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An Exploration of the Association Between Social
Relationships and Depression in People With Schizophrenia

by

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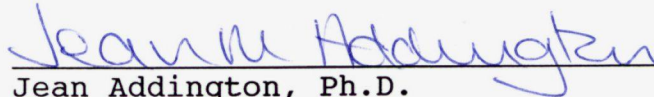
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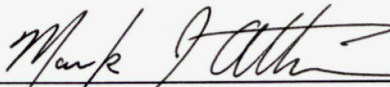
The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "An Exploration of the Association Between Social Relationships and Depression in People With Schizophrenia" submitted by Geraldine E. Robinson in partial fulfillment of the requirements for the degree of Master of Science.



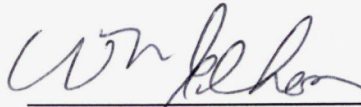
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ABSTRACT

This study was designed to explore the previously unexamined association between social relationship variables and depression in schizophrenics, while controlling for positive and negative symptoms. Depressive symptoms were not significantly associated with any of the social relationship variables. Higher negative symptoms however, were significantly associated with several of the variables except for number of kin network members and emotional support from kin. These findings are limited by the relatively low levels of depression, and skewed distribution of depression scores. Possible reasons for the lack of significant findings are discussed, including the possibility that there is no true association. It is possible that this population may have different vulnerability or mediating factors associated with depression. In addition, there were several gender differences which require further examination. The previously established association between higher negative symptoms and smaller, less supportive social networks was confirmed. Further research is needed to explain the different finding with kin versus nonkin bonds. Kinship bonds tend to be obligatory with the family members initiating and maintaining the bond, whereas acquaintances and friendship bonds tend to require active participation by both parties which may not be possible for schizophrenics.

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DEDICATION

This dedication is made to those who unselfishly lend a hand, a shoulder, an ear, or a kind word to anyone in need. In addition, I dedicate this work to my husband, Ken, my two children, Graham and Jennifer, and to those of my family and friends who have supported me throughout this endeavor and throughout my life. You know who you are, thank-you.

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LIST OF ABBREVIATIONS

ABBREVIATIONS of Scales Used or Reviewed

Beck Depression Inventory	BDI
Brief Interview Schedule for Social Interaction	Brief ISSI
Brief Psychiatric Rating Scale	BPRS
Calgary Depression Scale for Schizophrenics	CDSS
Diagnostic and Statistical Manual for Mental Disorders, 3rd Edition	DSM III
Diagnostic and Statistical Manual for Mental Disorders, 3rd Edition, revised	DSM III-R
Hamilton Depression Rating Scale	HDRS
International Classification of Diseases	ICD-9
Montgomery and Ashberg Depression Rating Scale	MADRS
Positive and Negative Syndrome Scale	PANSS
Present State Examination	PSE
Research Diagnostic Criteria	RDC
Scale for the Assessment of Negative Symptoms	SANS
Scale for the Assessment of Positive Symptoms	SAPS
Schedule for Affective Disorders and Schizophrenia	SADS
Social Network List	SNL
Social Support Questionnaire	SSQ
Structured Clinical Interview for DSM III-R	SCID

ABBREVIATIONS of Social Relationship Variables

Emotional Support from Kin	ESK
Emotional Support from Nonkin	ESNK
Emotional Support Total	EST

(Continued...)

Number of Kin in the Network	NETKIN
Number of Nonkin in the Network	NETNKIN
Total Network Size	NETWORK
<u>Abbreviations of Symptoms</u>	
Depressive Symptoms	CDSS
Negative Symptoms	POS
Positive Symptoms	NEG

Chapter I

Introduction

Depression in schizophrenia has received much attention in terms of its' etiology, course, outcome and its' implications for the course of schizophrenia. Absent from these investigations, however, is an examination of social relationship variables such as social support and social networks in helping to explain depression in schizophrenia. Previous research with the general population and with clinically and subclinically depressed people has established a consistent relationship between greater depression and smaller social networks with less social support. There also appears to be a relationship between higher negative symptoms of schizophrenia and smaller social networks with less social support. The main focus of this research is to determine whether various aspects of social relationships are significantly associated with depressive symptoms in people with schizophrenia, as they are with depression on its own and schizophrenia on its own. In addition, the size and composition of the social network and its supportive functions in this sample of people with schizophrenia are described.

This chapter contains a discussion and definition of relevant symptom and illness variables. It is intended to provide an understanding of the current state of knowledge of the illness variables used in this study, including schizophrenia, positive and negative symptoms of

schizophrenia, depression and depression in schizophrenia. Chapter II contain a description and discussion of the concepts of social relationships, social network, social support, and emotional and instrumental support. These constructs were then operationalized according to their use in this study. Chapter III contains a review of previous research findings relevant to social support/networks in depression and in schizophrenia. This review is intended to provide a basis for predicting the outcome of analyses since no data is available specifically on social relationships and depression in schizophrenia. It also contains a statement of the hypotheses for this study. Chapter IV contains a description of the method, subjects, research instruments and data analyses for this study. Results are presented in Chapter V and discussed in Chapter VI.

Schizophrenia

The term schizophrenia was first used by Eugen Bleuler in 1908 to describe a group of mental disorders characterized by splitting (schizo) of the mind (phrenia). According to Tsuang (1982), Bleuler based his concept of schizophrenia on Kraepelin's 1896 description of a group of mental illnesses called dementia praecox which Kraepelin initially believed involved irrecoverable mental deterioration. He later recognized that some patients do improve. The characteristic symptoms of dementia praecox were hallucinations (false perceptions), delusions (false beliefs), incomprehensible speech, illogical or disjointed

thinking, emotional blunting, apathy, an expressionless, stiff and frozen appearance, lack of interest in the outside world, bizarre behaviour such as repetitive body movements or posturing, and the patient's lack of judgement or awareness of his or her condition.

Bleuler, however, believed the primary characteristics of schizophrenia to be thought disorders, emotional blunting, and an impaired relationship with the outside world, while delusions and hallucinations were secondary to the fundamental symptoms (Tsuang, 1982).

A more recent description of schizophrenia is as an illness that can produce

... a broad range of clinical signs and symptoms that include various combinations of delusions, hallucinations, thought disorders, affective and volitional disturbances, loss of ego boundaries, ambivalence, intellectual deterioration, and personality aberrations (Strauss, Bowers, Keith, Meltzer, & Liberman, 1982, p 433).

As can be seen from the above descriptions, various symptoms such as delusions and hallucinations have been assigned differing degrees of importance during the last century. However, the various ways of conceptualizing schizophrenia over the years do not appear to have fundamentally changed. The major exception is the positive - negative syndrome distinction in schizophrenia.

Positive and Negative Symptoms

The positive - negative distinction divides the symptoms into similar types, with the more active symptoms

such as hallucinations and delusions classified as belonging to a positive syndrome and the more passive symptoms such as blunted affect and intellectual deterioration classified as a negative syndrome.

The distinction between positive and negative types of symptoms was made by J.H. Jackson in 1889. The concept was then introduced to the psychiatric context in 1942 by de Clerambault (Sass, 1989). It was reintroduced by Strauss, Carpenter and Bartko in 1974. However, this division was not actively investigated until the late 1970's and early 1980's (Andreasen, 1982; Crow, 1980). Andreasen developed standardized scales specifically for measuring negative and positive symptoms called the Scale for the Assessment of Negative Symptoms (SANS) in 1983 and the Scale for the Assessment of Positive Symptoms (SAPS) in 1984.

Crow (1980) distinguishes between two separate syndromes in schizophrenia but uses different terminology to describe essentially the same concepts as Strauss et al. (1982) and Andreasen (1982). Type I or acute schizophrenia is characterized by positive symptoms and is associated with change in dopaminergic transmission. Type II or deficit state is characterized by negative symptoms and is unrelated to dopaminergic transmission. Crow believed Type II may be associated with intellectual impairment and structural changes in the brain. Since Crow's work, additional distinctions between negative and positive syndromes have been confirmed on clinical, demographic, psychometric and

psychobiological parameters (Andreasen & Olsen, 1982; Kay, Opler & Fiszbein, 1986; Lindenmayer, Kay & Opler, 1984; Opler, Kay, Rosado & Lindenmayer, 1984). Andreasen and Olsen (1982), for example, found that persons with negative syndrome had poor premorbid adjustment, a lower overall level of functioning, impaired cognitive functioning and indications of previous brain injury and cerebral atrophy. Persons with positive syndrome had better premorbid adjustment, better overall levels of functioning, normal sensoria, and no evidence of cerebral atrophy. Opler et al. (1984) found that primarily negative syndrome persons were older, less educated, more often born in wintertime, hospitalized later in life, and less heavily medicated than primarily positive syndrome persons.

Many authors have investigated the relationship of positive symptoms to negative symptoms and found mixed results. The current general consensus about the relationship between the two types of symptoms is that they are semi-independent (McGlashan & Fenton, 1992). Individuals can be high or low on negative symptoms while being either high or low on positive symptoms, with presumably the worst case being high on both. Which combination of signs and symptoms are equated with which etiology, course and outcomes remains controversial. Nevertheless, the distinction between positive and negative symptoms appears to be useful and widely accepted in research on schizophrenia. The latest version of the American

Psychiatric Association's Diagnostic and Statistical Manual (DSM IV) officially recognizes this distinction.

In the present study the Positive and Negative Syndrome Scale - PANSS (Kay, Fiszbein & Opler, 1987) (refer to Appendix I) was used to identify positive symptoms including delusions, conceptual disorganization, hallucinatory behavior, excitement, grandiosity, suspiciousness/persecution, and hostility. Negative symptoms included in the PANSS are blunted affect, emotional withdrawal, poor rapport, passive/apathetic social withdrawal, difficulty in abstract thinking, lack of spontaneity/flow of conversation, and stereotyped thinking.

Depression

Most people have occasionally felt depressed or down, often in response to negative occurrences. This type of mood disturbance is transitory and within a normal range of mood variation. However, some people experience a severe and long-term disturbance consisting of several psychological and physiological symptoms that can seriously disrupt day to day functioning. The mental disorder known as depression is often an incapacitating condition, usually requiring treatment and is not necessarily connected to negative life events (Winokur, 1981).

Symptoms of depression frequently include cognitive dysfunctions such as negative thinking, decreased ability to concentrate and a tendency to blame oneself for negative occurrences. Psychological symptoms usually include

depressed mood especially in the morning, loss of interest, irritability, agitation, loss of enjoyment, feeling inferior, hopelessness and suicidal ideation. Physiological symptoms often include sleep disturbances such as early morning awakening, inability to sleep or sleeping much more, changes in appetite, weight loss or gain, and fatigue (Winokur, 1981).

Various symptoms and their duration are differentially emphasized in determining whether the person is experiencing a clinical major depressive episode. Most systems include depressed mood and have a minimum duration criteria as prerequisites for a diagnosis of depression. Some of the more common interview based systems used in research for diagnosing a case of depression include:

- the Present State Examination (PSE), which uses a computerized scheme called CATEGO;
- the Schedule for Affective Disorders and Schizophrenia (SADS), which uses a diagnostic classification system called Research Diagnostic Criteria (RDC);
- the Diagnostic Interview Schedule (DIS), which uses a diagnostic system called the Diagnostic and Statistical Manual III (DSM-III);
- the Structured Clinical Interview for DSM-III-R (SCID), which uses a diagnostic system called the Diagnostic and Statistical Manual III-R (DSM-III-R);
- the International Classification of Diseases (ICD-9).

There are also numerous other depression scales for use in interviews and self-report questionnaires which can measure level of depressive symptomatology and/or classify someone as a case. Several are discussed below and in the literature review in Chapter III.

It is often useful to get a measure of the level of depressive symptomatology rather than to classify someone as a case of clinical depression or not a case. Monitoring the number and severity of symptoms is clinically useful to determine if the patient is getting better or worse. In research, the symptom approach is especially relevant when the depressive symptoms are secondary to a serious physical disorder such as cancer, or to another major mental disorder such as schizophrenia. There is a great amount of useful information available in the rating of specific symptoms that may or may not overlap with the symptoms of other disorders. Variation in symptoms is lost when a simple case-no case classification is used. The symptom approach allows the researcher to account for any possible overlap with other disorders for specific symptoms whereas the case approach does not. Because there is an established overlap between some depressive symptoms and some symptoms of schizophrenia, particularly negative symptoms (Prosser, Csernansky, Kaplan, Thiemann, Becker, & Hollister, 1987) (discussed below), it is useful to be able to account for overlapping variance. Therefore, the symptom severity approach is used in measuring symptoms of depression, using

the Calgary Depression Scale for Schizophrenia - CDSS (Addington, Addington, Maticka-Tyndale & Joyce, 1992) (refer to Appendix II) and in measuring symptoms of schizophrenia, using the PANSS (Kay et al., 1987).

Depression in Schizophrenia

Frequency of Depression in Schizophrenia

Symptoms of depression appear to be relatively common in people with schizophrenia (Hirsch, 1982; Johnson, 1981, 1988). This depression tends to conform to a typical depressive syndrome, at least in long-stay, chronic schizophrenic in-patients where depressed mood reached a point prevalence of 13% (Barnes, Curson, Liddle, & Patel, 1989) as measured by item 23 of the PSE (Present State Examination). Based on a review of the literature with a variety of depression measures, McGlashan and Carpenter (1976) estimate a post-psychotic depression frequency of 25%. They suggest the rate may be even higher due to the scarcity of post-hospital evaluations in general in the studies they reviewed. A later study of 211 schizophrenic patients by Mandel, Severe, Schooler, Gelengerg and Mieske (1982) also found approximately 25% developed a depression, as measured by the Hamilton Depression Rating Scale (HDRS), within a five month period after discharge. Lindenmayer, Grochowski and Kay (1991) found that 5% of their 240 chronic schizophrenic patients showed severe depression. An additional 52% of patients had mild to moderate degrees of depression.

The rate of depression within the same sample can also be different depending on the phase of the illness in which it is measured. A study by House, Bostock and Cooper (1987) revealed that 22% of their subjects were depressed during their first episode of schizophrenia. One year later only 7% of the sample were depressed.

Other studies have found much higher rates of depression in schizophrenia depending on the criteria used to measure depression and the duration of study. In one of a series of studies of depression in schizophrenia, Johnson (1981, study I) found clinically significant levels of depression in half of the untreated new acute schizophrenics and in about a third of chronic schizophrenics who relapsed. Depression was assessed by clinical examination, the Hamilton Depression Rating Scale (HDRS), and the Beck Depression Inventory (BDI). A minimum score of 15 and a duration of at least one week on one of these scales defined someone as depressed.

Longitudinal studies which measure all occurrences of depression within their time frame found much higher rates of depression. Johnson (1981, study II) found that during a two year prospective survey of 30 relapsing schizophrenics, 70% of the participants experienced an episode of depression (scoring 15 or higher on the BDI, with a duration of at least one week). The mean duration of the depressive episodes was 8.4 weeks. Sixty percent of this sample were depressed at time of entry into the study.

Johnson notes that true depression may be overestimated because his series of studies did not control for drug-induced akinesia syndrome, which may mimic depression. Even with a possible overestimation of depression, about one third of this sample remained depression-free during relapse and remission over the entire two year period, making depression common but not universally co-incident with schizophrenia. The Johnson studies do not provide any evidence as to why some people with schizophrenia appear to be less susceptible to depression than others. Social relationship variables which have been shown to be important in depression alone (discussed in Chapter II & III) were not measured in these studies, yet could be useful in explaining this difference.

Etiology of Depression in Schizophrenia

There is disagreement about the etiology of depression in schizophrenia. Three main theories are reviewed:

- 1) pharmacogenic or akinetic depression,
- 2) reactive post-psychotic depression, and
- 3) revealed depression.

Pharmacogenic or akinetic depression. The possibility that patients may be at increased risk for depression and perhaps suicide because of drugs administered to alleviate their schizophrenic symptoms makes the issue of pharmacogenic depression a controversial one. In a review of the literature up to 1980, Ananth and Ghadirian (1980) claim to have found relationships between many drugs,

including neuroleptics and antipsychotics, and depression. They also note, however, that many of the studies reviewed do not describe the depressive symptoms in detail, making it difficult to assess the specificity and nature of the suspected drug-induced depressions.

Galdi (1983) contends that while the causes of post-treatment depression in schizophrenia may be heterogeneous, a substantial proportion of these depressions are probably pharmacogenetically-induced. He found that patients with first degree relatives who had a history of depression were significantly more likely to become depressed after 4 to 6 weeks of neuroleptic therapy than those treated with placebo.

It is plausible that some amount or some types of depression are drug-induced in schizophrenics. Depression is known to be a common side effect for many medications (Ananth & Ghadirian, 1980). However, this theory is unable to explain adequately much of the depression in schizophrenia. More recent studies do not support the pharmacogenic theory of depression in schizophrenia.

Johnson (1981) conducted a series of studies with mixed results. He concluded that some depressive symptoms may be drug-related since both high doses of medication and the development of drug induced extrapyramidal symptoms correlate significantly with the presence of depression. An alternate interpretation of these results suggests that perhaps the subjects with higher doses are taking more

medication because they are more ill and thus also more likely to be depressed as part of their greater illness than those on lower dose who are perhaps less ill and less depressed.

If depression in schizophrenia is drug induced then those who were not on medication should experience significantly less depression than those who are on medication. Johnson (1981) found that depression occurred in a high proportion of drug-free patients with schizophrenia. This means that a significant proportion of depressive symptoms occurring in schizophrenia is not drug related.

In a series of studies, Hirsch et al. (1989) found that depressive symptoms (PSE item 23) are less common in severe, chronic, schizophrenic in-patients than would be predicted if these symptoms were manifestations of negative symptoms or if they were drug induced. Severe, chronic patients tend to experience increased negative symptoms and tend to be on medication. In addition, they found no significant difference in prevalence of depression (as measured by the Manchester Scale item score greater than or equal to 2) between the drug-treated ($n = 22$) and untreated ($n = 21$) groups with schizophrenia.

Barnes, et al., (1989) found no significant differences between the matched groups of schizophrenics (depressed vs controls) on negative symptoms, Parkinsonism, tardive dyskinesia, anticholinergic medication, or current dose of

antipsychotic drug. The authors suggest this shows depression was not related to drug treatment, nor was it a direct manifestation or misinterpretation of negative symptoms. Their study was, however, unable to help resolve the issue of whether the depression was an integral part of schizophrenia, was related to their adverse circumstances, or part of multiple handicaps.

Reactive post-psychotic depression. Occasionally, the depression does not coincide with the introduction of medication or the onset of schizophrenic symptoms, but occurs weeks or months later as in what has been described as reactive post-psychotic depression (McGlashan & Carpenter, 1976). This theory postulates that depression occurs as a result of the person's reaction to the ordeal experienced (McGlashan & Carpenter, 1976; Siris, Harmon, & Endicott, 1981). It is certainly conceivable that a person could become severely depressed in the wake of a psychotic episode, realizing that goals, dreams and expectations for the future must be altered and sometimes abandoned. McGlashan and Carpenter (1976) distinguish this type of post-psychotic depression from drug induced akinesia or depression. A drug induced depression occurs within the first few weeks of drug administration and either remits spontaneously with the person's adjustment to the medication or is treatable with anti-parkinsonian drugs. A reactive post-psychotic depression, however, is not affected by such manipulations of neuroleptic medication. The literature

suggests that reactive post-psychotic depression theory, however plausible, at best explains only a small percentage of depression in schizophrenia. Much of the depression that is not drug induced appears to begin before or concurrently with the onset of a psychotic episode (Hirsch, 1982) rather than weeks to months later as would be the case in reactive post-psychotic depression.

