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Personal characteristics that increase protection or vulnerability in people with serious mental disorders

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Running Head: Protection and Vulnerability in SMI

Personal Characteristics that Increase Protection or Vulnerability in People with Serious Mental Disorders

by

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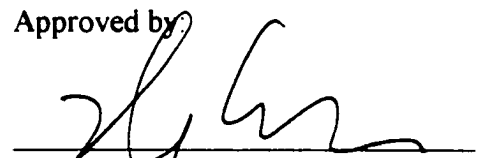

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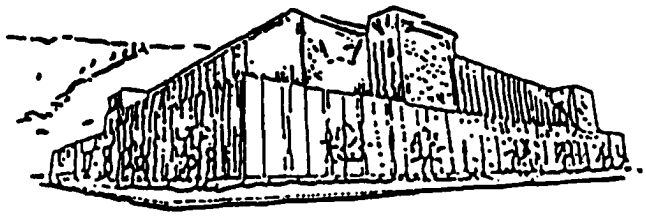

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Lovinia M. Plimpton, M.A. Psychology

Personal Characteristics that Increase Protection or Vulnerability in People with Serious Mental Disorders. (210 pp.)

Director: David Schuldberg, Ph.D.

This study is a cross-sectional, quasi-experimental group comparison utilizing Thirty-five patients from a CVAMC treatment program of schizophrenia patients, thirty-three patients with severe and persistent, chronic, PTSD, and twenty-nine Control subjects from an Ohio National Guard Unit. The level of several characteristics (Social Support, Coping Skills, Constructive Thinking, Creativity, and Psychological Hardiness) may serve to protect or to increase vulnerability (P/V) to relapse in SMI. Knowing the P/V characteristics of patients may allow professionals to assist patients in avoiding relapse and maximizing their quality of life.

Tests of means, a discriminant function analysis, and regression models were used to determine differences in patterns of characteristics contributing to the Global Assessment of Functioning (GAF) and to the Global Severity Index of the SCL-90-R. (GSI).

Although patients with PTSD received higher GAF ratings than patients with schizophrenia, schizophrenia patients scored higher in Constructive Thinking (CTI), self-rated Creative Activities (HDYT), and adaptive coping strategies (Planful Problem-solving and Positive Reappraisal (WOC). These variables all can be affected by learning. Patients with PTSD reported more marriages, employment, and greater psychological distress on every subscale of the SCL-90-R.

Social Support variables were important characteristics for patients with severe and persistent, chronic, PTSD and contributed over 53% of the variance in GAF. These patients reported very small Social Support networks. Social Support did not enter the model for GAF in patients with schizophrenia, but contributed 19% to the variance in GSI. This study replicates and extends findings that appropriate social support is associated with recovery from acute PTSD in combat veterans. The study also replicates findings that patients with schizophrenia find less intimate social support from non-kin more satisfying than intimate support from kin.

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INTRODUCTION

Serious mental illness (SMI) has been an object of scientific study for well over a century. Various disorders have been described and defined by signs and symptoms that emphasize what is wrong with an individual. This approach has been productive, in that general agreement has been reached as to the signs and symptoms of SMI. Treatment methods have focused on alleviating these symptoms, surely a sensible and compassionate focus, in that all healers struggle to increase well-being by soothing or removing suffering. However, the treatment of some serious mental disorders has been less than totally successful using this approach. For example, about one-third of those diagnosed with schizophrenia suffer life-long impairment from episodes of psychosis (Kaplan & Sadock, 1991). Combat veterans and others with chronic PTSD rarely overcome all their symptoms (Gibbs, 1989;Green, Lindy, Grace, Glesser, Leonard, Korol, & Winget, 1990; Herrmann, & Eryavec, 1994; Leopold, & Dillon, 1963).

Over time, research and theoretical efforts have gradually shifted focus from descriptions of symptoms to attempts to discover and describe root causes of SMI. These are probably as varied as are the disorders recognized today. Because of these complexities in etiology, the discussion of SMI in this paper will be limited to veterans with chronic schizophrenia/schizoaffective disorder and veterans with chronic PTSD. A third group of veterans who are not suffering from any SMI will be included in the research to help focus the emerging picture of strengths and weaknesses in SMI. This

discussion will lead us to consider issues of risk from exterior stressors as well as vulnerabilities due to both internal characteristics of the individual and earlier external stressors (e.g., early trauma) that impact upon the individual. Issues of innate and learned strengths that protect the individual are also part of the picture. The issues are complex

Theories and models of causation in schizophrenia are built around both external stress and internal vulnerability, or diathesis. The latter represents a set of characteristics that reside within the individual and arise from genetic, physical, and experiential circumstances. Current diathesis-Stress theories of schizophrenia are generally well-supported in the literature (Meehl, 1990; Mirskey & Duncan, 1986; Neuchterlein, 1987; Neuchterlein, Dawson, Gitlin, Ventura, Goldstein, Snyder, Yee, & Mintz, 1992; Zubin, Magiziner, & Steinhauer, 1983), although the precise contributions of various specific etiologic factors remains unclear. The authors cited above generally agree that accumulated stress plays an important role in triggering episodes of psychosis in vulnerable individuals. The models these authors propose to describe the complex interactions of genetics, early experience, and later life events generally show an interaction between "nature" and "nurture" in the causes and course of schizophrenia.

The comparative roles of stress and diathesis in PTSD are less clear. Theories of the etiology of PTSD fall into categories of developmental (psychodynamic and attachment), behavioral, physiological, and cognitive theories. Psychodynamic theorists have posited that anxiety reactions to trauma are exacerbated in persons who were severely punished in childhood for behaviors that expressed Id desires (Chiu, 1971; Eisenberg, 1958; Jenkins, 1968; Whiting, et al., 1966). A relatively recent body of theory

and research looking into adult attachment (grounded in the work of Bowlby, 1979) has suggested that avoidantly or ambivalently attached persons are more vulnerable to this sort of mental distress (Feeney & Noller, 1996). Shalev (1993) describes a variety of physiological changes that may be the result of trauma, such as dysregulation of opiod receptors in the brain or of the hypothalamic-pituitary-adrenal axis involved in sympathetic nervous system activation.

Seligman (1971) suggested that human beings are prepared, biologically or genetically, to fear certain objects, such as snakes or spiders, and learn to fear other objects from their parents and caregivers. PTSD resulting from a stressful traumatic event might be worsened if the experience included exposure to one of these "prepared" fears. Beck, Emory, and Greenberg (1985) add that beliefs that an individual does not have the capacity to cope with the trauma exacerbates PTSD symptoms.

However, the current state of research evidence neither confirms nor refutes these theories of a specific pre-existing diathesis that increases vulnerability to the severe stress of trauma, although the evidence is clear that there are individual differences in responses to stress (Choy & De Gosset 1992). A common factor to all accounts of the etiology is that an external stressor is understood to be part of the process.

Other workers have emphasized stress and ignored diathesis in explaining PTSD; Sarason and Sarason (1987) even place PTSD in a chapter about stress rather than in the Chapter on Anxiety disorders in their Abnormal Psychology text book. An additional issue concerns the effects and influence of individual differences that might protect from illness or increase an individual's ability to avoid the ill effects of stress or diathesis when

exposed to trauma.

The current discussion of the contributions of various elements, such as preexisting diathesis, resiliency in the face of adversity (Rutter, 1990; Schuldberg, Karwacki, & Burns, 1993), or current stressors, to the occurrence of episodes of illness, as well as to the lower competence of SMI patients, hinges on understanding of these concepts of risk, physical or "constitutional" characteristics, environmental stressors, and the interaction of these factors as they work together to increase protection from or vulnerability to the effects of serious mental illness. Defining and limiting the scope of these terms is an early task of this paper.

First, some definitions will be offered. Brief reviews of the literature on the etiology of schizophrenia and PTSD will be presented in order to consider the relative roles of diathesis and stress in each disorder. The application of these definitions to patients with schizophrenia and patients with PTSD will be discussed. Next, social support and several other potentially protective factors (Psychological Hardiness, Constructive Thinking, Creativity, Coping) that may affect the etiology and course of disease in the chosen classes of SMI will be described. Finally, hypotheses concerning expected differences in factors leading to protection or vulnerability across two classes SMI patients will be introduced. The varied roles of stress, learned responses, and innate qualities in the course of these two disorders will be woven through this paper, but the focus of this research will be on how constructs that are signs of positive mental health (*protective* factors), or their absence, as well as the presence of characteristics that increase the likelihood of increased symptomology (*vulnerability* factors) may be found in two classes

of SMI, albeit at low levels. In addition, this research is concerned with how these signs may form two distinct clusters of indicators of positive mental health that can be measured and potentially used for treatment planning to increase well-being in patients with SMI. Since this research is cross-sectional, no reliable measurement of the occurrence of stressors over time is possible, but the role of this unmeasured, theoretical component must be mentioned in the discussion, while acknowledging that stress is both not measured and unmeasurable in this work.

Risk? Vulnerability Factor? or Both?

To say that one is at risk for X is a common statement. In this paper and study, the use of the term "risk" will be limited to exposure to life stressors or an external, environmental factor as cause of SMI. This definition follows Rutter (1990), and it excludes genetically-based internal characteristics as components of risk, which shall be included as vulnerabilities ("diathesis") rather than risks. This limited definition may help clarify the discussion of issues which include an unmeasured component or internal consequence of previous stress, such as sensitization. Defining risk as Rutter does in this way allows the separation of vulnerability and protection from risk and may help clarify some complex issues.

Although some charting of previous stress as a trigger for episodes of illness in veterans with schizophrenia and with PTSD has been part of the record, knowing the comparative severity of such stressors in a given sample of either of these groups of patients after the fact is impossible. In addition, the level of an individual's ability to avoid succumbing to stressors may not be known. Resisting the temptation to try to quantify a

baseline of the elements of stress and resistance to stress that contribute to risk, or to protection and vulnerability, is fundamental to understanding the focus of this research. The author acknowledges and emphasizes that no adequate measure of previous stress can be inferred from the cross-sectional design of this work.

Neuchterlein (1987, 1992) wrote of differences in risk, indicating that environmental risk of relapse due to life events "had a role" in medicated patients, but not in non-medicated patients, whose relapses had little relation to their recorded life events. In other words, risk, as experience of current life stress - an external occurrence - overcame the presumed beneficial effect of psychotropic medication in these patients. This illustrates the complexity of concepts of protection and vulnerability, as well as the complexity of diathesis-stress theories of SMI, in that both an external cause (stressful life events) and an internal adjustment (the effects of medication) contributed to outcome (relapse).

Garmezy and Tellegen (1984) discussed physical illness, low Socio-economic Status (SES), severe marital discord, overcrowding, paternal criminality, maternal psychiatric disorder, and admission into the care of local authorities as "risk" factors for poor outcome in children of SMI parents. Note that only some of these so-called risk factors can be considered current stressors (that is, in the present), according to the definition of risk mentioned earlier. These children were found to be relatively unaffected by the presence of one "risk" factor. Two "risk" factors increased the chance of mental illness by a factor of two. Four "risk" factors yielded a ten-fold increase in mental illness in these children.

Some of these factors, such as maternal psychiatric disorder, could be interpreted as either internal or external, since they have an impact on both genetics and experience. The authors' discussion makes clear that the maternal influence risk factor is meant to refer to the stress of living with a mother who behaved erratically in her parenting, rather than referring to inherited traits. Thus, the definition of risk as external and current chosen for this paper is partially illustrated by Garmezy and Tellegens' (1984) approach.

Rutter (1990) has continued the discussion of risk by noting that an individual's response to risk could range from succumbing to illness to thriving in the face of adversity. This selective, individual response marks the meeting of the external and the internal, as well as the contribution of "Protective" Characteristics to outcome.

Protection/Vulnerability (P/V) Characteristics

Rutter (1990) explained the differential response of individuals to risk factors by positing that individual responses to stress are governed according to both internal and external qualities which characterize individuals. Each characteristic is viewed as existing on a continuum. At one end of the continuum for each characteristic is "vulnerability" (Please refer to Figure 1.). At the other end is "protection". In general, other traits or characteristics can have both a detrimental and a helpful effect, depending on their intensity or level.

Elliot and Lassen (1997) have proposed a similar, nonlinear model (illustrated in Figure 1, part B.) with "negative inflexible schema" at one end and "positive inflexible schema" at the other, separated by an integrated flexible schema. In Elliot and Lassen's model, vulnerability would attach to both the positive and negative inflexible schemas and

protection would attach to the integrated flexible schema. This nonlinear model is mentioned only because of the possibility that some P/V characteristics could work in this way. The variables measured in this study are expected to be linear.

Placing the social support characteristic of size of the social network, or number of persons with whom an individual interacts regularly, into linear (P/V characteristic) and nonlinear (schema) models may illustrate the common ground as well as unique characteristics of these models. Patients with schizophrenia generally report a small social network made up of primarily family (Meehl, 1990). If members of this network interact with a type of intensity labeled "High Expressed Emotion" (Beels, & McFarlane, 1982), the patient is more likely to relapse after treatment. A small network of nonkin that interacted with low intensity has been found to be indicative of better functioning in a group of more severely disabled chronic patients with schizophrenia in a group home (Denoff & Pilkonis, 1987). Thus, a small network where people interact with low intensity is placed at the Protection end of the continuum, and a small network of individuals interacting with high EE is placed at the vulnerability pole in the model (after Rutter, 1990).

In a nonlinear schema model, a small network of people interacting intensely (high EE) would represent a negative inflexible schema, a large network would be a positive inflexible schema (too many people), and a small network interacting at low intensity would be governed by a flexible schema. (Note that "schema" here implies a model, or set of rules, governing systems, not individual cognitive functioning.) Risk is here represented by current external stressors, the degree and type of social communications.

The social support characteristic of network size has been chosen for illustration in this figure, but a variety of characteristics can be explored using linear and, if necessary, nonlinear models. For instance, Kobasa's (1979) element of Control, part of the Hardiness Construct, could be placed in the schema model with low Control at the negative schema pole, extreme overcontrol at the positive inflexible pole (Kobasa herself does not describe overcontrolling behavior as part of her construct, but an inflexible schema for overcontrol can be easily imagined). High but flexible Control could represent an integrated flexible schema. A linear model, after Rutter (1990), would propose low Control at the Vulnerability end and high Control at the Protection end of the model. It is expected that P/V characteristics will follow a linear model in most cases, although the non-linear configuration of Elliot and Lasson (1997) may be found in some social support situations.

Examples of Protection/Vulnerability characteristics (P/V) include possible internal characteristics, such as creativity, intelligence, sense of humor, level of arousal, motivation, or impulsiveness, and external phenomena, such as structural and functional social support, common sense, or coping strategies. These factors are potentially common to all individuals and vary in the extent to which the factors serve to protect or to increase vulnerability for each individual. Rutter (1990) postulates that P/V characteristics modify risk factors and determine whether external "risk" leads to illness or health. He describes this modification as an interactive process. It is also presumed to be linear.

This is an important point. Outcome is never pre-determined, since various P/V characteristics interact in unpredictable ways with risk factors in much the same way that a graphic equalizer modifies characteristics of sound waves to produce varied sounds that

are emitted by speakers in a sound system. This also means that P/V characteristics do not necessarily produce main effects in subject's outcomes, but rather may interact statistically with risk.

P/V characteristics may be anchored in subjects' personality, early learning or in diathesis for various mental disorders. In other words, persons who are vulnerable for schizophreniform disorders might possess different P/V characteristics than those who are not. Items in this cluster of P/V characteristics will be referred to as Type I characteristics in this paper.

Although there is a growing literature about combat-induced PTSD, less is known about characteristics that are protective or increase vulnerability in patients with PTSD; this paper proposes that they will be named Type II. Hallmarks of chronic PTSD include categorical thinking, social withdrawal from most persons who are not veterans, and explosive anger, as negative characteristics, or vulnerabilities. These patients also may exhibit moderate to high motivation to accomplish their goals, the ability to form long-term friendships with other veterans, and the ability to attract a mate. The present study contributes to an emerging picture of vulnerability and protection in PTSD.

Characteristics shared by many patients with schizophrenia that are at the vulnerability end of the continuum (in a linear model) for various P/V characteristics are low motivation, social aversion, and passive coping. Traits related to creativity may be part of a pattern of P/V characteristics in patients with schizophrenia that could be protective. One purpose of the proposed research is to determine whether the various P/V characteristics measured in this current research form and function as two distinct clusters

in veterans with schizophrenia and combat veterans with PTSD.

Rutter (1990) describes individuals who possess characteristics that function successfully as protective features as "resilient". These individuals appear to survive or thrive in the face of both risk and genetic pre-disposition to SMI in a variety of situations. This does not mean that they will never be exposed to risk that leads to illness, nor that they will ultimately avoid succumbing to SMI. The process is fluid. Neuchterlein (1992) has reported that non-medicated patients who appeared to be doing well sometimes faced risks that were consequences of their own prior behaviors (See also Schuldberg, et al. 1996). For example, some relapsed because of job stress that resulted because they were well enough to find employment. One might speculate that protective characteristics led them to situations that then overloaded the protective value of other P/V characteristics.

Elder and Clip (1989) reported that between 60% and 70% of veterans of World War II and the Korean conflict acknowledged that their war experiences had had beneficial effects (e.g., they learned to cope with adversity, developed a broader perspective, and self-discipline) as well as traumatizing effects (nightmares, "misery", and bad memories of death and destruction). Their self-reports may have reflected developmental processes aided by P/V characteristics. This research was descriptive only and limited to polling these veterans for their current reactions to combat that had occurred 30 to 40 years earlier. Once again, retrospective measures of stress, as well as undocumented speculations about the origins of P/V factors must be considered undependable.

Thus, some P/V characteristics may be stable over the life span; others could have either a positive or negative influence on outcome, and increase, decrease, or disappear entirely depending on life events or developmental stage. For example, social support from parents is generally assumed to be stable over the parent's life span (Berkman, & Syme, 1979). Social support from friends may be less dependable. Social support from a spouse/lover might be either stable or undependable. An internal protective factor, intelligence, might be stable, although illness or injury can change this characteristic as well.

This discussion of stress, diathesis, vulnerability, and P/V characteristics focuses on two classes of SMI patients, patients with chronic schizophrenia and long-term patients with PTSD. Limiting the scope of this discussion to these two patient populations allows us to explore the relative contributions of both stress and diathesis in these two forms of SMI. While the diathesis of genetics, physical illness, and early experience clearly contributes to symptoms in patients with schizophrenia, such causes are generally less well-documented as yet in the etiology of PTSD, although there are some tantalizing hints that sensitization through experiencing previous trauma, or that causes of symptoms of personality disorder, may serve as diathesis.

Stress in early adulthood frequently precipitates an initial breakdown in the patient with schizophrenia (particularly in the reactive subtype). A stressor severe enough to be "outside of the scope of normal human experience" (American Psychiatric Association, 1995) is required before the PTSD diagnosis can be considered. DSM-IV clearly states that stress is the major etiologic force in PTSD. The DSM-IV does not attribute a major

role in schizophrenic and schizophreniform episodes to stress, although diagnostic experts rightly attribute a role to stressful experiences as well (Meehl, 1990; Mirskey & Duncan, 1986; Neuchterlein, 1987; Neuchterlein, et al. 1992; Zubin, et al. 1983). The focus of this study is to attempt to measure some characteristics in SMI patients that contribute to wellness or mental strength. This research cannot directly separate these issues but stressors, learned responses, and innate qualities are a major part of the backdrop of the study.

In this introduction, a brief description of schizophrenia and PTSD will be followed by discussions of several P/V characteristics: Structural and Functional Social Support, and a collection of characteristics that Schuldberg (1993) has termed Personal Resourcefulness. Rutter (1990) has termed a similar set of characteristics "resiliency". We shall hypothesize that the diathesis for potential schizophrenia (as well as subsequent environmental factors including stressors) will lower the level of many of these P/V characteristics, such as some types of social support, while raising the level of others, such as creative potential (Type I P/V characteristics). A different pattern of P/V characteristics (Type II P/V characteristics) is expected in combat veterans who are diagnosed with PTSD and who are presumed for the purposes of this study to have different learned responses and innate qualities.

Diathesis and Stress in the Etiology of Schizophrenia

Approximately 50% of monozygotic twins of parents with schizophrenia also suffer from this disorder. Why do about 50% of the co-twins escape? Meehl (1990) presents a complex discussion of the genetics of schizophrenia that argues that the current

world-wide rate of schizophrenia (about 1% in all cultures) indicates that about 10% of the world's population carry a single gene that "causes" the inherent vulnerability indicated by the twin concordance rates (as well as other proportions for off-spring, sibs, and relatives of patients with schizophrenia). He also credits "polygenic potentiators": other physical, cognitive, and emotional characteristics, such as cognitive slippage (or loosened associations), social introversion, "soft" neurological signs (differences in skin conductance or eye tracking), emotional lability or instability, and low motivation and energy that may increase vulnerability to psychotic breakdown in the face of life stress. Meehl (1962, 1990) chose the term "Schizotaxia" to describe individuals who carry the genetic potential (both the single "gene" as well as potentiators) for schizophrenia and of acknowledged that schizotaxia plus experience, physical illness, and culture produces the diathesis with which life stress interacts in ways that lead to either illness or relative well-being. This theory allows for the interaction innate qualities, learned responses, and stressors.

A second hypothesized cause contributing to the development of schizophrenia that has gained popularity among scholars is family influence in early childhood. These psychosocial theories are stress theories, not diathesis theories. Higher levels of life stressors, such as low socio-economic status (an external cause), and family discord and dysfunction (resulting in learned responses), have been identified as partial predictors of an initial psychotic breakdown, and also of relapse and recurring episodes in the chronic course of the disorder (Angemeyer & Lammers, 1986; Neuchterlein, 1987; Raulin, Mahler, O'Gorman, Furash, & Lowrie, 1987; Strauss & Carpenter, 1972, 1974a, 1974b,

1977; Taylor & Hinton, 1987).

During the 1950's popular theories regarding the onset and course of schizophrenia were based on family processes that were observed and hypothesized to be deviant (Brown, Birley, & Wing, 1972; Doane, West, Goldstein, Rodnick, & Jones, 1981; Holden & Lewine, 1982; McCreadie & Phillips, 1988; Singer & Wynne, 1966). Learning theorists described a process by which a child learned deviant behaviors, such as bizarre emotional reactions, from parents who were deficient in social and communication skills and methods, or who were interpersonally aversive (Kaplan & Sadock, 1991). Others suggested that such symptoms were a learned strategy for interpersonal avoidance (Meehl, 1990). Bateson et al. (1956) put forth a theory of the "double binding" family in which a child is routinely required to make impossible choices between two aversive alternatives. Theodore Lidz (1958) described families with deviant parental relationships, either skewed by a parental power struggle with the child in the middle, or divided, with the opposite sex parent allied with the child against the same sex parent. Singer and Wynne (1966) noted deviant communication styles in families of children with schizophrenia. These social interactions were described as upsetting and confusing to patient and family. Reframing this literature in terms of social support, it appears that learned and experienced patterns of faulty social interaction anchor the vulnerability pole of social support as a P/V characteristic in schizophrenia.

In related work, Brown, et al. (1972) described a "High Expressed Emotion" (EE) family communication style in relatives of adult patients with schizophrenia and other psychiatric patients who were released to their homes. This style of frequent criticism,

overinvolvement with the patient, and an attitude of hostility was strongly related to relapse in patients who spent more than 35 hours per week with the "high EE" relatives. This is also indicative of the vulnerability (upsetting support) pole of this P/V characteristic of Social Support. Beels and McFarlane (1982) report that patients' family members spontaneously explained their "high EE" as responses to the stress of living with a decompensating psychotic relative. However, there is no way to discover after the patient's breakdown whether the family caused the child's disorder or the child's oddities produced the family's high EE communications. High EE in families could be further evidence that some kinds of (upsetting) social support increase vulnerability for patients with schizophrenia, rather than providing some protection from the effects of stress.

In attempts to investigate whether social interactions increased vulnerability in patients with schizophrenia, some researchers have attempted to discover clues to premorbid differences in the school records of persons who were later hospitalized for schizophrenia (Parnas, Schulsinger, Sarnoff, Mednick, & Teasdale, 1982; Watt, 1978; Watt, Stolorow, Lubensky, & McClelland, 1970). These attempts to research the premorbid social interactions of patients with schizophrenia represent prospective data because the teachers and others who recorded their assessments of childrens' behaviors had no idea that the child would become mentally ill or that the records they were producing would be used as data.

