Scale for the Assessment of Negative Symptoms, BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale

Note: Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of pathology, higher scores on SLDS indicate greater satisfaction.

Gender 1= female, 2= male

Marital Status 1= single, 2= married/defacto/separated/divorced

Employment Status 1= disability pension/unemployed, 2= employed/studying

Level of Education 1= primary or secondary, 2= tertiary

Diagnosis 1= schizophrenia, 2= schizoaffective disorder

Marital Status

1. Single $n = 53$; 2. Married/de facto/separated/divorced $n = 12$

Anxiety: 1. Single $M = .88$, $SD = .86$ 2. Married/de facto/separated/divorced $M = 1.53$, $SD = .90$

Hostility: 1. Single $M = 1.38$, $SD = .43$ 2. Married/de facto/separated/divorced $M = 1.95$, $SD = .79$

Appendix 7G

Correlations and One-way ANOVAs between Particpant Characteristics and Adjustment Variables for Blunting (N = 35)

	Gender		Marital Status		Employment Status		Level of Education		Diagnosis		Length Illness	Number of Hosp.	Chlorp. Equiv.
Adjustment Measure	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*F*	*df*	*r*	*r*	*r*
Schizophrenic Symptoms minus SANS Blunting score	.04	1, 33	1.19	1, 33	.01	1, 33	1.22	1, 33	.10	1, 33	.05	.13	-.11
Subjective Psychopathology (BSI)													
Somatisation	.90	1, 33	3.42	1, 33	.50	1, 33	.49	1, 33	.06	1, 33	.12	-.11	.30
Interpersonal Sensitivity	.26	1, 33	.02	1, 33	.02	1, 33	3.81 *	1, 33	1.71	1, 33	.08	-.26	-.10
Depression	.53	1, 33	.04	1, 33	3.56	1, 33	.44	1, 33	5.54 *	1, 33	.11	-.14	.15
Combined Anxiety	.98	1, 33	.08	1, 33	3.18	1, 33	.35	1, 33	4.07	1, 33	.07	-.10	.15
Hostility	.30	1, 33	.37	1, 33	.10	1, 33	.28	1, 33	2.16	1, 33	.16	-.15	.02
Quality of Life (SLDS)	.31	1, 33	.13	1, 33	.25	1, 33	1.76	1, 33	2.14	1, 33	-.29	.16	.21

*$p < .05$.

SANS = Scale for the Assessment of Negative Symptoms, BSI = Brief Symptom Inventory, SLDS = Satisfaction with Life Domains Scale

Note: Higher scores for Schizophrenic Symptoms and BSI indicate higher levels of pathology, higher scores on SLDS indicate greater satisfaction.

Gender 1= female, 2= male

Marital Status 1= single, 2= married/defacto/separated/divorced

Employment Status 1= disability pension/unemployed, 2= employed/studying

Level of Education 1= primary or secondary, 2= tertiary

Diagnosis 1= schizophrenia, 2= schizoaffective disorder

Comparison of Participant Adjustment for the Present Sample and Other Schizophrenia Studies where One or More of the Same Adjustment Measures have been Employed

	Present Sample		Mueser et al. (1994)		Patterson et al. (1997a)		Kim et al. (1997)		McDonald et al. (1998)		Morlan & Tan (1998)		Kingsep et al. (2003)		Revheim et al. (2006)	
Total Sample Size	119		136		70		63		50		27		17		38	
Variable	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
SANS Summary Score	19.17	12.01			7.8[b]	5.0	52.1[d]	23.7	17.88	11.83					34.50[d]	15.20
SANS Alogia score	5.44	2.46	1.58	.62												
SANS Anhedonia score	7.13	2.40	2.53	1.02												
SANS Attention score	4.94	1.44	2.11	.99												
SANS Avolition score	6.68	2.49	2.38	.88												
SANS Blunting score	9.37	5.31	2.19	.98												
SAPS Summary Score	4.62	8.34			4.7[b]	3.9			10.88	11.65						
Total BSI Score	56.22	20.89									46.41	15.41	57.25	17.19		
Somatisation	11.27	4.90									48.67	10.61				
Interpersonal Sensitivity	7.86	3.58									46.41	11.59				
Depression	10.12	4.70			5.4	6.0					42.07	9.51				
Combined Anxiety	19.44	8.40									45.41[c]	11.05				
Hostility	7.61	3.18									45.56	11.92				

	Present Sample		Baker & Intagliata (1984)		Tempier et al. (1998)		Lenzi et al. (2003)		Margolese et al. (2006)	
Total Sample Size	119		118		59		16		73	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Satisfaction with Life Domains Scale (SLDS)	78.56	13.27	79.4	-	81.40	-	74.40	15.60	91.90	18.50

[a] Symptom total scores and standard deviations

[b] No information provided about calculation of scores

[c] Original anxiety subscale

[d] Included global rating scores in total

SANS = Scale for the Assessment of Negative Symptoms

SAPS = Scale for the Assessment of Positive Symptoms

BSI = Brief Symptom Inventory