Revealed depression. Knight and Hirsch (1981) have developed an interesting theory called 'revealed' depression. They postulate that the depression occurs concurrently with the acute psychotic episode but is not necessarily obvious until the more florid or positive symptoms begin to subside with treatment. In a brief review of the literature, Hirsch (1982) found that depression is more common in acute psychotic phases of schizophrenia than in chronic stages and that it decreases following treatment. These findings favor the 'revealed' depression theory over pharmacogenic and post-psychotic depression theories. Also in support of the revealed depression theory is a study by Green, Nuechterlein, Ventura and Mintz (1990). They measured symptoms of schizophrenia and depression, using the Brief Psychiatric Rating Scale (BPRS) (Overall & Gorham, 1962), every two weeks for one year. This strategy enabled Green et al. (1990) to be fairly accurate in pinpointing the onset of depressive symptoms relative to the onset of schizophrenic symptoms. They found that episodes of depression more often started during relapse of

schizophrenic symptoms rather than during remission, as would be the case in reactive post-psychotic depression.

Since the three theories reviewed above are each able to explain only part of the depression that is observed in schizophrenia, we could be dealing with several distinct presentations of depression in schizophrenia, each with its own etiology, course and outcome. Many drugs are indeed capable of inducing depression as a side effect, but not all medicated patients experience depression while many non-medicated patients do. In addition, depression is a plausible post-trauma reaction to the experience of becoming ill, being hospitalized, and changing one's life, but supportive evidence for this theory is sparse. Depression could also co-occur with a psychotic episode as a sign of the person's greater overall illness but only be detectable once the more florid or positive symptoms begin to subside as in revealed depression.

Important for this study is that not everyone experiencing a relapse or acute episode of schizophrenia becomes depressed at all. The above three theories may explain much of the depression occurring in schizophrenia but none explain why some people with schizophrenia experience symptoms of depression while others do not. When we look to the literature on variables associated with depression alone, social relationship variables appear to be a popular focus (discussed in Chapter III). Factors such as social support and social networks (discussed in Chapter II)

could be associated with differing vulnerabilities to depression in schizophrenia as they are with depression alone.

Negative Symptoms and Depression

The negative - positive symptom distinction in schizophrenia has proved useful in examining depressive symptoms in schizophrenia. Depressive symptoms appear to co-occur with negative symptoms. Addington and Addington (1988) found significant correlations between several measures of depression (including the PSE and the HDRS) and negative symptoms (assessed using the SANS) indicating an overlap between the measure of negative symptoms and the measures of depression. Other studies have also found an overlap between measures of depression and measures of negative symptoms (Prosser, et al., 1987; Kulhara, Avasthi, Chadda, Chandiramani, Mattoo, Kota, & Joseph, 1989). Prosser et al. (1987) found that negative symptoms were significantly correlated with some vegetative features of depression but not with cognitive features of depression. Their sample met Research Diagnostic Criteria (RDC) for schizophrenia. All were stabilized on medication for schizophrenia and were not on any antidepressant medication. The BPRS was used to assess negative symptoms and the HDRS was used to assess depressive symptoms. The total negative symptom score from the BPRS was not significantly correlated with the total depression score from the HDRS. However, when individual item analyses were conducted, the individual

items of; decreased work and activity, motor retardation and decreased libido were each highly correlated with negative symptoms. This means that while the scales, overall, do measure separate constructs, they also contain some significant overlap which has the potential to confound results.

Kulhara et al. (1989) also examined the relationship between depressive symptoms (using the PSE) and negative symptoms (using the BPRS). They found an overlap with some depressive features such as slowness, retardation and lack of energy. The remainder of the depressive symptoms did not overlap with negative symptoms, supporting the notion that depression and negative symptoms are two distinct phenomena which happen to have a few overlapping symptoms in the scales used to measure them.

It appears that certain types of symptoms are not only common to both disorders but that they are clinically indistinguishable. To avoid confounding, it was desirable to use measures which do not have such an overlap between depressive and negative symptoms. If this confounding is not dealt with, the validity of the measurements and thus the validity of the interpretation of result is in question.

Noteworthy are studies which have not found this overlap (Barnes, et al., 1989; Hirsch, et al., 1989). The Barnes et al. (1989) and Hirsch et al. (1989) studies both assessed negative symptoms using the SANS rather than the BPRS as in most of the studies reviewed above.

In addition, Craig, Richardson, Pass, and Bregman (1985) point out that current depression rating scales continue to be used despite not being designed for use with schizophrenics. The HDRS, for example, is designed to be used on depressed patients but only after a diagnosis of depression has been made (Hamilton, 1960).

A narrower assessment of depression for people with schizophrenia which does not overlap with negative symptoms would help to differentiate negative and depressive symptoms. Addington et al. (1992) have recently developed the Calgary Depression Scale for Schizophrenia (CDSS). This measure of depression was designed specifically for use with people who have schizophrenia. It was highly correlated with other standard measures of depression (including the BDI, the HDRS and the depression portion of the BPRS) demonstrating its validity as a scale for depression. In addition, it had low correlations with negative symptoms as measured by the PANSS (Addington, Addington, & Maticka-Tyndale 1994), allaying concerns about confounding due to overlapping with negative symptoms. The authors concluded that the CDSS achieves a good level of separation between level of depressive, and negative symptoms. This was the case for both inpatients and outpatients with schizophrenia. Confirmatory factor analyses also showed support for their hypothesis that the CDSS and PANSS measure separate constructs. Therefore, the CDSS was used in the present study in an effort to measure depressive symptoms separate

from negative symptoms. The CDSS is discussed further in the instrument section of Chapter IV.

Positive Symptoms and Depression

Positive symptoms have also been found to be related to depression to varying degrees depending on the phase of the illness. Dollfus, Petit and Menard (1993) conducted a study in which they examined the relationship between positive symptoms (using two measures - the PANSS and the SAPS) and depression (using the Montgomery and Asberg Depression Rating Scale - MADRS) at three stages of schizophrenic illness (admission, discharge, and stabilized) within three diagnostic classification systems for schizophrenia (DSM III-R, ICD-9, and Langfeldt). During the acute phase of the illness higher positive symptoms (for both PANSS and SAPS) were significantly associated with lower depressive symptoms for DSM III-R and Langfeldt diagnosed schizophrenics. However, the correlations for the ICD-9 diagnosis was not significant at the acute phase of schizophrenia. During the residual or discharge phase and the stabilized phase, positive symptoms were not significantly correlated with depressive symptoms in any diagnostic group.

Lindenmayer, et al. (1991), in contrast, found that patients with higher depression scores tended to exhibit greater positive symptoms, especially for 'conceptual disorganization'. They used the PANSS to obtain a positive symptom score and a depressive component score derived from factor analysis of the 30 items on the PANSS. This

depression component score from the PANSS correlated highly with the HDRS, an established measure of depression.

Summary

Both depression and schizophrenia are serious mental disorders. Depression is a common phenomena in people with schizophrenia, further complicating the situation of the ill person. Measuring depression in schizophrenia is not a straightforward matter because of the possible confounding due to overlap with negative symptoms. This potential confound makes exploring the association between social relationships and depression in schizophrenia complicated. This study uses the Calgary Depression Scale for Schizophrenia to avoid confounding of depressive and negative symptoms.

Chapter II

This chapter contains definitions and a discussion of relevant social relationship variables. It is intended to provide an understanding of how these concepts have previously been used in the literature as well as how they were used in this study. Specific social relationship variables used in this study are described.

Social Relationships

Human beings are social beings. We live, work and play with others. We depend on others in many areas of our lives and others depend on us. Though solitude can be an occasional peaceful distraction from a busy life, there are very few if any people who never interact with others at least to some degree. The nature, amount and quality of these interactions make up a major part of our lives and are therefore of great importance. These interactions we each have with other individuals are called social relationships.

Social relationships vary in their degree of familiarity and function of the participants. Those we do not know well and with whom we interact on a casual basis are called acquaintances. Those we live with, those we depend on, those who depend on us, and those we are emotionally close to are our family and friends. Those who are related to us through genetics, marriage and adoption are considered kin.

Though many of these relationships are positive and voluntary, some are negative and may merely be maintained

out of a sense of obligation or dependence. In addition, we may not necessarily have social relationships with some persons that are normally considered kin or family members. Someone who is adopted may have many genetically related family members but not know them and thus not have relationships with them.

For the purposes of this study, positive aspects of relationships, or lack thereof, and persons with whom the subjects currently have existing social relationships were considered. This does not in any way negate the value of investigating past, desired or overtly negative social relationships (Starker, 1986). They are merely not within the scope of this investigation.

The importance of social relationship variables in mental health is a complex and controversial issue. Many authors have commented that research findings are often not comparable because studies are not necessarily measuring the same concept even though the same terminology may be used or they are using different terminology for essentially the same concept (Barrera, 1981; Bloom, 1990; Gottlieb, 1985; Henderson, 1980 a & b; Heitzmann & Kaplan, 1988; Krause, 1989; Starker, 1986; Turner, Frankel & Levin, 1983). Major difficulties are the operationalization and measurement of constructs. Social network size, network integration, network density, primary network, secondary network, social affiliation, satisfaction with network, received social support, perceived social support, satisfaction with

support, emotional support, instrumental support and reciprocity of support are just a few of the terms used in the social relationship literature. There are no standard, accepted definitions and no standard, accepted measurement instruments for these concepts, though many diverse schemes have been attempted. See Heitzmann & Kaplan (1988) for a review of 23 instruments for measuring social relationships. A sample of some different of instruments are described below to give an indication of some of the different types of available methods of measuring social relationships.

The Shortened Kaplan Scale (printed in Turner, et al., 1983) has seven items, each giving different vignettes of three hypothetical people and their relationship to others in their lives. These vignettes range from lacking in various types of support to having plenty of several types of support. The subject is instructed to read these descriptions and then indicate which of the three descriptions best applies to themselves (on a five point scale). It is an indirect method of assessing someone's social situation. This method requires the subject to identify with one of the three 'persons' described in each set of vignettes. Because of the identification component it may be particularly vulnerable to socially desirable responding or not be relevant to people with serious mental disorders.

Other instruments concentrate on the structure of the network, assessing the number and types of relationships a

person has. The Social Network List (SNL) for example, asks respondents to list up to 20 individuals who might provide support and measures the size and density of the network (Stokes, 1983). This measure, however, gives no indication of the functioning of the network members.

The Social Support Questionnaire (SSQ) (Sarason, Levine, Basham & Sarason, 1983) also assesses the size and characteristics of the network. In addition, it measures the overall level of satisfaction with support received for each of 27 items. The received support subscale and the satisfaction with support subscale are shown to be independent constructs in this measure. This difference between received support and satisfaction emphasizes the importance of specifying what is being discussed in the social relationship literature.

The social relationship questionnaire used in this study is called the brief Interview Schedule for Social Interaction (brief ISSI) (refer to Appendix III) and is a shortened version of the original ISSI by Henderson, Byrne, and Duncan-Jones (1981). It was chosen based on its compatibility with the most commonly accepted definitions of social networks and social supports (discussed below), its face validity, its good reliability, its thoroughness in examining many aspects of social relationships, its suitability for being administered to subjects with widely ranging abilities, and its previous use with a similar sample of subjects.

Following is a discussion of popular definitions and explanations of the relevant social relationship concepts which are used in this study. Indepth discussion of related social relationship concepts are available in Chappell and Guse (1989), Coyne and Bolger (1990), Heitzmann and Kaplan (1988), Krause (1989), and Turner, et al. (1983). Social relationship variables, as measured by the brief ISSI, can be divided into several areas (see the research instrument section of Chapter IV). The two areas used in this study are: 1) network size variables; and 2) social support variables. They are from the attachment table portion of the brief ISSI and are discussed in detail below.

Social Networks

The term social network generally refers to interpersonal linkages among a set of individuals (Mueller, 1980) and is a structural measure (Brugha, 1989) of the people someone interacts with or has contact with. It can be considered a way of describing all or a portion of the social relationships in which an individual is engaged. According to Beels, Gutwirth, Berkeley, and Struening (1984), networks can be described in terms of their:

- 1) size (ie. count of close or casual contacts),
- 2) composition (ie. the designation of individuals as family, friends, acquaintances),
- 3) function (ie. the kinds of activities network members engage in such as supportive or interfering).

- 4) context (ie. the types of situations in which interaction with network members occur),
- 5) demographic characteristics (ie. age, gender, occupation, education, etc.),
- 6) contact (ie. the frequency, duration, and intensity of contact with network members),
- 7) multiplexity (ie. number of different kinds of social exchanges with network members), and
- 8) homogeneity (ie. whether network members are fairly alike (homogeneous), or different from each other (heterogeneous)).

In addition to the focal person's individual linkages with network members, the linkages amongst network members or clusters of network members, independent of their linkages with the focal person, can be examined in depth (see Hammer 1981 for a comprehensive review of structural cluster analysis). Though interesting, cluster analysis is not a focus of this study.

Networks vary greatly from person to person. One individual may have a network consisting of many acquaintances, a few close friends and several family members, while another person's network may consist of few acquaintances, no friends, and one or two family members.

The total network size (NETWORK) variable used in this study consists of a simple count of close and somewhat close network members, generally family and friends, listed on the attachment table section of the brief ISSI (see Appendix

III). In this table, network members are identified by name and specified as either kin or nonkin. The attachment table does not assess more peripheral network members such as acquaintances, though these are available elsewhere on the brief ISSI. Separate scores for number of kin (NETKIN) and number of nonkin (NETNKIN) members of the network are also computed. Other aspects of the networks of these subjects are described in the results section of Chapter V.

Social Support

The function of the networks also varies for individuals. Functional measures assess the extent to which individual relationships or entire networks actually provide or merely have available to the subject particular functions such as social support (Cohen & Wills, 1985).

Caplan (1974) defined social support as a situation whereby

significant others help the individual mobilize his psychological resources and master his emotional burdens; they share his tasks; and they supply him with extra supplies of money, materials, tools, skills, and cognitive guidance to improve his handling of the situation.

Caplan essentially described several of the types of supportive functions that were later pursued in the mental health literature. These functions were variously termed:

- emotional, expressive, self-esteem, or close support;
- informational, advice or appraisal support; and
- instrumental, tangible or material support,

as examples (Cobb, 1976; Cohen & Wills, 1985; Tardy, 1985; Wills, 1985).

The term support implies a positive function of interacting with others. Though the present study focuses on positive functioning, negative functioning of network members is also possible (Pagel, Erdly, & Becker, 1987; Rook, 1984) as in the case of high expressed emotion (ie. criticism, overinvolvement) (Glynn, et al., 1990; Brooker 1990).

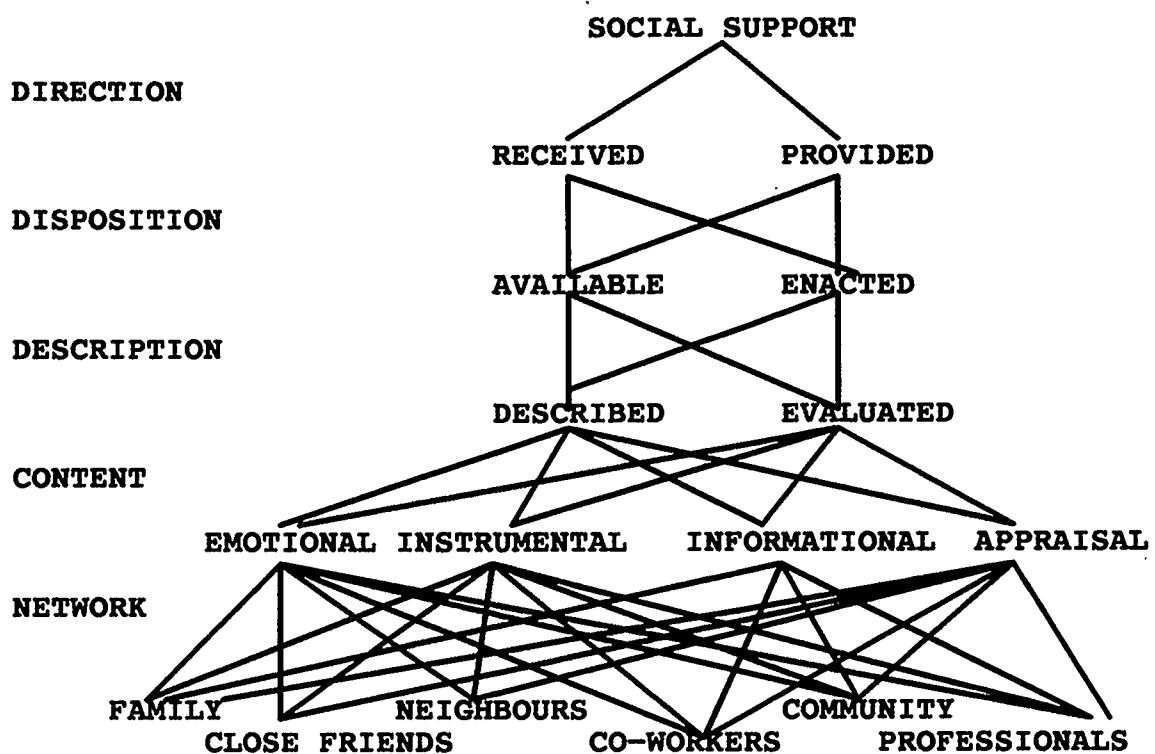
Tardy (1985) suggests five dimensions of social support that can be considered when evaluating measures of social support and social networks. The following points are not intended to be exhaustive, but give an indication of the ways in which social support, in the positive sense, can be examined.

- 1) direction; support can be received and/or provided
- 2) disposition; support can be enacted or perceived as available
- 3) description / evaluation; support can be described and/or evaluated on degree of satisfaction
- 4) content; there can be many different types of support
 - a) support can be emotional (i.e. confidant, someone to lean on)
 - b) instrumental (i.e. lend money, doing things with or for)
 - c) informational (i.e. advice, guidance, resource)
 - d) appraisal (i.e. positive interaction which causes

the individual to feel valued and important)

5) network composition; any of the above types of interaction can occur with family, close friends, neighbors, co-workers, community, or professionals. Refer to Figure 1 for a diagram of this description of social support. The brief ISSI is evaluated in reference to Tardy's description in the research instrument section of Chapter IV.

Figure 1: Aspects of social support.



Tardy (1985)

Emotional Support

Emotional support is a subcategory of social support which causes the individual to feel a sense of belonging, a sense of predictability, a sense of being valued and esteemed, and a recognition of self-worth as well as positive affect (Cohen & Wills, 1985; Weiss, 1969, 1974). Tardy (1985) describes emotional support as that which involves caring, the provision of trust, empathy, and love. This can be accomplished by having someone to confide in, a shoulder to cry on, someone to support our view of the world, and someone to provide encouragement, as examples.

Cohen and Wills (1985) suggest that a generalized beneficial effect of social support, particularly emotional support, could occur because the person is provided with regular positive experiences and a set of stable, socially rewarding roles in the community.

This sense of belonging and stability could provide a strong base for persons to ride out rough times as well as make them less susceptible to negative experiences. For example, a person with a regular, strong and emotionally supportive network may be more confident and thus perform better on the job, making failure less likely. Likewise, when a failure on the job does occur it may have less of an effect on them in an overall negative fashion because of the strong initial base and because of the emotional support received after the event. Alternatively, persons without such a base may be more likely to experience failure through not having acquired a sense of confidence and self-worth

from their network. When environmental or emotional assaults do occur, they are starting from a weaker position as well as having less emotional support to offset the effects of the negative occurrence. These vulnerabilities and lack of mediating effects could make these persons more susceptible to depression and other ills with or without the occurrence of severe negative events.