Preschizophrenic boys were described by teachers' comments to be undersocialized and aggressive, even in the primary grades. Preschizophrenic girls were not distinguishable from normal girls until adolescence, when they were described as excessively socialized

and over-inhibited (Watt, et al. 1970). Thus, there is evidence that individuals who are vulnerable to schizophrenia spectrum disorders may show signs of their vulnerability from a very early age, signs manifested in their social interactions, which appear to increase vulnerability rather than to protect from risk. The focus here is on the patterns of social interaction as P/V factors, not on signs of diathesis.

For many years behavioral and cognitive behavioral treatments that have attempted to build on whatever strengths patients and families possess have been conducted in outpatient treatment settings with both patients and their families (Anderson, Hogarty, Bayer, & Needleman 1984; Beels & McFarlane, 1982). These interventions usually emphasize social skills, independent living skills, medication management, and/or understanding serious mental illness. The common method of treatment is to determine the level of knowledge in a group of patients and to overcome deficits in knowledge or behavior. Many of these approaches have improved the lives of patients and their families.

However, there remains a group of patients who make little progress under such psychoeducational treatment. Accurate assessment of all aspects of social support and other possible P/V characteristics, and attempts to determine where the protective effects of support end and where vulnerability begins for the patient, might help to increase the effectiveness of such interventions for a broader range of patients.

This study considers these social support issues and other individual characteristics, such as Constructive Thinking, Psychological Hardiness, Creativity, and Coping strategies. However, just as the optimal types and levels of social support for a former mental patient are difficult to discover, descriptions of optimal levels of other P/V

characteristics are also tentative at this time. This research is expected to add to the knowledge base about these characteristics.

Patients with schizophrenia are thought to experience lower levels of social support and unsatisfactory social relationships in general (Crotty & Kulys, 1986; Cutler, Tatum, & Shore, 1987; Denoff & Pilkonis, 1987; Hamilton, Ponzoa, Cutler, & Weigel, 1989; Hirschberg, 1985). Many studies have confirmed that patients with schizophrenia tend to have smaller social networks, especially patients exhibiting negative symptoms (Cutler et al. 1987; Denoff & Pilkonis, 1987; Hirschberg, 1985). People with schizophrenia also tend to have networks composed primarily of relatives (Beels, 1981). Several characteristics of structural social support such as size, density (the percentage of network members who know each other as well as the subject), and enmeshment (the percentage of network members who interact with each other regularly) have been found to be associated with poorer outcome and relapse.

In a very unexpected finding (possibly related to the construct of enmeshment), Hirschberg (1985) found a positive relationship between number of social contacts and duration of in-patient treatment. He did not assess for High EE in the families of his patients, but these results suggest that High EE might have been part of the picture.

Denoff and Pilkonis (1987) compared former patients living in sheltered residences in Pennsylvania and found that higher functioning residents had social networks that were less dense (that is, fewer of the persons in the network knew each other), more intimate, and more extensive outside of the residence; lower functioning residents had smaller, denser, less intimate networks of non-kin within the residence. However, lower

functioning residents were also satisfied with their level of social support. (Note that satisfaction with social support is a global functional measure of social support and appears to be unrelated to level of functioning in this sample.)

The authors speculate that an intervention pushing these lower functioning residents toward interactions outside the residence might have a detrimental decompensating effect. Knowing and interacting with a small group of non-kin individuals in a relatively nonemotional way may have been more satisfying and beneficial for these people. This finding emphasizes that satisfaction with level of support in a highly individual matter and cannot be described or predicted accurately by anyone but the individual. In addition, this subjective rating may be unrelated to overall functioning.

In addition to Social support, other potential P/V characteristics need to be described and studied in order to increase the effectiveness of treatment approaches. Alternative treatment approaches might focus on discovering and describing positive signs of functioning in SMI patients so that these signs could be recognized and reinforced to increase the effectiveness, satisfaction with life, and hope for a better future of the individual. Benefits would also accrue to families and the community.

As is evident from the preceding discussion of environmental P/V factors, much more than genetic pre-disposition is active here. Ways of interacting socially are learned, and these can be either protective or increase vulnerability. Not so obvious is the question of how some people who might be vulnerable because of genetic influence not only do not become ill, but actually flourish. Schuldberg (1993) described this phenomenon in a study of a construct he named Personal Resourcefulness, a set of attitudes, cognitions,

perceptions, and coping behaviors in college students hypothetically at risk for psychotic symptoms based on their scores on the Wisconsin Scales of Hypothetical psychosis proneness (Chapman & Chapman, 1985). A Principal Components Analysis identified several internal perceptual, cognitive, and affective/motivational characteristics that might serve at the protective pole in the complex mixture that contributes to illness or health. Meehl (1990) has suggested that schizotaxia in an individual could be a source of creative, divergent thinking as well as the loosened associations typical of active psychosis. Other aspects of Resourcefulness, for example coping strategies, could well be learned.

Etiology of PTSD: Roles of Innate Qualities, Learned Responses and Stress

PTSD is, by definition and diagnosis, both a stress-related anxiety disorder. The occurrence of an event that is universally accepted as overwhelmingly traumatic and marks the beginning of symptoms is necessary for the diagnosis (APA, 1994), although it is not clear whether this event alone is sufficient. An important question is why not everyone who experiences a traumatic situation, such as a natural disaster, crime, or combat, becomes traumatized over the long term. The observation that only about 20% to 50% of trauma exposure victims exhibit symptoms that last for more than a few weeks caused psychologists and psychiatrists to believe early on that persons who were traumatized for any length of time were vulnerable because of a "lack of character" or "weakness" (Murray, 1992; Wilson, 1995). Some professionals treating World War II combat veterans anxiety disorders believed that internal vulnerability played a primary role (Grinker & Spiegel, 1945; Wilson, 1995).

There is general agreement that severity and duration of traumata directly affect post trauma reactions, whether the immediate "normal" reactions of anxiety and shock, acute stress reactions, or the more lasting symptoms of acute or chronic PTSD. Vitaliano, Maiuro, Bolton, and Armsden (1987) list four sets of variables that affect the strength of the reaction to disaster: (1) severity of disaster (or stressor), (2) preexisting vulnerability, such as childhood abuse, or high level of reactivity to stimuli (3) "psychological resources" (or the "P" side of P/V characteristics), and (4) social support (a very important P/V characteristic). All of these will be of interest in the proposed study.

Of these sets of variables, preexisting vulnerability concerns us first, since this variable is part of diathesis in the etiology of SMI. As mentioned earlier, preexisting, internal vulnerability to PTSD has been explained by theories of prepared fears, learned anxiousness (trait anxiety), unconscious repression of Id impulses, faulty attachment, differences in physiological reactivity, and previous traumatization because of abusive or neglectful parenting in childhood (Beidel & Turner, 1984; Comer, 1992, 1995; Feeney & Noller, 1996; Kaplan & Sadock, 1991). Unfortunately, the texts that list these possible etiologic influences acknowledge that very little empirical research supports these as etiologic factors. There is some evidence that abusive or neglectful parenting (which might also be described as early upsetting social support or an early failure in attachment, as well as an initial or priming dose of traumatization) was correlated with more severe PTSD symptoms in combat veterans (Brenner, Southwick, Johnson, Yehuda, et al., 1993; McCranie, Hyer, Boudewyns, & Woods, 1992).

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The relative role of stress versus the role of some internal vulnerability in combat-induced PTSD is not clear. The literature indicates that the incidence of PTSD is between 15% and 30% for samples of Vietnam veterans (McGuire, 1990). The National Vietnam Veterans Readjustment Study estimated lifetime prevalence of PTSD to be 30.9% of male

theater veterans and 26% among females (Weiss, et al., 1992). If stress alone were responsible for this disorder, one would expect a much higher incidence, although it may be true that no more than 15 to 30% of combat personnel were exposed to severe combat stress. On the other hand, PTSD prevalence rates for the entire age-related cohort are estimated at 0.3% to 2.5% (Schlenger, Kulka, Fairbank, Hough, et al., 1992).

Several studies have attempted to identify pre-existing conditions that may make combat veterans vulnerable to the stress of combat. Watson, Anderson, and Gearhart (1996) assessed patients with PTSD, psychiatric controls, and a Control group of hospital employees, and determined that general psychosocial maladjustment (as indicated by incarceration or inpatient or out-patient psychiatric treatment in parents or older siblings) in the family of origin does not appear to increase trauma survivors' vulnerability to PTSD.

McNally and Shin (1995) reported that IQ, as measured by the Shipley Institute for Living Scale, predicted variance in PTSD symptoms beyond that accounted for by severity of combat exposure in 105 male Vietnam combat veterans. Note that intelligence was correlated with one of Schuldberg's Resourcefulness Factors and is generally taken as a protective factor or predictor of positive adjustment (Masten, Morison, Pellegrini, & Tellegen, 1990; Rutter, 1990). Lower intelligence predicted more severe symptoms. The Shipley is a commonly used research instrument, but has been criticized as a single measure of intelligence. Unfortunately, no pre-combat measure of intelligence was available.

Hiley-Young, Blake, Abeug, Rozynko, et al. (1995) assessed 177 combat veterans

for premilitary factors as well as PTSD symptoms and postmilitary violence to self, spouse, and others. They found that although high rates of childhood victimization were found for these subjects, victimization did not predict post military violence, criminal activities, or PTSD symptoms. High combat exposure did predict PTSD symptoms in this sample. Low childhood adjustment ratings and school suspensions predicted drug or alcohol abuse, but not PTSD. This evidence suggests that previous trauma may increase vulnerability to subsequent traumata. Severity of that subsequent trauma apparently is more directly related to symptoms. Teasing apart this relationship of multiple traumatizations is difficult to do from this evidence.

Fontana and Rosenheck (1994) used data from the National Vietnam Veterans Readjustment Study to survey a community sample of 1139 male veterans and built a model relating pre-military factors and traumas, war-related, nonwar-related traumas, homecoming reception, and post-military traumas to PTSD. They found that war-related traumas contributed "substantially" more than nonwar-related traumas to PTSD symptoms. Childhood abuse and family instability contributed modestly to the model. The two most influential factors were lack of support from friends and family upon return from Vietnam (which might be considered a support-related "V" factor), and combat. These authors reported in an earlier study (Fontana & Rosenheck, 1993) that war zone experiences contributed the most to both PTSD and psychiatric symptoms in a sample of 381 Vietnam theater veterans. They found that combat exposure contributed directly to PTSD symptoms, but not to general psychiatric symptoms. The overall fit of the model

was deemed to be satisfactory, accounting for 59% of the variance in PTSD.

Green, Grace, Lindy, Gleser, and Leonard (1990) reported similar results in their study of 200 men who served in Vietnam between 1965 and 1972. Premilitary factors (education, age at enlistment, and "several items from the SADS-L") accounted for 9% of the variance in PTSD when entered first in a regression equation. Military combat factors added another 19% to the variance accounted for, and postmilitary factors (mainly social support after return from Vietnam) contributed an additional 12%. Good support (at homecoming and currently) decreased the likelihood of a PTSD diagnosis. The authors found that antisocial personality disorder predicted only drug or alcohol abuse disorders, but not PTSD.

Gibbs (1989) lists individual characteristics that may increase vulnerability to the effects of trauma. Among these are age (the very young and very old appear to experience greater traumatization), gender (men react with more substance abuse; women suffer more depression), previous psychopathology (which has a dose-related response: more pathology yields more traumatization), and social class (lower SES predicts greater distress).

Wilson and Krauss (1985) retrospectively assessed premilitary, military, and postmilitary factors in 200 Vietnam veterans, including social, family, and personality variables. They found that the best predictors of PTSD symptoms were the severity of combat experience (less than 40% of the variance) and lack of social support leading to psychological isolation (accounting for less than 43% of the variance) after returning from

Vietnam. Premilitary personality disorder variables accounted for less than 3.5% of the variance in PTSD symptoms. Some of these premorbid personality characteristics were more strongly associated with other postmilitary disorders, such as depression, sensation-seeking behaviors, and substance abuse. It would appear that premilitary personality factors may have contributed weakly to PTSD, but not nearly as strongly as traumatization and postmilitary social support.

Goldberg, True, Eisen, and Henderson (1990) assessed three groups of monozygotic twins who were veterans of the Vietnam era. The three groups consisted of (a) twins who had not served in southeast Asia (1900 pairs), (b) twins with one who served in South East Asia and one co-twin who served elsewhere (715 pairs), (c) and twins who both served in South East Asia (854 pairs). The researchers controlled for potential confounds such as years of education, age, branch of service, score on the Armed Forces Qualification Test, length of service, etc., and found that no confounding factors changed their conditional logistic regression models. They concluded that veterans who served in Southeast Asia had a four-to-six fold chance of experiencing PTSD symptoms, when compared to their twin who did not serve in Southeast Asia. The comparison groups demonstrated similar effects. The prevalence of PTSD symptoms increased with increasing combat exposure. This sort of result suggests that exposure to trauma, at least in combat veterans, has more to do with the etiology of PTSD than the backdrop of innate qualities, and learned responses. The current study focuses on P/V characteristics that may influence the clinical and diagnostic picture in severe chronic

PTSD.

Schnurr, Rosenberg, and Friedman (1993) examined changes in MMPI scores of 540 men who attended college during the Vietnam era. Civilians were compared to veterans who were grouped according to combat exposure (none, peripheral, or direct). The authors reported that the groups differed only as adults, and effect sizes were small; in other words, no pre-combat differences were found. The authors described their results as confusing and concluded that, in a select population, combat exposure does not have universally negative outcomes. However, this community sample did not include many veterans with active PTSD symptoms, thus restricting the possible findings.

One study did find a pre-military factor that may be a possible vulnerability factor in PTSD. Brenner, et al (1993) found higher rates of childhood physical abuse in 38 patients presenting with symptoms of PTSD than in 28 medical patients. The association between childhood abuse and PTSD symptoms persisted after controlling for differences in level of combat exposure. Patients with PTSD also had a higher incidence of pre-combat trauma of other kinds than did medical patients. Previous trauma may increase the risk of developing PTSD, perhaps playing a "sensitizing" or "kindling" role. The present study included a rough measure of childhood emotional, physical, and sexual abuse.

Another study demonstrated a similar pattern of findings. McCranie et al. (1992) applied a person-event interaction model to 57 Vietnam veterans with diagnosed PTSD and reported that the father's negative parenting (an important lack of social support and, perhaps, a previous trauma dose) was more predictive of PTSD symptoms at lower levels

of combat exposure, supporting the finding that childhood physical abuse or pre-military trauma may increase vulnerability to PTSD. However, a question arises. Is this premilitary trauma best considered a previous stressor that has, so to speak, infected the veteran with a susceptibility to being traumatized, or does this previous stressor become part of a "diathesis"?

Thus, several studies have found that premilitary factors may increase vulnerability to traumatization and PTSD. Effects were small and less than the effects of combat experience. The link that appears to be of primary importance is that previous traumatic experience could increase a veteran's vulnerability to traumatization from combat experience.

On the other hand, Pitman, Orr, Lowenhagen, Maklin, et al. (1991) found few pre-military differences in a comparison of 250 combat veterans. Patients with PTSD did not differ from others in medical history, military efficiency, or conduct ratings. There were trends for veterans with PTSD to report lower arithmetic aptitude, more school difficulties, and lower pulse rate at induction. Just how these characteristics might contribute to a vulnerability to PTSD is not completely clear, although difficulties with arithmetic and with schooling might be indicators of lower intelligence, and pulse rate may reflect a basal arousal difference, although the finding of lower pulse rate is confusing.

Research has shown that combat veterans with PTSD diagnoses have more in common post-trauma than has been demonstrated pre-trauma. This may reflect the difficulty of registering accurate findings retrospectively. Or, it may underline a premise of

this paper that combat trauma has a greater role in the development of PTSD than earlier experience or innate qualities.

Sherwood, Funari, Piekarski, & Alexander (1990) found that character styles of passive-aggressive, schizoid, avoidant, and borderline features, as assessed at admission by the Millon Clinical Multiaxial Inventory, were significantly associated with PTSD symptoms in 189 male Vietnam veterans at an inpatient treatment program. This study did not ascertain whether these veterans exhibited these character styles before exposure to combat. The authors (1993) also applied the MCMI to an inpatient patient group of Vietnam veteran patients using a hierarchical cluster analysis, and identified four clusters of patients that accounted for 98% of the variance. Three clusters had Millon profiles suggesting stress reactions; the remaining cluster had profiles suggesting antisocial adjustment. Two of the clusters were further identified as high stress groups by the PTSD scale of the MMPI-2, and these subjects were diagnosed as patients with PTSD. (A chart review of subjects in the present study allowed the author to record Axis II data, which are recorded in Table 1. It is interesting to note that Antisocial Personality Disorder was noted in five patients).

Garte (1989) reported that in his sample of 50 Vietnam veterans with PTSD diagnoses, subjects were significantly more likely to respond to a sexuality and intimacy research instrument in ways that showed that they had more difficulties with intimacy than patients in a Drug Dependency treatment program. Garte interpreted these data to mean that these patients with PTSD were fixated at the Eriksonian stage of intimacy vs.

isolation as a result of being traumatized. The clinicians treating subjects with PTSD diagnoses in this study frequently commented that their social behaviors resembled those of high school students, something that will be discussed at the end of this paper as well..

Some of the research reviewed suggests that the single, most important cause of PTSD is combat experience itself. Boscarino (1995) surveyed 2490 Vietnam veterans and 1972 veterans who did not serve in Vietnam and found that Vietnam veterans were significantly more likely to have PTSD, generalized anxiety, and depression diagnoses. "Lower quality social support" was associated with PTSD but not with drug abuse among the Vietnam veterans. Subsequent social support - a P/V factor in the current study - appeared to be important as well in separating veterans with brief PTSD reactions from those who developed chronic PTSD.

Berg, Watson, Nugent, Gearhart, Lee, et al. (1994) measured moral development in 24 Vietnam veterans who had either high or low combat exposure. Veterans who scored low in moral development on a Kohlberg-related measure reported substantial PTSD symptoms, but those who scored high in level of moral development suffered few symptoms. The authors suggest that moral development, a cognitive-developmental variable may blunt the effects of combat on veterans. This study had no way of measuring the level of moral development in these veterans before facing combat. Another possibility is that traumatization prevented further maturing of the process of moral development in these veterans.

These studies appear to support the DSM-IV diagnostic criteria that emphasize

trauma as the major source of PTSD symptoms. The findings that inadequate parenting by fathers and childhood abuse may be linked to combat trauma's leading to PTSD support the notion that this anxiety disorder is situational in a way that schizophrenia is not. A previous "dose" of trauma may increase vulnerability to the risk factor of a subsequent trauma in PTSD.

Diathesis in schizophrenia apparently consists of genetic, pre- and post-natal physical, and experiential components, as well as early doses of stress. Diathesis in PTSD, while possibly including cognitive, physiological, and personality components as well as a factor of previous exposure to stressors, appears to play a different role than in schizophrenia. This difference in etiology provides an opportunity to investigate the vulnerability-protection poles of a number of personal characteristics. Stress is a factor not amenable to measurement in this cross-sectional study, while the research does acknowledge that stressors probably played major roles in producing overt symptoms in both patients with schizophrenia and especially patients with PTSD.

In a study that suggests a pattern applicable to the experience of veterans with schizophrenia and PTSD in the US (Rabinowitz, Margalit, Mark, Solomon, & Bleich, 1990), Israeli combatants who had to be removed from battlefield conditions during the engagement in Lebanon in 1982 had early difficulties in dysfunctional families (85%), difficulties in school (70%), and problems during military service (70%). Rabinowitz et al. (1990) suggest that combat veterans with premilitary psychological problems may "break-down" early on and are different from those who survive combat and report symptoms

beginning after returning home. It was expected that veterans in the present study would show a similar pattern, with patients with schizophrenia breaking down before exposure to combat, and patients with PTSD surviving combat and beginning symptoms after returning home.

Choosing a Sample of Patients with PTSD

The chosen PTSD sample for the study consisted of veterans of the Vietnam conflict, Korean "Police Action", or World War II who were exposed to combat. This combat experience occurred 30 to 50 years ago, a long time for symptoms to have persisted, yielding a group of subjects with a severe and persistent chronic disorder. As this sample was entirely male, gender as a contribution to level of traumatization was not an issue. (Veteran's Administration rules for research do not allow for recruitment of only men or only women for any research study. Two women were assessed, given feedback on their responses, and thanked for their participation. Their data were not included in the study.) It is reasonable to assume the Vietnam-era men have more or less similar SES, since higher SES men were usually able to obtain college deferments during this unpopular conflict. The effect of SES was addressed through interviews with patients or chart review. The members of the sample appear to have been similar in age at traumatization, although World War II veterans were somewhat older and remained longer in the theater of combat than veterans of Korea or Vietnam. This information was also gathered through interview and chart review.

Evaluating the possible role of early experience contributing to more severe

psychopathology in exacerbating PTSD symptoms is more difficult in this particular sample, since information on early symptoms was not readily available. However, the stress of being drafted and undergoing basic training may have been sufficient to "weed out" men with recognizable pre-existing disorders. Indeed, many of the service-connected chronic patients with schizophrenia in treatment at The Cleveland Veterans Administration Medical Center (CVAMC) where this study was conducted, had their first psychotic episode as a result of the stress of basic training and never saw combat. These men also were usually 100% service-connected for mental disability and did not have to find employment to support themselves. This pattern did not occur with patients with PTSD, many of whom first exhibited symptoms after leaving military service and were seeking service-connection at the time of their first treatment.

Thus, it is presumed here that an external, situational cause marks Combat veterans with PTSD as different from patients with chronic schizophrenia. An internal vulnerability to anxiety disorders is not posited for this sample. If an overwhelming trauma is necessary, but not sufficient to produce PTSD, the researcher can seek to describe both vulnerability factors and resources in the victim. This research attempts to describe resources in two classes of SMI patients in an effort to broaden our knowledge of determinants of outcome in SMI, and potentially to promote treatment plans that will lead to better mental health.

A Model of the Contributions of P/V Characteristics to Symptoms and Well-Being in Two Types of SMI

We have described characteristics that may serve to protect or to make vulnerable SMI patients, factors that may be relevant as well to the adjustment of all individuals. We have also attempted to gather these characteristics into clusters that might be identifiable and separate in two classes of SMI patients. These "Type I" and "Type II" clusters will be described in more detail later in this paper.

The next step is to organize these characteristics into models that can illustrate the interactions of diathesis, stress, vulnerability, and protection in contributing to course of disorder in these two classes of SMI. It must be acknowledged that these models assume the effects of innate qualities, learned responses and stress while the proposed research cannot measure stress directly, and its measure of innate qualities and learned responses is indirect and tied to group membership. Stress is measured by highly subjective self-ratings of child abuse, family discord, legal history, and substance abuse. Figures 2 and 3 are diagrams of possible complex relationships among stress, diathesis, and P/V factors in two types of SMI, schizophrenia and PTSD. These two diagrams are not presented as alternate models. Both describe the same relationships from slightly different points of view, with different pathways for each disorder. The present study does not test these models directly, but rather explores the Type I vs. Type II P/V characteristic definitions. The Figures presented are only meant to present the idea.

Several measures that indicate the possession of mental strengths (Psychological

Hardiness, Constructive Thinking, Coping Skills, Creativity, and Social Support) had been tested prior to this study and are the source of the P/V characteristics evaluated in this research using the SMI patients in this study. There may be other characteristics that could be included in further research. Focusing on the role of P/V factors and testing this limited model by measuring Social Support, Hardiness, Creativity, Coping, and Constructive Thinking may also inform as to what other questions to ask, such as determining the relative contributions of stress, diathesis, and other clusters of P/V characteristics in other classes of SMI.

The process of breakdown in schizophrenia results from a complex mixture of factors, involving innate qualities, learned responses, stress, and P/V characteristics of one specific type (Type I). On the basis of a review of the literature earlier in this paper, a set of Type I P/V characteristics is hypothesized which includes creativity, a specific pattern of Social Support (a small network composed primarily of kin with less frequent interactions), lower levels than so-called "normal" people of Constructive Thinking, and Psychological Hardiness. Type I P/V Characteristics as a cluster are hypothesized to be both present and related to outcomes in patients with schizophrenia but not in patients with PTSD, who are expected to demonstrate the presence and effects of a different cluster of characteristics (Type II).

The cluster of Type I P/V characteristics is presumed to be active for good or ill before an initial psychotic episode, as indicated by Meehl (1990) and Schuldberg (1993). In those who tend more toward the vulnerability pole of P/V characteristics, chronic

disorder is presumed to be likely. However, some of the protective characteristics may still remain, albeit at low or sub-threshold levels. Appropriate treatment might strengthen the protective factors and decrease the vulnerability factors in individuals in this cluster, but with the exception of coping skills, these are likely to be stable over time in patients with chronic schizophrenia.

In contrast, the role of trauma in PTSD may influence the Type II cluster of P/V characteristics in the patient with PTSD; the role of stress in this disorder is unambiguous. In the presence of symptoms, an overwhelming trauma is necessary as well as sufficient for this diagnosis to be given (APA, 1994). As noted earlier, more severe symptoms have been found in combat veterans who suffered previous trauma in the form of childhood abuse, which may be indicative of a dose-related response, with each successive trauma increasing the level or strength of the anxiety disorder that results (a "sensitization" or "kindling" factor). This may represent both diathesis and previous stress of a sort, but is clearly different from the combination of genetics, early experience, and physical characteristics that have been documented in patients with schizophrenia.

Combat veterans who have been traumatized so severely that they are symptomatic 35 years after the combat exposure are hypothesized to have possessed P/V characteristics in a different pattern than patients with schizophrenia. This set of P/V characteristics is referred to as Type II. Relatively little can be gleaned from the literature that would indicate what this collection might be, but this study hypothesizes that this cluster includes greater Hardiness, and a different social support pattern (larger network composed of

more friends who are also combat veterans, with more intimate relationships, but also more upset with relationships). Warm and accepting social support from family and other civilians upon return from Vietnam has also been credited as the factor that prevented upsetting combat experiences from deteriorating into chronic PTSD (Schlenger, et al. 1992; Solomon, Mikulincer, & Avitzur, 1988; Ursano, Boydstun, & Wheatley, 1981; Wilson, 1985). It is expected that current social support also plays a role in outcome with patients with PTSD.

Additional hypotheses are based on the author's intensive experience with patients, and on consultation with clinicians at CVAMC. While it can be assumed that whatever protection these patients had available at the time of the stress was inadequate in their traumatizing situations, varying levels of P/V characteristics may affect later levels of adjustment.

Veterans with PTSD appeared to be "sicker" in treatment than patients with chronic schizophrenia at CVAMC, although these veterans were also better able to live in the "real world", in that they had jobs, owned homes, and were married to a greater extent than patients with schizophrenia. Figure 2 illustrates a possible model of etiology of PTSD in which trauma and stress overcome P/V characteristics, as well as initiating a severe anxiety disorder. One possible effect of traumatization is that the individual is "frozen" by anxiety and anger and cannot utilize his usual defenses, including available P/V characteristics. In this case, the patient with PTSD would remain deprived of the protection afforded by any of his usual P/V characteristics. In contrast, the patient with

schizophrenia might still have access to some of these characteristics; for the patient with schizophrenia, some characteristics (creativity for example) may also be related to the diathesis for the disorder. Different patterns and levels of P/V characteristics are expected to predict outcome (measured by GAF and by the SCL-90-R) in both patients with schizophrenia and patients with PTSD.

Clinical Experience with Patients with Schizophrenia and Combat Veterans Diagnosed with PTSD

As has been indicated in the previous sections, it is to be expected that many of the social and personal deficits observed in patients with schizophrenia (both premorbid and post breakdown) will not be present in a combat veteran with PTSD, although the PTSD diagnosis does not rule out such deficits. Both patients with chronic schizophrenia and patients with PTSD who remain in treatment at CVAMC, where the subjects for this research were gathered, demonstrate some common deficits and problems.

Patients in both groups tend to be unemployed and prone to periodic substance abuse, although a substantial subset of PTSD veterans in treatment at CVAMC appears to use overwork (60-100 hours weekly) rather than substance abuse to ward off the anxiety associated with their disorders. Random drug tests enforce a rule requiring no drug or alcohol use while in outpatient treatment groups at CVAMC, for patients with PTSD but not for patients with schizophrenia. Patients with schizophrenia are thus more likely to be current users or abusers of alcohol and drugs. More patients with schizophrenia are "Service-connected" at 50% or more and do not need to seek employment, thus,

weakening the usefulness of occupational history as an indicator of functioning. Nevertheless, this factor is assessed and reported in the present study.

Alcoholism or drug abuse prior to the onset of symptoms might increase general psychological vulnerability, thus complicating the interpretation of this symptom. In fact, many veterans with or without PTSD report that their use of alcohol and drugs began in Vietnam (Wilson, & Krauss, 1985). Knowing the pre-breakdown history of substance abuse in both patients with schizophrenia and patients with PTSD is important in this study. According to diagnostic supervisors in the substance abuse assessment program, one clue to diagnosing PTSD in a substance-abusing veteran at CVAMC is no history of teen substance abuse prior to combat experience in Vietnam. The interview and review of patient records includes evaluation of past and present use and abuse of substances including alcohol, street drugs, and pain medications and these results are reported. The strength of these data is higher in cases where the patient's self-report matches his medical history

On the basis of the literature on schizophrenia and PTSD, as well as clinical observations, it appears that combat veterans may be more likely to have larger social networks made up of both kin and non-kin than patients with schizophrenia, although one sign of PTSD in a combat veteran is an aversion to interacting with people, something that may be more noticeable than the social aversion of chronic patients with schizophrenia. Patients with PTSD at CVAMC reported that they were only comfortable interacting with other veterans of the same conflict, and that they avoided family gatherings because

someone always asked inappropriate questions about combat activities. The two patient groups may differ most in their satisfaction with interactions with family and in the number of veteran friends listed in the social network.

Patients with PTSD are also expected to be married in numbers that would approximate averages for the population as a whole. In addition, they are much more likely than patients with schizophrenia to be divorced several times. They appear to be more adept at attracting mates and girl friends than chronic patients with schizophrenia, albeit similarly uncomfortable in maintaining intimacy in relationships.

Not as much is currently known about the presence, absence, or levels of the hypothesized P/V characteristics such as Hardiness (Bartone, Ursano, Wright, & Ingraham, 1989; Kobasa, 1979), Constructive vs. Destructive Thinking (Epstein & Meier, 1989), Coping styles (Folkman, & Lazarus, 1988; Lazarus, & Launier, 1978), or psychometrically-assessed Creativity (Davis & Subkoviak, 1979) in these groups. Comparing veterans in treatment for chronic schizophrenia vs. chronic PTSD will allow further exploration of the roles of different types of P/V characteristics in outcome and adjustment of SMI. The following sections describe the putative P/V characteristics in this study and review in more detail relevant literature.

Social Support as a Major P/V Characteristic

Social Support is a major research interest of this researcher as well as an agreed-upon P/V characteristic that appears prominently in the literature. Inadequate social support has been described as part of the vulnerability of schizophrenia (Beels, 1981;

Beels & McFarlane, 1982; Brown, et al., 1972; Meehl, 1990). Lack of adequate Social Support is also a factor that increases the duration and severity of PTSD symptoms. Social Support is the first P/V characteristic measured in this study.

Chroniclers of human activity have long noted that satisfactory social interactions have a positive effect on health and happiness. Social interactions are recognized as so central to health and happiness that human beings are described as social animals. The subset of human social relationships described by the term "social support" has been under study for some time as a possible causal or mitigating factor in good health and/or as protection against stress-related illnesses. Thus, the ability to garner and utilize social support can be viewed as a primary P/V characteristic.

One specific definition of social support (Cobb, 1976) states that social support is information that:

(a) leads a person to believe that she or he is cared for and loved,

(b) leads a person to believe that she or he is esteemed and valued, and

(c) leads a person to believe that she or he belongs to a network of communication and mutual obligation.

Kaplan, Cassel, and Gore (1977) operationalized social support as "the degree to which an individual's needs for affection, approval, belonging, and security are met by significant others". That one respected researcher would define social support as information, (an external stimulus) and others would cite an individual's needs, (an internal response) as central to the concept, illustrates one difficulty in defining and researching

social support. This construct is something that is so well known "in the real world" that operationalizing it is difficult.

Psychologists have noted a demonstrated, positive relationship between direct, quantified, social support and both physical and mental health (Cobb, 1976; Cohen, 1985; Cohen & McKay, 1984; Cohen & Wills, 1985; Hirsch, 1980; House, Landis, & Umberson, 1988; Jung, 1984; Thoits, 1982). However, these studies have found different pathways, levels, and effects associated with health and social support. The picture is not clear, in spite of many years of cleverly designed research.

Conversely, empirical relationships have also been well-documented between deficits in the level and type of social support and the occurrence and course of many mental disorders, including mood disorders, anxiety disorders, and schizophrenia (Anderson, et al. 1984; Andrews & Tennant, 1978, Angemeyer & Lammers, 1986; Billings & Moos, 1984; Crotty & Kulys, 1986; Denoff & Pilkonis, 1987; Dworkin, Green, Small, Warner, Cornblatt, & Erlenmeyer-Kimling, 1990; Liem & Liem, 1978; Schuldberg, et al., 1996; Watt, 1978; Watt, et al. 1970).

For example, Turner (1981) found that social support was necessary for well-being in samples of new mothers, incompetent parents, adult-onset hearing loss individuals, and community-based mentally ill patients. He found both important main effects and buffering effects; social support was also a more accurate predictor of outcome than was social class. (Main effects and the Buffering Hypothesis will be discussed below.) Winefield (1984) reported that at least 25% of neurotics and personality disordered persons lacked

the ability to initiate, carry out, and interpret social interactions with others. She speculated that even higher percentages of persons with more severe or chronic disorders would be unable to initiate or receive social support, independent of its availability in the environment.

Klein, Hawkins, and Newman (1987) reported that chronic psychiatric patients held more unreliable perceptions of significant others than controls. Sullivan and Poertner (1989) found that the long-term mentally ill have extremely small social networks and report loneliness. It seems that the presence of mental illness does distort both perception and utilization of potentially beneficial social support.

One conceptual problem is that "adequate social support" might be different for an individual who may be at risk for schizophrenia compared to others in the general population. (This is conceptually defining for this study's Type I vs. Type II definition.) Note also that long-term or chronic patients' networks are largely composed of family and mental health professionals (Brown, et al. 1972). Patients with schizophrenia are thought to experience lower levels of social support and unsatisfactory social relationships in general (Crotty & Kulys, 1986; Cutler, et al. 1987; Denoff & Pilkonis, 1987; Hamilton, et al., 1989; Hirschberg, 1985).

As noted above, current theories of schizophrenia embrace models combining genetic, biological, information processing vulnerability factors, and familial and other environmental "stress" factors, as all contributing to a psychotic breakdown (Meehl, 1990; Mirskey & Duncan, 1986; Zubin, et al. 1983). These theories postulate that a stressful

event or series of events may trigger the first psychotic episode in at least a subset of cases. Adequate social support (approval from significant others as well as help when facing difficulties) could influence this process both by shielding the individual from some kinds of stressful events or improving adjustment in general (a main effect) and also by mitigating the effects of stress that occurs (the "buffering" interaction). Thoits (1984) conducted a longitudinal study that showed that stress exposure and lack of social support predicted risk for psychological disorder and distress at a later time, regardless of whether there was a history of psychopathology (depression, schizophrenia, anxiety disorders, or no disorder) and was able to rule out pre-existing psychological vulnerability as a condition contributing to her results.

A large body of research has also demonstrated that social support has both compensations and handicaps associated with it. Social support works its effects on the individual as a process. These "double-edged" attributes clearly fit the definition of a P/V characteristic.

Types of Social Support

Social support can be divided into two constructs as: (1) the *structure* of the social support network ([a] the number of others with whom one interacts, [b] the relationship to these persons, [c] the frequency of social interactions, and [d] the closeness of the social relationship); and (2) the *functions* of social support exchanged by individuals in the social support network (such as esteem, cognitive guidance, companionship, emotional support, and tangible assistance exchanged between persons who interact regularly). These two

aspects have been labeled "structural social support" and "functional social support" respectively. Whether the researcher asks "who", "how many", or "what do they do" seems to determine the results of research concerning social interactions.

Structural support and functional support operate in different ways, perhaps to the extent that they might be considered to be two separate P/V characteristics. Cohen and McKay (1984) reviewed more than 30 studies of the relationships between social support and health and found inconsistent results, depending on whether social support was defined as a global structural measure, specific functional measures, a compound functional measure, or simply as the existence of a confiding relationship.

Social resources, including perceptions of both structural and functional social support, are often present when an acute stressor or a series of chronic stressors occurs. This is presumed to be true for people with SMI as well as the rest of the population (Angermeyer, & Lammers, 1986; Beels, 1981; Billings, & Moos, 1984; Boscarino, 1995; Brown, et al., 1972). The individual's perceptions of the extent to which these social resources are helpful and/or upsetting, or adequate or inadequate, may modify the level of psychological distress that results from the stressor/s. In addition, supporters may increase actual support when they see the effects of stress on the individual ("mobilization of support"; see Ensel & Lin, 1991). This could be expected to be reflected in the individual's perceptions of support as more helpful, and a concomitant decrease in the level of psychological distress.

Over time, if the stressor/s remain or increase, supporters may become exhausted,

or the individual's reactions to the stressor may render him or her less "worthy" of continued support in the eyes of others ("support deterioration"; see Ensel & Lin, 1991). Individuals might perceive this deterioration as upsetting. Support perceived as upsetting plus ongoing stress could be expected to lead to greater psychological distress, setting up a vicious circle. In an individual with a low level of social resources and/or an internal vulnerability to stress, psychological distress could be expected to be greater than in a comparable individual with more resources and less vulnerability.

Assessing Social Support Through Structural Measures

A frequent method for measuring and studying social support has been to quantify aspects of the extent of the social network. Measures of the number of people with whom one interacts have been gathered by asking for numbers of individuals in numerous categories, such as "Family", "Coworkers", people known through "Clubs", "Social organizations", "Religious Organizations", and "Commercial settings". Structural support has been studied longer than perceived functional support, since the simple counting of interactions is a more obvious measure of support. For example, Seeman, Seeman, and Sayles (1985) found that integration in a support network is modestly associated with good health in a year-long study of a large community-based sample. Their measure simply recorded whether the subject found him/herself to be supported by a number of persons. Note that this definition borders on a "functional" measure. House, et al. (1980) reported that low quantity and quality of social interactions were predictors of high risk of mortality from widely varying causes.

Instruments that assess structural variables can generate reports of social networks containing up to several hundred persons, especially if the instrument is cast in the form of a diary requiring subjects to list all persons with whom they interacted day by day (Hammer, 1984). A more personal and smaller network emerges if subjects are asked to name persons who are "important" to them or to whom they feel "close". This approach allows the researcher to inquire about characteristics of each relationship, such as duration or history of the relationship, frequency of contact, age differences, closeness, and reciprocity of helping behaviors (Billings & Moos, 1981; Donald & Ware, 1984; Flaherty, Gaviria & Pathak, 1983; Griffith, 1985; Hammer, 1984; Hirsch, 1980; Hirsch & David, 1983; Hirsch & Rabkin, 1986). Some of these measures also ask whether the individuals named were supportive in various areas and whether that support was helpful or not, thus assessing functional support as well.

One structural element that seems to correlate with other structural measures is size of the personal network. Hammer (1984) reported that subjects named at most a few dozen individuals when interviewed about social contacts. People tend to name individuals first whom they see frequently, feel close to, and have seen recently. Burt and his colleagues analyzed information from the General Social Survey and found that the average respondent listed between zero and eight persons when asked to name persons important in his or her life (Burt, 1984, 1986; Burt & Guilarte, 1986). These researchers identified the third person named as critical, noting that closeness and frequency of contact decline rather steeply in a linear fashion up to the third person, but that there was little

difference between the third and the fifth person. Hirsch (1980) noted that when networks were limited to the first ten persons named, no predictive power concerning the likelihood of stress related illness was lost.

Cohen and Wills (1985) noted in their extensive review article that when social support is studied as structure (number of persons in the social network, frequency of contacts, types of relationships), it is found to be a main effect in relationship to variations in mental or physical health. A quantified level of social contact (the simplest kind of structural measure) has been consistently associated with level of health outcome, regardless of level of stress. For example, Berkman and Syme (1979) found that nine years after an initial survey, the age-adjusted mortality rates of a stratified random community sample were two to four-and-a-half times higher for those with the lowest levels of social contact than for those with many social contacts. One possible interpretation of this sort of finding is that number of social supports may reduce the amount of stress impacting an individual.

While measures of size, frequency of contact, and other structural factors tend to reveal a main effect of social support on subsequent health, measures of satisfaction with functional levels of support tend to show some sort of interaction between social support and stress level in influencing subsequent health. This interactive effect can be positive or protective, reducing the effects of stress on health, or negative, increasing vulnerability and the effects of stressors.

Assessing Social Support Through Functional Measures

A second measurement approach to assessing social support is to list supportive behaviors (e.g. "she or he always listens") and ask subjects whether they receive such support and from whom. This type of question can be analyzed and combined into a global measure of "social support from friends" or "from family", as in the Proccidano and Heller (1983) Perceived Social Support from family (PSS/Fa) and friends (PSS/Fr) instrument. This information can also be reported less globally, as in the Cohen, Mermelstein, Kamarck and Hoberman (1985) Interpersonal Support Evaluation List (ISEL), which yields subscales assessing appraisal of other's support, feeling of belonging, extent of tangible aid, and self-esteem.

As stated above, when social support is studied as function (type of supportive behavior and/or satisfaction with social support), it is more likely to emerge as a characteristic that interacts with stress, or "buffers" its effects, serving to reduce the consequences of whatever stressor is being studied. The existence of the latter effect has been termed the "stress buffering hypothesis" in studies where level of functional social support has been significantly related to mental or physical health in the presence of a severe stressor, such as caring for a spouse diagnosed with Alzheimer's disease (Fiore, Becker, and Coppel, 1983; Haley, Levine, Brown, & Bartolucci, 1987; Kiecolt-Glaser, Dyer, & Shuttleworth, 1986; Pagel, Erdly, & Becker, 1987) or returning to college as a married, female, non-traditional student (Hirsch, 1980). This type of social support is also found to buffer the secondary effects of physical illnesses and mental disorders in general

(heart disease, depression, suicide, fractures, accidents, childhood leukemia, and schizophrenia) on both sufferers and care givers (Cohen & McKay, 1984; Dean & Lin, 1977; Gore, 1981; Gottleib, 1985; House, 1981).

Hirsch (1980) found that greater satisfaction with cognitive guidance (the advice one received from others) was significantly related to better mood and less psychological symptomatology in young widows and non-traditional women students. Spiegel, Kraemer, Bloom and Gottheil (1989) even found that women with metastatic breast cancer who received social support through their interactions with a support group lived up to 18 months longer than matched patients who had received no such support.

Several researchers have further refined the study of functional support by measuring the degree of satisfaction with social support (Fiore et al., 1983; Hirsch, 1980; Hirsch & David, 1983; Hirsch & Rabkin, 1986; Kiecolt-Glaser et al. 1988; Rook, 1984; Rook, 1990). Levels and sources of support seem to interact with levels and direction of stress in complex ways, thwarting efforts to determine the exact nature and influence of helpful and beneficial social support. The variety of responses of individual human beings to levels of stress as well as to their own levels of past and present health interweave to further complicate the situation.

Thus, support that is seen as over-protective, shaming, or generating resentment, similar to the overly involved, critical interactions often found in families of chronic patients with schizophrenia (high EE, see section on schizophrenia) can be upsetting to the recipient; this is frequently strongly associated with greater psychological distress and

lower well-being. But, the above researchers reported that functional support that is seen as positive, or helpful may not be related in any systematic way to either psychological or physical distress or well-being. These findings complicate analysis and interpretation of data in studies that have not attempted to measure level of satisfaction or dissatisfaction with support.

Another complication in many studies is that stress is generally present by definition as a consequence of the selection of subjects (often in a group facing high levels of stressors), insuring that a main effect for social support may not be identifiable because of the restricted range in level of stress. Nevertheless, the presence of adequate social support has been cited as the protective factor in studies of a variety of stressors (Cohen, 1987; Denoff & Pilkonis, 1987; Hirsch, 1980; Hobfoll, 1985; House, et al. (1988).

Applications of Functional and Structural Support to the P/V Paradigm

In actuality, functional social support operating as a buffer and structural social support occurring as a main effect are likely to operate concurrently in any one person's social network. Sorting these influences out experimentally can be difficult to do. Few people are isolated from others and also without stress, a situation that would potentially allow a demonstration that social support alone might be related to better health outcome. Conversely, few people are ideally supported and also subjected to high stress, allowing the researcher to fully test the extent to which social support might buffer the effects of stress. In actuality, varying levels of stress occur at times when available support is quantifiable as high or low, satisfactory or inadequate, in a complex set of relationships

that is presumably related to health outcome, somehow.

Schwarzer and Leppin (1991) reviewed the current state of social support research and attempted to divide support into perceived support, that is, a person's beliefs about the amount and efficacy of the support available to him or her (this is close to functional support), and received support, the actual helping behaviors provided by persons in the social network (this is close to structural support). They argue that differences in perceived and received support are an important source of distress. For example, depressed persons may not recognize or report supportive behaviors if their depression prevents them from noticing others' efforts to be supportive (Folkman & Lazarus, 1986; Jung, 1984; Winefield, 1984). These subjects may also refuse support, giving would-be supporters little choice but to withdraw (Gruen, Schuldberg, Nelson, & Quinlan, 1994).

Abrupt, dramatic stressors, such as natural disasters and exposure to combat, tend to produce acute anxiety reactions relatively independently of an individual's personal psychological vulnerability (Gibbs, 1989; Kinston, & Rosser, 1974). Anecdotal evidence suggests that kin and friends of such distressed victims tend to rally around them at those times. Social support is mobilized and may prevent (a main effect) or alleviate (an interactive buffering effect) an anxiety reaction. If negative life events continue, either the amount of support that continues to be offered and/or the individual's perceptions of the effectiveness of that support frequently lessens, allowing a further increase of stress which leads to greater distress (Ensel & Lin, 1991; Pagel, et al. 1987; Pierce, Sarason, & Sarason, 1991; Rook, 1984; Rook, 1990).

One might speculate that persons with few social resources might initially find themselves stressed by negative life events to a greater extent and be at higher risk for psychological distress with further problems "spiraling out". This pattern of social interaction, leading to more stress which further reduces social resources, has been observed in patients with chronic schizophrenia. In addition, the meaning of support attempts may be further confused because of the thought disorder exhibited by many patients with schizophrenia (Crotty & Kulys, 1986; Cutler, et al. 1987; Denoff & Pilkonis, 1987; Hamilton, et al. 1989; Hirschberg, 1985).

Measuring the degree of upset with support, something done in measures developed by this author, is likely to be a parsimonious way of separating received from perceived support, since current appraisals of available support are based on the individual's experience of the availability of actual support efforts in the past and present. Thus, measures of helpful support may reflect actual support in the past and present as well as expectations of support in the future. Upsetting support, on the other hand, may reflect the belief that support will not be available in the future, based on unfulfilled needs in the past and present.

Factors Influencing the Usefulness of Social Support

Social support variables are modified by attributes of the stressor, such as whether the stressor is considered to be socially inappropriate (i.e. the consequences of alcohol or drug abuse, an abusive relationship) or perhaps includes a perceived danger to a person offering support (as in the case of a person with AIDS). According to Cohen and McKay

(1984), social support is most likely to be of help in mitigating stress when:

1. The stressor is socially acceptable.

2. A support provider is seen as similar to the subject.

3. Support is offered from someone who is not as alarmed at the stressor as the sufferer is.

4. Admitting that one is facing a stressor will not harm the relationship to a support provider.

SMI patients appear to recruit and use social support according to these "rules", but also in accordance with sets of "rules" that operate within their pathology. As noted, patients with schizophrenia tend to have small social networks consisting of kin, other patients, and professional helpers (Brown, et al., 1972; Sullivan & Poertner, 1989). For patients with schizophrenia, structural social support as a P/V characteristic may be both a sign of positive mental health and a stressor leading to pathology, since family relationships may present problems. Patients with schizophrenia are thought to experience lower levels of social support and unsatisfactory social relationships in general (Crotty & Kulys, 1986; Cutler, et al. 1987; Denoff & Pilkonis, 1987; Hamilton, et al. 1989; Hirschberg, 1985).

One conceptual problem is that "adequate social support" might be different for an individual who may be at risk for schizophrenia compared to others in the general population. The ability to balance their need for supportive interactions with their need for avoiding overstimulating anxiety brought about by too much intimacy may be best

indicated by measuring the degree of satisfaction with social support from important persons, expressed as both the degree of helpfulness and degree of upset with support interactions. This is the approach taken in this study.