In this study, a scale to assess the receipt of emotional support is constructed from the sum of yes / no responses to the following questions from the attachment table of the Brief ISSI; 9 (someone to talk with frankly), 13 (someone to share life with), 16 (someone who knows you well as a person), 17 (someone to lean on), 18 (someone who feels close to the subject), 19 (someone to share happiness with), 20 (someone to confide in) and, 21 (comforted by being held). Each of these questions addresses various aspects of emotional support and is coded to reflect whether the support is present or absent, and comes from kin or from nonkin. An emotional support total scale (EST) is computed as well as two sub-scales reflecting emotional support from kin (ESK) and emotional support from nonkin (ESNK).

Instrumental Support

The concept of instrumental support suggests that imbedded in social ties are basic social processes that could enhance general adaptation and assure adjustment to particular stressful events (Heller, Swindle & Dusenbury,

1986). Instrumental supports generally include the practical or material help given to someone.

Having instrumentally supportive network members could, for example, help prevent negative experiences such as financial, logistic or legal problems from occurring or alleviate their impact when they do occur. Someone who has a family member to borrow money from, if necessary, may be less likely to get evicted from their apartment when they are out of money. Even if they were to be evicted they would have somewhere and someone to go to which would alleviate the impact of the experience of losing their home. Persons without such instrumental support may end up living on the street and find themselves in a seemingly hopeless and very vulnerable position.

People with schizophrenia, because of the nature of the illness, may find themselves particularly dependant on other people and/or agencies for a wide variety of many day to day practical tasks. For people in such a position greater use of instrumental support from network members may be more of an indication of greater illness and greater dependance rather than integration and involvement with their network. In addition, the brief ISSI fails to adequately assess instrumental support for this population. Therefore, instrumental support is not included in the analyses for this study.

Relationship Between Network and Support Variables

Social network indices are largely a structural measure which by themselves provide little information regarding the functioning of the members. Network measures can provide only an indirect measure of perceived or potential availability of functions such as emotional or instrumental support of the members (Cohen & Wills, 1985). It is sometimes assumed that the larger the network the more social support the person receives. In actuality, larger networks merely have more *potential* for support, which may or may not exist. Studies that have examined the relationship between network size and available support have found rather low correlations (.20 to .30) (Barrera, 1981; Cohen, et al., 1982; Sarason, et al., 1983; Schaefer, Coyne, & Lazarus, 1981). Someone may have only one or two close relationships and derive more support from their small network than another person with several rather superficial relationships in their large network.

Summary

The concepts of social relationships, social networks, social support and emotional support are often vague and illusive constructs. Common definitions of these constructs were reviewed. It was established that network function can not always be reliably predicted from network structure. Thus, as O'Reilly (1988) recommends, both social support and network size are measured in this study in order to better understand the participant's social situation.

Chapter III

Literature Review

Studies establishing an association between social relationships and; mental health, depression, and schizophrenia are reviewed in this chapter. It is intended to provide background on the current state of knowledge of how various social relationship variable are related to depression and how they are related to schizophrenia, particularly negative and positive symptoms. There are no studies (to the authors knowledge) which have directly investigated the association between social relationship variables and depression in schizophrenia. This background knowledge provides the base for doing so in this study.

Social Relationships and Mental Health

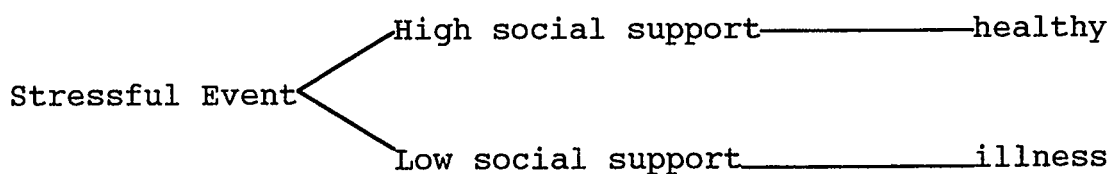
The study of social support grew out of epidemiological and public health models of disease that were applied to psychological phenomena (Bloom, 1965; Cassel, 1974). Lack of social support was considered one causal factor in a multifactoral model of causation for a wide variety of disorders. Involvement in a social network and having social support was also suspected to be a protective factor against a wide variety of disorders. Much research has since been conducted in regard to mental disorders, including schizophrenia and especially depression.

A major area of investigation deals with the potential of social relationships to guard against the manifestation of physical and mental health problems in a stress buffering

or stress moderating capacity (Brown, Bhrolchain, & Harris, 1975; Cobb, 1976; Dean & Lin, 1977; Dohrenwend & Dohrenwend, 1978; Eckenrode & Gore, 1981). In this type of model, (see Figure 2) social networks and their supportive functions are important after a stressor, such as a major life event, has occurred because of their ability to somehow reduce the impact of the stressor. A review of the social support literature by Cobb (1976) revealed that social support can protect people in crisis from a wide variety of pathological states including giving birth to babies with low birth weight, death, arthritis, tuberculosis, depression and alcoholism, as examples.

Figure 2

**Stress buffering or moderating model of social support,
life stress and mental illness.**



Studies using a variety of gender and ethnic sample compositions have found that larger networks and / or higher levels of social support are associated with better mental health. For example, in a study of Chinese-Americans (121 males and 49 females), Lin, Simeone, Ensel and Kuo (1979)

found that at all levels of life events, (as measured by the Holmes and Rahe Social Readjustment Rating Scale, Holmes & Rahe, 1967) persons with better social supports tended to have fewer psychiatric symptoms. Furthermore, high levels of life stress had greater impact when social supports were low as opposed to high. To ensure respondent accuracy and to ensure people were not excluded based on language barriers, interviews were conducted either in English or the native language or Chinese dialect of the respondents.

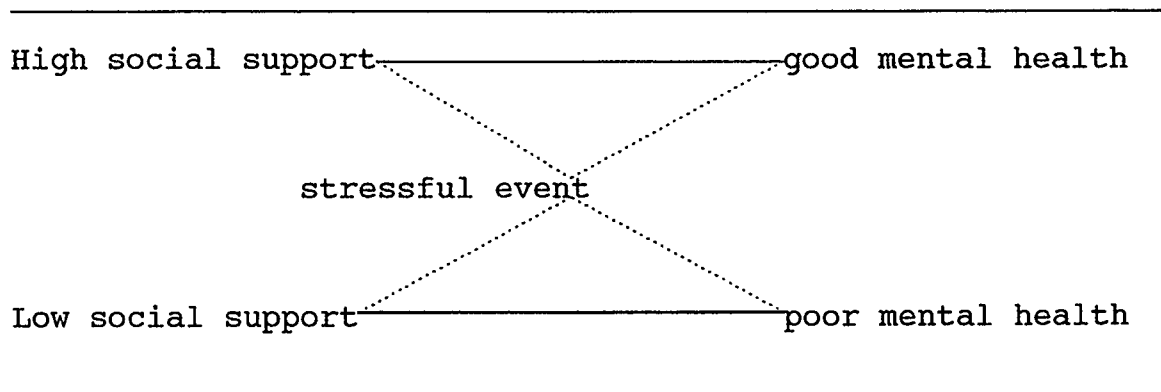
A problem with the Lin et al. (1979) study is that the Holmes and Rahe Scale assigns a standard weight to each event regardless of personal life circumstances. For example, pregnancy is assigned a stress weight of 40 (out of a possible 100) regardless if it is a much hoped for, planned pregnancy or a high-risk, teen, late in life, or unwanted pregnancy. It is easy to see that an unwanted, high-risk pregnancy occurring on the verge of retirement could be very stressful. Conversely, the occurrence of a much hoped for, planned pregnancy would not be as stressful. The individual's life circumstance needs to be taken into account when measuring the stressfulness of life events.

Irrespective of problems with the Holmes and Rahe Scale, the Lin et al. (1979) study revealed that the unique contribution of social support, independent of marital status, occupational prestige, and stressful life events, accounted for 13% of the variance in psychiatric symptoms. This finding indicates that social support may be important

for mental health independent of stress level (see Figure 3). Other authors have also found some evidence to support the importance of social relationships to mental health, independent of life stress (Henderson, 1977, 1980a, 1980b; Miller & Ingham, 1976; Mueller, 1980; Williams, Ware & Donald, 1981).

Figure 3

Direct beneficial effect model of high social support independent of life stress.



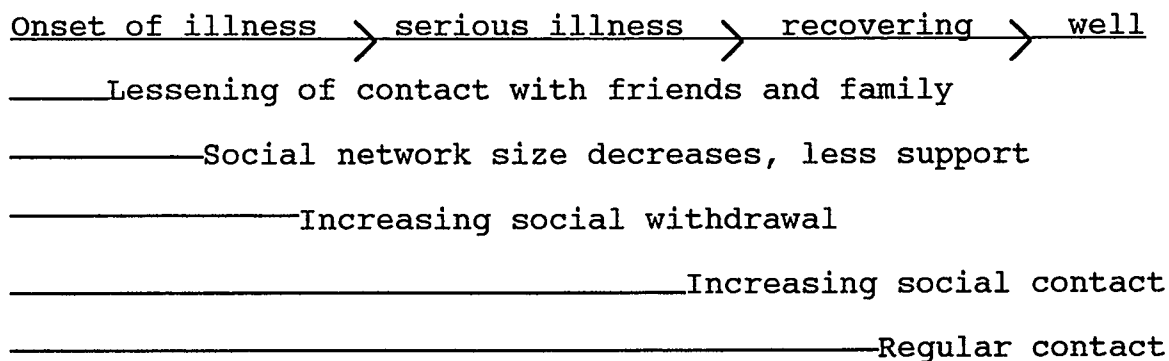
In a huge ($n = 2,234$) longitudinal study, Williams et al. (1981), found that social supports predict improvements in mental health over time in a general population sample. In addition, several studies reviewed by Turner, et al. (1983) found that having a confiding relationship was crucial for good psychological health status regardless of stress. Higher social support was consistently associated with better psychological health status. In addition, the review by Turner, et al. (1983) found that the social

networks of psychotics appear to be differentiated from those of both neurotics and normals by their smaller size, domination by kin, and larger proportion of dependent relationships.

Though it appears that social relationship variables can affect mental health (either directly or indirectly through moderating the effects of stress factors), there is also some evidence that changes in health status can precede changes in social relationships (see Figure 4).

Figure 4

Possible relationship of health status to network size or social support over time with changes in health status preceding changes in social relationships



In a peasant village in Laos, Westermeyer and Pattison (1981) found that mental illness was associated with a decrease in size of social networks, disproportionate reliance on family, and asymmetric instrumental exchange.

The asymmetrical exchange was in the form of the subjects being or becoming the recipients of instrumental aid as they became ill. Most of these subjects were either illiterate, mute or not lucid enough to self-report. Thus, social network data was collected retrospectively (one year time period) through interviews with several informants for each subject. Retrospective data is often subject to the effects of time on memory and bias based on re-interpreting the past in light of the present. In this case, the informants tended to be in agreement so their retrospective data is at least supported by cross-validation.

In a one year prospective study of a community sample ($n = 230$) with measurements taken every 3 months, Henderson and Moran (1983) examined the question of whether it is the symptoms or the social relationships which were the first to change. They used the ISSI sub-scales of availability of close ties, the perceived adequacy of close ties, the availability of diffuse ties and the perceived adequacy of diffuse ties. These correspond to the sub-scales (friend and family number - FRNDNO, adequacy of friends and family - FRNDAD, acquaintance number - AQNO, and adequacy of acquaintances - AQAD) from the brief version of the ISSI discussed in Chapter IV. They were unable to answer this question because with both onset and remission of neurotic and depressive symptoms, the availability of social relationships in size and quality remained unchanged. There were several problems with this study however. Though

prospective, the duration was rather short for detecting neuroses and depression in a community sample. Very few of their subjects developed serious enough symptoms to address their question. In addition, the repeated administration of the social relationship and illness scales over time appeared to show significant regression to the mean. Furthermore, due to test taking, there appears to have been some change in the subjects in the form of personal stocktaking which could account for their improved health and social situations over time.

The model depicted in Figure 4 shows how it is possible that as persons become ill they feel less and less like socializing. They may stop calling on friends and see family members less often because they do not feel well enough to interact. The decline in network size or the amount of social support they perceive as available comes as a result of their illness. According to this model, when cross-sectional studies measure social support / networks at the time when the illness is serious enough to come to the attention of health professionals (and researchers), the drop in social support / networks may have already occurred. This makes it impossible to determine any sort of causal relationship, making it is just as likely that persons had small networks / low support to begin with, or that the illness caused a decline in their social relationships. Longitudinal research is desirable if causal associations are sought. Since social relationships have not yet been

investigated in reference to depression in schizophrenia the first step before engaging in an expensive and lengthy, longitudinal study is to conduct an exploratory study to determine whether a significant relationship exists at all.

Depression and Social Relationships

Research on social support / networks and depression in clinical and non-clinical populations has been extensive. Consistent findings indicate that higher levels of social support are associated with lower levels of depression (see Barrera, 1986 for an extensive review, and George, 1989 for a limited review). Following are some examples of research findings on social networks and depression and social support and depression.

Higher levels of depressive symptomatology were associated with a variety of network size indicators including fewer number of friends, less organizational participation, less social participation (Billings & Moos, 1981, 1984), fewer number of close friends, fewer number of close relatives (Aneshensel & Frerichs, 1982; Aneshensel & Stone, 1982), lack of presence or lack of perception of presence of spouse and friends (Dean & Ensel, 1982; Lin & Dean, 1984; Lin & Ensel, 1984; Warheit, 1979), lower social embeddedness (Bell, LeRoy & Stephenson, 1982; Surtees, 1980), less contacts with friends and family (Mitchell & Hodson, 1983) and weaker strength of close ties (Billings & Moos, 1984).

Higher levels of depressive symptomatology were also associated with less perceived support from spouse, friends, relatives (Billings & Moos, 1981, 1982; Cohen & Hoberman, 1983; Cohen, McGowan, Fooskas, and Rose, 1984; Gore, 1978; Habif & Lahey, 1980) and co-workers (Billings & Moos, 1982), less perceived availability of child care aid (Belle, 1982), less perceived emotional and tangible support (Belle, 1982; Schaefer, et al., 1981), less perceived adequacy and availability of support (Henderson, et al., 1981) and lack of a confidant (Brown, et al., 1975; Costello, 1982). A few of these studies are elaborated upon below.

Cohen and Hoberman (1983), for example, conducted a cross-sectional study with college students and found that perceived social support moderated the relationship between negative events and depression. Cohen, et al. (1984) also conducted a study with college students as subjects. They assessed depression with the BDI and social support with the Inventory of Socially Supportive Behaviours (ISSB) (Barrera, Sandler, & Ramsay, 1981) and the Interpersonal Support Evaluation List (ISEL) (Cohen & Hoberman, 1983). The ISSB assesses actual occurrences of supportive behaviours while the ISEL assesses perceived available social support. Lower support scores from both scales were significantly associated with higher depression scores at Time 1. Only lower perceived social support was associated with higher depression at Time 2.

In a study of pregnant adolescents, Barrera (1981) found that lower support satisfaction was significantly associated with higher depression scores. Interestingly, they found that total number of network members was not associated with depression for the sample as a whole. However, this study did not just ask about supportive network members as the present study does. It also included conflicted network members, that is, those who were sources of interpersonal conflict. When separate analyses were conducted for the conflicted network subscale it was found that higher number of conflicted network members was significantly associated with higher depression scores. Conversely, lower number of non-conflicted network members was associated (though not significantly) with higher depression. The opposing direction of these associations would tend to cancel each other out when the subsamples (conflicted and non-conflicted) are combined and analysed as a whole. This explains the lack of association between total network members and depression.

Researchers wishing to address both positive and negative network members are advised to keep them separate for data analysis purposes. Supportive and nonsupportive network members are likely to be differentially associated with illness as the above example demonstrates.

Certain specific aspects of social support appear to be differentially associated with depressive symptoms. Emotional types of support appear to be particularly

important. For example, Krause (1987) found that lack of emotional support was the strongest predictor of depression.

In the landmark Camberwell study by Brown, et al. (1975), having a confidant was found to be particularly important for reducing the risk of depression following a major life event or a long term difficulty. Psychiatric disorder developed in 38% of the women under stress who did not have a confiding relationship with a spouse or boyfriend, whereas only 4% of such women with a confiding relationship developed a psychiatric disorder. The generalizability of these findings is limited by the fact that the sample was composed entirely of women.

A retrospective study with a random community sample of women, conducted by Costello (1982), attempted to replicate the Brown et al. study. A total of 449 women in Calgary, Alberta were interviewed about their relationship with their husband or boyfriend and classified as either having or not having an intimate relationship with their significant other. They were also asked whether they had a confidant. Depression was assessed using a shortened form of the 9th edition of the Present State Examination (PSE). The interviews were recorded and ratings were made by consensus between the researcher and his assistants. Thirty-eight women in this sample had an onset of depression, but only 31 of them had a spouse, cohabitant or boyfriend. In agreement with Brown, et al. (1975), this study found that a lack of intimacy with an existing partner increased the risk of

depression in women. Out of the 31 depressed women with a significant other, 39% did not have an intimate relationship with their significant other. Only 16% of the non-depressed women with a male companion did not have an intimate relationship with him. In addition, 37% of the 38 depressed women did not have a confidant, including confiding relationships outside of that with their male partner, whereas only 19% of the non-depressed women did not have such a confidant.

A major drawback of the Costello (1982) and Brown, et al. (1975) studies is that they are retrospective with no cross-validation. This is a problem because people who are depressed could tend to be in a negative mind set, and thus recall or report more negative events or be more negative about their relationship with their partners. This should be kept in mind whenever retrospective data is interpreted.

Studies showing a significant positive association between social relationship variables and depression at first glance look as though they may contradict the above results, however; they are actually consistent with the bulk of the literature. Coyne, Aldwin and Lazarus, (1981) and Fiore, Becker and Coppel (1983) found that higher seeking of emotional support and higher frequency of asking for support were associated with higher depression scores. Notice that these variables are slightly different than those discussed above. Here subjects are actually seeking support rather than perceiving it as available to them. Those who are most

ill may be asking for or in need of help, but they may not necessarily be getting it or not have it readily available to them. This distinction further points to the importance of being precise about which social relationship concepts are being examined.

Social Relationships and Schizophrenia

The ability of human beings to interact with one another (social skill or social competence) is an important factor in developing and maintaining social relationships. This ability is impaired in people with schizophrenia. Westermeyer and Harrow (1986), for example, found that people with schizophrenia showed less prehospital social competence in comparison to those who did not have the illness. In addition, they found higher social competence was predictive of better overall outcome for both men and women with schizophrenia.

Mueser, Bellack, Morrison, and Wixted (1990) found that schizophrenic patients had the lowest premorbid adjustment and social skills compared to schizoaffective and to affective patients. These findings indicate that people with schizophrenia have fewer of the skills and competencies required to develop and/or maintain social relationships.

The tendency for people with schizophrenia to be less socially competent than other people could help explain findings indicating their networks are significantly smaller and less supportive than the networks of other groups (Cohen & Sokolovsky, 1978; Garrison, 1978; Lipton, Cohen, Fischer,

& Katz, 1981; Pattison, DeFancisco, Wood, Frazer, & Crowder, 1975; Pattison & Pattison, 1981; Tolsdorf, 1976; Westermeyer & Pattison, 1981).