According to clinicians at CVAMC, patients with PTSD, in contrast, do not exhibit the general social aversion that is so prevalent in patients with schizophrenia. However, many are suspicious of strangers and reluctant to add new members to their social networks. This social caution is thought to be a learned response dating from their years of military service in situations where "new Guys" were likely to die quickly and/or to make mistakes that endangered the lives of all near them. Veterans with PTSD vary considerably in the size and nature their social networks, naming other Vietnam veterans and wives or girl friends most frequently in group settings focusing on useful social support at CVAMC. Their use of social support and the way they intereacted in group treatment settings was very different from that of patients with chronic schizophrenia, or from the descriptions of individuals described in the literature cited in this discussion.

Measurement of Social Support in the Present Study

For the purposes of the present study, Social Support was operationalized by measurement of an individual's perceptions about the extent to which social interactions with various others inform him or her of the extent of affection, esteem, security, and belonging extended through functional social interactions of several types (socializing, emotional support, tangible assistance, or cognitive guidance). In addition, social network measures of size, frequency of interactions, closeness of the relationship, and relationship

to the subject are used as measures of actual received support.

Other P/V Characteristics: Constructive Thinking, Psychological Hardiness, Coping, and Creativity

Social Support is not the only characteristic that has been demonstrated to impact both favorably and unfavorably on individuals. One can speculate that many characteristics exist in varying amounts in persons and serve to protect or to increase vulnerability, depending on individual differences and circumstances. Likely candidates are humor, intelligence, motivation, self esteem, self efficacy, creativity (divergent thinking, originality, flexibility, fluency of cognitive processes), wisdom or common sense (Constructive Thinking), Psychological Hardiness (Commitment, Control, Challenge), and problem-solving ability (problem-focused coping). Several of the latter will be assessed in the present study.

Schuldberg (1993) studied some of the likely candidates and described a construct he named Personal Resourcefulness, a set of attitudes, cognitions, perceptions, and coping behaviors that appeared in later work to be related to lack of symptoms in college students hypothetically at risk for psychotic symptoms according to their scores on the Wisconsin Scales of Hypothetical Psychosis Proneness (Chapman & Chapman, 1985). The characteristics of interest include psychological Hardiness as described by Kobasa and her colleagues (Bartone, et al. 1989; Kobasa, 1979, Kobasa et al., 1981; Kobasa, Maddi, & Puccetti, 1985), Constructive Thinking or practical intelligence, (Epstein & Meier, 1989), thinking and acting creatively as measured by the How Do You Think (HDYT, Davis &

Subkoviak, 1975), and appropriate choices of problem-solving coping behaviors (Folkman & Lazarus, 1988).

These characteristics appeared to be linear P/V characteristics in college students and, thus, might be of interest in SMI patients as indicators of vulnerability to risk or protective factors in the face of continued risk. Whether these act independently, additively, exponentially, or as main effect vs. interaction is not known.

Psychological Hardiness

Kobasa (1979)described a personality construct that she named Psychological Hardiness, consisting of three elements, Control, Commitment, and Challenge. Persons high in these elements of Hardiness were more resistant to the effects of stress in their lives. Persons who are high in Hardiness:

a) believe they have a degree of influence or control over events in their lives through the decisions they make, the cognitions they entertain, and the coping skills they choose.

b) are able to feel deeply committed to events and activities in their lives, especially to those that impact on their core sense of self.

c) anticipate change as an exciting challenge leading to further personal development rather than a threat.

Kobasa reported that high stress/low illness executives (aged 40 to 49) showed more Hardiness than similarly aged high stress/high illness executives. However, her scale measures positive constructs of Commitment, Control, and Challenge by counting more

negatively valenced symptoms, such as alienation, powerlessness, and vegetativeness, as well as genuinely positively-keyed characteristics, such as achievement, dominance, role consistency, adventurousness and endurance.

Funk (1992) reviewed the literature on Hardiness measurement and criticized Kobasa's scale as a measure of neuroticism "turned upside down", a negative indicator of positive characteristics. Funk suggested that further research is needed to determine whether the construct measured is Hardiness or neuroticism, since all of Kobasa's items were negatively scored. He stated that while Control and Commitment were strongly, negatively related to future illness, Challenge showed a weaker relationship. He also criticized the practice in the research of choosing high Hardiness subjects by using a combined Hardiness score, since it is likely that high scores on one sub-scale could hide lower scores on another of the components, thus ignoring the independent contributions of Control, Commitment, and Challenge. These criticisms do not invalidate the Hardiness construct so much as place it more firmly in the P/V category of characteristics. Hardiness may well be a two-ended characteristic with protection from neuroticism at one end and vulnerability to neuroticism at the other.

Bartone et al. (1989) modified Kobasa's scale by shortening it, recasting items for a more blue-collar subject pool, and putting some items into a positive mode (78% of the instrument items remained negatively keyed). These authors also shortened the instrument to 45 items. In their prospective study of Army Officers assigned the unwelcome duty of assisting families of the worst peacetime disaster in US Army history (a plane crash in the

Arctic) the authors found that Social Support and Hardiness at time one interacted to moderate the effects of physical illness at time two. Kobasa and her colleagues found similar results in more recent research (Kobasa, Maddi, & Courington, 1993; Kobasa, Maddi, & Kahn, 1993). They reported both main effects and an interaction between Hardiness and stressful life events. They also found that level of Hardiness decreased after an illness (Kobasa, Maddi, & Courington, 1993).

These elements of Commitment, Control, and Challenge form a small constellation of characteristics that may be present at sub-threshold levels in patients with schizophrenia. Perhaps they operate at such low levels that they have not been able to protect patients with chronic schizophrenia from psychotic breakdown. Their presence and pattern may have been different in patients with PTSD. These patients did survive their traumatization while many combatants did not. Did Hardiness contribute to survival in combat? Whether the components of Hardiness are currently at higher levels in patients with PTSD than in patients with schizophrenia is one of our research questions.

Constructive Thinking or "Practical Intelligence"

Epstein and Meier (1989) developed a construct of beneficial thinking and wisdom, which is more than common sense, which was termed Constructive Thinking. This represents a practical kind of intelligence that leads to successful living, a kind of wisdom. They report that Constructive Thinking is basically experiential and associationistic. It operates primarily at preconscious and unconscious levels and is fitted into rational and logical systems only when behaviors based on the experiential and

associationistic cognitions are brought into consciousness. Effective coping behaviors are the observable evidence of this construct.

A factor analysis of statements that fit 18 face valid categories of "common sensical" thoughts and behaviors gleaned from student diaries and papers from a self-enhancing psychology course yielded a 6-factor structure. This structure was used to develop a test of experiential intelligence with a global scale of adaptive thinking and six major scales (including Behavioral Coping, Emotional Coping, Categorical Thinking, Personal Superstitious Thinking, and Naive Optimism).

Epstein and Meier (1989) found that Constructive Thinking was not related to intelligence as measured by the Shipley Institute of Living Scale (Zachary, 1986) or to level of education, although education level and the Shipley were related to each other. This supports their assertion that Constructive Thinking is something different from intelligence.

Research in the last five years has generally found that subjects who score higher in Constructive Thinking are able to cope more effectively in a variety of situations (D'Zurilla & Chang, 1995; Epstein & Katz, 1992; Mezzich, Tarter, Kirisci, Hsieh, et al., 1995). Persons low in Constructive Thinking tend to make more negative cognitive and emotional inferences about themselves (Epstein, 1992; Katz & Epstein, 1991). Constructive Thinking has an alternate pole, Destructive Thinking, according to Epstein and Meier (1989), making this construct a possible P/V characteristic.

Thinking and Acting Creatively

Elements of creativity that contribute to successful living and Creative behaviors are, in part, markers of psychological health (Kubie, 1976; Lombroso, 1976). Flexibility in thought and behavior, divergent thinking, fluency of ideas, and playfulness in thought and behavior are elements of another P/V characteristic. This is especially likely to represent a nonlinear bi-polar P/V characteristic, since the strong association between classical artistry and classical madness might suggest that there can be too much of a good thing when it comes to creativity (Kubie, 1976; Lombroso, 1976). A strong grounding in reality or ego strength may be necessary to avoid possible negative effects of extremes of flexibility and divergent thinking.

Selecting among the many measures of creativity poses a problem when assessing SMI veterans. Measuring creative activities in school or life as Richards, Kinney, Benet, and Merzel (1988) do in veterans who have suffered from severe psychopathology for many years is not practical. But, The How Do You Think (HDYT) of Davis & Subkoviak (1975) was used by Schuldberg in his study of Personal Resourcefulness, as well as the Independent Activities scale, the Barron-Welch Art Scale, and The Alternate Uses, Form B. Among these measures, the HDYT contributed most strongly to the Personal Resourcefulness construct. This measure appears to measure creative activities as well as divergent thinking.

Research using the HDYT has shown that it is related to several measures of adaptive functioning. Smith and Tegano (1992) found that female college students who

scored higher in creativity scored higher on 11 subscales of the Self-Image Questionnaire than less creative students. Gardner and Moran (1990) found that higher creativity identified members of highly adaptable families, while lower HDYT score characterized more rigid families. Runco, Ebersole, and Mraz (1991) found that higher HDYT scores were strongly associated with a measure of self-actualization in a study using college students.

Creativity in patients with chronic schizophrenia may be a protective characteristic at low levels, in that flexibility and imagination appear to be associated with higher levels of functioning. Higher levels of creativity might contribute to or be tied to loosening of associations and delusional thinking, increasing vulnerability to relapse. This possibility may show that creativity fits into Elliot and Lasson's (1997) curvilinear flexible/inflexible schema model. The situation in patients with PTSD is not clear.

The proposed study uses the HDYT as a single measure of creativity since it was the strongest indicator of Personal Resourcefulness in other research.

Appropriate Choices of Coping Behaviors

Coping with stressors is a major requirement of living. All organisms must make adaptive changes when faced with an environmental change or suffer disequilibrium that threatens further existence (Lazarus & Launier, 1978). The ability to choose an adaptive set of attitudes, emotional responses, cognitions, and behaviors defines a complex response to life stress that can be seen as both a part of the complex of Personal Resourcefulness and also as a measure of effectiveness in living.

Kobasa included coping as a descriptor of the Control factor in her construct of hardiness. Epstein and Meier (1989) labeled two of the factors of Constructive thinking Behavioral Coping and Emotional Coping. Lazarus and Launier (1978) reviewed the literature of coping as a component of mental health and illness, both as independent and dependent variable. Folkman and Lazarus (1988) have developed methods to assess a variety of styles, methods, and attitudes of coping.

Rather than describing a single coping style that is always associated with successful living, research has discovered that different coping styles are more or less successful depending on the nature of the stressor, problem, or living situation (Fiore, et al. 1983; Forsythe, & Compas, 1987; Pagel, et al. 1987). Coping attempts that are focused on solving and, therefore, eliminating a problem are not successful in the face of a problem that cannot be solved, such as living with a permanent disability or caring for a loved one who has a senile dementia. Emotion focused coping attempts, such as seeking social support, or limited escape from the problem can lead to lessened distress in these cases.

Conversely, emotion-focused coping in the face of a problem that demands active coping, such as an automobile that needs repair, can lead to increased stress and subsequent distress. These various coping mechanisms can therefore by included in a list of P/V characteristics since they can act to either protect or increase vulnerability depending on circumstances.

Forstyhe and Campas (1987) reported that psychological symptoms increased when there was a poor fit between appraisals of problems and coping attempts. Wheaton

(1983) found that limited coping abilities led to increased levels of anxiety in the face of high stress. He reported that anxiety reactions appeared to be part of normal coping in the face of high levels of stress. This normal reaction could add to the level of anxiety expressed by both patients with PTSD and also by patients with chronic schizophrenia. Patients with schizophrenia at CVAMC appeared to be able to cope effectively in daily problem-solving when supported by professional staff who helped them focus on solving a real problem. These patients reported that they were able to solve most problems they encountered, but frequently did not use the coping skills they thought they had available unless helped by staff.

Patients with PTSD, on the other hand reported little faith in their abilities to cope with problems. They tended to go right to "crisis mode", or an instantaneous attack or retreat (usually attack) response to any problem while in residence at CVAMC. When supported by staff and encouraged to consider alternatives, they coped effectively with problems, except when those problems were seen as part of their traumas, such as exaggerated startle responses followed by extremely aggressive actions when confronted by the sound of helicopters flying overhead.

In the proposed study, coping as measured by The Ways of Coping Questionnaire (WOC, Folkman & Lazarus, 1988) is assessed as a P/V characteristic that can be subdivided into eight coping styles. The Planful Problem Solving scale and Escape-Avoidance Coping scales of the WOC were first tested as representative scales of problem focused coping and emotion-focused coping, as is the practice among clinicians at

CVAMC. However, a review of these scales indicated that the Escape-Avoidance Scale combines elements of both problem focused and emotion focused coping. The Distancing Coping and Positive Reappraisal scales were then added to the analysis as emotion focused coping scales, and the Confrontation Coping scale was added as a second problem focused scale.

Innate vs. Learned P/V Characteristics

As stated throughout this introduction, some P/V characteristics may be innate. Others are learned. Certain social support characteristics appear to be innate, such as the choice to interact with many or with few persons. The way persons interact, a component of functional social support, may be influenced by such innate tendencies, which may underlie the enmeshment or high EE in the families of patients with schizophrenia.

However, both structural and functional social support can be influenced by environmental circumstances and also by learning. The number of persons one interacts with regularly is influenced by the number of persons available as well as characteristics of these others. Persons tend to become more skillful at functional social support interactions as they age: witness the chaotic social interactions common among late adolescents, compared with the more cordial, albeit less dramatic social interactions of middle adults. Can the social support tendencies of patients with schizophrenia be attributed more to innate P/V characteristics, or are these tendencies amenable to learning? If the social support interactions of patients with PTSD resemble those of high school or young college males, how much change can be expected through social skills training?

The following variables appear to be either innate or subject to learning, according to researchers findings. Kobasa describes Psychological Hardiness as a stable part of the personality. She posits that it is formed early on in life. This, which has not been tested longitudinally to the current author's knowledge, would imply that Hardiness may be innate (Kobasa, 1979; Kobasa, Maddi, & Courington, 1993). Since older adults scored higher on CTI scales than did college students, Constructive thinking would appear to be amenable to learning (Epstein, 1993). Creativity has been described as innate by many authors who have studied this characteristic. There is abundant evidence that coping as measured by the WOC increases with appropriate experience (Folkman, Lazarus, Pimley, & Novacek, 1987).

Design of the Study and Rationale for the Hypotheses

The current study assesses the levels of these putative P/V characteristics as well as attempting to establish their role in predicting adjustment in two populations of SMI patients: patients with schizophrenia, who may be considered to carry a strong diathesis toward mental illness as well as ineffective levels of some P/V characteristics, and patients with PTSD whose P/V characteristics may be considered to have been overwhelmed in some way by the severity of traumatization. In addition, P/V characteristics are evaluated in a Control group of non-clinical members of the OHIO National Guard. It is hoped that these P/V characteristics are accessible to assessment techniques in both patient populations, although the patients do not at present give much superficial evidence of using these P/V characteristics.

While the issues of diathesis and stress are interwoven with descriptions of these two patient groups, this research cannot address the relative etiological contributions of persona and environment directly. The cross-sectional design does not permit the drawing of conclusions. However, another useful way of approaching how to conceptualize different P/V characteristics may be to think of whether characteristics are innate, or part of the personality, such as creativity or an introversive tendancy to withdraw from large groups of people. Other characteristics, such as coping strategies can be learned. A question hovering under the surface of the issues directly addressed by the following hypotheses is whether innate P/V characteristics or learned P/V characteristics are more closely connected to the outcome measures chosen for this study.

It is hypothesized that levels of these characteristics differ in the two groups of patient subjects forming two distinct clusters, Type I characteristics in patients with schizophrenia and Type II in patients with PTSD as listed in Table 2. Patients with schizophrenia and patients with PTSD are assessed regarding structural and functional social support, Psychological Hardiness, Constructive Thinking, Coping styles, and Creativity. P/V characteristics differ in the two groups. Information about how can potentially provide directions for treatment for individuals with SMI.

First, knowledge of the similarities and differences in these two patient populations is expected to suggest treatment refinements that may increase competence by addressing patients' strengths and weaknesses through acknowledgment of the role of P/V characteristics. Secondly, it is hoped that these similarities and differences between

subjects and among groups will contribute to adjustment as measured by the Global Assessment of Functioning (GAF; American Psychological Association, 1994), a rating that combines social functioning, ability to live independently, and level of symptoms in individuals.

For example, social support that is not intense but is mildly interactive, as indicated by less frequency of contact and lower estimations of "closeness", is predicted to be more satisfactory for patients with schizophrenia, while more interaction and greater intimacy will be more satisfactory for patients with PTSD. Using the other measures selected for this study, patients with PTSD are expected to show higher scores on Hardiness elements, and the Constructive Thinking Inventory (CTI), and lower scores on the HDYT. It is hoped that although traumatization has overcome the effectiveness of these P/V characteristics in daily living for patients with PTSD, their presence is still discernible by the assessment procedures. A Control group provides information on "baseline" levels of these characteristics in a non-patient sample.

Hypotheses

The following specific Hypotheses are proposed based on the literature reviewed in the introduction. Refer to Table 2 for expected clusters of Type I and Type II P/V characteristics. Please note that variables are listed as Type I or II P or V. The actual tests of whether a variable functions as Protective or to increase Vulnerability only occurs in the last set of regression analyses predicting outcome.

First of all, it is hypothesized that the scores of the control group will be

significantly higher than either patient group, forming a baseline against which to compare the two patient groups. Following are hypotheses concerning specific variables.

Social Support.

1. Patients with schizophrenia will list more kin in their social networks than patients with PTSD (Type I vulnerability characteristic). Conversely, patients with PTSD will list more friends in their networks (Type II protective characteristic)

2. Patients with schizophrenia will list smaller networks than patients with PTSD (Type I vulnerability).

3. Patients with PTSD will be more likely to have a spouse-lover than patients with schizophrenia (Type II protective). Both groups are likely to report a history of at least one divorce.

4. Patients with schizophrenia will report feeling less close to their network members (Type I protective). This lower rated closeness will be positively correlated with feeling that the network is helpful (that is, with greater satisfaction with perceived social support).

5. Patients with PTSD will report more frequent interactions with their network members than patients with schizophrenia (Type I and Type II protective).

Psychological Hardiness.

1. Patients with schizophrenia will report greater Control than patients with PTSD (Type I, vulnerability).

2. Patients with schizophrenia will report less Commitment than patients with

PTSD (Type I, vulnerability). Patients with PTSD will report much higher Commitment scores than patients with schizophrenia (Type II, vulnerability).

3. Patients with PTSD will report higher Challenge scores than Patients with schizophrenia (Type II, protective).

Constructive Thinking.

1. Patients with schizophrenia will score higher on the Emotional Coping, Behavioral Coping, and Naive Optimism scales of the CTI than patients with PTSD (Type I, protective)

2. Patients with PTSD will score higher on the Categorical Thinking and Superstitious Thinking scale (Type II vulnerability) than patients with schizophrenia.

Creativity.

1. Patients with schizophrenia will have higher creativity scores as indicated by the HDYT Global Scale (Type I vulnerability).

Coping Style.

1. In the report of recent coping with a real problem, Patients with schizophrenia will report more effective coping than patients with PTSD, as indicated by higher problem-focused and appropriate emotion-focused coping scores than patients with PTSD (Type I, Protective).

P/V cluster types and adjustment.

These analyses address whether the P/V characteristics actually function as Protection vs. Vulnerability characteristics with regard to outcomes in subjects in this

sample. The analysis will be based on (a) six within-groups regression models using GAF and GSI as dependent variables in separate equations for each of these variables, (b) a discriminant function analysis, and (c) an omnibus regression model using GAF as dependent variable.

1. Perceived upset with social support will predict greater pathology in all three groups as indicated by lower GAF (Global Assessment of Functioning) or higher GSI (SCL-90-R Global Severity Index) score.

2. The Type I cluster of Social Support variables will predict GAF in patients with schizophrenia, with vulnerability characteristics negatively related to GAF and protective characteristics positively related to GAF. (Perceived upset with kin and upset with friends will be negatively related to GAF as vulnerability characteristics; perceived helpfulness of friends and helpfulness of kin will be positively correlated with GAF as protective characteristics.) Converesely, Type I protective characteristics will be negatively related to GSI and vulnerability characteristics will be positively related to GSI.

3. The Type II cluster of Social Support variables will predict GAF in patients with PTSD, with vulnerability characteristics negatively related to GAF and protective characteristics positively related to GAF. (Perceived upset with kin and upset with friends will be negatively related to GAF as vulnerability characteristics; perceived helpfulness of friends and helpfulness of kin will be positively correlated with GAF as protective characteristics.)

4. The Type I cluster of P/V variables of the CTI, DRS, HDYT, and WOC will

predict GAF in patients with schizophrenia, with vulnerability characteristics negatively related to GAF and protective characteristics positively related to GAF. Converesely, Type I protective characteristics will be negatively related to GSI and vulnerability characteristics will be positively related to GSI.

5. The Type II cluster of P/V variables of the CTI, DRS, HDYT, and WOC will predict GAF in patients with PTSD, with vulnerability characteristics negatively related to GAF and protective characteristics positively related to GAF. Converesely, Type II protective characteristics will be negatively related to GSI and vulnerability characteristics will be positively related to GSI.

This study is expected to discover whether the constructs assessed indeed form two distinct clusters, designated as Type I in patients with schizophrenia and Type II in patients with PTSD. Refer to Table 3 for a listing that highlights their cluster membership.

If this is indeed the case, further research will be indicated to determine the relative contributions of stress, learned responses, and innate qualities in both the development of these clusters of P/V characteristics and their possible subsequent roles in recovery from SMI. If this is indeed the case, refinements for the treatment of both schizophrenia and PTSD may be built on this knowledge of Personal Characteristics that increase protection or vulnerability in serious Mental Illness. This method of assessing groups of psychological strengths can possibly be applied to other mental disorders as well.

METHOD

Procedures

This study compared two groups of long-term patients at the Cleveland Veterans Administration Medical Center (CVAMC) in Brecksville, Ohio. One group of consisted of Seriously Mentally Ill (SMI) Veterans who have diagnoses of various chronic, psychotic mental illnesses. These veterans were drawn from the Center for Life Management (CLM), a day-treatment program for veterans who have received chronic schizophrenia or schizoaffective diagnoses. The primary goal of the CLM is to maintain veterans with SMI in the community, thus avoiding hospitalization, which is more costly in both human and economic terms. Veterans who were inpatients at Ward 51-A, a transition ward operating a Day-treatment program for SMI patients ready for discharge, were also invited to participate in this research if they met criteria for chronicity and psychotic diagnosis, since more subjects were needed to fill the chronic schizophrenia group. A final subset of patients with chronic psychotic diagnoses was drawn from Vantage Place, a sheltered residence for chronic psychiatric patients. Most of the subjects in the sample had been hospitalized at 51-A, participated in the CLM program, and had resided at Vantage Place at one time or another, although not at the same times.

A second group of SMI patients was recruited from the Center for Stress Recovery (CSR), a treatment program for veterans exposed to combat who have been diagnosed with chronic Post Traumatic Stress Disorder (PTSD). The diagnostic process is

complex. Veterans, who are referred to the CSR from all over the United States, undergo a series of interviews, assessments, and pre-treatment counseling to make absolutely certain that the Veteran is suffering from combat-induced PTSD and has enough ego strength and self control to submit to a rigorous, ten-week, residential, treatment program. These patients have suffered from severe and persistent chronic PTSD for 30 to 35 years. Veterans from the PTSD programs who had been in treatment for at least six months, either as inpatients or outpatients were invited to participate. Many of these patients were referred by Substance Abuse Treatment Programs when treatment issues underlying the substance abuse of patients were discovered to be symptoms of PTSD. Whether these PTSD symptoms were of delayed onset or represented chronic, unrecognized symptoms, notwithstanding. Most PTSD patients in the CSR program reported a history of at least 30 years of symptoms consistent with either chronic or delayed onset PTSD, the limit of 6 months or more in treatment plus a long history of symptoms, yielded a PTSD patient population that approximates a population of chronic schizophrenia patients in treatment in terms of duration and severity of disorder and impairment of functioning. Indeed, the PTSD patients at CSR frequently appeared, on clinical observation, to be more impaired than chronic schizophrenia patients at CLM. PTSD patients' symptoms appeared to be as serious as those of chronic schizophrenia patients in treatment, but PTSD patients more frequently avoided being compelled to enter treatment; they were less likely to attract attention as obviously mentally ill outside of the hospital. CVAMC charts indicated that PTSD patients were more likely to be prosecuted within the legal system as substance

abusers and criminals.

A Control Group of active Army National Guard veterans was drawn from the 324th Ohio Army National Guard unit (OANG), a regiment of Military Police who have seen active duty in Honduras, Panama, Germany, Saudi Arabia, and Kuwait. OANG veterans were invited to participate after completing a screening process that determined that these soldiers had no symptoms of SMI, either psychotic disorders or PTSD.

All subjects were invited to participate in the study by answering questions presented in four paper and pencil measures and two computer programs.

Subjects

All veterans who were registered as patients in either the CSR, CLM, or 51-A during the first nine months of 1997 were offered the opportunity to participate. CVAMC policy demands that all patients be offered an equal chance to choose to participate; both male and female veterans were included. As expected, only two female participants from the CLM population, that is, subjects with schizophrenia diagnoses, consented to participate. Since no females were assigned to combat units during the Vietnam conflict, no females with a PTSD diagnosis were assessed. Only data from the male subjects are included in the analyses.

Thus, two groups of SMI patients were assessed. Two subjects from CLM were eliminated from the study when their records showed that their diagnoses were not clearly psychotic disorders. One patient had a history of PTSD and substance abuse as well as psychotic symptoms. A second had a history of long-term seizure disorder that confused

his symptoms considerably. Another veteran of the Vietnam era was included because his history showed that he was accepted into the US Marine Corps while being maintained on Thorazine. This veteran had first reported psychotic symptoms while in high school. His military history showed a remarkable record of bravery under fire that might have been related to his psychosis. He was included because his history revealed no occurrences of trauma-induced stress reaction; nor did he report any PTSD symptoms during the assessment.

Since the subjects with schizophrenia came from three different CVAMC programs, ANOVAs were used to explore the possible differences among demographic characteristics and variables of interest for the three subgroups of patients (CLM, 51-A, and Vantage Place). Table 4 lists mean values that highlight the similarities and differences among patients from the three settings. The three subgroups were similar in age, education, and age at diagnosis. No significant differences between patients from the three programs were found for any demographic variable. Student-Newman-Keuls Post-hoc tests revealed that significant differences were found for three scales of the research measures, the CTI Naive Optimism scale, and the WOC Distancing and Positive Reappraisal scales. Significant differences were found for the CTI Naive Optimism ($F_{31,2}$ = 5.43, p. = .01)and WOC Distancing ($F_{31,2}$ = 4.34, p. = .02) scales. Patients from Ward 51-A were significantly more naively optimistic than patients from CLM or Vantage Place, as tested by the Student-Newman-Keuls post hoc test. This may have been a reflection of the greater support they had received as recently hospitalized patients who were encouraged

to think optimistically about the skills taught (and, hopefully, learned) in hospital.

A more complex difference was found in WOC Distancing coping scale. Patients from Vantage Place used Distancing as a coping method to a greater extent than patients form CLM or Ward 51-A, according to the SNK post-hoc test, although an examination of means suggests that patients from 51-A and Vantage Place were more similar to each other than the statistical test might suggest. This difference may have been an indicator of a treatment effect, since patients at CLM are encouraged to cope actively with problems, while staff at Vantage Place and 51-A work to prevent life stressors from impacting their patients. Patients from 51-A and Vantage Place were more able to distance themselves from problems, because of this difference. This difference in treatment approach may have broadened the sample, as it reflects the differences available in treatment approaches to psychotic disorders.

Inclusion of patients from three places associated with CVAMC may have provided a more representative sample of chronic schizophrenic veterans than recruiting patients from CLM alone. Staff at 51-A and Vantage Place were more likely to attempt to shelter patients from life stress than staff at CLM, where support was offered in actively coping with life stress. This range of responses to patient support may be more representative of the wide range of supportive programs available to patients with chronic SMI.

Group Two consisted of 33 PTSD patients from CSR. All CSR participant were active participants in out-patient Group Therapy and had completed an intensive ten-

week in-patient treatment program for their PTSD. The CVAMC population of PTSD patients is more homogenous than that of the schizophrenic patients, since PTSD is a "newer" diagnosis than schizophrenia; inclusion in the PTSD program also requires no drug and alcohol use, with periodic random drug screening.

Control Group members, recruited from the 234 Ohio Army National Guard Military Police Unit, were screened for PTSD symptoms using questions based on DSM-IV criteria for PTSD (See Appendix B). Any potential subjects who exhibited PTSD symptoms were thanked for their willingness to participate and referred to a PTSD program in a VA Center near their homes. Two subjects were rejected because of PTSD symptoms. One subject who had experienced traumatic combat incidents was accepted after screening gave no evidence of PTSD symptoms. The final Control Group consisted of 29 men.

Administration of Measures

The measures were administered in individual or small group settings, with no more than four patients being tested at one time. The investigator was present with all patients to render any help that the patient deemed necessary. All subjects, patient groups as well as Control Group, were asked to respond to a packet of paper and pencil measures, computer measures, and a short interview (the main purpose of which was to confirm demographic data gathered from the chart and to aid in assigning a GAF rating to each subject). The interview also gave a subjective self-report of self-rated health, military history, childhood and adult social history, educational history, and work history. Patients

also gave permission for the investigator to review their medical information at the CVAMC. See Appendix B for examples of information sheet, PTSD Screener, and Consent forms.

Control Group subjects were administered the same measures in larger group settings of between five and fifteen subjects. Control subjects were encouraged to ask for help if any test items were not clear, and they availed themselves of this help less frequently than did patient subjects. Subjects were offered an honorarium of $5.00 as a token of appreciation for completing as many of the measures as they could. About half of the PTSD sample asked that their honoraria be donated to a fund for indigent veterans. All Control Group subjects donated their honoraria.

Description of Measures

The following measures of traits and characteristics that are hypothesized to contribute to mental and emotional well-being were used in this study. Pencil and paper measures were reset in 14 point type and presented with simplified instructions so that these SMI patients, who complain of difficulty reading and concentrating, would have less difficulty completing questionnaires. As noted, the principal investigator was available to aid patients as they worked with questionnaires.

Six of thirteen patients, including one from CSR, who asked for and were given help in reading the questionnaires needed help because of poor eyesight. Virtually all subjects with schizophrenia asked for help interpreting at least one item during the assessment. So many patients in both patient groups did not know the definition of the

words "aesthetic" and "ambiguity" (which appear in the HDYT) that these words were listed on a card (which also gave the definitions of the words) in order to give equal and appropriate aid to all patients. The investigator was concerned that PTSD patients would not ask for the definitions and would give unresponsive answers because of misunderstanding these words.

Effects of Reading Instruments Aloud to Subjects

ANOVAs were used to test for differences between patients who obtained help reading and those who read the questionnaires themselves. The main concern with this help in reading was whether this assistance resulted in raising scores of those subjects who were helped. In other words, was there evidence that reading to patients gave them an opportunity to obtain higher scores than those who received no help. Table 5 lists differences between subjects with schizophrenia who read and those who were read to.

An examination of Table 5 shows that no significant differences were obtained in the subgroups who were read to because of poor health or poor ability to read in Hardiness, creativity, or coping skills as indicated by the WOC, but that there was a trend on the Global CTI score for those who were read to because they were poor readers to score higher than those who read themselves or who those who were read to because of poor eyesight. The overall pattern of scores for the three subgroups suggests that reading to the patients who requested help did not increase their scores unduly. Examination of demographic characteristics of age, education, and age at diagnosis suggest that reading to patients was not associated with particular demographic features, although poor readers

had the least education. Oddly enough, patients with poor eyesight were significantly better educated than the others. GAF scores showed a trend for lower scores to be associated with being read to. Whether the GAF rater was influenced by the request of the patient for help is difficult to determine.

In summary, while reading to patients who requested help may have helped them achieve non-significantly higher scores for one measure (CTI Global Scale), this difference approached significance; all patients had the opportunity to receive help to the extent that they chose. Not offering help might have biased results in unknown and unpredictable ways for all measures.

Instruments

1. The MacIntosh[r] Social Support Index (MSSI, Plimpton, 1993).

This is a new instrument, developed by the author, and based on assessment techniques of Cohen (1985), Hirsch (1985), and Kiecolt-Glaser, et al. (1988), designed to measure and integrate structural and functional social support. This is a self-report measure administered with a MacIntosh[r] computer. The MSSI has been found to have reasonable psychometric properties when administered to post college adults in the Young Adults Attitude and Experience (Plimpton, 1993). As explained in the Literature Review, structural social support is that support which pertains to the structure of an individuals support, such as number of supportive persons, frequency of contact, and the relationships between and among the supporters. Functional support refers to that which supportive persons do, such as socializing, emotional support, tangible assistance, etc.

In this previous work, MSSI structural variables of number of people in the network ($r_{[friends]}$ = .20, p.< .01) and frequency of contact ($r_{[kin]}$ = .46, p. < .01; $r_{[friends]}$ = .56, p. < .56) were found to be positively correlated at low to moderate but significant levels with similar variables of the questionnaire called the Yale Family and Friends (YALE) measure, developed as an interview measure of social interactions reported by patients in a study of Community Mental Health Center Patients in New Haven, CT. (Glaser, Prusoff, John, & Williams, 1981), and modified to work as a self-report device. Similar correlations were observed with an interview-based Quality of Life relationships subscale (Heinrichs, Hanlon, & Carpenter, 1984).

MSSI functional variables of satisfaction with support from family, friends, and spouse/lover correlated at moderate to low levels with similar variables from the Perceived Social Support from Family ($r_{[kin]}$ = .52, p. < .01; $r_{[friends]}$ = .17, p. <.05) and Friends ($r_{[kin]}$ =.28, p. <.01; $r_{[friends]}$ = .30, p. <.01) instrument (Proccidano & Heller, 1983). These low to moderate Correlations with similar measures indicate that the MSSI measures, at least in part, social support constructs similar to several other standard research measures. One can conclude that the MSSI is a valid measure of both structural and functional social support.

However, The MSSI variables measuring upsetting support from family, friends, and spouse/lover were not correlated in any notable pattern with any other measure, indicating that this important element of social support may be identified by the MSSI but is not well measured by the Yale, the QOLREL, or PSS-FA or PSS-FR, since these

measures do not address the element of upsetting support in a way that allows the researcher to address perceived upset with support as a separate entity (Plimpton, 1994).

In the YAAES study, MSSI upsetting support from kin, friends, spouse/lover, and the total network was positively correlated with indices of psychological distress as measured by the SCL-90-R (Derogatis, 1983) and a modified Brief Psychiatric Rating Scale (Schuldberg, 1994, personal communication). Upsetting support variables were also negatively correlated with the Hardiness variables Control and Commitment, and with CTI Global Constructive Thinking, Emotional Coping, and Behavioral Coping scales. Distinguishing between perceived helpful and perceived upsetting functional social support is important since upsetting social support has been related strongly and consistently with mental and physical illness in studies of social support (Fiore, et al., 1983; Kiecolt-Glaser, et al., 1988; Pagel, et al., 1987; Rook, 1984, 1990).

The MSSI provides global measures of structural support from important social contacts by allowing the researcher to create variables that sum the total number of persons named as sources of support as well as yielding separate categories of important contacts named, such as family members, friends, coworkers, same generation family, or parents. Mean frequencies of contact and closeness can also be constructed for the global network reported and for a variety of subsets of contacts (parents, friends, etc.).

This instrument also provides measures of mean functional support overall and for each of four specific areas of functions of social support: Socializing, Cognitive Guidance, Emotional Support, and Tangible Assistance, through computation of the mean "helpful"

or mean "upsetting" response for the entire network reported, or for any subset of persons named. These values are obtained by averaging the helpful or upsetting ratings given for each person named as important, or for groups of important others. The ability to separate out levels of structural social support and levels of satisfaction with functional social support and to compute indices for the total network or subsets makes this instrument unique, useful, and convenient to use.

The functional indices of helpful support and upsetting support from kin, friends, the spouse/lover, professional helpers (others), and the total network were used in this study, as well as the structural variables of closeness, number, and frequency of contact with friends, kin, the spouse/lover, professional helpers, and the total network. (See appendix a for a description of computation procedures.)

2. The Dispositional Resilience Scale (DRS; Bartone, Ursano, Wright, & Ingrahm, 1989).

This 45 item scale is a modification of Kobasa's (1979) *Hardiness* Scale, which measures three variables indicating psychological healthiness which Kobasa named Commitment (as opposed to alienation), Challenge (vs. threat), and Control (vs. powerlessness). The DRS was developed for use with a blue-collar population by rewording some long and awkward items, recasting other items to avoid the exclusive use of negative item indicators, and shortening the measure. Funk (1992) noted that these changes are helpful, but commented that 78% of DRS items are still negatively cast. Bartone et al. report that this shorter measure correlates .93 with the original scale's

overall score. Reliability coefficients (*a*) for the three subscales range from .62 to .82. Chronbach's *alpha* for the overall Hardiness scale was .85. The Commitment, Challenge, and Control subscales were used in this study to indicate level of positive psychological functioning.

3. The Constructive Thinking Inventory (CTI; Epstein & Meier, 1989).

This 108 item scale captures elements of both constructive and destructive thinking patterns that indicate what Epstein and Meier (1989) describe as "practical intelligence", or common sense. A factor analysis of the instrument has yielded six factors: five bipolar factors that are interrelated and accounted for 43.7% of variance (Emotional coping, Behavioral coping, Categorical thinking, Superstitious thinking, and Negative Thinking) and a sixth, independent scale they named Naive optimism (4.3% of variance). A global score combines the five bipolar scales. Epstein and Meier describe this global CTI scale as a "broad bipolar scale that includes items from all of the specific scales except naive optimism". Forcing three and two factor solutions of the data from their reliability study yielded a first factor that held all of the constructive thinking scales and the global scale. The second factor contained general intelligence as indicated by the Shipley intelligence measure. Epstein and Meier (1989) interpret this factor structure to indicate that practical intelligence is not the same as IQ.

Staff of the CVAMC recommended rewording of several items of the CTI, because they felt that SMI patients might not have the education to understand the items. These changed items were added at the end of the measure. Thus, patients took the

standard measure, and reworded items were available in a position that did not compromise the comparability of measures between studies.

In this study, the Global Constructive Thinking Scale, Behavioral Coping, Emotional Coping, Categorical Thinking, Superstition, and Naive Optimism Scales, constructed as indicated in the CTI manual (1993), were tested for significant differences between groups. More detail concerning these scales can be found in the Literature Review. Regression models were built using all subscales to test the expected placement of these subscales in the Type I/Type II clusters of P/V characteristics.

4. The How Do You Think? (HDYT; Davis & Subkoviak, 1975).

The current version of this instrument is a 100 item, Likert Scale measure that assesses cognitive processes, beliefs, and activities associated with creativity. Davis and Subkoviak described six groups of items that indicate levels of originality: creative interests and activities, attraction to complexity, self confidence and humor, freedom and flexibility, and stimulation, risk-taking, and playfulness. The authors state that an earlier version of this instrument has adequate internal consistency, and that it correlated with judged creativity at .94 in a sample of 68 college students. The sum of all items in the HDYT was used in this study, as were several additional scales that were computed in accordance with the method of Davis and Subkoviak (1973), by summing items from each of their cluster analysis scales. Because little has been published about these scales, a reliability analysis was used to test their internal consistency in this study. The α values given in parentheses reflect the values for this sample. These were named by the authors

Creative Interests and Activities (HDYT Activities, $\alpha = 75$), Arousal Seeking, risk-taking, and Playfulness (HDYT Riskplay, $\alpha = .70$), Self-confidence and Sense of Humor (HDYT Humor, $\alpha = .65$), Flexibility and Freedom (HDYT Flexfree, $\alpha = .63$), and Creative Writing (HDYT Writing, $\alpha = .63$).

5. The Revised Ways of Coping Questionnaire (WOC; Folkman & Lazarus, 1988).

The revised WOC questionnaire describes the extent to which individuals commonly rely on eight coping strategies (Confrontive Coping, Distancing, Self-Controlling, Seeking Social Support, Accepting Responsibility, Escape-Avoidance, Planful Problem Solving, and Positive Reappraisal) when dealing with problems. Alpha coefficients for these scales range from .59 to .88. Folkman and Lazarus (1988) reported test-retest reliability, face validity and construct validity for this measure. They pointed out that since coping with real problems differs from situation to situation, some variation in coping responses is necessary. Comparison of results among several studies of coping yielded similarities in responses that suggest the validity of the measure (Folkman et al., 1987; Forsythe & Compas, 1987; McCrae, 1984; Parkes, 1984). As stated in the introduction, coping strategies are probably subject to learning and vary from situation to situation within the same person.

Patients and Controls in this study were asked to answer items as they applied to a problem experienced in the last week or two which had caused them considerable effort to solve. The Planful Problem Solving and Confrontive Coping scales were used as a measure of problem-focused coping and the Positive Reappraisal and Distancing Scales as

a measure of emotion-focused coping. The Escape-Avoidance Scale was also used, since it is commonly considered to reflect emotion-focused coping at CVAMC. However, the WOC Manual (1988) states that this scale combines emotion-focused and problem-focused coping strategies.

6. Global Assessment of Functioning (GAF; American Psychiatric Association, 1995).

The GAF is a rating that collapses both positive and negative functioning into a single rating between 10 and 100; older versions of this scale ranged from 10 to 90. The GAF was used as a measure of overall functioning and adjustment in this study. In rating the GAF, the clinician considers symptoms of illness, social functioning, and ability to work and live independently. "Normal" non-patients will usually receive a rating between 85 and 70. A rating of less than 45 indicates a probable need for psychiatric hospitalization. This rating is used routinely in charting patient's progress in both CSR and CLM.

Several characteristics of schizophrenic veterans, including their income from service-connected disability status generally force the clinician to rate them between 41 and 50, thus restricting the range of ratings so much as to make this rating problematic as an outcome variable in building regression models. For this study the anchors of the GAF were modified to include participation in CLM activities as "work or school". This modification allowed researchers to give a broader range of GAF ratings. No other modifications of GAF ratings were used. Ward 51-A patients and Vantage Place patients

who were not active CLM members received GAF ratings based on traditional interpretations of the GAF's anchors, reflecting their inability to maintain an activity in their lives akin to "work or school". No modification of anchors was necessary for PTSD patients or Controls, since their daily activities may include activities normally understood as "work or school", those categories to which CLM activities were compared.

One clinician each from Ward 51-A and CLM was trained by the principal investigator in the use of the GAF with the expanded definition of anchor points (including participation in CLM activities as "work or school". A reliability sample of 32 patients was rated to demonstrate reliability in GAF ratings; the 51-A clinician rated 8 patients, the CLM clinician rated 24 patients, and the principal investigator rated all 32 patients. Reliability was assessed using the weighted kappa statistic, computed for all 32 reliability subjects. The result of a weighted Kappa of .451, in the fair/moderate range (Cicchetti & Sparrow, 1981). Cohen, (1968) confirmed that GAF ratings were reliable enough to use as a dependent variable in building regression models for this study.

AS Table 4 shows, GAF ratings reflected the lower functioning of patients from Vantage Place and Ward 51-A, who had no equivalent activities to be considered as "work or school". The GAF was used as an independent variable in building regression models that describe and explain the effects of P/V characteristics in subjects with schizophrenia and PTSD patients.

7. The Symptom Checklist 90-Revised. (SCL-90-R; Derogatis, 1977).

During the course of the study, the investigator discovered that CSR routinely uses

the SCL-90-R as a measure of patient progress. The Chief of CLM gave permission to use this measure with CLM members, since he wanted to have a regular report of psychological distress for CLM patients. This measure was adapted by the author for administration on the MacIntosh[R] computer using HyperCard[R]. Schizophrenic patients who so desired completed the MacIntosh[R] version of the SCL-90-R. Control subjects also completed the SCL-90-R at the time of assessment after doing the MSSI. The computer was programmed so that the SCL-90-R was automatically presented when the subject finished the MSSI.

PTSD patients who had a recent SCL-90-R on file were not tested a second time. Those who had not recently completed this measure, completed the MacIntosh[R] version after doing the MSSI, with the computer automatically presenting the SCL-90-R after completion of the MSSI. Thus, two test formats were used with patients in the PTSD program. No data are available to demonstrate the equivalence of these two formats. These data are used with caution. Data from this measure was shared freely with both VA programs.

8. Demographic interview/Chart Review.

A short interview was conducted with each patient and with Control subjects to confirm and complete information garnered from the patient chart. No chart review was possible for Control Subjects and the interview provided the only source of this information for Control subjects. Details about family of origin, physical and mental health history, education, military history, employment history, legal history (including

information related to conduct disorder), marital status, substance abuse history, and diagnostic history were gathered and used as retrospective indicators of pre-trauma etiologic factors that may have influenced the development of chronic PTSD. Refer to Table 6 for a list of the variables gleaned from the interview and chart review.

These data may also provide information relevant to the etiology of schizophrenia and PTSD and can provide further useful points of comparison among the three groups, although no formal statistical comparisons are reported in this study, other than the demographic descriptions of the groups. Control subjects underwent a similar interview, except that they were not asked to provide a detailed history of hospitalization for mental illness; Controls were asked whether they had ever been treated for any mental disorder, including mild depressive disorders or symptoms related to bereavement.

For patient subjects, a chart review was used to confirm and complete the interview information. Chart information is logged onto the computer system at CVAMC and includes progress notes, pharmacological information, medical and psychiatric histories, and discharge summaries. These items provide a rich source of information about patients and complete the picture of patients needed to form an accurate GAF rating as well as describing various characteristics that define the groups in this sample. These chart sources also gave information relevant to tentative Axis II diagnoses that were used to help describe the groups. Clinicians at CVAMC are reluctant to give diagnoses of Personality Disorders unless the evidence for a disorder is firm; many patients were given "deferred" on Axis II. In these cases, the therapist most familiar with the patient was

asked to confirm his or her impression of the Axis II status of the patient. This information was expected to be useful in illuminating the diathesis vs. stress question in PTSD patients, since pre-existing personality disorder has been supposed as a risk factor for PTSD (Ursano, et al., 1981; Watson, et al, 1996; Wilson & Krauss 1985).

As noted, no chart review was possible for Control subjects, who were not asked for medical records; their medical records resided with their individual physicians and were not maintained under the umbrella of shared records at the CVAMC. Their interview data provided a self-report of information regarding general health, consultation with doctors, and use of medication, as well as self-reported drug and alcohol use, abuse, and treatment. No additional attempt was made to assess medical or emotional status, other than the initial screening for PTSD symptoms and the assignment of a current GAF.

Data Entry and Reduction

Raw data were entered twice into two identical files for each paper and pencil measure (DRS, HDYT, CTI, WOC, Interview/chart review) using SPSS for Windows, version 6.0. These identical files were checked against each other both automatically and manually, and discrepancies were checked against the original questionnaire in order to ensure clean data. A second data-cleaning step was done by using SPSS to calculate scales and subscales for each of the duplicate files. These calculated variables were compared manually for each subject on each questionnaire and discrepancies checked against the original measure. Once all variables were determined to match in both files, a final database was built containing all data for each subject.

Data from the MacIntosh[R] measures were translated into a format compatible with SPSS using the Apple Exchange program, and this information was added to the data base after a similar data-checking and variable computation process. One advantage of directly recording data on the MacIntosh[R] computer is that fewer errors are possible during the data transfer, cleaning, and computation process.

The database thus created is rich indeed, since medical and family history is included. The CVAMC patients have access to state of the art medications, such as Clozapine, Resperidone and Resperidol for patients with schizophrenia, and trials of new anti-kindling agents for PTSD patients. While too few patients in the patient groups are maintained on any one medication regime to include medication in the analysis, including medication as a variable in the database provides clues for further research and will be of interest to professional staff at CVAMC.