Erickson, Beiser, Iacono, Fleming, and Lin (1989) conducted a study comparing the social relationships of people with first episode schizophrenia to people with affective psychosis and to a matched, well, comparison group and found mixed results. This study is of particular interest because they used the brief ISSI as their measure of social relationships in people with schizophrenia. Those with schizophrenia had significantly fewer close and confiding relationships (FRNDNO subscale described above) than those with affective psychosis and those who were well. There were no group differences on availability of acquaintance (AQNO subscale), on adequacy of support from acquaintances (AQAD subscale) or on adequacy of support from close and confiding relationships (FRNDAQ subscale).

The Erickson et al. (1989) study compared those with schizophrenia to those with affective psychosis (composed of major depression, or bipolar disorder with psychotic features) but did not control for, or report amount of, depressive symptomatology in those with schizophrenia. It is well established (see above discussion in Chapter I) that many people with schizophrenia do experience mild to severe depressive symptomatology, particularly during and after a psychotic episode. Those with affective psychosis and those with schizophrenia, therefore, are likely to share a

significant amount of symptomatology. Not accounting for this overlap means it is impossible to tell whether the lack of difference between these two groups on several of the social relationship variables is due to true similarities between schizophrenia and affective psychosis as illnesses or whether it is due to these patients having some depressive symptoms in common.

When kin and nonkin from the attachment table (equivalent to the NETKIN and NETNKIN variables used in the present study) were considered, greater number of nonkin in the network was significantly associated with better prognosis for those with schizophrenia and those with affective psychosis. Interestingly, greater number of kin in the network was significantly associated with poorer prognosis for those with schizophrenia. The explanation given is that this was thought to reflect an inability of schizophrenic subjects to tolerate intimate relationships and close contact or be a result of high expressed emotion (criticism, overinvolvement, etc).

Alternatively, since these subjects were experiencing their first episode of schizophrenia, family members and patients would still be adjusting to the change in subjects' mental health status. Dealing with potentially confused and distraught family members is an additional stress on someone who is trying to cope with their own new illness. Later on, perhaps when both parties have adjusted, having several,

close, supportive family members as part of their social network could be more positive.

Also in reference to relationships with kin, Tolsdorf (1976) found that the networks of males with schizophrenia became more heavily composed of family members as the illness time went by. In addition, schizophrenic males served fewer support functions for others in their network than did control subjects with physical illness. The schizophrenic group also had fewer network members to provide supportive functions and those they had each served a larger number of functions. From the results of this study, it appears as though network members of male schizophrenics are composed primarily of overburdened family members. Efforts to expand the network of schizophrenic patients would be useful if only to relieve family members, regardless of whether doing so proves directly helpful to patients. Relieving some of the responsibility for supportive functions from family members would at least be indirectly beneficial to patients.

Family members also comprised the majority of network members for long-term schizophrenic patients in a study by Creswell, Kuipers and Power (1992). The overall size of the network was small, consisting of an average of seven family and friends with whom they have had contact in the last year. When considering only those with whom subjects had regular contact, the average network size drops to three

people. By and large, these remaining people tended to be family members.

In considering why the smaller networks of people with schizophrenia would tend to be more heavily composed of family it is useful to look at the nature of kinship versus nonkinship ties. It is likely that voluntary relationships such as acquaintances and friendships tend to decline sooner because they require active participation by both parties in order to be maintained. In contrast, kinship bonds tend to be accompanied by a stronger sense of obligation and are therefore more likely to be maintained even when the person with schizophrenia is having difficulty functioning in the relationships.

In addition, Cohen and Sokolovsky (1978) found that people with schizophrenia manifest less reciprocity in their social relationships compared to people without schizophrenia. Recall from Tardy's description of social support in Figure 1 that various types of support can be either received or provided by the subject. Reciprocity, in this context, refers to whether the subjects not only receive various types of support from network members but also give support to them. People with schizophrenia appear to receive more than they are able to give. This association did not appear to hold for other diagnostic groups.

Social Relationships and Negative versus Positive Symptoms

Lack of social competence or lack of social skill appears to be strongly associated with higher negative symptoms but not positive symptoms of schizophrenia (Mueser, et al., 1990). Jackson, Minas, Burgess, Joshua, Charisiou, and Campbell (1989) found that those with the least negative symptoms exhibited the best social skills performance. Social skill performance was assessed using a series of microbehavioral variables including; eye contact, body posture, voice volume, voice tone, facial gestures, length of speech and verbal content. Negative symptoms were measured by the SANS (Andreason, 1982) and positive symptoms were assessed by the SAPS (Andreasen, 1984).

Jackson's subjects were also assessed for depression using the HDRS and the BDI. BDI depression scores were significantly associated with positive symptoms but HDRS depression scores were not. Neither of the depression scores correlated with negative symptoms. Though the data were collected, the authors did not report whether depression in schizophrenia is related to any of the social skills variables.

Bellack, Morrison, Wixted and Mueser (1990) report that social skill measures were correlated with negative symptoms but not with non-negative psychotic symptoms. Negative symptoms were measured by the SANS (Andreasen, 1983). Depression in schizophrenic patients was assessed by the BPRS but its association with social skills was not

reported. This is unfortunate given the lack of data on depression in schizophrenia relating to any social relationship variables.

Since social relationships are largely dependent on social skill, it is likely that people with more negative symptoms (rather than positive symptoms) have fewer people in their social networks. Recent research appears to support this expectation. Hamilton, Ponzoha, Cutler and Weigel (1989) found that patients with more severe negative symptoms had fewer network members and more dysfunctional networks than those with less severe negative symptoms. Positive symptoms, however, did not correlate significantly with any network variable in the Hamilton et al. (1989) study.

In addition, Cresswell, Kuipers, and Power (1992) found that greater prevalence of negative symptoms was significantly associated with lower levels of support and that those with a predominance of negative symptoms were less likely to seek support in the event of a life stressor. It is unknown whether they simply tend not to engage in help seeking behaviors because of their negative symptoms or if they don't bother to seek support because they know or think it is not available to them. Nevertheless, it appears that the negative symptoms rather than the positive symptoms play an important role in the association between schizophrenia and smaller, more dysfunctional social networks.

Social relationships and depression in schizophrenia

To this author's knowledge no research has yet been published regarding the association between any social relationship variables and depression in schizophrenia. Therefore, expectations are drawn from previous research on social relationships and depression on its own and between social relationships and schizophrenia on its own. The following is a summary of some of the more pertinent issues to be considered when designing research to address this question.

First, the causal paths and the directions between social relationships and mental health are complex and unclear. It is unlikely that a unidirectional model is able to resolve this issue. Without regard to causal direction, the bulk of the literature does establish an association such that the smaller the social networks and the less support the worse the mental health, and visa versa, especially in regard to depression. Social support appears to have an ability to regulate an individuals mental health. Thus, even though we do not know precisely how this is done, it still has implications for mental health workers in that it would seem important for them to encourage, facilitate, and strengthen informal community support for individuals and their families. This argument takes on even more strength when we consider the already diminished social situation of most people with schizophrenia.

Second, there are various measurement and conceptual difficulties in examining the association between social

relationship variables (network size, and supportive functions) and depression in a sample of people with schizophrenia. There is a relationship between schizophrenic symptoms, particularly negative symptoms, and depressive symptoms (discussed in Chapter I) which has the potential to confound results. There is also a relationship between negative symptoms and social relationships (discussed below) which must be controlled for to avoid confounding of results.

Third, while it is possible that the mediating models for social support, stress and depression alone apply equally well for depression in schizophrenia, this should not be assumed. For example, a model where social support mediates the negative effects of major life events may work for depression in schizophrenia but only if we change the assumptions about what constitutes a major life event or long term difficulty. The life of someone with schizophrenia is not directly comparable to a well person's life. The experience of having schizophrenia itself could be considered a major life event and a constant long term difficulty. In addition, what might not be noticeable or be a minor annoyance for a well person may very well be a major distressing event for someone with schizophrenia. The current methods of assessing life events and long term difficulties would not be appropriate to this population.

Furthermore, the moderating model itself has an essential flaw. Starker (1986) points out that almost all

life events result in a modification of one's social support system causing a confounding of results. A life event that is believed to play a causal role in depression, for example, could involve the loss of the person's main source of support (death of a spouse, divorce, losing a job) thus confounding any possible stress moderating effects.

Therefore the life events, stress buffering or moderating model is not used in this study. It is currently methodologically possible and theoretically sound to proceed in investigating only the *direct* association of social support/network variables to depression in schizophrenia.

Summary

As discussed above, previous research has revealed an association between schizophrenia and network size, composition, and function. When type of symptom is considered, it appears that negative rather than positive symptoms of schizophrenia are responsible for the association between schizophrenia and social relationship variables. Negative symptoms are often confounded with depression in schizophrenia. In addition, positive symptoms show varying associations with depression at different phases of the illness. Depression on its own has a well established history of association with deficient social support and social networks, but has not yet been examined in a sample of people with schizophrenia. The present research examines the association between depressive symptoms and network size (for close and somewhat close

network members) as well as depressive symptoms and emotional support in a sample of people with schizophrenia while controlling for positive and negative symptoms.

Hypotheses

The following specific relationships are hypothesized.

- a) Higher depressive symptoms are significantly associated with fewer number of kin network members, controlling for negative and positive symptoms.
- b) Higher depressive symptoms are significantly associated with fewer number of nonkin network members, controlling for negative and positive symptoms.
- c) Higher depressive symptoms are significantly associated with fewer total number of network members, controlling for negative and positive symptoms.
- d) Higher depressive symptoms are significantly associated with less emotional support from kin, controlling for negative and positive symptoms.
- e) Higher depressive symptoms are significantly associated with less emotional support from nonkin, controlling for negative and positive symptoms.
- f) Higher depressive symptoms are significantly associated with less emotional support from the total network, controlling for negative and positive symptoms.

Chapter IV

Method

Design

This research was a cross-sectional, descriptive, exploratory study of the social relationships of people with schizophrenia. It occurred at the one year follow-up assessment of a larger 2 year longitudinal study at the University of Calgary which examined the course of depression in schizophrenia. The studies were approved by The Conjoint Medical Ethics Committee of the University of Calgary and by The Foothills Hospital Research and Development Committee.

Sample

Participants were 44 male and female adult volunteers with a DSM-III-R (American Psychiatric Association Diagnostic and Statistical Manual, 3rd edition, revised, 1987) diagnosis of schizophrenia, who participated in the larger study, and were available for the social relationship interview (using the brief ISSI) at their one year follow-up. They were from the southern Alberta area, mainly from Calgary.

Participants were recruited into the larger study initially from acute hospital admissions. Calgary hospitals assisting in recruitment were the Foothills Hospital (primarily), the Calgary General Hospital, and the Holy Cross Hospital. Each potential participant's attending physician assessed the potential participant's willingness

and competence to consent and to participate before recommending him or her to the study. An experienced psychiatrist then administered the Structured Clinical Interview for DSM-III-R (SCID) (Spitzer, Williams, Gibbon, & First, 1990; 1992) to confirm the diagnosis of schizophrenia.

Exclusion criteria included:

- 1) mental retardation
- 2) age over 65
- 3) active drug or alcohol abuse in the last year
- 4) seizure disorder
- 5) any identifiable neurological disorder.

Determination of whether a person met the exclusion criteria was based on a review of the patient's charts and medical history.

Generalizability

The results are best generalized to those in the mid-range of severity of schizophrenic illness. In addition to having a diagnosis of schizophrenia, participants must have been ill enough to have been hospitalized but not so ill as to be incompetent to consent or participate.

Generalizability is thus limited by systematic exclusion of people on both the very mild and very severe ends of the spectrum of severity of schizophrenic illness. Though information on such people would certainly be important, it was not possible to include them here given the methodological constraints and practical consideration

pertaining to validity of the data obtained from those who are extremely ill.

This was a sample of convenience so it was unknown how representative these participants were of even the original sample. To check for other factors potentially impacting on generalizability of findings the final sample ($n = 44$) was compared (on all measures included in this study except the social relationship variables) against participants from the larger study who did not participate in this study. These comparisons were conducted using data from time of entry into the larger study and again using data from the one year follow-up.

Going back to the time of entry into the larger study, there were a total of 74 subjects eligible to participate in this study. By the one year follow-up point of the larger study 18 subjects had dropped out, (2 due to suicide, several moved out of the area, several simply withdrew from the study) leaving 56 subjects eligible to participate in this study.

Of these 56 remaining subjects, 45 consented to participate in this study. One subject who consented was not included because he was too ill to properly complete the brief ISSI. The additional 11 subjects either did not consent or were unavailable. Thus, there were 44 subjects who had complete data for analysis in this study and 12 who did not. Refer to Figure 5 for a depiction of these numbers.

Figure 5: Attrition of subjects who were available to participate from the larger study at Time 1 and 1 year compared to those who did participate in this study.

	Time 1	1 year
all available subjects from larger study	74	56
drop-outs from larger study before one year	18	
non-participants who continued on to one year follow-up	12	12
total of non-participants	30* (12 + 18)	12**
actual participants in present study continuing on to one year follow-up	44*	44**

* Time 1 comparisons on demographic and symptom data

** 1 year comparisons on demographic and symptom data

Results of these comparisons are presented in Tables 5 & 6

There were no significant differences between those who did participate (n = 44) and those who did not participate (n = 12) at the one year follow-up on any demographic variable measured in the study including;

- sex,
- age,
- highest grade level achieved,
- month of birth,
- number of suicide attempts,
- number of previous admissions,
- number of months since first admission,

- age at first psychiatric admission,
- age at onset of schizophrenia, or
- age at loss of a parent if any.

Refer to the Results Section (Chapter V) for actual values. There were also no differences between these two groups on depressive symptoms, positive symptoms or negative symptoms. Thus for subjects who made it to the one year follow-up there is no difference between those who participated in the present study and those who did not. The actual values obtained in these comparisons are reported in detail in the data analyses section.

However, when the Time 1 data for the group who eventually participated in the present study ($n = 44$) were compared with Time 1 data of other potential subjects at time of entry into the study ($n = 30$, 18 who dropped out before the 1 year, plus 11 who later did not consent, plus the 1 who could not complete the brief ISSI) some differences were found. Specifically, those who did not participate had significantly higher scores on depressive symptomatology than those who did participate. Refer to Table 5 in the data analysis Results Section (in Chapter V) for specific values. In addition, those who did not participate in this study were significantly older at the time of their first psychiatric admission than were subjects who did participate. These differences indicate differential attrition which further biases the sample and limits the generalizability of the findings. The finding of

higher depressive symptomatology scores for Time 1 data in those who did not participate is especially of concern. This study focuses on depression in schizophrenia yet it appears that the very subjects of interest are the ones who tend not to participate. Future researchers should be wary of this tendency when recruiting participants and drawing conclusions from their results.

Ethical Considerations

Informed Consent

The purpose of the study and the expected role of participants was fully explained to ensure informed consent. Potential subjects were given an opportunity to address any questions before agreeing to participate as well as at any time during their participation.

Voluntary Participation

During recruitment and whenever participants showed any concern about participation, the voluntary nature of participation and the confidential nature of the information provided was stressed.

Payment

Participants who made a trip to the Foothills Hospital for the purpose of taking part in this study were paid a sum of \$15 to cover expenses, such as transportation costs or parking fees.

Confidentiality

Respondents were individually interviewed in a closed room to ensure privacy and confidentiality. No audio or

video recording was made. Data sheets only had participants' identification numbers on them to allow matching of follow-up data with previous data. The list matching participants' names with their identification numbers and the data itself were stored separately in locked cabinets and accessible only to authorized study personnel. These data remain on file and are stored in locked cabinets.

Breach of Confidentiality

One relevant exception which ethically compelled a limited breach of confidentiality occurred when information gathered for research purposes indicated a subject was a threat to herself. The principal investigator of the larger project, who is an experienced psychiatrist, was consulted and a decision was made to inform the participant's mental health care worker of her suicidal ideation.

Risks to Participants

No enduring risks were anticipated to subjects who participated in this study. No experimental manipulations were made whatsoever. Inquiry into sensitive topics, however, appeared to cause a few respondents to become mildly, transiently distressed during assessments. This was minimized by emphasizing the confidentiality of the information revealed to researchers. Though rarely necessary, the pace of the interview was sometimes modified, (i.e. by stopping for a glass of water or cup of coffee) for subjects who showed some distress, whether as a result of the questions or as a result of their mood state on that

day. In one instance the assessment was terminated, re-booked and completed at a later date. One subject was dropped from this study because his interview was terminated when it became evident that his delusions had progressed to the point where he was too ill to comprehend the meaning of and coherently respond to the questions on the brief ISSI.

Research Instruments

Demographics

Demographic data, relevant personal data and medical history data were collected during the intake interview and from a review of participants' medical charts.

Structured Clinical Interview for DSM-III-R

All participants met DSM-III-R criteria for schizophrenia using the SCID, administered by an experienced psychiatrist. The SCID is a semi-structured interview for making a major axis I DSM-III-R diagnoses, covering both current and lifetime diagnoses (Spitzer, Williams, Gibbon, & First, 1990, 1992). Test-retest reliability of the SCID has been assessed using 506 pairs of interviews at six sites (Williams et al., 1992). Kappa coefficients varied by diagnosis and site but generally were comparable to those reported for other major diagnostic instruments, such as the National Institute for Mental Health (NIMH) Diagnostic Interview (DIS) (Robins, Helzer, Croughan, & Ratcliff, 1981) and the Schedule for Affective Disorders and Schizophrenia (SADS) (Endicott, & Spitzer, 1978).

Positive and Negative Syndrome Scale

The PANSS was used to assess the presence and severity of positive and negative symptoms of schizophrenia (Kay, Fiszbein, & Opler, 1987). The PANSS was developed from the Brief Psychiatric Rating Scale (BPRS) (Overall, & Gorham, 1962) and the Psychopathology Rating Schedule (PRS) (Singh, & Kay, 1975). It consists of a 30 item scale that separately assesses seven positive symptoms, seven negative symptoms and sixteen general psychopathology symptoms on a seven point scale from 1 (absent) to 7 (severe). Information necessary to give ratings on each symptom was collected in a 40 minute (approximately) semi-structured, increasingly directive interview and if necessary, from persons familiar with the subject, such as family or the patient's prime nurse.

PANSS developers reported alpha coefficients of .73 to .83 ($p < .001$) indicating high internal reliability and homogeneity among sub-scales items (Kay et al., 1986). The general psychopathology scale produced a split half reliability coefficient of .80 ($p < .001$). For unremitted inpatients the test-retest reliabilities over a 3 to 6 month interval were .89 (Positive sub-scales - POS), .82 (Negative sub-scales - NEG) and .77 (General Psychopathology sub-scales - GPS) (Kay et al., 1987). Kay et al. (1986) also cited support for the convergent, discriminant, and criterion related validity of the POS and NEG sub-scales.

Refer to Appendix I for a copy of the PANSS score sheet and subscale composition.

Calgary Depression Scale for Schizophrenia

The CDSS is a semi-structured interview developed specifically to assess level of depression in people with schizophrenia and has been found to be valid and reliable in both the acute and remitted phases of schizophrenia (Addington et al., 1992). It takes approximately 10 to 20 minutes to administer depending on the number of follow-up probes necessary to obtain a rating on each item. The CDSS was able to discriminate between the presence and absence of a major depressive episode with 93% of patients correctly classified. The CDSS correlated highly with three standard depression scales, namely, the Hamilton Depression Rating Scale (HDRS) ($r = .8220$, $p < .001$), the Beck Depression Inventory (BDI) ($r = .7923$, $p < .001$), and the Brief Psychiatric Rating Scale (BPRS) ($r = .8713$, $p < .001$). These three depression scales were used in many of the studies cited in the literature review on depression in schizophrenia and depression on its own. The high correlations between the CDSS and these measures allow some comparability between these and previous findings. Refer to Appendix II for a copy of the CDSS.