Sequence of the Analyses

The analyses of the data of this study proceeded systematically in an attempt to evaluate sets of indicators of mental and emotional strengths and vulnerabilities that might prove useful in planning treatment of people with a diagnosis of SMI based on increasing strengths rather than overcoming weaknesses. Steps in this analysis proceeded according to the following order.

a. Data were summarized to provide descriptions of the subject groups and comparisons of some demographic characteristics (age, education, settings, etc.). Since some subjects in the Schizophrenia patient group came from different CVAMC

programs and some patients were read to, analyses were conducted to determine whether differences among these patients were a problem.

b. Comparisons of three groups were conducted using ANOVA using the P/V measures (DRS, CTI, HDYT, WOC, SCL-90-R, MSSI variables) as dependent variables and Group as independent variable in order to asses differences in these measures among groups. The Student-Newman-Keuls post-hoc test was used to assess differences among groups when an overall significant difference was found.

c. Regression models (variables were entered stepwise) were built within each group of subjects to determine: (1) patterns of P/V characteristics that predicted GAF as the dependent variable and (2) patterns of P/V characteristics that predicted the Global Severity Index of SCL-90-R (GSI) as the dependent variable. The analysis provided two equations for each group, or a total of six equations.

d. A Discriminant Analysis was conducted using P/V measures as independent variables, attempting to predict Group membership as the dependent variable and, describing how schizophrenics, PTSD patients, and Controls differ. A randomly chosen 50% of the total sample was used to build the model, and then the model was tested using the other half of the sample.

e. A final omnibus regression model was constructed including all subjects in the study with diagnosis coded as two dummy variables (schizophrenia = 0, 1; ,PTSD = 1,0; Control = 0, 0). P/V measures, entered stepwise, formed the independent variables, and GAF scores formed the dependent measure. Another omnibus regression model

was built using GSI as the dependent variable.

RESULTS

Subject Characteristics

Three groups of veterans were included in the sample for this research. Experimental Group one was composed of 35 veterans with Schizophrenia. Group Two included 33 veterans with a diagnosis of PTSD. The men in these two groups were all patients of the Cleveland Veterans Administration Medical Center (CVAMC) during the summer and fall of 1997. Group three, a Control group, consisted of 29 members of the 324 Ohio Army National Guard assessed in the spring of 1998.

The subjects with schizophrenia ranged in age from 31 to 78 with a mean age of 48.2 years (sd = 9.6 years). Subjects with PTSD ranged in age from 33 to 70 years in age with a mean of 49.1 years (sd = 6.3 years). Control subjects were significantly younger than either patient group, ($F_{2,94} = 22.52$, $p < 0.00005$) and ranged in age from 25 to 57, with a mean age of 36.0 years (sd = 9.3). Subjects with schizophrenia and the subjects with PTSD did not differ significantly in age.

The three groups did not differ significantly in education ($F_{2,94} = 2.71$, $p < .07$; $\chi^2_{[6]} = 12.19$, $p = .058$), although the schizophrenic group contained more subjects with less than a high school education. Several other demographic variables which describe the sample are reported in Table 7. Subjects with schizophrenia were much less likely than Controls or subjects with PTSD to own their homes, to be married, or to live with wives and children. Controls and subjects with PTSD more often owned homes and lived with

wives and children, but subjects with PTSD had significantly more divorces than either subjects with Schizophrenia or Controls.

Both subjects with schizophrenia and subjects with PTSD had significantly more substance abuse and treatment for substance abuse in their histories than Controls. Subjects with PTSD were unlikely to be currently abusing substances because of a requirement of the PTSD treatment program that they demonstrate that they are "clean" by random urine and blood tests. Subjects with PTSD also reported a significantly greater number of alcoholic fathers than either subjects with Schizophrenia or Controls.

Subjects with Schizophrenia and subjects with PTSD tended to report trouble with legal authorities (criminal behavior) in childhood and adulthood more did than Controls. Seven subjects with PTSD reported legal problems, in both childhood and adulthood, as compared with two subjects with schizophrenia and one Control. This sort of history suggests that a label of Antisocial Personality Disorder could be considered in several subjects with PTSD.

Thus, in summary, subjects with schizophrenia in this study tended to be more socially isolated and inactive than subjects with PTSD and Controls. Controls, as a group, were more like a Norman Rockwell painting of the average American, that is working steadily, currently married for the first time, with children, and living in a house owned by the family. Subjects with PTSD reported more current sobriety than subjects with schizophrenia due to program requirements that they maintain their sobriety.

Another subject characteristic of interest is Axis II diagnosis. Table 1 shows that

far fewer chart notations suggesting personality or character disorders were found in schizophrenia patients than in PTSD patients. A t-test ($t_{1,65} = 2.55$, $p = .013$) revealed that significantly more PTSD patients than schizophrenia patients received either diagnoses or notation of Axis II "traits" or "features". This Axis II diagnostic notation was considered to be important because the clinicians evaluating PTSD patients gave such notations reluctantly, in an effort avoid over-pathologizing these patients. Table 1 counts the existence of the noted Axis II disorder as true for patients given provisional and "rule-out" disorder notations. Thus, this reported difference, in a demographic characteristic not included in the design of this project, may be interesting as it confirms indications in the literature that character disorder may be a precipitating factor in the development of chronic PTSD, but this finding in this sample must be viewed with great caution.

Evaluation of the Hypotheses in This Study

Group differences for Hardiness hypotheses.

1. Subjects with Schizophrenia will report greater Control than subjects with PTSD (Type I vulnerability).

As hypothesized, Control subjects reported significantly higher Control on the DRS than either subjects with Schizophrenia or subjects with PTSD, who did not differ from each other. Refer to Table 8 for means, standard deviations, and test statistics for all variables referred to in these results, and to Figure 4 for the chart of the results for the DRS.

2. Subjects with Schizophrenia will report less Commitment than subjects with

PTSD (Type I P/V protection).

Control subjects reported higher Commitment on the DRS than either subjects with PTSD or subjects with schizophrenia. Contrary to this hypothesis, subjects with Schizophrenia reported significantly more Commitment than subjects with PTSD. This unexpected result, however, supports the observation of the investigator that subjects with Schizophrenia made greater efforts to improve their lives than did subjects with PTSD. This issue will be raised again in the Discussion section.

3. Subjects with PTSD will report higher Challenge scores than subjects with Schizophrenia (Type II P/V protection).

Contradicting this hypothesis, control subjects reported significantly higher Challenge scores than either subjects with Schizophrenia or subjects with PTSD, who did not differ from each other. This may indicate that SMI patients in both classes (Schizophrenia and PTSD) respond to difficulties as threats rather than challenges to be overcome.

Thus, in conclusion, none of the hypotheses concerning group differences in the construct of Psychological Hardiness was supported.

Results for the Constructive Thinking Inventory.

1. Subjects with schizophrenia will score higher on the Emotional Coping, Behavioral Coping, Superstitious Thinking and Naive Optimism scales of the CTI than subjects with PTSD (Type I P/V Class) and lower on the Categorical Thinking scale (Type II P/V Class).

Supporting this hypothesis, subjects with schizophrenia scored significantly higher on the Emotional Coping and Behavioral Coping Scales of the CTI than subjects with PTSD, but were significantly lower than Control subjects. Refer to Figure 5 for these charted results. However, subjects with schizophrenia scored non-significantly lower than subjects with PTSD on the Superstition and Categorical Thinking scales, contradicting part of the hypothesis. Control subjects were significantly different from either of the experimental groups on these scales in a direction that indicated greater Constructive Thinking in Controls than either SMI group.

As mentioned in the Literature Review, the Naive Optimism scale of the CTI indicates traits that can be both adaptive and maladaptive. In this study, greater Naive Optimism scores may have been adaptive, that is, lending protection to individuals with higher scores. Subjects with PTSD scored significantly lower on this subscale than subjects with schizophrenia and Controls, who did not differ from each other.

These results indicate that subjects with schizophrenia in this sample demonstrated greater levels of Constructive Thinking than did subjects with PTSD, as expected. Controls scores were higher than the norms published by Epstein (1993), while Schizophrenic subjects' scores appeared to be similar to these norms. This can be seen in Table 8.

Results for Creativity Measure.

1. Patients with schizophrenia will have higher creativity scores as indicated by the HDYT Global Scale (Type I P/V vulnerability).

This hypothesis was not supported for the Global HDYT score. Subjects with PTSD scored non-significantly lower than either subjects with schizophrenia or Controls, whose scores were similar. As Table 8 indicates, subjects with schizophrenia's scores varied most greatly, with a range of 201 points (Mean = 288.23, sd = 52.1), as against 172 for subjects with PTSD (Mean = 277.87, sd = 42.4), and 153 points for Controls (Mean = 291.17, sd = 35.8).

Examination of subscales of the HDYT showed that subjects with schizophrenia engaged in Creative Activities (as indicated by the subscale named Creative Activities, P/V Type I protection) to a greater extent than subjects with PTSD or Controls. Whether this indicated greater attention to creative activities or a perception that these patients completed projects that were creative was not testable in this study.

Results for Coping Style.

1. In the report of recent coping with a real problem, subjects with schizophrenia will report more effective coping than subjects with PTSD, as indicated by higher overall coping scores (Protection for both Type I and Type II).

The Planful Problem Solving Scale of the WOC was used as an indicator of problem-focused Coping (Protective if a problem can be solved; increases vulnerability if a problem can't be solved and must be endured) and the Escape-Avoidance Coping Scale was used as an indicator of Emotion-focused Coping (increases vulnerability in most cases). As hypothesized, subjects with schizophrenia scored significantly higher in Planful Problem Solving than subjects with PTSD and were similar to Controls. However,

Controls scored significantly lower on the Escape-Avoidance Scale than either patient group. Refer to Table 8 and Figure 7 for means and charted results for WOC scores.

Because it was discovered that the Escape-Avoidance Scale has elements of both problem-focused coping and emotion-focused coping, two other scales that are more purely emotion-focused were included in the analysis. Positive Reappraisal (Protection) and Distancing (Vulnerability) fall into the Emotion-Focused Coping domain in that these scales reflect coping by using a mental/emotional mind-set. Subjects with schizophrenia scored significantly higher than Controls on both of these scales and higher than subjects with PTSD on Positive Reappraisal. Positive Reappraisal can be protective because it helps persons to act upon the beneficial elements of a problem. Coping with a problem by distancing oneself from it usually increases vulnerability. Subjects with PTSD used significantly more confrontation (a scale that is problem-focused) than Controls in their coping, a deficit that is common in this group, although meeting a problem head-on can be adaptive. The degree of confrontation may be the key.

Results Regarding Social Support Hypotheses

Means, standard deviations, and statistics for Social Support variables are reported in Table 9. Charted Results for structural social support variables are shown in Figure 8.

1. Subjects with schizophrenia will list more kin in their social networks than subjects with PTSD (Type I P/V Vulnerability). Conversely, subjects with PTSD will list more friends in their networks (Type II P/V Protection).

These hypotheses were supported by the results of this study, with subjects with

schizophrenia listing significantly more kin than subjects with PTSD. Controls listed slightly more kin than subjects with PTSD, placing them between the two experimental groups in number of kin. Subjects with schizophrenia listed significantly fewer friends than either subjects with PTSD or Controls. Subjects with schizophrenia also listed Professional Helpers as providers of support significantly more often than Controls (only one such "other" was listed by a Control subject) or subjects with PTSD.

2. Subjects with schizophrenia will list smaller networks than subjects with PTSD (Type I P/V Protection).

The size of the Social Network listed by subjects with schizophrenia was similar to that of Controls. Contrary to expectations, subjects with PTSD listed extremely small networks, consisting mainly of friends. Three of the subjects with PTSD named only one person, a friend, potentially making them vulnerable to adverse life events that might be avoided or lessened by the presence of supportive others. This unexpected finding may provide part of the framework of protection and vulnerability that impacts these patients.

3. Subjects with PTSD will be more likely to have a spouse-lover than subjects with schizophrenia (Type II Protection). Both groups are likely to report a history of at least one divorce (Vulnerability).

More subjects listed a spouse/lover than reported that they were married in all groups (This was not tested statistically). Three of the Control group listed more than one person as a "spouse/lover", as did one of the subjects with schizophrenia who mentioned casually that he would spend more time with his "girl friend" but his wife didn't like it.

Two of the Control subjects who listed more than one spouse/lover were divorced and may have listed the ex-spouse with whom they shared child custody.

However, numerical ratings of the level of helpfulness and upset with functional support (Socializing, Cognitive Guidance, Emotional Support, or Tangible Assistance) for this relationship were averaged for each one of these variables, as was done for kin, friends, etc. This may have lowered the average score for two of the three Control subjects, who rated the second "spouse/lover" as more upsetting and less helpful than those Controls who listed one spouse/lover.

Having stated this, significantly more subjects with PTSD listed a spouse/lover than subjects with schizophrenia. As hypothesized, the Chi Square statistic showed that there were significantly fewer spouse/lovers listed by subjects with schizophrenia than by subjects with PTSD (or Controls, who were not significantly different from PTSD patients). The Chi Square statistic was chosen to test this hypothesis, since so few patients with schizophrenia listed a spouse/lover. The data was, therefore, categorical. However, several subjects listed more than one person as a spouse/lover, taking their data toward continuity.

Also, as hypothesized, a significantly greater number of divorces were reported by subjects with PTSD than by subjects with schizophrenia or Controls who did not differ significantly from each other ($F_{2,90} = 10.10$, $p. = .0001$).

4a. Subjects with schizophrenia will report feeling less close to their network members (Type I P/V protection).

This hypothesis was partially supported in a complex way, perhaps because it was not stated precisely enough. There were no differences between groups for closeness to the total network or for closeness to kin. Controls reported significantly higher closeness values for friends than either subjects with PTSD or subjects with schizophrenia, who were also significantly different from each other, with subjects with schizophrenia reporting the lowest closeness ratings for friends.

4b. This lower rated closeness will be positively correlated with feeling that the network is helpful (that is, greater satisfaction with perceived social support; Type I Protection).

Table 10 shows correlations between rated closeness to friends, kin, and the total network and rated perceived helpfulness for friends, kin, and the total network. As hypothesized, in subjects with schizophrenia, low closeness to friends was significantly more satisfying to them (a higher positive correlation to perceived helpfulness of friends) than higher closeness to friends ratings of Controls or PTSD patients.

5. Subjects with PTSD will report more frequent interactions with their network members than subjects with schizophrenia (Type II P/V Protection).

Subjects with PTSD and Controls both reported significantly more frequent contact with their total social network as well as with kin, friends, and spouse/lover than did subjects with schizophrenia. In addition, Controls interacted with friends significantly more often than did subjects with PTSD.

Results for Functional Social Support (not Addressed by Hypotheses)

An exploratory analyses of the functional Social Support variables of Socializing, Tangible Assistance, Emotional Support, and Cognitive Guidance was not related to any of the hypotheses but revealed interesting differences in attitudes toward functional support among the three groups. Tests of differences in group means revealed no significant differences in perceived upset with or perceived helpfulness of the functional Social Support variables of Socializing, Tangible Assistance, Emotional Support, or Cognitive Guidance for kin among the three groups. Results for these variables are shown in Tables 11 and 12, and these results are plotted in Figures 9 and 10. Most of the difference in perceptions of these functions of Social support was found in values for perceived helpfulness of friends and perceived upset with friends. Controls rated their friends as significantly more helpful and significantly more upsetting than the patient groups, with the exceptions of perceived upset with Cognitive Guidance and perceived upset with Tangible Assistance. Controls and patients with PTSD did not differ for these variables, but rated their friends as significantly more helpful and more upsetting than did patients with schizophrenia. Patients with schizophrenia rated Professional Helpers (others) as more helpful and more upsetting than did patients with PTSD. Only one Control subject listed an "other" in the support network, preventing the inclusion of Controls in the analysis of "others". It would appear that patients with schizophrenia view "others" in a similar manner to that which patients with PTSD and Controls view friends.

The ratings for a spouse/lover were difficult to analyze, in that only three patients

with schizophrenia included a spouse/lover in their social networks. Patients with PTSD reported the highest rating of the three groups for perceived upset with Cognitive Guidance (advice) from the spouse/lover. Controls reported a non-significantly lower rating and patients with schizophrenia recorded a significantly lower rating than either group. Patients with schizophrenia recorded a significantly lower rating for perceived helpfulness with Socializing than either of the other two groups.

Table 13 lists correlations between perceived helpful support and perceived upsetting support with the GAF, a Clinician-generated rating that measures psychological well-being, and the SCL-90-R GSI, a self-generated rating that measures overall psychological distress.

With the exception of a negative correlation between perceived helpfulness of the spouse-lover and GSI (a very questionable finding in that only three patients with schizophrenia listed a spouse-lover), no relationships were found between perceived helpfulness and either GAF or GSI. On the other hand moderate to strong correlations were found between perceived upset with support from the total network, kin, and the spouse-lover and GSI for both patients with Schizophrenia and patients with PTSD. This finding may not be interpretable in schizophrenia, since so few patients listed a spouse-lover.

Results For the SCL-90-R

The SCL-90-R revealed unexpectedly large differences among the three groups of this study, as is shown in Table 14 and Figure 11. Subjects with PTSD were significantly

more distressed than subjects with schizophrenia on all scales of the measure. Subjects with schizophrenia were in turn significantly more distressed than Controls in all but the Hostility Scale. This large difference in hostility between subjects with PTSD and the other groups, underscored one of the hallmarks of PTSD, that is extreme anger. Also of interest was the finding that subjects with PTSD endorsed more psychotic experiences than did subjects with schizophrenia. These results as a whole, emphasize the distress that subjects with PTSD experience.

P/V Cluster Types and Adjustment

Within-groups regression models.

In reporting the results of the regression models built according to the plan outlined in the methods section of this paper, this paper shall move away from stating specific results tied to individual hypotheses to more descriptive reporting of exploratory findings. Six regression equations were constructed using the stepwise procedure, two for each group. GAF was used as dependent variable for one set of equations for each group, and the SCL-90-R Global Severity Index (GSI) for another set for each group. Results for these equations are reported in Table 15.

For Controls, neither GAF nor GSI was predicted by a neat cluster of the independent variables measured by this study. The Flexibility and Freedom subscale of the HDYT accounted for less than 15% of the variance in GAF. The Positive Reappraisal Scale of the WOC brought the total variance accounted for up to 28%. Both these variables had a negative loading on GAF. No other variables could be entered using a .05

probability to enter.

In a model using GSI as dependent variable, CTI Emotional Coping was negatively related to GSI, accounting for 37% of the variance, and Number of Kin in the social network contributed an additional 8% to the variance.

For subjects with schizophrenia, only Escape/Avoidance Coping of the WOC and the Emotional Coping subscale of the CTI entered the model, accounting for a total 0f 48% of the variance in GAF. These two variables had a negative loading on GAF, indicating that less use of Emotional Coping efforts were related to more effective functioning. A second model was developed using GSI as dependent variable, that incorporated seven variables and accounted for 82% of the variance in GSI, as Table 15 shows. Creative Activities and perceived Closeness to Kin were negatively associated with GSI, while the other five variables appeared to increase it.

In subjects with PTSD six variables contributed to GAF, accounting for 68% of the variance in GAF. A larger Social Network and greater Frequency of Contact with a Spouse/lover increased GAF. The other four variables, Number of Kin, Closeness to Friends, Planful Problem Solving, and Taking Responsibility as a coping strategy were negatively related to GAF.

A second model using GSI as dependent variable included three variables and accounted for 58% of the variance in GSI. Rated Helpfulness of the Spouse/lover was negatively related to GSI; CTI Superstitious Thinking and WOC Confrontive Coping increased GSI.

Discriminant function analysis.

A Discriminant Function Model was built using approximately 50% of the total sample chosen randomly by the random function of the SPSS statistical program used to analyze the data for this study. The model included five variables, GAF, CTI Categorical Thinking, WOC Distancing, WOC Taking Responsibility, and CTI Emotional Coping which entered the model in the order listed. The model correctly classified 84.44% of the cases selected for use in the analysis and only 62.75% of the cases not included in the analysis (although this classification rate is meaningless for the development sample). Table 16 shows details of the analysis.

Omnibus regression model including all groups.

Table 17 shows the details of an omnibus regression model built predicting GAf for the entire group of subjects. Psychiatric diagnosis was included by creating two dummy variables coding the presence or absence of PTSD and schizophrenia. The two variables coding schizophrenia and PTSD entered the model first, followed by WOC Escape-avoidance coping, CTI Categorical Thinking, and CTI Emotional Coping. These five variables accounted for 53% of the variance in GAF.

A second exploratory model was built using subject who were SMI patients only (Table 18), necessitating one dummy variable delineating PTSD or Schizophrenia. In this model diagnosis entered the model first, accounting for 14% of the variance in GAF. WOC Escape-Avoidance Coping was the only other variable that entered, accounting for an additional 11% of variance.

DISCUSSION

The Control group in this research established a baseline that showed that veterans who are SMI patients are indeed impaired in comparison with a Control group of "normal" men when Psychological Hardiness, Constructive Thinking, and Coping skills are assessed in this study. These markers of psychological strengths all indicated higher functioning in the Control group than in either patient group. Surprisingly, as shown inTable 8, subjects with schizophrenia reported higher scores in many of the test measures than did subjects with PTSD, although clinicians observing both groups might well see that patients with PTSD functioned in the "real world" at a higher level than did the patients with schizophrenia, as indicated by both clinical observations and a significantly higher mean GAF. Patients with PTSD were able to work, lived independently, and maintained adult family relationships with wives and children to a greater extent than did patients with schizophrenia. These activities were shared with clinicians in outpatient therapy appointments and gave an appearance of normalcy that was mainly communicated by clinical conversations. The importance of these relationships was confirmed by the inclusion of a spouse/lover in the networks of patients with PTSD measured by the MSSI data.

The present research has presented many fascinating particulars; exploring these particulars presents some paradoxes. One of these paradoxes, for example, concerns the data for the SCL-90-R, a self-report measure of psychological distress. Scores of patients

with PTSD indicated much higher levels of distress than either patients with schizophrenia or Controls. This contrasts with their overall higher adjustment as indicated by GAF, which included ratings of occupational and social functioning as well as of psychological symptoms. Did these patients live well in spite of their greater psychological distress? Or, did they successfully hide this distress from clinicians who rated them using the GAF? These results prompt the researcher to contemplate the relationship between well-being and psychological distress.

Discussing the results of a complex study requires care in outlining these results. Looking at each piece will inform the reader about specific findings, but may not increase overall knowledge of serious mental illness. Nor will a piecemeal approach necessarily allow much in the way of modification of treatments to increase functioning and satisfaction with life in individuals with SMI. Therefore, this discussion will center around patterns of strengths and weaknesses revealed by the measures administered to the patients with schizophrenia, patients with PTSD, and Control subjects who were participants in this study, attempting to build up a more general picture of the similarities and differences in these patients.

However, a close examination of the pieces is necessary before attempting to fit these pieces into coherent patterns. The organization of this discussion will continue to follow the list of hypotheses until the individual pieces are clear, and then present more overall patterns of results that may allow the both the researcher and the clinician to see the pathologies of schizophrenia and PTSD from the viewpoint of strengths in patients, as

well as weaknesses.

Summary of Results

Psychological Hardiness.

Control Group members scored significantly higher than either patient group, who did not differ from each other on Control or Challenge. Patients with schizophrenia were more committed to improving their lives, according to the DRS, than patients with PTSD, but not as committed as Control Group members (Refer to Table 8 and Figure 4).

Observation of patients with schizophrenia who were actively engaged in the CLM and 51-A programs confirmed this finding. These patients tried hard to live well with their disabilities. These programs have been available to patients for over 25 years, while the CSR program has been available to patients with PTSD for about 14 years. The greater effort shown by higher Commitment scores for patients with schizophrenia may be due to a treatment effect. Treatment efforts of staff at 51-A and CLM are aimed at engaging patients in greater commitment and responsibility for what happens to them.

Constructive Thinking

Control Group members scored higher than either patients with schizophrenia or patients with PTSD on the CTI Scales which demonstrate Constructive Thinking (the Global, Behavioral Coping, and Emotional Coping Scales) and lower on those CTI scales indicating Destructive Thinking (Categorical Thinking and Superstition). Their scores on these scales were generally higher or lower, scoring in a more healthy direction, than standardization samples reported in the CTI Manual (Epstein, 1993), as is shown in Table

19, although no statistical tests were conducted. This was surprising, since Control Group members were probably not better educated than the College male standardization sample, although they are probably older. (Epstein & Meier, 1975 did not report on either of these demographic characteristics, although they did determine that age and Constructive Thinking was positively, significantly correlated in their sample.) The expectation that Constructive Thinking increases with age suggests that this construct fits into the P/V paradigm as a characteristic that changes through learning. This developmental process may have been interrupted or retarded in patients with PTSD because of their traumatization (Berg, et al., 1994; Garte, 1989; Gibbs, 1989).

A particularly noteworthy difference is found in Categorical Thinking Scores. Epstein reports that this scale is not stable over time; persons are less apt to see things in black and white as they age (Epstein, 1993). The Control group for this study reported the lowest score on the Categorical Thinking Scale of all groups reported in Table 9.