Brief Interview Schedule for Social Interaction

The brief ISSI was selected to collect information on social relationships. The original ISSI, which has consistently shown good reliability and validity in the

general population, (Duncan-Jones, 1981; Henderson, et al., 1981) was shortened and slightly modified by Erickson et al. (1989) to facilitate its use with people who have schizophrenia. Refer to Appendix III for a copy of the brief ISSI, the scoring sheet, and the brief ISSI codebook. Only data from the attachment table is used in this study. It is a structured interview which takes from 15 to 40 minutes to complete depending on the interactive abilities of the respondent and the size of his or her social network.

The brief ISSI has previously been used in a study of people who have a first episode of schizophrenia (Erickson et al., 1989). The acquaintance number, and family and friend number sub-scales (AQNO and FRNDNO) as well as their satisfaction sub-scales (AQAD and FRNDAQ) are reported to have Cronbach's alpha coefficients ranging from 0.60 to 0.92 when computed separately for the patients with schizophrenia, for patients with affective psychosis and for the matched control subjects (Erickson et al., 1989). These authors also note that two-thirds of the coefficients were higher than 0.70. There is no validity or reliability data available on the attachment table portion of the interview.

In a personal communication (Jan. 14/94) Erickson reported additional alpha coefficients from newly available five year follow-up data on 53% of the surviving original sample ($N = 70$ for psychiatric patients, $N = 76$ for matched controls). The psychiatric follow-up sample had no differential attrition on diagnosis, level of adaptive

functioning at intake, age of onset, duration of prodromal period or parental social economic status. Potential differential attrition data for social relationship variables are not currently available. The FRNDNO subscale produced alpha coefficients of 0.80 with the psychiatric patients (grouped together) and 0.79 for the matched control group. The AQNO subscale produced alpha coefficients of 0.83 for the psychiatric group and 0.94 for the matched control group.

The brief ISSI also shows good face validity particularly for questions pertaining to the attachment table. Questions directly query typical types of interaction (both contact and support) for acquaintances and friends and family. The questionnaire also covers many of the aspects of social support described by Tardy (1985) and discussed above. The brief ISSI covers both received and provided support. Perceived available support is assessed but actual enacted support is not directly assessed. The scale describes as well as evaluates support. It addresses emotional, instrumental and appraisal support but does not directly address informational support. Support from network members is assessed in the categories of family, close friends, neighbors, co-workers, and community. There are no questions which directly assess "professional" network members such as doctors, therapists, nurses, group home workers and clergy but they are included on the attachment table if mentioned by the respondent. Thus the

scale appears to address many of the key aspects of social support as described by Tardy (1985), even though only a few of them are necessary for the analyses utilized in this study.

This scale is also practical for use with people with schizophrenia because it is relatively short and uses the interview method which allows for clarification should misunderstanding of questions or responses occur.

Roles of Researchers

There were three people who were responsible for collection of data in this project. Geraldine E. Robinson was the principle investigator responsible for conducting the brief ISSI interviews at the one year follow-up point of the larger study. She also did the data entry and data analyses. Dr. Donald Addington conducted 2 of the brief ISSI interviews with subjects who were in residence in out of town hospitals. Inter-rater reliability was established by simultaneous ratings of interviews conducted alternately by Dr. Addington and Ms. Robinson. Actual reliability values were not computed because of the nature of the data (i.e. names of family members), however, both researchers practised together with in-hospital psychiatric patient volunteers until a high level of agreement was achieved on data elicited and recorded.

An experienced psychiatrist (Dr. Donald Addington) conducted all screening interviews and recruited subjects.

He also conducted all SCID interviews to confirm the diagnosis of schizophrenia and depression. Dr. Addington has received training specifically on use of the SCID. The SCID data was collected at time of entry into the larger study.

A research associate, Jackie Bushiekin, collected demographic data and data on the PANSS and the CDSS at both the time of entry into the larger study and at the one year follow-up interview. She is a registered nurse with several years of psychiatric nursing experience and has been the research co-ordinator on several research projects in the Calgary area. She trained to use the PANSS by means of a training manual and standardized video taped training and testing sessions provided with the PANSS. Inter-rater reliability coefficient of $>.80$ was achieved between her ratings and those on the video taped demonstrations during training sessions before beginning interviews with subjects. She also trained to use the CDSS with its developer, Dr. Addington.

Inter-rater reliability was also computed between Dr. Addington and Ms. Bushiekin after the completion of training on the PANSS and the CDSS. Inter-class correlations coefficients were 0.97 for the PANSS negative scale, and 0.96 for the CDSS (Addington, et. al., 1994).

Descriptive Statistics

Means, standard deviations, and range of values were used to describe the sample on the following variables:

- age,

- education,
- age at onset of illness,
- number of previous psychiatric admissions,
- number of years since first admission,
- age at first admission,
- number of suicide attempts,
- negative symptoms and depressive symptoms.

A statement of actual numbers and percentages was made for the following variables:

- sex,
- ethnicity,
- marital status,
- source of finance,
- living arrangements and diagnosis.

Composition of the networks (ie. the relationship of the person who is most often named as 1st, 2nd and 3rd closest to the participant, the relationship of the person fulfilling the greatest number of supportive functions, and numbers of kin and nonkin) was also described.

Data Analysis

Hierarchical multiple regression, backward multiple regression and simple correlational analyses were used to examine whether the expected associations existed in this sample. The analyses were done for the sample as a whole. Follow-up analyses were conducted for male and females separately because of suspected gender differences.

Error rate

Results of individual analyses were considered statistically significant at the $p < .05$ level, with no adjustment for the number of analyses; however, actual probability values were reported.

Justifications for this decision are: 1) the analyses are pre-planned, as such they did not take post-hoc advantage of chance patterns observed in the data; 2) the study is exploratory in nature and covers relatively new areas of investigation. As such it should be given the best chance of finding existing relationships. More rigorous tests of significance can be applied to replication studies designed specifically to support or refute these exploratory findings; 3) economically, conducting several pre-planned analyses maximizes the use of data from a very limited source. This also allows for a broader, more detailed examination of the social situation of these people. Only a certain percentage of people with schizophrenia in this area are willing and / or able to participate in research studies. Thus there is a very limited source from which to recruit participants. Furthermore, we cannot expect the willing and able ones to participate in a separate study for each question we wish to address. To avoid the over-use of people with schizophrenia and still be able conduct preliminary investigations of questions of interest, some relaxing of error rate restrictions is justified.

Chapter V

Results

Descriptive Results

Demographic Description

This sample consists of 29 male and 15 female adult volunteers ($n = 44$) from Calgary and the southern Alberta area. The sample was almost entirely Caucasian (93%). The mean age of the sample was 35 years. They had achieved an average of 11.5 years of education with 77% having completed grade 12. Just over 61% of this sample were never married singles, while another 30% were divorced, separated or widowed. Only 9.0% were currently married or in a common law relationship. Subjects tended to live alone (36.4%), with parents (25.0%) or with a friend/room-mate (18.2%). The remainder lived with a spouse (9.1%), in a group home (9.1%) or with other relatives (2.3%). The main source of financial support came from social welfare (77.3%). Another 11.4% were employed, while the remainder were supported by their families (9.1%) or had no apparent source of support (2.3%). Half of the subjects had not lost a parent through death or divorce, while for 16% the fathers had died, for 6.8% the mothers had died, for 13.6% both parents had died, and for 13.6% the parents were divorced. For 25% of the subjects the loss occurred before the age of 20. Refer to Table 1 for a summary of the means, standard deviations and minimum and maximum values for applicable demographic data and for some illness history variables.

Table 1: Descriptive statistics for demographic and illness history data on 44 male and female schizophrenics

Variable	Mean	SD	Min.	Max.
Age in years	35	9.8	18	62
Highest grade	11.4	2.2	6	16
Age illness began	22.7	6.3	9	44
Age at first psychiatric admission	24.5	7.3	9	44
Number of previous admissions	5.4	5.0	0	21
Number of suicide attempts	1.5	3.5	0	20

Illness History Description

All subjects had a DSM III-R diagnosis of schizophrenia using the SCID. The mean age of onset of illness was 22.7 years, with a mean age at first admission of 24.5 years. As a group they had a mean of 5.4 psychiatric admissions. Only two subjects were experiencing their first psychiatric admission at the time of entry into the study. Just over half (52%) of the subjects had never attempted suicide, while 10% had attempted more than three times. One subject had attempted 12 times and another had attempted 20 times. Refer to Table 1 for a summary of these results.

Description of Symptom Data

The mean depressive symptomatology score was 4.1 (on a scale of 0 to 28). Half of the subjects had little (a score of 2 or less) or no symptoms of depression as measured by the CDSS. Only 20% ($n = 9$) had a depressive symptomatology score of 7 or greater. No subjects had scores exceeding 15.

The possible scores for each of the positive and negative sub-scales on the PANSS range from 7 to 49. This sample had a mean positive symptom score of 13. Over half (55%) scored 12 or lower on positive symptoms. Their mean negative symptom score was 17.5. More than half (52%) of the subjects had a negative symptom score of 16 or lower. Refer to Table 2 for descriptive results including means, standard deviations, minimum and maximum values for symptom data from the CDSS and the PANSS.

Table 2: Descriptive statistics for depressive, negative and positive symptom data for 44 male and female schizophrenics

Variable	Mean	SD	Min.	Max.
Positive symptoms from PANSS	13.0	5.6	7	28
Negative symptoms from PANSS	17.5	6.2	8	31
Depression score from CDSS	4.2	4.6	0	15

Social Relationship Description

1) Network Composition and Description

Subjects were given an opportunity to name all of their close and somewhat close network members and indicate whether they were kin or nonkin. The names, sex, and relationship to the subject were recorded on the attachment table of the brief ISSI. Close network members were ranked ordered according to who the subject felt closest to, fondest of, or most attached to. Somewhat close network members were simply listed on the attachment table following all of the close network members.

a) Close network members. The mean number of close network members was 4.7 people, with 75% of subjects having 5 or fewer close network members. Mothers fulfilled the most supportive functions. This variable was used for descriptive purposes only and was not included in the analyses with depression.

Refer to Table 3 for a summary of the ranking of close network members. The person most often ranked as first closest was the mother (for 30% of subjects). The person second most often ranked as first closest was a significant other (for 18% of subjects), while the person third most often ranked as first closest was a friend (for 16% of subjects). The vast majority (68%) of close network members ranked as first closest were kin members of one type or another.

The person most often ranked as second closest was a friend (for 21% of subjects). The person second most often ranked as second closest was the mother (for 16% of subjects). The person third most often ranked as second closest was the father (for 14% of subjects). Over 61% of close network members ranked as second closest were kin members of one type or another.

The person most often ranked as third closest was also a friend (for 32% of subjects). The person second most often ranked as third closest was a sister (for 18% of subjects). The person third most often ranked as third closest was no one (for 16% of subjects).

Thus mothers and friends appear to be the closest network members for people with schizophrenia, outranking fathers, siblings, significant others and professionals.

Table 3 Description and ranking of persons most often named as first, second and third closest network members.

Person Ranked by Subject as			
<u>Frequency</u>	<u>1st closest</u>	<u>2nd closest</u>	<u>3rd closest</u>
most often	mother (30%)	friend (21%)	friend (32%)
2nd most often	significant other (18%)	mother (16%)	sister (18%)
3rd most often	friend (16%)	father (14%)	no one (16%)

Further research is required to replicate these results and to determine why mothers in particular play such a prominent role.

Interestingly, five subjects had a professional, such as a therapist, nurse or clergy member, ranked as the first or second closest person in their lives. Relationships with professionals were not directly queried (questions asked specifically about family and friends), rather they were recorded only if spontaneously mentioned by the subject.

b) Somewhat close network members. The somewhat close category was defined as persons they can rely on for emotional or material support, who are more than just acquaintances but not as close as the closest group. Several subjects (30%) had no one they considered to be somewhat close. The mean number of somewhat close network members was 2.5 people, with 55% of subjects having 2 or fewer somewhat close network members and 90% of subjects having 5 or fewer somewhat close network members.

The person most likely to be named as a somewhat close network member was a friend (48%). When other nonkin network members, particularly professionals are included in the friend category this amount goes up to 55%.

2) Network Size Variables

This section describes the network variables used in data analyses in the present study. Refer to Table 4 for summary statistics on these variables.

a) Total network size (NETWORK); The mean number of network members (including both close and somewhat close members whether they were kin or nonkin) was 8 persons, with 50% of the sample having 7 or fewer network members.

b) Number of kin in the network (NETKIN); There was a mean of 4 kin members (including both close and somewhat close kin members) in the networks of these subjects. One subject named 17 kin network members, however, 50% of the subjects had 3 or fewer kin members in their entire network.

c) Number of nonkin in the network (NETNKIN); There was a mean of 4 nonkin network members (including both close and somewhat close nonkin members), with 50% of subjects having 3 or fewer nonkin members in their networks.

3) Emotional Support Variables

There were eight emotional support items on the attachment table. Only one network member was recorded for each item even though some subjects may have the support indicated by a particular item available from several network members. The 'main' person who was the source of a particular type of support, if it was available at all, were of interest in this study. Table 4 lists summary statistics for these variables.

a) Emotional support total (EST); All subjects had at least one item of emotional support available from someone in their network of close and somewhat close relationships (including both kin and nonkin). The mean emotional support total score for this group was 5.6 (out of a possible 8)

with just over 50% of the sample having a score of 6 or greater.

b) Emotional support from kin (ESK); Only 13.6% of subjects did not name any kin members as a main source of emotional support on any of the eight items. The mean emotional support score from kin members was 2.9 (out of a possible 8) with approximately 50% of subjects identifying 3 or fewer kin members as main sources of any of the emotional support items.

Table 4: Means, standard deviations, minimum and maximum values for social relationship variables on a sample of 44 male and female schizophrenics

Variable	Mean	SD	Min.	Max.
NETKIN	3.97	2.9	0	17
NETNKIN	3.84	3.3	0	13
NETWORK	7.82	4.1	2	21
ESK	2.88	2.0	0	7
ESNK	2.7	2.4	0	8
EST	5.6	1.9	1	8

c) Emotional support from nonkin (ESNK); When only considering nonkin, 22.7% of subjects did not name any nonkin network member as a main source of emotional support. The mean emotional support score from nonkin members was 2.7

(out of a possible 8). Just over 52% of subjects identified 2 or fewer nonkin members as main sources of emotional support.

Data Analyses Results

Group Difference Tests for Attrition Bias

Two sets of attrition bias tests were computed to determine:

a) if this sample at entry into the larger study differed from subjects who did not eventually participate in the social relationship portion of the project (Time 1 comparison in Table 5), and

b) whether those remaining subjects at the one year follow up who did not participate in the social relationship portion of the project differed from the sample that did participate (one-year comparison in Table 6). Groups were compared on all demographic and symptom variables discussed above. The Time 1 t-tests revealed a significant difference on depressive symptomatology ($t = 2.2$, $p < .05$, 2-tail) between those who did not eventually participate ($n = 30$, $M = 7.3$, $sd = 4.6$) and those who composed the present sample ($n = 44$, $M = 4.8$, $sd = 4.7$). Implications of these results are discussed in the generalizability section of Chapter IV. There were no other significant differences between these two groups at Time 1. The group comparisons made at the one year follow up revealed no significant differences between those who participated ($n = 44$) and those who were still in the larger study but did not participate in the social

relationship portion ($n = 12$). See the generalizability section of Chapter IV for a detailed description of these subjects. Figure 5 shows the Time 1 means, standard deviations, t-test values and two-tail probability values on demographic, illness history and symptoms variables for those who participated in this study and those who only participate in the larger study.

Table 5: Time 1 t-test comparisons of the participants of this study to nonparticipants from the larger study

Variables at time 1	In Study Mean(SD) ($n = 44$)	Not in Study Mean(SD) ($n = 30$)	t-test prob.
Age in years	35.0 (9.8)	36.9 (12.0)	0.67 .50
Highest grade	11.4 (2.2)	11.9 (2.9)	0.73 .47
Age illness began	22.7 (6.3)	26.0 (7.7)	1.97 .054
Age at first psychiatric admission	24.5 (7.3)	28.4 (8.8)	2.00 .048
Number of previous admissions	5.4 (5.0)	4.4 (4.4)	-.88 .36
Number of suicide attempts	1.5 (3.5)	1.6 (3.8)	0.13 .89
Positive symptoms from PANSS	20.0 (6.0)	21.2 (6.4)	-.73 .47
Negative symptoms from PANSS	21.7 (5.4)	22.1 (6.2)	0.32 .75
Depression score from CDSS	4.8 (4.6)	7.3 (4.6)	2.20 .03

Table 6: One year follow up time comparisons of participants in this study to those who only participated in the larger study

Variable	In Study Mean(SD) (n = 44)	Not in Study Mean(SD) (n = 12)	t-test prob.
Age in years	35.0 (9.8)	34.5 (11.7)	0.14 .89
Highest grade	11.4 (2.2)	11.5 (1.6)	-.16 .87
Age illness began	22.7 (6.3)	23.3 (6.8)	-.30 .77
Age at first psychiatric admission	24.5 (7.3)	25.8 (6.5)	-.57 .57
Number of previous admissions	5.4 (5.0)	4.3 (3.4)	0.88 .39
Number of suicide attempts	1.5 (3.5)	1.1 (1.6)	0.62 .54
Positive symptoms from PANSS	13.0 (5.6)	16.1 (5.8)	-1.65 .12
Negative symptoms from PANSS	17.5 (6.2)	20.7 (7.2)	-1.37 .19
Depression score from CDSS	4.2 (4.6)	5.3 (4.7)	-.70 .49

At Time 1 the study sample was composed of 29 males and 15 females, while the group not in the study was composed of only 14 males and 16 females. These differences in group composition were not statistically different using a Chi-squared test.

Correlations Between Variables

Correlations with depressive symptoms

Refer to Table 7 for a correlation matrix listing the Pearson Product Moment Correlations between variables and their accompanying probabilities. Depressive symptoms (CDSS) were not significantly correlated with any of the social relationship variables used in this study, specifically;

- number of kin in the network (NETKIN),
- number of nonkin in the network (NETNKin),
- total number of network members (NETWORK),
- emotional support from kin (ESK),
- emotional support from nonkin (ESNK), and
- emotional support total (EST).

Depressive symptoms were also not significantly correlated with positive symptoms (POS) from the PANSS.

Correlations with negative symptoms

Negative symptoms (NEG) from the PANSS were significantly positively correlated with depressive symptoms ($r = .35$, $p < .01$) such that the higher the negative symptoms the higher the depressive symptoms. Negative symptoms were also significantly positively correlated with positive symptoms ($r = .36$, $p < .01$) such that the higher the negative symptoms, the higher the positive symptoms. Negative symptoms were also significantly positively correlated with number of suicide attempts ($r = .34$, $p <$

.01) such that the higher the negative symptoms the greater number of suicide attempts.

Higher negative symptoms were significantly correlated with less of several of the social relationship variables including;

- number of nonkin network members ($r = -.27, p < .05$),
- total number of network members ($r = -.30, p < .05$),
- emotional support total ($r = -.39, p < .01$), and
- emotional support from nonkin ($r = -.38, p < .01$)

Emotional support from kin and number of kin in the network were not significantly correlated with negative symptoms, positive symptoms or depressive symptoms.

Table 7: Matrix showing the Pearson Product Moment Correlations of symptom and social relationship variables

Variables	CDSS	NEG	POS	NETKIN	NETNKIN	NETWORK	ESK	ESNK
NEG	0.35**	1.0						
POS	0.10	0.36**	1.0					
NETKIN	-.12	-.10	0.02	1.0				
NETNKIN	-.10	-.27*	-.03	-.15	1.0			
NETWORK	-.17	-.30*	-.01	0.6***	0.70***	1.0		
ESK	-.12	0.07	0.13	0.56***	-.17	0.26*	1.0	
ESNK	-.03	-.38**	-.19	-.24	0.48***	0.22	-.64***	1.0
EST	-.16	-.39**	-.10	0.29*	0.42**	.55***	.26*	.58***

* $p < .05$, ** $p < .01$, *** $p < .001$. ($n = 44$).

Multiple Regression Analyses Results

Several separate hierarchical multiple regression analyses, each predicting depression while controlling for negative and positive symptoms were computed. None of the network size variables including number of kin, number of nonkin or total number of network members predicted depression over and above negative and positive symptoms (results shown in Table 8). None of the emotional support variables including emotional support from kin, from nonkin, or from the network as a whole predicted depression over and above negative and positive symptoms (results shown in Table 9). Tables 8 and 9 show that the resulting equations each reveal that the negative symptom variable was the only predictor accounting for significant variance in depressive scores. Note that solid lines separate the individual regression equations and dashed lines separate steps in each equations. For example, negative and positive symptoms were entered first, then the network size or emotional support variable was entered. Beta values listed in the tables represent the values from the final step in each equation.

Table 8: Multiple regression analyses with network size variables predicting depression scores, controlling for negative and positive symptoms.

Variables in Equation	Standardized Beta	t-value	prob.
DEPRESSION			
Negative symptoms	.35	2.17	.035
Positive symptoms	-.02	-.13	.89

Number of kin	-.08	-.56	.58
DEPRESSION			
Negative symptoms	.36	2.15	.037
Positive symptoms	-.03	-.16	.87

Number of nonkin	-.003	-.06	.98
DEPRESSION			
Negative symptoms	.33	2.0	.05
Positive symptoms	-.02	-.11	.91

Total in network	-.07	-.44	.66

Table 9: Multiple regression analyses for each of the emotional support variables predicting depression scores, controlling for positive and negative symptoms.

Variables in Equation	Standardized Beta	t-value	prob.
DEPRESSION			
Negative symptoms	.36	2.3	.026
Positive symptoms	-.008	-.05	.95

Emotional support from kin members	-.14	-.99	.32
DEPRESSION			
Negative symptoms	.398	2.38	.022
Positive symptoms	-.017	-.11	.91

Emotional support from nonkin members	.12	.75	.46
DEPRESSION			
Negative symptoms	.34	2.0	.05
Positive symptoms	-.02	-.15	.88

Emotional support total	-.03	-.19	.85

In addition, a backward regression was computed using CDSS as the dependent variable. Number of kin and nonkin in the network, emotional support from kin and from nonkin and positive and negative symptoms were forced into the equation as predictor variables. Emotional support total and total network size were not entered into this equation because

they are composites of emotional support from kin and nonkin and of number of kin and nonkin in the network respectively. Table 10 summarizes the results of this analysis. The only significant independent variable which remained in the equation was negative symptoms, accounting for 12% of the variance ($F = 5.8$, $p < .02$) in depressive symptomatology. Probability criterion for removing a variable was .10.

Table 10: Backward Multiple Regression Analysis with depressive symptomatology as the outcome variable. POUT = .1000. Dashed lines separate steps in the regression.

Variables in Equation	Standardized Beta	t-value	prob.
Negative symptoms	.36	2.00	.05
Positive symptoms	-.003	-.02	.98
Emotional support from kin members	-.11	-.46	.65
Emotional support from nonkin members	.06	.24	.81
Number of kin	-.01	-.07	.95
Number of nonkin	-.05	-.28	.78

Negative symptoms	.36	2.15	.037
Emotional support from kin members	-.11	-.46	.65
Emotional support from nonkin members	.06	.24	.81
Number of kin	-.01	-.07	.95
Number of nonkin	-.05	-.28	.78

Table 10 continues on next page

Table 10 continued

Variables in Equation	Standardized Beta	t-value	prob.
Negative symptoms	.36	2.2	.033
Emotional support from kin members	-.12	-.6	.55
Emotional support from nonkin members	.07	.24	.81
Number of nonkin	-.04	-.28	.79
Negative symptoms	.35	2.3	.027
Emotional support from kin members	-.15	-1.0	.31
Number of nonkin	-.03	-.20	.84
Negative symptoms	.36	2.47	.017
Emotional support from kin members	-.14	-1.0	.31
Negative symptoms	.348	2.40	.020

Male - Female Differences

As discussed in Chapter VI, it was decided to divide the sample according to sex and compute separate correlational and multiple regression analyses for males ($n = 29$) and females ($n = 15$) as well as compare the groups on social relationship variables (Table 11) and, demographic and symptom variables (Table 12). Males tended to achieve a slightly higher level of education ($M = 12$ years, $sd = 2$ years) than females ($M = 10.2$ years, $sd = 2.2$ years) ($t = 2.7$, $p < .01$). There were no other significant differences between these two groups on variables included in this study.

Table 11: Means, standard deviations, t-test values and probabilities for social relationship variables comparing male (n = 29) and female (n = 15) schizophrenics

Variable	Males Mean (SD)	Females Mean (SD)	t-value	prob.
Number of kin in network	4.1 (3.3)	3.7 (2.1)	0.45	.65
Number of non-kin in network	3.76 (3.1)	4.0 (3.8)	-.21	.83
Total number of network members	7.86 (4.0)	7.73 (4.4)	0.09	.93
Emotional support from kin	2.86 (2.2)	2.93 (1.7)	-.12	.90
Emotional support from nonkin	2.28 (2.4)	3.13 (2.5)	-.84	.41
Emotional support total	5.3 (2.1)	6.1 (1.4)	-1.36	.18

Table 12: Means, standard deviations, t-test values and 2-tail probability values for demographic, illness history and symptom variables, comparing males and females

Variable	Males Mean(SD) (n = 29)	Females Mean(SD) (n = 15)	t-test prob.
Age in years	34.6 (8.7)	36.1 (11.5)	-.43 .67
Highest grade	12.0 (1.9)	10.2 (2.2)	2.7 .01
Age illness began	21.9 (6.5)	24.3 (5.6)	-1.3 .22
Age at first psychiatric admission	24.0 (7.9)	25.4 (6.2)	-.63 .53
Number of previous admissions	5.5 (5.3)	5.3 (4.6)	0.16 .87
Number of suicide attempts	1.8 (4.3)	1.0 (1.4)	0.80 .43
Positive symptoms from PANSS	12.6 (4.9)	13.7 (6.7)	-.57 .57
Negative symptoms from PANSS	17.4 (6.4)	17.9 (5.9)	-.25 .80
Depression score from CDSS	3.8 (4.3)	4.9 (5.1)	-.67 .50

Correlational Results for Males

Correlational analyses for males (presented in Table 13) revealed that depressive symptomatology is significantly negatively correlated with emotional support from kin ($r = -.37$, $p = .023$) such that the less emotional support available from kin network members the higher the depressive

symptomatology. Depressive symptomatology was not significantly related to any other social relationship or symptom variable.

Table 13: Matrix showing the Pearson Product Moment Correlations of symptom and social relationship variables for males (n = 29)

Variables	CDSS	NEG	POS	NETKIN	NETNKIN	NETWORK	ESK	ESNK
NEG	0.29	1.0						
POS	-.10	.30	1.0					
NETKIN	-.14	-.16	.02	1.0				
NETNKIN	-.17	-.38*	-.03	-.23	1.0			
NETWORK	-.25	-.44**	-.01	.65***	.59***	1.0		
ESK	-.37*	.05	.10	.56***	-.11	.38*	1.0	
ESNK	0.20	-.39*	-.25	-.14	.49**	.26	-.57***	1.0
EST	-.16	-.38*	-.17	.43**	.42**	.68***	.40*	.52**

* $p < .05$, ** $p < .01$, *** $p < .001$.

Positive symptoms were not significantly associated with any social relationship or symptom variable. However, negative symptoms in males revealed similar associations to social relationship variables as did the group as a whole. Higher negative symptoms were significantly correlated with less:

- number of nonkin in the network ($r = -.38$, $p = .02$),

- total number of network members ($r = -.44$, $p = .009$),
- emotional support total ($r = -.38$, $p = .02$), and
- emotional support from nonkin ($r = -.39$, $p = .018$).

Number of kin in the network and emotional support from kin was not significantly associated with negative symptoms for males. Higher negative symptoms were also significantly correlated with greater number of suicide attempts ($r = .37$, $p = .026$).

Correlational Results for Females

For females alone, depressive symptomatology was not related to any social relationship variables. Higher depressive symptoms were significantly correlated with higher negative symptoms ($r = .45$, $p < .05$). In addition, higher positive symptoms were significantly correlated with higher negative symptoms ($r = .46$, $p < .05$). For these females higher positive symptoms were significantly correlated with more suicide attempts ($r = .68$, $p < .01$). Positive symptoms were not significantly associated with any social relationship variables for females.

Higher negative symptoms were significantly correlated with lower emotional support total ($r = -.52$, $p < .05$) and approached significance for lower emotional support from nonkin. Refer to Table 14 for a summary of these results.

**Table 14: Matrix showing the Pearson Product Moment
Correlations of symptom and social relationship variables
for females (n = 15)**

Variables	CDSS	NEG	POS	NETKIN	NETNKIN	NETWORK	ESK	ESNK
NEG	0.45*	1.0						
POS	0.35	0.46*	1.0					
NETKIN	-.07	0.13	0.04	1.0				
NETNKIN	-.01	-.09	-.04	.05	1.0			
NETWORK	-.04	-.01	-.02	.52*	0.88***	1.0		
ESK	0.42	0.13	0.18	.56**	-.31	-.002	1.0	
ESNK	-.43	-.38	-.15	-.54*	0.48*	0.15	-.84***	1.0
EST	-.26	-.52*	-.04	-.29	0.48*	0.27	-.27	.75***

* p < .05, ** p < .01, *** p < .001.

Depressed versus non-depressed subjects

Because of this skewed and restricted distribution of depressive symptoms a decision was made to divide the subjects into 3 groups based on their level of depressive symptoms. The highest and lowest groups were then compared (using t-tests) for differences in social relationship variables. The lowest scoring group consisted of subjects with a CDSS score of 2 or less. The highest scoring group consisted of subjects scoring 7 or greater on the CDSS. Those with scores less than 7 and greater than 2 were not included in this analyses because they are neither clearly

depressed or clearly not depressed. There were no significant differences between depressed and non-depressed schizophrenics on any of the social network or emotional support variables. However, non-depressed subjects ($\bar{M} = 39$ yrs, $sd = 10.8$ yrs) were significantly older than depressed subjects ($\bar{M} = 29$ yrs, $sd = 5.1$ yrs) ($t = 3.45$, $p < .002$). In addition, significantly more months had past since first psychiatric admission for non-depressed subjects ($\bar{M} = 13.5$ months, $sd = 9.2$ months) than for depressed subjects ($\bar{M} = 5.8$ months, $sd = 6.7$ months) ($t = 2.6$, $p < .02$).

Chapter VI

Discussion

The purpose of this chapter is to discuss the limitations of the study and to interpret the results in light of these limitations. In addition this chapter is intended to discuss possible meanings of the results, how they relate to previous findings, and their practical relevance for the field of mental health.

Study limitations

This study had several limitations which need to be considered when interpreting the results.

1) Pre-study sampling bias. Subjects for the larger study were recruited from admissions to hospital psychiatric wards. Subjects were not sought out in the community or through other agencies that serve mentally ill populations. Therefore, only those people with schizophrenia who were in contact with mental health professionals in a hospital were considered. Though less costly and more convenient, this procedure automatically excluded mildly ill schizophrenics who were not ill enough to be hospitalized. In addition, it generally excluded those who were more or less permanently institutionalized and those who are severely ill yet do not come in contact with hospitals. The sample was limited to those who were moderately to severely ill while excluding mildly and extremely ill persons. The results are, therefore, limited in their generalizability.

This limitation is, however, not serious since very mildly ill schizophrenics who have not recently needed hospital care are probably not going to be very depressed either. The current sample already contains a high proportion of subjects with little or no depressive symptomatology. In addition, extremely ill schizophrenics are not likely to be competent to consent, to participate, or to give valid and reliable information. Therefore, including mildly ill and extremely ill schizophrenics would be of little additional benefit.

2) Differential attrition. As noted in Chapters IV & V, Time 1 attrition bias tests revealed that subjects who eventually participated in this study were less depressed than those who dropped out of the larger study or did not eventually participate in this study. This differential attrition on the outcome variable (depression) is problematic. It further biases the sample in addition to biases discussed above. It also means the desired sample has not necessarily been obtained, specifically, depressed schizophrenics. Recruiting a representative sample from the desired population is less likely given that some kinds of subject tend not to volunteer their participation or to drop out.

This finding is potentially of concern for other studies examining depression in schizophrenia as well. The design of this study within the larger study allowed for checking for differential attrition. Many studies,

particularly with a cross-sectional design, do not have this option yet may be susceptible to the same bias. Because participation is voluntary, not much can be done to remedy this type of bias and differential attrition. Rather, researchers should be aware that it can occur and interpret their findings in light of it.

3) Skewed distribution and low depression scores.

Depression scores were on average relatively low ($M = 4.2$, $sd = 4.6$) and positively skewed (skewness = 1.18) with over half of the subjects having little ($CDSS < 3$) or no discernable level of depressive symptomatology. This skewed distribution and low level of depressive symptomatology makes finding significant results less likely.

Summary of results for pre-planned analyses

Planned data analyses for this sample of mild to moderately ill schizophrenics revealed that

- a) number of kin network members,
- b) number of nonkin network members,
- c) total number of network members,
- d) emotional support from kin network members,
- e) emotional support from nonkin network members, and
- f) emotional support total from the network,

each were not significantly associated with depression in schizophrenia using simple correlations or over and above negative and positive symptoms using multiple regression analyses. These findings are generally inconsistent with the literature on depression and social relationships, (as

discussed in Chapter III) where a lack of support and smaller network sizes are typically associated with higher levels of depression (Aneshensel & Frerichs, 1982; Aneshensel & Stone, 1982; Belle, 1982; Billings & Moos, 1981, 1982, 1984; Brown, et al., 1975; Cohen & Hoberman 1983; Cohen, et al., 1984; Costello, 1982; Gore, 1978; Habif & Lahey, 1980; Schaefer, et al., 1981).

Possible explanations for lack of significant findings

1) No true relationship

First, it is possible that there is no true association between the social relationship variables and depression in schizophrenia. If this is the case, it is possible that depressive symptomatology in schizophrenia is not susceptible to the same social-psychological vulnerabilities as depressive symptomatology in the absence of schizophrenic illness. For example, whatever processes that caused schizophrenia in the first place may cause these people to also be vulnerable to depression independently of other typically depressive vulnerabilities such as lack of emotional support or small network size.

The general pattern of association between depressive and schizophrenic symptoms, as discussed in Chapter 1, where depression is more prevalent in the acute or relapse phases of the illness is consistent with this explanation. Social relationship variables could simply be irrelevant to depression in people with schizophrenia because their vulnerability to depression while ill is already so strong.

This argument is consistent with Hirsch's (1982) revealed depression theory of depression in schizophrenia. This theory postulates that depression is likely to co-occur with the acute or relapse phase of schizophrenia as a sign of the person's greater overall illness. It can not, however, explain why some become depressed and others do not.

2) Variance Already Accounted For

Second, as discussed below, negative symptoms are significantly associated with depression and with several of the social relationship variables in this study. Therefore, there may be not enough variance remaining in the depression scores to be significantly associated with any of the network size and emotional support variables over and above its associations with negative symptoms. In fact, depression was not even associated with any of the social relationship variables on its own using simple correlational analyses so the planned regression analyses turned out to be redundant.

3) Undetectable but true relationship

Third, there may in fact be an association between depression and social relationship variables but it was not detected in the present sample with the present methodology. There may not be sufficient variance in depressive symptomatology in this sample to detect significant relationships with the social relationship variables. Unfortunately, the size and nature of this sample was limited by the number of available subjects from a special

population within a particular time frame who may or may not have been experiencing depressive symptoms.

The distribution of depressive symptoms in this sample turned out to be skewed (as discussed above) such that just over half of the sample has little or no depressive symptoms (a CDSS score of 2 or less). Furthermore, the sample has a restricted range with only 9 subjects appearing to have what could be considered a clinically significant level of depressive symptomatology (a CDSS score of 7 or above). Note this does not mean they qualify to be classified as a case or not a case of clinical depression because the CDSS was not designed to determine a clinical diagnosis. What it could mean is that there are very few subjects who were experiencing a high enough level of depressive symptomatology to establish an association with the social relationship variables. In contrast negative symptoms, which were significantly associated with some social relationship variables, had a higher degree of variation and wider range of scores.

How much weight to give the lack of variance, low depression scores, and skewed distribution rational as an explanation for the lack of significant finding is arguable. There was, for example, enough variance and scores were sufficiently distributed to detect a significant relationship between depressive and negative symptoms. Nevertheless, obtaining a larger sample with purposive

sampling procedures should help to achieve a more normal distribution in future research.

4) Possible gender differences

Fourth, the male - female composition of this sample is not consistent with the composition of the bulk of the literature on depression and social supports/networks. Only one-third of the present sample ended up being comprised of women, whereas most studies on depression and social relationships have a primarily or exclusively female sample. (Barrera, 1981; Brown, et al., 1975; Costello, 1982).

If there are important differences in depression between men and women they could influence the association to various social relationship variables. A large epidemiological catchment area study revealed that women have a significantly higher lifetime and one year prevalence for depression than men (Weissman, Bruce, Leaf, Florio, & Holzer, 1991). A recent review of the literature by Bardenstein and McGlashan (1990) also concluded that the prevalence of depression is higher in women than in men. Therefore, there is a larger pool of depressed females from which to recruit participants than there is for males. This difference in availability could explain why many studies of depression and social relationships are composed of women subjects.

In addition, the Bardenstein and McGlashan (1990) review states that males tend to be older at age of onset of depression, display more antisocial behaviour, higher

alcohol and substance abuse, higher mortality, and higher suicide rates than women. Women tend to exhibit more self-destructive behaviour than men.

Because of these gender differences in depression in the literature and the final gender composition of this sample, a decision was made to compute separate correlational analyses for males and females on demographic, illness, and social relationship variables. Conclusions from these post-hoc analyses must be considered merely as tentative suggestions because the methodology of this study was not designed to test gender differences. There are unequal n's with proportionately very few female subjects. In addition, males and females in this study were not deliberately matched on any demographic or illness variables.

In this sample, males attained significantly higher education than females. There were no other statistically significant differences between males and females on the demographic variables assessed. There were no differences between males and females on negative symptoms and positive symptoms of schizophrenia. In addition, there were no differences between these two groups on depressive symptoms. This indicates that the group as a whole is relatively homogeneous, with moderately ill males being more or less the same as moderately ill females.