The Emotional Coping Scale is similar, in that person's scores generally increase as they age. Epstein reports that people learn to govern their emotions as they get older and respond less to negative emotions; aging apparently teaches persons to see "silver linings". This trend can be seen in Table 9, when the college male and adult samples' scores are examined. The Control Group, a young group albeit probably older than Epstein's College males, scored in between the two standardization samples.

Epstein describes the Naive Optimism Scale as a measure of unrealistic optimism, but acknowledges that this may be both a positive and a negative characteristic to possess.

This may be an example of a double-edged or nonlinear P/V characteristic (Elliot & Lassen, 1997). On the one hand, this can be expressed as "Positive thinking" and motivate the individual to try harder; on the other hand, the individual may do nothing when action is necessary to avoid many problems. Control group members in this study appeared to have a more realistic outlook than either of the standardization groups; they established an impressive level of practical wisdom in comparison with Epstein's standardization samples.

Examining the Schizophrenia patient group within this context reveals a picture of surprisingly high levels of practical wisdom (common sense) in this patient group. Their scores compared favorably with the College male sample and were similar to the adult sample, with the exception of the Emotional Coping and Superstition scales. Patients with schizophrenia had a more realistic outlook on life according to Naive Optimism scale results, confirming clinician opinions that CVAMC patients with schizophrenia were not overly optimistic about their abilities to cope with life.

Patients with schizophrenia recorded higher scores on the Superstition Scale (perhaps to be expected due to the cognitive difficulties found in this group), but did not differ on Categorical Thinking from the adults in Epstein's standardization sample. Given that the patients with schizophrenia were probably older and that scores on Categorical Thinking and Superstition tend to decrease with age and experience, these results may indicate a failure to learn from life experience in the patients with schizophrenia.

The bleakest picture was found in the data from patients with PTSD. As shown in

Table 9, their scores indicated less common sense or practical wisdom than any other group, with the exception of the Superstition and Naive Optimism Scales. Patients with PTSD were more realistic than patients with schizophrenia, although the SCL-90-R Depression scale scores might indicate that this was a type of "Depressive Realism". Patients with PTSD did not differ from patients with schizophrenia in levels of Superstition. Patients with PTSD scores resembled those of the College male group most. This and other findings suggest that one result of traumatization in Vietnam may have been fixation at a late adolescent phase of development (Berg, et al., 1994; Boscarino, 1995; Garte, 1989; Wilson, 1985).

An unanswered question is why the Control Group scored so much higher than Epstein's standardization samples. Epstein states that individuals move toward greater levels of Constructive Thinking once they leave school and begin working. However, this seems too small a step in these relatively young subjects to account for the difference that is apparent in these samples. That the Schizophrenia group shows similarly elevated scores may indicate that more than age is at work here. Beyond commenting that the scores of patients with PTSD scores tend to support clinical explanations of PTSD as freezing the developmental progress of victims, little can be concluded from these data. This leaves a tantalizing puzzle that begs for further exploration.

Creativity Scores.

No difference was noted in the groups' creativity as measured by the How Do You Think (HDYT) Global Scale (Davis & Subkoviak, 1979). However, patients with

schizophrenia scored significantly higher on a HDYT subscale called "Creative Activities" by the authors. This scale is supposed to measure the extent to which subjects translate their creative thoughts into creative behaviors. This may indicate that patients with schizophrenia attempt to *do* more with their creative potential. The activities listed in the scale include activities that are playful as well as artistic. The CVAMC veterans with Schizophrenia diagnoses were financially secure by virtue of their Service-connected Disability income, and may well have been able to devote more effort to play and artistic activities, since these were included in the CLM program. Patients with PTSD and Controls may have been active in similar activities as part of their daily jobs, what Richards et al. (1988) call "vocational creativity", but may not have thought of these activities as "creative".

An alternate hypothesis is that patients with schizophrenia were motivated to be creative by staff efforts to involve them in something other than sitting and smoking. Thus, the honest reporting of creative activities may have been an effect of treatment that attempted to motivate patients to engage their environment in positive, active ways.

Patients with PTSD reported a higher level of Arousal (as measured by this HDYT subscale) than patients with schizophrenia. The Arousal scale asks for endorsement of risk-taking activities, such as motor-cycling, bar fights, skiing and rock climbing. Such activities are associated with Vietnam veterans with chronic PTSD (Hiley-Young, et al. 1995). That this score was lower than that of the Control Group is somewhat surprising. This may have been a welcome treatment effect, since considerable effort was made in

treatment to decrease impulsivity and risk-taking by patients with PTSD. Alternatively, this lower risk-taking score may have been an effect of the younger age of the control subjects.

Coping Skills.

The teaching of coping skills was a focus of both the CLM and CSR treatment programs. The Planful Problem Solving and Confrontive Coping Scales of the WOC (both considered to measure problem-focused coping strategies) indicated that this treatment focus, emphasizing planning and assertiveness in solving problems, may have been more successful with the Schizophrenia patient group than with the PTSD patient group. The schizophrenia patient group's responses indicated that these patients did attempt to use planning in coping with problems; indeed, their scores were higher than those of the Control Group. They were also more Confrontive than Controls, a response that is unexpected in patients with chronic schizophrenia whose tendencies to withdraw are well-documented (Meehl, 1990).

Patients with PTSD used less Planful Problem Solving and had the highest level of Confrontation among the three groups, indicating that treatment efforts to teach these coping skills may not have been effective. However, the Schizophrenia Treatment Program has been available for patients for over 24 years (Mean time since VA diagnosis = 14.9 years) and the PTSD treatment program for less than 15 years (Mean time since diagnosis = 3.67 years). This difference in length of treatment ($t_{62} = 6.61$, $p < .0005$) may have to do with these factors rather than any inherent ability to cope in patients with

schizophrenia that patients with PTSD do not possess.

However, when emotion-focused coping was measured by the Escape Avoidance Coping Scale, there was no significant difference between the patient groups, while the Control Group scored significantly lower in use of this strategy. Folkman and Lazarus (1988) note in the WOC Manual that this scale is not either problem-focused or emotion-focused.

Two other more purely emotion-focused Coping Scales, Positive Reappraisal and Distancing, were also measured in this study. The Schizophrenia patient group scored significantly higher than either patients with PTSD or Controls in the use of Positive Reappraisal, and higher than Controls in the use of Distancing. These differences may also be due to treatment effects, since a frequent instruction from staff at CVAMC schizophrenia treatment programs is to find the "positive part" of any problem.

The use of Distancing Coping and Confrontive Coping by patients with schizophrenia and patients with PTSD may be more complex. Taking the mean for the Control Group for Distancing and Positive Reappraisal as a benchmark reveals that patients with schizophrenia used this strategy much more than Controls. As stated previously, this may be a treatment effect.

Withdrawal from a problem as a coping mechanism may be expected in patients with schizophrenia, whose tendency to distance themselves from a variety of stimuli is well documented (Meehl, 1990); confronting a problem is not to be expected. The situation is reversed in patients with PTSD, who are likely to be noisily confrontive in problem

situations (Garte, 1989; Gibbs, 1989; Green et al., 1990; Herrmann & Eryavec, 1994; Leopold & Dillon, 1963; Wilson, 1985) and are not generally known to distance themselves from problems. The two patient groups did not differ significantly in Distancing or in Confrontation.

Efforts to teach coping skills to patients with schizophrenia included instructions to face problems and to plan ways to solve problems while thinking positively about them. Efforts to teach coping skills to patients with PTSD included instructions to back away long enough to think of a plan for coping other than to attack or retreat. The patient groups were not significantly different for these two scales, perhaps because treatment efforts have been somewhat successful, although the difference between the patient groups and the Control Group indicates that more training in coping could be useful for both patient groups.

Structural Social Support

Hypotheses concerning structural aspects of social support were generally supported, with the exception of the hypothesis concerning size of the social network. The finding that patients with PTSD listed significantly fewer persons as supports in the entire network was surprising. Three patients with PTSD listed only one person in the network, a friend in each case. Given that this structural aspect of social support, number of persons in the social network, has been found to have a very strong positive relationship with physical and mental health, especially longevity, the small number of persons considered important in their lives by patients with PTSD is alarming (Burt, 1984, 1986; Burt &

Guilarte, 1986; Cobb, 1976; Cohen, 1985; House, et al., 1988).

Patients with PTSD also listed fewer kin as social supports than either Controls or patients with schizophrenia. This small network size did not affect reported closeness, frequency of contact, or perceived helpfulness of support from the network, kin, or spouse-lover.

Patients with schizophrenia's reports of their structural social support systems agree with the literature for the most part (Anderson et al., 1984; Beels & McFarlane, 1982; Cutler et al., 1987; Hirschberg, 1985; Denoff & Pilkonis, 1987; Meehl, 1990; Sullivan & Poertner, 1989). They listed significantly more kin than either of the other groups, fewer friends, and more "others" (health-care professionals from CVAMC for the most part). Patients with schizophrenia interacted significantly less frequently with those in their networks than did the other two groups. However, this lower frequency of interaction did not translate into reports of feeling less closeness to the network or to kin for the schizophrenia group.

Functional Social Support

The results for functional social support for the three groups were remarkably similar, with a notable exception for ratings for perceived helpfulness and perceived upset with support from friends. Controls gave friends the highest ratings for both upset and helpfulness; patients with schizophrenia gave friends the lowest ratings, with patients with PTSD in between and significantly different from either group. All three groups rated kin in a similar manner, but differed greatly in rating their friends. It would seem that

friendships are important relationships for normal adult males and patients with PTSD, but not for patients with schizophrenia.

Patients with schizophrenia reported significantly less closeness to friends than both other groups. However, this lower closeness was significantly positively correlated with perceived helpfulness in these friends. (Refer to Table 9 for details of this complex relationship.) Patients with schizophrenia, who reported feeling significantly less closeness to their friends than either of the other groups, were much more satisfied with the helpfulness of these friends than were Controls. This replicates others findings that, for schizophrenics, less intimate relationships with non-kin may be more satisfying (Denoff & Pilkonis, 1987).

A major finding in the work of social support researchers who attempt to separate perceived helpfulness of support from perceived upset with support has been that both physical and psychological illness are associated with perceiving support as upsetting, while there has been no consistent finding that perceiving support as helpful is associated with increased physical or mental health (Cohen & McKay, 1984; Cohen & Wills, 1985; Fiore, et al., 1983; Hirsch, 1985; Hirsch & David, 1983; Hirsch, & David, 1983; Kiecolt-Glaser, at al. 1986; Pagel, et al., 1987; Rook, 1984, 1990). Please note that the important quality here is not that support is lacking or deliberately unhelpful. The key is that support efforts are *perceived as upsetting*, regardless of intent or quality. An example of this sort of thing might be a parent who attempts to comfort an adult child who has suffered the death of an infant with reminders that the adult child is young enough to have more

children. These things happen, and are upsetting, and do correlate with greater levels of depression, anxiety, etc. (Cohen, et al., 1985; Fiore, et al., 1983; Hirsch, 1980; Hirsch, 1985; Kiecolt-Glaser, et al., 1988; Pagel, et al., 1987; Rook, 1984; Rook, 1990).

The usefulness of the ability to separate out perceived helpfulness and upset with support from various subgroups of the social network can be illustrated with a curious set of correlations that was noticed when the overall correlation matrix was perused. Perceived upset with Cognitive Guidance from the spouse/lover was strongly correlated with CTI variables (CTI Global: $r = -.76$, $p < .0005$; CTI Behavioral Coping: $r = -.61$, $p = .006$; CTI Emotional Coping: $r = -.60$, $p = .008$; CTI Naive Optimism: $r = -.53$, $p = .02$; CTI Categorical Thinking: $r = .58$, $p = .01$; CTI Superstition: $r = .49$, $p = .04$) and emotion-focused coping variables of the WOC (Distancing Coping: $r = -58$, $p = .010$; Positive Reappraisal: $r = -.53$, $p = .02$) in the case of patients with PTSD only, but not for Controls or patients with schizophrenia, for whom very weak correlations were noted. The signs of these correlations were in directions that showed that the more upset with Cognitive Guidance the patient was, the less effective was his constructive thinking and emotion-focused coping.

No hypotheses were put forth concerning this phenomenon. Thus, it is noted with great caution, only as an example of the detailed data available from the use of the MSSI. However, these data may indicate that while friends are of great importance in the social support of patients with PTSD, the spouse/lover may play a singularly important role. This issue is worth following up with research designed to ferret out whether there may be a

connection between perceptions that the spouse/lover gives upsetting cognitive guidance and a lack of practical wisdom and competent emotion-focused coping in patients with PTSD. Not only do the above results present a risk of Type II error, but the cross-sectional nature of the data do not allow the researcher to judge whether upsetting advice or lack of practical wisdom and emotion-focused coping drives the relationship. Patients with PTSD mention chaotic and upsetting relationships with their spouse/lovers frequently in both individual and group therapy settings at CVAMC. Thus, research into the role of the spouse/lover as a potential aid in alleviating the severity of PTSD symptoms might be indicated.

Upset with support from friends did not correlate with GSI in patients with schizophrenia. Upset with support from "others" (primarily CVAMC staff) was strongly correlated with GSI for patients with schizophrenia. These findings regarding functional support indicate that, despite differences in structural social support (i.e. smaller, less intimate networks are more satisfying for patients with schizophrenia), functional support appears to influence psychological health in SMI patients in a way that coincides with the literature. In the Control Group, there was no relationship between perceived helpfulness or upset with support and either GAF or GSI scores.

Symptomatology: The SCL-90-R

The serendipitous addition of this measure added additional dimensions to this study. Not only do the results for this measure give a clearer picture of the distress in which SMI patients find themselves, but it also provides an additional dependent measure

for regression models describing levels of adjustment in SMI patients. This was especially fortunate in that GAF and GSI are not only predictors of opposite conditions, but also derive from different sources. The GAF measures positive adjustment and/or psychological health. It is a measure of the outer experience of the subjects assessed by another, the clinician. GSI measures negative adjustment and/ or psychological distress. It is a measure of the inner experience of the subject; the subject describes his own state.

Table 14 shows a remarkable pattern of results for subjects from the three groups of this study. Briefly, Control subjects are least distressed as measured by all scales of the SCL-90-R. Patients with PTSD were the most distressed. Their responses record a picture of persons crying loudly in anguish. Their distress may provide clues as to why treating their disorder is difficult. The attention of these patients is turned inward to their discomfort and anguish.

Within-Groups Regression Models

The regression equations predicting GAF and GSI refine and focus the data listed and briefly discussed thus far. No definitive set of P/V characteristics could be found in these data predicting either GAF or GSI for the Control group, although the models for control subjects accounted for 28% of variance in GAF and 46% of variance in GSI. (See Table 15.) This may illustrate the old adage that normal people are different from each other while abnormal people are similar in their pathology.

For patients with schizophrenia and patients with PTSD, the situation is less clear. As Table 15 shows, equations predicting GAF for Schizophrenia and patients with PTSD

accounted for 48% and 68% of variance respectively. However, only the WOC Escape-Avoidance scale and CTI Emotional Coping scales contributed to the model for patients with schizophrenia. These scales describe characteristics that are presumably amenable to change through learning, as argued in the Introduction. Lower scores on each of these scales predicted higher GAF. No Social Support variables entered the model. This does not give the clinician much to work with in designing treatment programs to increase functioning for patients with schizophrenia, except to continue a treatment focus to increase positive emotions and logical planning to cope with problems.

The model predicting GAF for patients with PTSD may prove somewhat more useful in a clinical sense. Social Support variables accounted for over 53% of variance in GAF. Several structural Social Support variables predicted GAF, namely, larger network size, fewer kin named as part of the network, greater rated closeness to friends, and greater frequency of interaction with the spouse/lover. Recalling that patients with PTSD reported the smallest social networks and that friends figured prominently in their networks, the finding lends emphasis to treatment efforts to encourage patients with PTSD to increase social interactions, particularly interactions outside the family. Since Planned Problem Solving and Taking Responsibility also contributed to the model, adding training in these areas to Social Skills Training might increase the effectiveness of treatment for patients with PTSD in settings where these treatment modalities were not part of the program. Since Social Skills and problem-solving modules were part of the training program at CVAMC, this model suggests that these efforts were already bearing

fruit in increased GAF ratings in these patients.

A much different situation was presented by the equations predicting GSI for the subjects with schizophrenia and patients with PTSD. Higher levels of CTI Superstition, lower perceived helpfulness of the spouse/lover, and greater Confrontive Coping efforts were associated with increased GSI in patients with PTSD, accounting for more than 57% of the variance in the dependent variable. Including this set of variables in a PTSD treatment program presents a challenge to the clinician, although the problem solving skills module at CVAMC attempts to teach alternatives to angry confrontation as a coping strategy. Attempts to increase the use of logic, hence reducing personal superstitious behaviors is also part of treatment. Social skills training might lead to insight into the reasons for a spouse/lover to appear to be less helpful. These bits and pieces are difficult to work into a treatment program.

The model predicting GSI in patients with schizophrenia was the most complex and included both Social Support variables and variables indicative of psychological strength ("P" variables). This model accounted for over 81% of the variance in distress measured by the GSI. Social Support variables of higher levels of perceived upset with kin and the spouse/lover were prominent, as was closeness to kin. Lower Commitment, higher Confrontive Coping, and higher Categorical Thinking were also associated with higher GSI. The inclusion of these variables in a model predicting psychological distress makes sense; these characteristics do not describe the clinically noted picture of the higher functioning schizophrenia patient. However, that greater self-reported Creative Activities

contribute almost 6% to the model predicting psychological distress is counter-intuitive. Perhaps engaging in creative pursuits takes attention away from coping with reality for a schizophrenia patient. An alternative hypothesis is that the activities claimed by these "patients may not be completed, leading to frustration, or, if completed, may not increase the patients' ability to cope with reality. Or, since creative activities may covary with psychopathology, both creativity and symptoms may be indicators of innate qualities or "diathesis".

However, this model gives the clinician many avenues to increase the efficacy of treatment for patients with schizophrenia. Reducing Confrontation and Categorical Thinking in coping has been part of the treatment program at CVAMC for some time. Those patients who are less committed to improving their lives apparently suffer more psychological distress. The CLM program goals focus on increased commitment for patients. The program also aims to increase opportunities for interactions of low intimacy with as many non-kin as the patient can tolerate, thus indirectly reducing closeness to kin, especially physical closeness during the time spent at the CAVMC. Less contact may reduce the level of upsetting interactions with both kin and the spouse/lover, although only three of the schizophrenia group listed a spouse/lover. Thus, the usefulness of this variable in any predictive model is severely limited, although being upset with the spouse/lover was apparently an important enough predictor of GSI for these three persons to be included in the equation for the entire group. This may reinforce the notion that close relationships are sources of significant stress for patients with schizophrenia.

A Discriminant Function Model Predicting Group Membership

One important indicator of the worthiness of the idea that persons in different categories vary according to groups of personal characteristics (which have been called P/V characteristics in this study) is a Discriminant function model that attempts to group these persons using proposed P/V characteristics. Please refer to Table 16 for this model. This table, describing a model developed with a randomly chosen 50% of the total sample, shows that a few of the variables tested in this study for efficacy as P/V characteristics were moderately useful in discriminating between members of the three groups, patients with schizophrenia, patients with PTSD, and Control subjects.

GAF, the most important discriminating variable, was a clinically-derived description of the overall status of the subject, not a characteristic that might provide protection or vulnerability. Two of the other four variables (Categorical Thinking and Distancing as a coping mechanism) that entered the model were variables that described both Type I and Type II vulnerabilities. The two remaining variables (Taking Responsibility as a coping mechanism, and CTI Emotional Coping) were variables that described protective factors. The presence of variables that describe both protective and vulnerability factors is encouraging. An examination of the means for these variables showed that vulnerability was greater in expected ways for the two patient groups. The schizophrenia patients had a higher mean for Distancing coping, which was listed as a Type I vulnerability characteristic, although there was no significant difference between the patient groups. The PTSD patient group had a non-significantly higher mean for

Categorical Thinking, which was listed as a Type II vulnerability characteristic. The expected vulnerability characteristics were present in the patient groups at levels sufficient to delineate a difference between them.

This model composed of a descriptive factor (GAF) and equal numbers of factors describing protection and vulnerability classified almost 63% of the validation sub-sample correctly. This is satisfactory for the exploratory work done in this study. This model may not yet be useful for diagnostic or treatment purposes in a VAMC setting, but it suggests that clusters of P/V characteristics useful for treatment-planning purposes may be developed in time.

An Omnibus Regression Model Predicting GAF

Table 18 shows details of an omnibus regression predicting GAF in all three groups, which included diagnosis coded as two dummy variables. The model accounted for 55% of the variance in GAF. Diagnosis for schizophrenia was the first variable that entered the model, followed by diagnosis for PTSD. Thus, a description of the group from which the subject came was, as in the Discriminant function model, more important than any P/V characteristic. The results for these two statistical models testifies to the strength of historical methods of approaching mental health. Mental weaknesses appear to be more noticeable and definitive for classification than mental strengths.

Three other variables were part of the regression model. Two of these, Escape-Avoidance as a coping mechanism and Categorical Thinking increase vulnerability (as reflected in its' positive contribution to predicting GAF); the third, Emotional Coping can

be protective. Examination of the means for these vulnerability-describing variables in Table 15 confirms that Escape-Avoidance coping is most prominent in the patient groups. Categorical Thinking is most prominent in patients with PTSD, significantly less prominent in Schizophrenics, and significantly the least prominent in the Control subjects. Conversely, CTI Emotional Coping, a protective factor, is most prominent in the Control subjects, and significantly less present in patients with schizophrenia and patients with PTSD, respectively. While three variables do not compose a very useful cluster of P/V characteristics for treatment-planning purposes, this model encourages research to refine these suggestive results that may yield a model of psychological strengths that would lead to more effective treatment programs.

Since diagnosis entered the regression model first, indicating the importance of clinically overt and classifiable mental illness in describing these subjects, another regression equation was composed using only patients with schizophrenia and patients with PTSD. This model accounted for 26% in the variance in GAF, too little to be of much use overall, but the model is interesting in its composition. Diagnosis was the first variable that entered the equation, confirming that the traditional distinctions on diagnosis are useful. Escape-Avoidance Coping was the only other variable that entered the model, confirming that treatment programs designed to encourage patients to engage in Planful problem-solving are likely to have merit.

Characteristics That Protect or Make Vulnerable in Different Groups

The results of this study present a mixed picture regarding evidence supporting the

notion that persons with different classes of serious mental illness can be seen as possessing distinct sets of characteristics that protect or increase vulnerability to the individual's disorder. The set of measures that were tested as P/V characteristics can be grouped as (1) Social Support variables and (2) measures of personal resourcefulness (Hardiness, Constructive Thinking, Creativity, and Coping).

Certain of the measures tested as possible P/V characteristics can be seen as innate or part of the personality. These would include the Hardiness components of Challenge and Control, and Creativity as indicated by the HDYT. Control subjects were significantly different from patient subjects in these characteristics, who did not differ from each other. Certain other characteristics, such as the scales of the CTI, Hardiness Commitment, and the WOC scales can be viewed as subject to change through learning. In addition, all of the significant differences in means between the two patient groups were found in these variables. All the non-social support variables entering the regression equations had to do with coping of some sort.

Structural social support variables (larger network size, fewer kin named) differed between the patient groups as expected, but only contributed to predicting GAF in patients with PTSD. The same situation occurred for variables related to functional social support, greater closeness to friends, more frequency of interaction with the spouse/lover. The inclusion of these social support variables in a regression model predicting adjustment (GAF) constructed with only PTSD patients underscores the probable importance of social support in treatment for PTSD patients.

However, the study did not demonstrate a clear set of P/V characteristics for the separate patient groups, the hypothetical Type I vs. Type II distinction. Coping skills were taught in treatment programs for both groups of patients, and these results can be interpreted as reflecting more years in treatment for patients with schizophrenia, as well as a weak indication that P/V characteristics serve to increase mental health if they can be identified and utilized in treatment programs designed to increase strengths. Either interpretation could be useful to clinicians at CVAMC in that the information gleaned in this study can guide treatment plans in the future.

When vulnerability factors are emphasized, as in the within groups regression models using the GSI, a global indicator of psychological distress, little can be determined by studying the models for patients with PTSD and Controls. However, the model predicting GSI for patients with schizophrenia is rich and descriptive of protection and vulnerability characteristics recognized in the literature. The social support variables of greater closeness to kin, being upset with kin, and upset with a spouse/lover (only 3 spouse/lovers listed) contributed significantly to GSI. In the social support literature, upset with support is strongly associated with mental illness and anguish. In the schizophrenia literature, greater closeness to kin, sometimes termed enmeshment when occurring in extreme form, is associated with greater distress and lower functioning.