Correlational findings (again to be interpreted as speculative) for males were somewhat different than for

females which may help explain some findings (or rather lack of significant findings) for the group as a whole. In particular, for males alone, greater emotional support from kin (ESK) was significantly associated with less depressive symptoms ($r = -.37$, $p < .05$). Thus when only males are considered the proposed expectation for ESK is confirmed.

In women the association between ESK and depressive symptoms was in the opposite direction such that the higher the emotional support from kin the higher the depressive symptoms ($r = .42$, $p > .05$). The actual correlational value was higher for women than for men and approached significance but since there were fewer women ($n = 15$) it did not reach statistical significance. With the sample analyzed as a whole these opposing correlations would tend to cancel each other out indicating a false lack of association.

A similar situation occurred for emotional support from nonkin (ESNK). In this instance, higher ESNK tended to be associated with higher depressive symptoms for men ($r = .20$, $p > .05$) but lower depressive symptoms for women ($r = -.43$, $p > .05$). Though these results were not statistically significant, they too would tend to cancel each other out for the sample analyzed as a whole.

The emotional support total (EST) variable was also not significant for males, for females or for the sample as a whole. Again, opposing directions of the relationships are suspected but in a slightly different manner than described

above. For ESK and ESNK it was the different genders that cancelled each other out. Emotional support total (EST) scores are composed of emotional support from kin and emotional support from non-kin. For males, ESK was negatively associated with depressive symptoms such that the lower the ESK the higher the depressive symptoms, while ESNK was positively associated with depressive symptoms such that the higher the ESNK the higher the depressive symptoms. Combining these two scales to form the EST scale resulted in the two opposing associations cancelling each other out for males. For females, ESK was positively (not significant) associated with depressive symptoms such that the higher the ESK the higher the depressive symptoms, while ESNK was negatively (not significant) associated with depressive symptoms such that the lower the ESNK the higher the depressive symptoms. Again, combining these two opposing associations cancels each other out for females. Thus, when EST for males is combined with EST for females there is no significant association between EST and depressive symptomatology for the sample as a whole.

The results from the analyses for males are almost identical to the results of the overall analyses. The greater number of males in this sample disproportionately influences the results. Predictions were drawn from previous research on depression and social relationship variables which had primarily female subjects. The importance of social relationships may be different for

males and females which could explain why the present findings are not consistent with other depression and social relationship research.

An additional, noteworthy, though non-significant, correlation with depression that showed an opposing association for males and females was for positive symptoms. In this sample, higher positive symptoms were associated with higher depressive symptoms for females, but lower depressive symptoms for males.

These opposing findings based on gender were unexpected. Previous research on social relationships and depression alone did not indicate a need for separate analyses. The analyses were done post-hoc in order to delve deeper into the data to help explain the lack of significant results from pre-planned analyses. These results should be interpreted with caution because this study was not designed to assess gender differences and because there were relatively few females in the sample. Though the findings are in no way conclusive, they do emphasize the importance of taking gender into account when studying social relationships and depression in schizophrenia. Future research needs to be done to properly explore these female, male difference in association between social relationships and depression in schizophrenia.

5) Inadvertent inclusion of conflicted network members

Finally, this study was designed to address positive aspects of social relationships. Overtly negative

relationships were not directly queried. Barrera (1981) found that higher number of conflicted network members was significantly associated with higher depression scores while lower number of non-conflicted network members was associated with higher depression. When these two groups were combined they cancelled out each others association with depression. A similar situation could have unwittingly occurred in the present study. In listing all of their close and somewhat close network members (composed of kin and nonkin) subjects may have included network members with whom they had various degrees of interpersonal conflict rather than just listing those with whom they had supportive relationships. The brief ISSI does not inquire specifically about conflictual relationships. It also can not distinguish between conflictual and non-conflictual relationships so the validity of this speculation can not be tested. Future researchers should, however, be aware of this possibility.

Depressed versus non-depressed

Because of the skewed distribution of depressive symptom scores, a decision was made to divide the subjects into three groups; depressed, mildly depressed, and non-depressed and compare the two extremes. Analysis comparing the depressed and non-depressed groups revealed that the non-depressed subjects were significantly older and that more time had passed since their first psychiatric admission than the depressed subjects. Improved outcome is associated

with age in schizophrenia (Ciompi, 1987) thus making it more likely that older schizophrenics are overall less ill, including less likely to be depressed. In addition, it is possible that severely depressed subjects are on average younger because many of them may not live very long lives. Suicide is an unfortunately common end to the lives of many depressed schizophrenics (Roy, 1988) leaving the less severely ill person representing older schizophrenics.

Because more time has passed for non-depressed subjects since their first psychiatric admission than for depressed subjects, non-depressed subjects have had more time to adjust to their schizophrenic illness. They are also more likely to be in a remitted or stabilized phase of schizophrenia than those whose illness is more recent. The above literature review on depression in schizophrenia establishes that depression is more common in the acute or relapse phase of schizophrenia than in the remitted or stabilized phase (Green et al., 1990). Thus, the finding that non-depressed schizophrenics are older and more time has passed since their first psychiatric admission than for depressed schizophrenics is consistent with established findings on depression in schizophrenia.

Discussion of findings for negative symptoms

Negative symptoms of schizophrenia were included in the analyses as a control variable but turned out to be the only variable yielding consistent significant associations with social relationship variables. Specifically, higher

negative symptoms of schizophrenia were predictive of several of the social relationship variables including;

- fewer number of nonkin in the network,
- smaller total network size,
- less emotional support from nonkin and
- less emotional support total.

This was the case for simple correlational analyses and for all of the multiple regression analyses. These correlations were also examined separately for men and for women to see if gender differences would be found here as was found with depressive symptoms. For males, higher negative symptoms were associated with smaller NETWORK, fewer NETNKIN, less EST and less ESNK. However, only less EST was significantly associated with higher negative symptom scores for females.

Negative symptoms were not, however, related to number of kin in the network or emotional support from kin for the sample as a whole. Though this finding is contrary to the bulk of the literature on social network size and social support in schizophrenia, it is consistent with the Erickson, et al. (1989) study discussed in Chapter III where a significant association was found between greater number of kin in the network and higher negative symptoms. Again, whether or not conflicted network members were inadvertently included in this study and perhaps in the Erickson, et al. (1989) study, which also used the brief ISSI, becomes an issue.

There is a difference in the importance of the number of kin versus nonkin members in the network and their supportive roles. Further investigation needs to be done to confirm or deny the following speculations regarding these findings.

It is conceivable that there is no association between negative symptoms and number of kin in the network because kinship bonds are based to a large degree on obligation of the family members. As such these bonds are less likely than nonkinship bonds to degrade over time. Friendships and casual acquaintance type relationships, on the other hand, are likely to require active participation by both parties. As someone becomes increasingly ill, especially with higher negative symptoms, they may become more withdrawn and less able to actively participate in their social relationships. Without active participation, non-obligatory relationships such as friends and acquaintances are likely to diminish and possibly even disappear. In contrast, parents, siblings and other kin members are likely to make the effort to maintain a relationship with the ill person even when that person is unable to reciprocate. Therefore, there would not be a significant relationship between negative symptoms and number of kin in the network. The same argument can be applied to emotional support from kin network members.

Though this argument can fuel speculation about these findings it should not be considered conclusive from the present data. It does however, pave the way for directions

of future research. Further investigation needs to be done which directly addresses the concepts of obligation, active and passive participation in social relationships as well as reciprocity. In addition, longitudinal studies with larger samples need to be conducted to properly address this area.

Correlations between network size and support variables.

Previous studies have found rather low correlations between network size and social support (Barrera, 1981; Cohen et al., 1982; Sarason et al., 1983; Schaefer et al., 1981), as discussed in Chapter II. Network size variables and their emotional support counterparts in this study were rather highly correlated (refer to Table 7 in Chapter V). This is due in part to the manner in which scores were obtained. If someone provided one of the areas of support they were listed on the attachment table and thus counted in computing the network size variable. Furthermore, only one person who was the primary source of a particular type of support was named. This method of scoring meant, for example, that a person with ten confidants received recognition for only the main confidant, just as did a person with only one confidant. There were eight items included in obtaining the emotional support score and the maximum score was eight. Higher scores are possible if one chooses to record more than one network member as a source of each of the emotional support items.

Implications of findings

The findings from the descriptive portion of this study confirm previous findings that social networks of schizophrenics are small and consist mainly of family members (Creswell, et al., 1992). Mothers appear to play a particularly important role in the lives of people with schizophrenia. Even if social relationship variables are not important for depression in schizophrenia (as this data tends to indicate), the programs which attempt to increase the size of networks for people with schizophrenia could be beneficial if only to relieve some of the burden of care giving from the few existing network members. Social skills training and network strengthening have already been used as preventative measures against relapse. However, not much in the way of practical implications should be made from this study. It is not conclusive because of the above discussed limitations. Additional research which remedies the limitations found in this study needs to be conducted before any firm conclusions can be made.

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APPENDIX IPOSITIVE AND NEGATIVE SYNDROME SCALE FOR SCHIZOPHRENIA
(PANSS - Kay, Opler and Fiszbein, 1987)

Subject # _____ Date ____/____/____ Time _____ Rater _____

1) POSITIVE SUBSCALE

P1 Delusions.....1...2...3...4...5...6...7
 P2 Conceptual
 disorganization.....1...2...3...4...5...6...7
 P3 Hallucinatory behavior...1...2...3...4...5...6...7
 P4 Excitement.....1...2...3...4...5...6...7
 P5 Grandiosity.....1...2...3...4...5...6...7
 P6 Suspiciousness /
 persecution.....1...2...3...4...5...6...7
 P7 Hostility.....1...2...3...4...5...6...7
 SUM P1 TO P7 TO OBTAIN POSITIVE SYMPTOMS SCORE

2) NEGATIVE SUBSCALE

N1 Blunted affect.....1...2...3...4...5...6...7
 N2 Emotional withdrawal.....1...2...3...4...5...6...7
 N3 Poor rapport.....1...2...3...4...5...6...7
 N4 Passive / apathetic
 Social withdrawal.....1...2...3...4...5...6...7
 N5 Difficulty in abstract
 thinking.....1...2...3...4...5...6...7
 N6 Lack of spontaneity and
 flow of conversation.....1...2...3...4...5...6...7
 N7 Stereotyped thinking.....1...2...3...4...5...6...7
 SUM N1 TO N7 TO OBTAIN NEGATIVE SYMPTOMS SCORE

3) GENERAL PSYCHOPATHOLOGY

G1 Somatic concern.....1...2...3...4...5...6...7
 G2 Anxiety.....1...2...3...4...5...6...7
 G3 Guilt feelings.....1...2...3...4...5...6...7
 G4 Tension.....1...2...3...4...5...6...7
 G5 Mannerism and posturing..1...2...3...4...5...6...7
 G6 Depression.....1...2...3...4...5...6...7
 G7 Motor retardation.....1...2...3...4...5...6...7
 G8 Uncooperativeness.....1...2...3...4...5...6...7
 G9 Unusual thought content..1...2...3...4...5...6...7
 G10 Disorientation.....1...2...3...4...5...6...7
 G11 Poor attention.....1...2...3...4...5...6...7
 G12 Lack of judgement
 and lack of insight.....1...2...3...4...5...6...7
 G13 Disturbance of volition..1...2...3...4...5...6...7
 G14 Poor impulse control.....1...2...3...4...5...6...7
 G15 Preoccupation.....1...2...3...4...5...6...7
 G16 Active social avoidance..1...2...3...4...5...6...7
 SUM P1 TO P7 TO OBTAIN POSITIVE SYMPTOMS SCORE

APPENDIX II

THE CALGARY DEPRESSION SCALE FOR SCHIZOPHRENICS

GENERAL INSTRUCTIONS

The Calgary Depression Scale for Schizophrenics is specifically designed for assessment of level of depression in people with schizophrenia. It was originally derived from two widely used instruments, the Present State Examination and the Hamilton Depression Rating Scale, using factor and reliability analysis techniques (1). Its reliability and validity was further tested on a separate sample using Confirmatory Factor Analyses and Discriminatory Analysis techniques (2).

The scale is designed to reflect the presence of depression exclusive of other dimensions of psychopathology in schizophrenics at both the acute and residual stages of the disorder. It is sensitive to change, and can be used at a variety of intervals.

The rater should have experience with schizophrenics and should develop inter-rater reliability within 5 to 10 practice interviews.

The interview consists of eight structured questions followed by one observation item. This last item depends on the observation of the entire interview.

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INTERVIEW GUIDE FOR
CALGARY DEPRESSION SCALE FOR SCHIZOPHRENICS

Interviewer: Ask the first question as written. Use the follow-up probes or qualifiers at your discretion.
Time frame refers to **last two weeks** unless otherwise stipulated.
N.B. The last item, #9 is based on observations of the entire interview.

1). DEPRESSION

How would you describe your mood over the last two weeks: Do you keep reasonably cheerful or have you been very depressed or low spirited recently?

In the last two weeks how often have you (own words) every day? all day?

- 0. Absent
- 1. Mild Expresses some sadness or discouragement on questioning.
- 2. Moderate Distinct depressed mood persisting up to half the time over last 2 weeks: present daily.
- 3. Severe Markedly depressed mood persisting daily over half the time, interfering with normal motor and social functioning.

2). HOPELESSNESS

How do you see the future for yourself?
Can you see any future? - or has life seemed quite hopeless?
Have you given up or does there still seem some reason for trying?

- 0. Absent
- 1. Mild Has at times felt hopeless over the last week but still has some degree of hope for the future.
- 2. Moderate Persistent, moderate sense of hopelessness over the last week. Can be persuaded to acknowledge possibility of things being better.
- 3. Severe Persisting and distressing sense of hopelessness.

3). SELF DEPRECIATION

What is your opinion of yourself compared to other people? Do you feel better or not as good or about the same as most?

Do you feel inferior or even worthless?

- 0. Absent
- 1. Mild Some inferiority; not amounting to feeling of worthlessness.
- 2. Moderate Subject feels worthless, but less than 50% of the time.
- 3. Severe Subject feels worthless more than 50% of time. May be challenged to acknowledge otherwise.

4). GUILTY IDEAS OF REFERENCE

Do you have the feeling that you are being blamed for something or even wrongly accused? What about? (do not include justifiable blame or accusation. Exclude delusions of guilt)

- 0. Absent
- 1. Mild Subject feels blamed but not accused less than 50% of the time.
- 2. Moderate Persisting sense of being blamed, and/or occasional sense of being accused.
- 3. Severe Persistent sense of being accused. When challenged, acknowledges that it is not so.

5). PATHOLOGICAL GUILT

Do you tend to blame yourself for little things you may have done in the past?

Do you think you deserve to be so concerned about this?

- 0. Absent
- 1. Mild Subject sometimes feels over guilty about some minor peccadillo, but less than 50% of time.
- 2. Moderate Subject usually (over 50% of the time) feels guilty about past actions the significance of which s/he exaggerates.
- 3. Severe Subject usually feels s/he is to blame for everything that has gone wrong, even when not his/her fault.

6). MORNING DEPRESSION

When you have felt depressed over the last 2 weeks, have you noticed the depression being worse at any particular time of day?

- 0. Absent No depression.
- 1. Mild Depression present but no diurnal variation.
- 2. Moderate Depression spontaneously mentioned to be worse in a.m.
- 3. Severe Depression markedly worse in a.m., with impaired functioning which improves in p.m.

7). EARLY WAKENING

Do you wake earlier in the morning than is normal for you? How many times a week does this happen?

- 0. Absent No early morning wakening.
- 1. Mild Occasionally wakes (up to twice weekly) 1 hour or more before normal wake time or alarm time.
- 2. Moderate Often wakes (up to 5 times weekly) 1 hour or more before normal time to wake or alarm.
- 3. Severe Daily wakes 1 hour or more before normal time.

8). SUICIDE

Have you felt that life wasn't worth living?
Did you ever feel like ending it all?
What did you think you might do?
Did you actually try?

- 0. Absent
- 1. Mild Frequent thoughts of being better off dead, or occasional thought of suicide.
- 2. Moderate Deliberately considered suicide with a plan, but made no attempt.
- 3. Severe Suicidal attempt apparently designed to end in death (ie: accidental discovery or inefficient means).

9). OBSERVED DEPRESSION

Based on interviewer's observations during the entire interview.

The question "Do you feel like crying?" used at appropriate points in the interview, may elicit information useful to this observation.

0. Absent

1. Mild Subject appears sad and mournful even during parts of the interview involving affectively neutral discussion.

2. Moderate Subject appears sad and mournful throughout the interview, with gloomy monotonous voice and is tearful or close to tears at times.

3. Severe Subject chokes on distressing topics, frequently sighs deeply and cries openly, or is persistently in a state of frozen misery if examiner is sure that this is present.

CALGARY DEPRESSION SCALE FOR SCHIZOPHRENICS

SUBJECT IDENTIFICATION _____

INTERVIEWER _____ DATE _____

	<u>Absent</u>	<u>Mild</u>	<u>Moderate</u>	<u>Severe</u>
1. DEPRESSED MOOD	0	1	2	3
2. HOPELESSNESS	0	1	2	3
3. SELF DEPRECIATION	0	1	2	3
4. GUILTY IDEAS OF REFERENCE	0	1	2	3
5. PATHOLOGICAL GUILT	0	1	2	3
6. MORNING DEPRESSION	0	1	2	3
7. EARLY WAKENING	0	1	2	3
8. SUICIDE	0	1	2	3
9. OBSERVED DEPRESSION	0	1	2	3

© Calgary Depression Scale for Schizophrenics,
D. Addington & J. Addington

APPENDIX IIIBRIEF INTERVIEW SCHEDULE FOR SOCIAL INTERACTION

(Calgary, Alberta, Canada, 1994 revision by
G.E. Robinson; based on the Vancouver 1986 revision by
Erickson and on the original ISSI by Henderson, Bryne &
Duncan-Jones, 1981)

SUBJECT ID _____

DATE D____\M____\Y____

INTERVIEWER _____

(Introduction statement)

I would like to get some idea of the people around you in your life. This includes those you are closest to, your family, friends, neighbours and the people you may meet from day to day.

The questions are divided into two areas: first I'll ask you about acquaintances and later I'll ask about family and close friends. I am most interested in people you see on a regular basis and can get in touch with easily. These would mostly be people in the _____ region. However, if there are important friends and relatives in other cities or provinces with whom you maintain contact and friendship, then include them as well.

These first questions will be about acquaintances, people you know a little but who are not close friends.

SECTION A: ACQUAINTANCES

- 1A.** On most days, how many people do you see whom you know just a little, to smile to or wave to or to say good morning to - people you do not know well - you may not even know their names - but you greet each other when you pass by?

(record number)

AQNO _____

- 1B. Is this about right for you, or do you wish you saw more, or fewer such people?

less.....1
 about right.....2
 depends on situation.....3
 more.....4

AQAD

- 2A. Are there acquaintances or people not close to you **from whom** you can easily **ask small favours** such as people you know well enough to borrow books or tapes from.

if no, record zero.

if yes, ask "HOW MANY?" record number

AQNO

- 2B. Would you like to have more or fewer people to do this for you or is it about right?

less.....1
 about right.....2
 depends on situation.....3
 more.....4

AQAD

- 3A. Are there acquaintances or people not close to you **for whom you do small favors**, such as lending them books or tapes?

if no, record zero.

if yes, ask "HOW MANY?" record number

AQNO

- 3B. Do you wish there were more people or fewer people for whom you could do this, or is it about right?

less.....1
 about right.....2
 depends on situation.....3
 more.....4

AQAD

- 4A. Are there acquaintances or people not close to you **from whom** you could expect **practical or material help** in times of trouble?

if no, record zero.

if yes, ask HOW MANY? record number

AQNO

- 4B. Do you wish you had more or less of such help available or is it about right?

less.....1
 about right.....2
 depends on situation.....3
 more.....4

AQAD

- 5A. Are there acquaintances or people not close to you **who can expect practical or material help from you** in times of trouble?

if no, record zero.

if yes, ask HOW MANY? record number

AQNO

- 5B. Do you wish there were more or fewer people for whom you could do this, or is it about right?

less.....1
 about right.....2
 depends on situation.....3
 more.....4

AQAD

SECTION B: FAMILY AND CLOSE FRIENDS

In this section, I will be asking about your family and close friends. In some questions I will ask who these people are. You do not need to give their full names. Their first names and their relationship to you will be fine.

First, I would like you to think about all of your **close friends**.

- 6A. How many friends do you have **who could come to your home at any time and accept things as they find them?** For example, they could just stop by and wouldn't be embarrassed if your house were untidy or if you were in the middle of a meal.

(record number)

FRNDNO

- 6B. Would you prefer more or less of this,
or is it about right?

less.....1
about right.....2
depends on situation.....3
more.....4

FRNDAD

- 7A. How many friends do you have **whom you could visit at any time, without waiting for an invitation?** You could arrive without being expected and still be sure you would be welcome.

(record number)

FRNDNO _____

- 7B. Would you like to have more or fewer friends like this, or is it about right for you?

less.....1
about right.....2
depends on situation.....3
more.....4

FRNDAD

- 8A. Overall, would you say you **belong to a close circle of friends**, - a group of people who all keep in touch with each other - or not?

no.....1
yes.....2

- 8B. Would you like to have more or less of this,
or is it about right?
(persons, duration or frequency)

less.....1
about right.....2
depends on situation.....3
more.....4

FRNDAD

Now please think about **all the people in your life with whom you maintain contact and friendship.** This includes the people you live with, your family and your friends.

- 9A. Among your family and friends, how many people are there who are **immediately available** to you **whom you can talk with frankly**, without having to watch what you say?

If none, record zero.

*If one or more,
record number*

FRNDNO _____

- 9B. Would you like to have more of fewer people like this, or is it about right for you?

less.....1
about right.....2
depends on situation.....3
more.....4

FRNDAD

- 9C. With the one (those) you have, would you like to feel more or less free to be frank or is it about right?

less.....1
about right.....2
depends on situation.....3
more.....4

FRNDAD

if zero in 9A code not applicable.....8

- 9D. Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 9D)

10. If something unpleasant or irritating happens and you get upset or angry about it, **do you have someone you can go to** who isn't involved and tell them just how you feel, or not?

If no, record zero.

If yes, ask "HOW MANY?" and record number

AQNO _____

11. Now I want you to think about everyone with whom you are close. Considering those you live with, your family and friends, **who above all would you say you are closest to, fondest or, or most attached to?** Who would be next? Anyone else?

(Fill in a name, their sex and their relationship to the subject on the ATTACHMENT TABLE for each person mentioned and rank order them in column 11. If none, go on to next question.)

12. Now I want you to think about the rest of your family and friends who are **more than just acquaintances.**

These are people you can count on for emotional or material support even though you may not be as close or as attached to them as the one you just mentioned. Do you have family and friends like this or not?

If no one, go to Question 13
If yes, ask "WHO ARE THEY?"

(Fill in a name, their sex and their relationship to the subject on the ATTACHMENT TABLE for each person mentioned and make a check mark in column 12 for each.)

13. Would you say you have a single lasting relationship, **someone you intend to go on sharing your life with** or not? (if yes) With whom?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 13. If no one, go on to next question.)

14. Is there anyone **very important** to you with whom you are **no longer in close touch?** (if yes) Who is it?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 14. If no one, go on to next question.)

15. Has **anyone close to you died** in the last few years? (if yes) Who was it?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 15. If no one, go on to next question.)

16. Is there anyone who **knows you very well as a person?**
(this includes friends as well as family) (if yes)
Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 16.
If no one, go on to next question.)

17. Is there any particular person you feel **you can lean on?** (if yes) Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 17.
If no one, go on to next question.)

18. Do you feel there is one particular person who **feel very close to you?** (if yes) Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 18.
If no one, go on to next question.)

19. When you are happy, is there any particular person you can share it with - someone who you feel sure **will feel happy simply because you are?**
(if yes) Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 19.
If no one, go on to next question.)

20. At present, do you have someone you can **share you most private feelings with (or confide in)** or not?
(if yes) Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 20.
If no one, go on to next question.)

21. Are there ever times when you are **comforted by being held in someone's arms?** (if yes) By whom mainly?

no.....1
yes.....2

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 21.
If no one, go on to next question.)

22. Do you have a close friend or relative **from whom** you can easily **ask small favors**, such as borrowing tapes or books? (if yes) Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 22.
If no one, go on to next question.)

23. Do you have a close friend or relative **for whom** you do **small favors**, such as lending them tapes or books? (if yes) Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 23.
If no one, go on to next question.)

24. Do you have a close friend or relative **from whom** you can easily **ask larger favors**, such as to look after your home while you are away, to lend you \$50 or \$100 if you need it, or to help you in times of trouble? (if yes) Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 24.
If no one, go on to next question.)

25. Do you have a close friend or relative **for whom** you do **larger favors**, such as to look after **their** home while they are away, to lend them \$50 or \$100 if they need it, or to help them in times of trouble? (if yes) Who is this mainly?

(Fill in only one name, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in column 25.
If no one, go on to next question.)

26. Recently have there been any bad feelings or quarrels between yourself and anyone close to you? (if yes) With whom mainly?

(Fill in up to three names, their sex and their relationship to the subject on the ATTACHMENT TABLE and make a check mark in columns 26. If no one, go on to next question.)

- 27A. Still thinking of your family and everyone else, how many people are there **who depend on you particularly** for help, or guidance or advice in day to day life?

(record number)

FRNDNO _____

- 27B. Would you like to have more or less of this in your life, or is it about right?

less.....1
about right.....2
depends on situation.....3
more.....4

FRNDAD

28. Are there any people outside your home who really **appreciate what you are doing for them?**

If no, record zero. If yes, record number.

FRNDNO _____

29. Do people **tell you that you are good at doing some things**, or not? For example, do people praise you, or commend you for something your good at, in the home, at work, elsewhere?

If no, record zero. If yes, record number.

FRNDNO _____

BRIEF ISSI ATTACHMENT TABLE

SUBJECT IDENTIFICATION NUMBER _____ **INTERVIEWER** _____ **DAY** _____ **MONTH** _____ **YEAR** _____

[illegible]

CODEBOOK FOR BRIEF ISSI

<u>Variable Name</u>	<u># of columns</u>	<u>range of values</u>	<u>missing data</u>	<u>descrip of variables</u>
AQNO1A	2	0-98	99	- number of casual acquaintances of the subject
AQAD1B	1	1-4	9	- satisfaction with number of casual acquaintances 1 = less 2 = about right 4 = more
AQNO2A	2	0-98	99	- from how many acquaintances can subject easily as small favors
AQAD2B	1	1-4	9	- satisfaction with AQNO2A above 1 = less 2 = about right 3 = depends on situation 4 = more
AQNO3A	2	0-98	99	- how many acquaintances subject does small favors for
AQAD3B	1	1-4	9	- satisfaction with AQNO3A above 1 = fewer 2 = about right 3 = depends on situation 4 = more
AQNO4A	2	0-98	99	- practical or material help from acquaintances
AQAD4B	1	2-4	9	- satisfaction with AQNO4A above 2 = about right 3 = depends on situation 4 = more

Variable Name	# of columns	range of values	missing data	descrip of variables
AQNO5A	2	0-98	99	- practical or material help to acquaintances
AQAD5B	1	1-4	9	- satisfaction with AQNO5A above 1 = fewer 2 = about right 3 = depends on situation 4 = more
FRNDNO6A	2	0-98	99	- number of friends who could drop by subject's home at any time
FRNDAD6B	1	1-4	9	- satisfaction with FRNDNO6A above 1 = less 2 = about right 3 = depends on situation 4 = more
FRNDNO7A	2	0-98	99	- number of friends subject can drop in on at any time
FRNDAD7B	1	1-4	9	- satisfaction with FRNDNO7A above 1 = less 2 = about right 3 = depends on situation 4 = more
CIRCLE8A	1	1-2	9	- does subject belong to a close circle of friends 1 = no, 2 = yes
CIRCLE8B	1	1-4	9	- satisfaction with CIRCLE8A above 1 = less 2 = about right 3 = depends on situation 4 = more

Variable Name	# of columns	range of values	missing data	descrip of variables
FRNDNO9A	2	0-98	99	-number of family or friends subject can talk frankly with
FRNDAD9B	1	1-4, 8	9	- satisfaction with FRNDNO9A above 1 = less 2 = about right 3 = depends on situation 4 = more 8 = not applicable
FRNDAD9C	1	2-4, 8	9	- satisfaction with level of frankness 2 = about right 3 = depends on situation 4 = more free 8 = not applicable
WHO9D	2	0-10	99	- relationship of person with whom subject can mainly be frank 0 = no one 1 = mother 2 = father 3 = sister 4 = brother 5 = daughter 6 = son 7 = other relative (grandparent, aunt, uncle, cousin, etc) 8 = significant other (spouse, boyfriend, etc) 9 = friend 10 = professional (therapist, etc)
NOTE: THESE ABOVE CODES ARE TO BE USED IN ALL SUBSEQUENT RELATIONSHIP OF "WHO MAINLY" QUESTIONS. COMPUTE IN SPSS: 1-7 = KIN(QUESTION NUMBER) = (1) 8-10 = NONKIN(QUESTION NUMBER) = (2)				
SEX9D	1	0-1	9	- sex of who mainly 0 = female 1 = male

Variable Name	# of columns	range of values	missing data	descrip of variables
AQNO10	2	0-98	99	- number of people subject can go to if upset or angry
CLOSE11	2	0-98	99	- number of people subject is close to
CLOSE1	2	0-10, 88	99	- relationship of first closest 88 = not applicable
CLOSE1A	1	1-2, 8	9	- kin or non kin of first closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE1B	1	0-1, 8	9	- sex of CLOSE1 0 = female, 1 = male 8 = not applicable
CLOSE2	2	0-10, 88	99	- relationship of second closest 88 = not applicable
CLOSE2A	1	1-2, 8	9	- kin or non kin of second closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE2B	1	0-1, 8	9	- sex of CLOSE2 0 = female, 1 = male 8 = not applicable
CLOSE3	2	0-10, 88	99	- relationship of third closest 88 = not applicable
CLOSE3A	1	1-2, 8	9	- kin or non kin of third closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE3B	1	0-1, 8	9	- sex of CLOSE3 0 = female, 1 = male 8 = not applicable
CLOSE4	2	0-10, 88	99	- relationship of forth closest 88 = not applicable

Variable Name	# of columns	range of values	missing data	descrip of variables
CLOSE4A	1	1-2, 8	9	- kin or non kin of forth closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE4B	1	0-1, 8	9	- sex of forth closest person 0 = female, 1 = male 8 = not applicable
CLOSE5	2	0-10, 88	99	- relationship of fifth closest 88 = not applicable
CLOSE5A	1	1-2, 8	9	- kin or non kin of fifth closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE5B	1	0-1, 8	9	- sex of fifth closest person 0 = female, 1 = male 8 = not applicable
CLOSE6	2	0-10, 88	99	- relationship of sixth closest 88 = not applicable
CLOSE6A	1	1-2, 8	9	- kin or non kin of sixth closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE6B	1	0-1, 8	9	- sex of sixth closest person 0 = female, 1 = male 8 = not applicable
CLOSE7	2	0-10, 88	99	- relationship of seventh closest 88 = not applicable
CLOSE7A	1	1-2, 8	9	- kin or non kin of seventh closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE7B	1	0-1, 8	9	- sex of seventh closest person 0 = female, 1 = male 8 = not applicable

Variable Name	# of columns	range of values	missing data	descrip of variables
CLOSE8	2	0-10, 88	99	- relationship of eighth closest 88 = not applicable
CLOSE8A	1	1-2, 8	9	- kin or non kin of eighth closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE8B	1	0-1, 8	9	- sex of eighth closest person 0 = female, 1 = male 8 = not applicable
CLOSE9	2	0-10, 88	99	- relationship of ninth closest 88 = not applicable
CLOSE9A	1	1-2, 8	9	- kin or non kin of ninth closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE9B	1	0-1, 8	9	- sex of ninth closest person 0 = female, 1 = male 8 = not applicable
CLOSE10	2	0-10, 88	99	- relationship of tenth closest 88 = not applicable
CLOSE10A	1	1-2, 8	9	- kin or non kin of tenth closest 1 = kin, 2 = nonkin 8 = not applicable
CLOSE10B	1	0-1, 8	9	- sex of tenth closest person 0 = female, 1 = male 8 = not applicable
MID12	2	0-98	99	- number of people subject feels somewhat close to
MID1	2	0-10, 88	99	- relationship of first somewhat close 88 = not applicable

Variable Name	# of columns	range of values	missing data	descrip of variables
MID1A	1	1-2, 8	9	- kin or non kin of first somewhat close 1 = kin, 2 = nonkin 8 = not applicable
MID1B	1	0-1, 8	9	- sex of first somewhat close 0 = female, 1 = male 8 = not applicable
MID2	2	0-10, 88	99	- relationship of second somewhat close person 88 = not applicable
MID2A	1	1-2, 8	9	- kin or non kin of 2nd somewhat close 1 = kin, 2 = nonkin 8 = not applicable
MID2B	1	0-1, 8	9	- sex of 2nd some- what close person 0 = female, 1 = male 8 = not applicable
MID3	2	0-10, 88	99	- relationship of third somewhat close person 88 = not applicable
MID3A	1	1-2, 8	9	- kin or non kin of 3rd somewhat close 1 = kin, 2 = nonkin 8 = not applicable
MID3B	1	0-1, 8	9	- sex of 3rd some- what close person 0 = female, 1 = male 8 = not applicable
MID4	2	0-10, 88	99	- relationship of forth somewhat close person 88 = not applicable
MID4A	1	1-2, 8	9	- kin or non kin of 4th somewhat close 1 = kin, 2 = nonkin 8 = not applicable

Variable Name	# of columns	range of values	missing data	descrip of variables
MID4B	1	0-1, 8	9	- sex of 4th somewhat close person 0 = female, 1 = male 8 = not applicable
MIDE5	2	0-10, 88	99	- relationship of fifth somewhat close person 88 = not applicable
MID5A	1	1-2, 8	9	- kin or non kin of 5th somewhat close 1 = kin, 2 = nonkin 8 = not applicable
MID5B	1	0-1, 8	9	- sex of 5th somewhat close person 0 = female, 1 = male 8 = not applicable
MID6	2	0-10, 88	99	- relationship of sixth somewhat close person 88 = not applicable
MID6A	1	1-2, 8	9	- kin or non kin of 6th somewhat close 1 = kin, 2 = nonkin 8 = not applicable
MID6B	1	0-1, 8	9	- sex of 6th somewhat close person 0 = female, 1 = male 8 = not applicable
MID7	2	0-10, 88	99	- relationship of seventh somewhat close person 88 = not applicable
MID7A	1	1-2, 8	9	- kin or non kin of 7th somewhat close 1 = kin, 2 = nonkin 8 = not applicable
MID7B	1	0-1, 8	9	- sex of 7th somewhat close person 0 = female, 1 = male 8 = not applicable

Variable Name	# of columns	range of values	missing data	descrip of variables
MID8	2	0-10, 88	99	- relationship of eighth somewhat close person 88 = not applicable
MID8A	1	1-2, 8	9	- kin or non kin of 8th somewhat close 1 = kin, 2 = nonkin 8 = not applicable
MID8B	1	0-1, 8	9	- sex of 8th somewhat close person 0 = female, 1 = male 8 = not applicable
MID9	2	0-10, 88	99	- relationship of ninth somewhat close person 88 = not applicable
MID9A	1	1-2, 8	9	- kin or non kin of 9th somewhat close 1 = kin, 2 = nonkin 8 = not applicable
MID9B	1	0-1, 8	9	- sex of 9th somewhat close person 0 = female, 1 = male 8 = not applicable
MID10	2	0-10, 88	99	- relationship of tenth somewhat close person 88 = not applicable
MID10A	1	1-2, 8	9	- kin or non kin of 10th somewhat close 1 = kin, 2 = nonkin 8 = not applicable
MID10B	1	0-1, 8	9	- sex of 10th somewhat close person 0 = female, 1 = male 8 = not applicable
SHARE13	1	1-2	9	- someone to share life with 1 = yes, 2 = no

Variable Name	# of columns	range of values	missing data	descrip of variables
TOUCH14	2	0-10	99	- someone important with whom subject is no longer in close touch code as in WHO9D
DIED15	2	0-10	99	- someone close died recently code as in WHO9D
KNOWS16	2	0-10	99	- someone who knows subject very well as a person code as in WHO9D
LEAN17	2	0-10	99	- someone to lean on code as in WHO9D
FEELS18	2	0-10	99	- someone who feels very close to subject code as in WHO9D
HAPPY19	2	0-10	99	- someone who will feel happy for subject code as in WHO9D
CONFID20	2	0-10	99	- someone in whom subject can confide code as in WHO9D
HELD21	1	0-10	99	- being comforted by being held in someone's arms code as in WHO9D
SMFAV22	2	0-10	99	- family and friends from whom subject can ask small favours code as in WHO9D
SMFAV23	2	0-10	99	- family and friends who can ask small favours of subject code as in WHO9D

<u>Variable Name</u>	<u># of columns</u>	<u>range of values</u>	<u>missing data</u>	<u>descrip of variables</u>
LGFAV24	2	0-10	99	- family and friends from whom subject can ask large favors code as in WHO9D
LGFAV25	2	0-10	99	- family and friends who can ask large favors of subject code as in WHO9D
BAD26A	2	0-10	99	- bad feelings or quarrels between someone close and subject, first code as in WHO9D
BAD26B	2	0-10	99	- bad feelings or quarrels between someone close and subject, second code as in WHO9D
BAD26C	2	0-10	99	- bad feelings or quarrels between someone close and subject, third code as in WHO9D
DEPEND27	2	0-98	99	- how many people depend on subject for help, advice
FRNDAD27	2	1-4	9	- satisfaction with DEPEND27
FRNDNO28	2	0-98	99	- number of people who appreciate what subjects do for them
FRNDNO29	2	0-98	99	- number of people who praise subject
NOTE: EXCLUDE TOUCH14 AND DIED15 FROM FOLLOWING VARIABLES				
NETWORK	2	0-98	99	- count of the total number of close and somewhat close people named on the attachment table

<u>Variable Name</u>	<u># of columns</u>	<u>range of values</u>	<u>missing data</u>	<u>descrip of variables</u>
NETKIN	2	0-98	99	- count of the total number of kin in the network on the attachment table
NETNKIN	2	0-98	99	- count of the total number of nonkin in the network on the attachment table
EST	1	0-8	9	- count of yes responses to questions 9, 13, 16, 17, 18, 19, 20, and 21, including both kin and nonkin from attachment table
ESK	1	0-8	9	- count of yes responses to questions 9, 13, 16, 17, 18, 19, 20, and 21, include only kin members from attachment table
ESNK	1	0-8	9	- count of yes responses to questions 9, 13, 16, 17, 18, 19, 20, and 21, include only nonkin members from attachment table