Confrontive Coping, Categorical Thinking, and lower Commitment all contributed to GSI scores in patients with schizophrenia in this study. Treatment plans at CVAMC currently include interventions to overcome these particular vulnerabilities. These

characteristics are familiar to clinicians who work with people with schizophrenia and do indicate lower functioning; the model rings true.

A puzzle is seen in this model with the inclusion of the Creative Activities subscale of the HDYT in the model. This measure contributed about 9% to predicting the variance in GSI. Individuals at CLM who spent a lot of time in creative pursuits tended to be those who also withdrew from social activities at the Center. They also gave more evidence of loose associations in their speech and interactions with others. Seen in this light, creative activities may have acted to "increase vulnerability", acting as an indicator of diathesis in schizophrenia, if one connects loose associations with divergent thinking, an indicator of creativity.

This preliminary study has provided some weak indications that looking for indicators of psychological strengths may have clinical and scientific value. There is more evidence for factors that indicate psychological strengths in patients with PTSD than in patients with schizophrenia. That is, the regression models showed more variables that predicted GAF than predicted GSI in patients with PTSD. Conversely, more indicators of psychological weaknesses can be tied to an outcome measure of psychological distress in patients with schizophrenia than in patients with PTSD. These relatively weak findings suggest that the search for P/V characteristics continues to be valuable, although no tidy bundle of highly predictive measures has been identified as yet.

Differences and Similarities in Groups of SMI Patients

Patients with chronic schizophrenia or PTSD in this study exhibit both similarities

and differences. Psychotic behavior is part of each syndrome, although the nature of psychotic experience differs for the two groups of patients. Hallucinations and delusions in PTSD have to do with the traumatizing experience of the patient, but may vary considerably in schizophrenia (Feeney & Noller, 1996; Fontana & Rosenheck, 1994; Hiley-Young, et al., 1995; Meehl, 1990; Mirsky & Duncan, 1986; Neuchterlein, 1986; Wilson, 1985). The overall presentation and personality style of patients with PTSD is more "colorful". A greater degree of emotion, more dominant and extreme behavior, including impulsive and risky behavior is the norm. These patients can be charming in social situations; they interact with great humor if in the presence of other veterans. Being with a Vietnam veteran with PTSD puts one in mind of being with late adolescents in general. Their posture, vocal patterns, appearance, and emotional volatility are reminiscent of high school students. This impression is consistent with the notion that one effect of severe traumatization is fixation at the developmental stage of the patient at the time of traumatization (Garte, 1989). Military training, which emphasizes the immediate obedience of all orders, may contribute to this late adolescent tendency to group identification and lack of individuation.

The most noticeable characteristics that clinicians experience in patients with schizophrenia is often their ambivalence - in their thoughts, in social interactions, and in motivation (Meehl, 1990). As an example, consider the first encounter with a female patient with schizophrenia (a veteran who was not included in the study) that the author had was during a trip to a local mall for lunch, shopping, and a movie. These "Friday field

trips" were a regular part of the treatment program, and patients had to attend regularly or they would not be permitted to take part in other parts of the program. (Individual and group therapy was also required and never withheld as an inducement to attend program events.) The veteran led the author to the "best restaurant", said that she did not like to window shop, and suggested a movie to see together. The afternoon was pleasant; the conversation was "normal".

However, on Monday, the patient was distant and seemed confused. She talked at length with another staff member upon whom she depended for comfort and guidance. After this consultation, she came to the author and explained that she was sorry that she was acting "weird", but she could not remember what we had done on the field trip. She asked what the movie was about, responding that she really wanted to see it and wished she could remember it, but being with a new person had raised her anxiety levels to the point that she could not remember; if she had known this would have happened she would have taken an optional dose of medication to lower her anxiety; maybe she would "just take the anti-anxilytic every Friday; what do you think?".

This sort of interaction exemplifies clinical experience with many patients with schizophrenia. Their behavior does not match their beliefs or their communications about their behavior. This is the sort of "split" referred to in the original meaning of the term "schizophrenia".

The Meaning of Social Support for SMI patients

The results of this study point to social support (network size, number of kin,

closeness to friends, and frequency of contact with a spouse/lover) and coping strategies (WOC Escape-Avoidance, Planful Problem Solving, Taking Responsibility, and CTI Emotional Coping) as the particular psychological strengths that were found to have significant contributions to within-groups regression models describing patients with PTSD and with schizophrenia. Thus, listing more people, feeling close to friends, and frequent interactions with a "significant other" is adaptive for patients with PTSD. But, the regression model for the patients with schizophrenia shows that social support was not important in improving functioning in patients with schizophrenia in this study. This suggests that coping skills that apparently can be learned improved functioning (GAF) in both groups of patients.

Greater levels of functioning occurred in the presence of satisfactory social support in patients with PTSD. Such social support did not enter the predictive model in patients with schizophrenia. Thus, based on these models as well as clinical experience, treatment plans for PTSD should include attention to improving social both structural and functional social support, as well as the teaching of appropriate-to-the-situation coping skills. Of course, these treatment interventions would be only part of a treatment plan that emphasizes interventions also addressing the relief of primary symptoms of traumatization.

The omnibus regression model and the discriminant function model underline these notions. Diagnosis and GAF an additional measure closely related to diagnosis, entered the models first and were most descriptive of the groups in this study. Several coping variables were the only other variables that predicted group membership. Social support,

predictive of PTSD patients' functioning, did not have a strong enough influence on patients with schizophrenia to enter either classification model. Creativity and Psychological Hardiness, presumably more stable over the life span and perhaps reflections of innate personality, did not discriminate among two groups of patients and Controls. Coping strategies, presumably learned, were important in predicting functioning, whether evaluated by the within-groups models, a discriminant function model, or the omnibus regression model.

The clinical implication of this research seems clear. Treatment should focus on increasing adaptive behaviors that are amenable to learning. Apparently this would include coping, but not behaviors related to creativity or Psychological Hardiness. This conclusion is tentative at this point, in that this research was correlational in nature and not longitudinal. Further inquiry is needed that tests learning longitudinally, as well as including variables that indicate the presence of other psychological strengths. As with all scientific inquiry, replication of these findings would strengthen any conclusions that might be drawn.

In addition to the absence of social support variables in the model predicting greater functioning in patients with schizophrenia, it is noteworthy that the coping variables that entered the model predicting GAF were ones that are negatively correlated with GAF. It is as if increased functioning must be described by the absence of pathology in these patients. Since the GAF is a clinician-generated outcome rating, and the rater saw patients only in a professional setting, it is possible that the GAF may have been influenced

primarily by such absence of symptoms in patients with whom the rater was less familiar. The interview gave information about the basics of the patients' living situation, such as employment, family, education, and living situation. Patients with schizophrenia did not try to present their living situations as exemplary as did patients with PTSD. The measures used in this study were not yet analyzed when the GAF rating was assigned and this could not have contaminated the rating. All of these factors may have resulted in the clinician assigning more weight to the absence of pathology than to occupational and social functioning .

However, social support appeared to have an influence on the level of distress, expressed by GSI, in a within groups model predicting GSI. Increased closeness to kin and perceiving kin and the spouse/lover as upsetting predicted greater distress. This seems similar to the functioning of social support variables described by Denoff & Pilkonis (1987) and Beels & McFarlane (1982). Greater enmeshment and contact with kin and high EE was associated with lower functioning in patients with schizophrenia in these studies. In the current study, social support for patients with schizophrenia did not contribute to greater functioning, but was associated with increased distress. The lack of self-rated social support as part of the model predicting GAF in Schizophrenia and its presence in the model predicting distress is notable and underlines the notion that social support may have little ability to increase functioning in patients with schizophrenia, but has much ability to increase harm (Meehl, 1990; Neuchterlein, et al., 1992; Zubin et al. 1983).

Satisfying Social Support contributed to greater levels of functioning for patients

with PTSD. This is remarkable when the paucity of social interactions reported by patients with PTSD is taken into consideration. Several patients would list only one person as a social network member. Many PTSD patients complained informally about having to attend large gatherings of family at holiday times. Most of these patients had been divorced more than once and could not maintain cordial relationships with a spouse/lover. Yet, greater frequency of contact with a spouse/lover and a larger network were positive contributors to GAF for the patients with PTSD. Seeing the spouse/lover as helpful lowered the level of distress (GSI). Efforts to increase social support could well be given greater emphasis in PTSD treatment than in Schizophrenia treatment.

P/V Characteristics that may be Innate vs. Learned in SMI Patients

An interesting detail of this research study is that the non-social support variables that entered the various models (within-groups regression, discriminant function analysis, and omnibus regression) for patients appear to be amenable to change through learning. Patients at CLM are taught to engage with problems and to use problem-focused coping strategies. Thus, it makes sense that self-rated lower Escape Avoidance (WOC) and lower self-rated Emotional Coping (CTI) would be associated with increased GAF, as they may be related to successful engagement with treatment.

It also makes sense that greater Confrontive Coping (WOC), greater Categorical Thinking (CTI), and lower Commitment would be associated with greater psychological distress. These characteristics are targets of treatment at CVAMC. Treatment programs teach patients to be more confrontive (therefore less detached), more committed

(therefore less withdrawn), and to consider more alternatives (therefore less categorical) in their behaviors.

Patients who learn new behaviors related to these characteristics not only appear to function better, but receive more approval and reinforcement from staff, thus presumably lowering their psychological distress. Internalizing these behaviors may eventually increase functioning as well, increasing GAF. Only longitudinal research can address this possibility directly.

An exception to the idea that P/V characteristics that affect outcome can be changed by learning occurred with the Creative Activities scale of the HDYT. Behaviors related to this creativity variable are taught at CLM. A large part of treatment has to do with arts, crafts, and creative writing (A bi-monthly newspaper was published by the patients at the time of this research, but is not published now. The patient who served as "Editor", not included as a research subject, "graduated" from the program and is now working in a semi-sheltered job with CVAMC.)

On the other hand, several of the patients whose behavior appears to be extremely psychotic appear to have genuine creative gifts and produce remarkable paintings, photographs, and poetry. Their self-rated creative actions contributed to predicting their presumable higher GSI scores, according to this model. No effort has been made to isolate the scores of these patients from the group means, as is appropriate in this research design. The experimenter remained blind to individual subject's assessment results. It is not clear whether learning to apply innate creativity to activities actually increases psychological

distress or coexists with distress in individuals whose psychotic state leads them to the expression of creativity. This question might best be answered by a small n study.

In the patients with PTSD, P/V characteristics subject to change through learning predicted both higher functioning (WOC Planful problem solving and WOC Taking Responsibility Coping) and psychological distress (CTI Superstitious Thinking and WOC Confrontive Coping). Patients with PTSD are taught to plan their responses to problems and to assess their share of the responsibility for difficulties before assuming total responsibility. These learned responses contributed very little to the model when compared to social support variables, but did contribute to 14.29% of the variability in the model. Learning to approach problems in a less emotional way in the presence of satisfying social support increases functioning in these patients. This finding is also useful in planning treatment programs.

Too much superstitious thinking and aggressively confrontive coping was associated with greater psychological distress in patients with PTSD. As a group these patients reported extremely high levels of distress in every scale of the SCL-90-R. Both CTI superstition and WOC Confrontive Coping are targets of training at the CVAMC PTSD treatment program (CSR). With an outcome variable that shows a restricted range of responses because of the extremely high scores, the identification of two P/V characteristics that are both subject to learning and targets of current treatment is encouraging. This cross-sectional and correlational study allows limited conclusions. One inference may be that reducing aggressive confrontation and superstitious thinking in these

patients lowers their psychological distress.

Social Support and Treatment Planning

The Within-groups Regression models clearly show that appropriate social support can improve functioning for patients with PTSD but do not contribute much to the level of functioning of patients with schizophrenia. Efforts to increase social interactions with friends and spouse/lover can be beneficial to patients with PTSD but may only increase stress and distress for patients with schizophrenia, although the application of this finding to patients with schizophrenia must be viewed with caution because of the small number who listed a spouse/lover.

Table 12 and Figure 10 show the differences in attitudes about upsetting functional social support of patients with schizophrenia or patients with PTSD. Recall that perceived upset with advice from the spouse/lover was strongly correlated with less effective Constructive Thinking and emotion-focused coping. Also recall that patients with PTSD reported the smallest social networks. Determining the most effective level of social Support from friends and significant others may require a delicate balance between intimacy and isolation.

Final Thoughts and Implications for Future Research

The results of this study suggest that treatment efforts have been moderately successful for patients with schizophrenia. Means of non-social support variables that are subject to change through learning (CTI and WOC scales) were significantly higher in patients with schizophrenia than in patients with PTSD. Means of other non-social support

variables tied to P/V characteristics that may be innate, perhaps representing diathesis, were similar in these two groups of patients (HDYT creativity and DRS Hardiness). This correspondence was not perfect; the DRS Commitment and HDYT Creative Activities were significantly higher in patients with schizophrenia. These characteristics may be more amenable to change through learning than other scales of these measures and are targeted by current treatment programs at CVAMC.

Means of several variables that may be subject to change through learning were similar in the two patient groups and suggest areas where treatment efforts might be increased (CTI Superstition, WOC Escape-Avoidance, WOC Distancing, and WOC Confrontive Coping). The Confrontive Coping scale presents a small puzzle. Treatment efforts at CLM were aimed at increasing Confrontation in patients with schizophrenia while treatment at CSR attempted to reduce aggressive confrontation in patients with PTSD. The means for the two groups were just short of significantly different, with the scores of patients with schizophrenia lower than those of patients with PTSD, but higher than scores of the control group. The question of how the treatment emphases affected these subjects who inevitably were subject to demand characteristics of both questionnaires and their treatment cannot be addressed by this study.

Since these results appear to validate the usefulness of treatment, encouragement is offered to CVAMC to continue efforts to teach problem-solving skills and the use of logic and positive thinking in living well. The aims of the CVAMC programs serving the two patient groups differ. Out-patient treatment for patients with schizophrenia aims to keep

veterans out of the hospital by supporting their efforts to live "outside". Only a few patients are encouraged to leave the VA community, partly because their Service-connection assures them of adequate income without attempting to work.

Treatment for PTSD patients is designed from the beginning to return the patient to their best lives away from the VA system. Service-connected benefits are granted for limited times and need to be renewed for most PTSD patients, a cumbersome process. The perusal of these results might suggest that at least some PTSD patients would benefit from a more permanent service-connected relationship with the VA system. At present, out-patient treatment is frequently interspersed with periodic substance-abuse treatment or criminal prosecution, both of which interrupt out-patient group treatment at CSR.

A major unanswered question is why the tests of means show patients with schizophrenia to be "healthier" than patients with PTSD while GAF shows them to be worse off. Experience with these patients supports the GAF ratings as more descriptive of functioning in patients with schizophrenia than the study measures. Patients have learned a great deal about coping and common sense according to the measures. However, their behaviors in their daily interactions do not match these scores very well.

For example, one patient has been an easy target for panhandlers on the street while traveling by bus to the CLM program. His income allows him to carry plenty of money for his lunch and a newspaper or two. It was learned that he gave his money freely to anyone who asked. An intervention was designed in which all staff approached him several times a day and asked him for money in various ways so that he could practice

refusing to give his money to others. This intervention appeared to work for a month or so, but then needed to be repeated. This man has no memory problems; both his recent and remote recall abilities seem to be intact. He appears to give to beggars because the stress of refusing in a strange situation, especially if the panhandler is aggressive, is aversive. Stress in real situations may interfere with the ability of a patient with schizophrenia to use the knowledge possessed, according to results of this study.

An alternative hypothesis is that the diathesis load of schizophrenia interferes with patients' applying the learning they have attained, according to the results of this study. Why do the daily lives of patients with schizophrenia fail to reflect the Constructive Thinking and coping strategies that their test results suggest that they possess? This question about the nature of serious mental illness, particularly schizophrenia, echoes through much of the research that has been published. Finding an answer to this question might tell us something important about the nature of schizophrenia, itself. One brief study of 35 patients cannot give definitive answers, but this work presents the question very clearly. Longitudinal research designed to measure learned and innate P/V characteristics, outcome from several angles (other-rated, self-rated, and objective measures), and satisfaction with functioning is needed. Perhaps the measures show more progress than the GAF might indicate. A longitudinal approach would show whether this is so. This research should also include measures of stress, perhaps direct measures like the PANAS (Watson, Clark, & Tellegen, 1988) and Life events scales (Holmes & Rahe, 1967; Rahe, 1958) and less direct measures, the Hope Inventory (Staats, 1987; Stassen & Staats, 1988).

Much of this discussion has focused on applications of the findings of the research to treatment efforts. A less pragmatic approach concerns whatever impact these findings may have on our understanding of the etiology of SMI. Divergent thinking, or loose associations are an accepted phenomenon in schizophrenia. This research suggests that this characteristic increases vulnerability for patients with schizophrenia. Constructive Thinking is not defined as an accepted part of the diathesis load of schizophrenia. However, these patients with schizophrenia gave evidence that they had *learned* to think constructively, and that this gave them some protection from their illness, as reflected by the increased GAF rating. Further study may lead to the discovery of other characteristics that give protection or vulnerability in the case of schizophrenia.

In the case of patients with PTSD social support from non-kin appears to be protective. Adequately satisfying social support has been found to be an important quality in overcoming PTSD in the literature. Besides giving a direction for treatment efforts for patients suffering from the effects of trauma, this finding may suggest that if social support can help overcome symptoms of PTSD, better social support might prevent an initial traumatization from developing into chronic PTSD. The support for this supposition is tenuous, based more on speculation and findings of others that adequate social support was found in veterans who did not develop chronic PTSD. Adequate social support might be the key to avoiding a fixation of developmental stage that freezes the traumatized veteran in place and prevents him from living well.

This may be a way of describing the difference between the two classes of SMI

examined in this research. Patients with schizophrenia may be described as depending on internal resources accessed through learning in a supportive environment that does not threaten them with too much intimate social interaction. Patients with chronic PTSD, on the other hand, may be described as imprisoned in trauma, cut off from the developmental processes to which they used to have access. Satisfying intimate social interactions may free them from this prison. A key to their improvement is through an external resource, learning to tolerate the problems inevitable in social interactions.

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Table 1. Axis II Diagnostic Indications for Schizophrenia and PTSD Patients.

Axis II Diagnosis	Schizophrenia Pts.	PTSD Pts.
Cluster A		
Paranoid P. D.	3	1
Cluster B		
Borderline P. D.	1	2
Anti-Social P. D.		4
Narcissistic P. D.		2
Cluster C		
Dependent P. D.	1	5
P. D. NOS	2	2
No Axis II Diagnosis	28	17

Note: One PTSD patient was given a diagnosis of Borderline P. D., with avoidant and dependent features. A second PTSD patient was given a diagnosis of P. D. NOS with passive-aggressive, and dependent features. These two patients were counted in the cell of the first-mentioned Axis II disorder. No Axis II Diagnoses were obtained for Controls.

Table 2. Proposed Type I and Type II Characteristics and their Expected Influence on Adjustment in Two Classes of SMI patients.

Type I P/V Characteristics	Type II P/V Characteristics
Social Support	**Social Support**
More kin than friends - V	More friends - P
Smaller social network - P	Larger network - P
Less rated mean closeness - P	Greater Frequency of contact - P
Satisfied with smaller, less intimate	Greater variation in helpful/upset ratings-V
Network - P	Has spouse/lover - V
Hardiness	**Hardiness**
Greater rated Control - V	Less rated Control - P
Low Commitment - V	High Commitment - V
Low Challenge - V	Higher Challenge - P
Constructive Thinking	**Constructive Thinking**
Emotional Coping - P	Categorical Thinking - V
Behavioral Coping -P	Negative Thinking - V
Suspicious Thinking - V	
Naive Optimism - V	
How Do You Think	**How Do You Think**
Creativity - P	Less creativity than type I - P

Note that these two types of P/V characteristics are expected to describe patients with schizophrenia (Type I) and patients with PTSD (Type II). "P" or "V" listed after each characteristic indicates whether it is expected to increase protection or Vulnerability.

Table 3. An alternative listing of the hypotheses for the proposed study which reflects the expected clusters of Type I and Type II P/V characteristics.

Hypotheses Identifying Type I P/V Characteristics

Social Support

1. Patients with schizophrenia will list more kin in their social networks than patients with PTSD.
2. Patients with schizophrenia will list smaller networks than patients with PTSD.
3. Patients with schizophrenia will report feeling less close to their network members. This lower rated closeness will be positively correlated with feeling that the network is helpful (that is, greater satisfaction with perceived social support).

Hardiness

4. Patients with schizophrenia will report greater Control than patients with PTSD.

Constructive Thinking

5. Patients with schizophrenia will score higher on the Emotional Coping, Behavioral Coping, Superstitious Thinking and Naive Optimism scales of the CTI than patients with PTSD.

Creativity

6. Patients with schizophrenia will have higher creativity scores as indicated by the How Do You Think scores.

Coping Style

7. Patients with schizophrenia will report more effective coping than patients with PTSD, as indicated by higher overall coping scores in a report of recent coping with a real problem.
8. The Type I cluster of Social Support variables will predict GAF in patients with schizophrenia.
9. The Type I cluster of P/V variables of the CTI, DRS, HDYT, and WOC will predict GAF in patients with schizophrenia.

Hypotheses Identifying Type II P/V Characteristics

Social Support

1. Patients with PTSD will list more friends in their networks.
2. Patients with PTSD will list larger networks than patients with schizophrenia
3. Patients with PTSD will be more likely to have a spouse-lover than patients w th schizophrenia.
4. Patients with PTSD will report more frequent interactions with their network members than patients with schizophrenia.

Hardiness

5. Patients with PTSD will report much higher Commitment scores than patients with schizophrenia.
6. patients with PTSD will report higher Challenge scores than patients with schizophrenia.

Constructive Thinking

7. Patients with PTSD will score higher on the Categorical thinking and Negative thinking scales than patients with schizophrenia.
8. The Type II cluster of Social Support variables will predict GAF in patients with PTSD.
9. The Type II cluster of P/V variables of the CTI, DRS, HDYT, and WOC will predict GAF in patients with PTSD.

Table 4. ANOVA Results Showing Differences Among Schizophrenic Subjects from Three Different CVAMC Programs or Residences, the Center for Life Management (CLM), Day Hospital of Ward 51-A, and a Group Home, Vantage Place.

Variable	CLM members(18) mean (sd)	Ward 51-A (8) mean (sd)	Vantage Pl. (9) mean (sd)	F ratio$_{df}$	Prob. of F
Demographic Var.					
Age	49.28 (7.75)	46.62 (10.45)	47.44 (12.82)	$0.53_{2,32}$	.59
Education	2.44 (0.96)	1.87 (0.83)	2.00 (0.87)	$1.27_{2,30}$	.31
Age at Diagnosis	24.71 (9.20)	21.50 (10.45)	22.75 (6.96)	$0.37_{2,30}$	.69
GAF	55.22 (12.39)	45.75 (7.55)	47.48 (10.62)	$2.59_{2,32}$	.09
Hardiness					
Control	27.18 (3.80)	24.87 (6.13)	25.44 (3.05)	$0.97_{2,31}$	.39
Committment	33.25 (6.86)	30.25 (9.47)	26.22 (9.71)	$1.74_{2,26}$	.20
Challenge	21.36 (4.72)	20.12 (4.52)	19.00 (3.71)	$0.80_{2,28}$	.46
CTI					
Global scale	108.94 (18.93)	109.37 (24.73)	102.00 (16.13)	$0.43_{2,32}$	.65
Behavioral Coping	55.78 (10.53)	58.87 (10.27)	52.44 (8.90)	$0.86_{2,32}$	.43
Emotional Coping	65.94 (17.39)	67.50 (18.16)	67.89 (11.21)	$0.05_{2,32}$	.95
Categorical Thinking	33.83 (8.29)	36.12 (9.70)	37.33 (8.80)	$0.53_{2,32}$	.59
Superstition	20.83 (7.63)	24.12 (7.94)	24.00 (7.32)	$0.84_{2,32}$	.44
Naive Optimism	31.78[b] (7.09)	38.87[a] (5.03)	28.00[b] (7.83)	$5.43_{2,32}$	.01

[a,b] Superscripts that are different from each other indicate that values are significantly different from each other. Means with no superscript are not significantly different .

Table 4 continued. ANOVA Results Showing Differences Among Schizophrenic Subjects from Three Different CVAMC Programs or Residences, the Center for Life Management (CLM), Day Hospital of Ward 51-A, and a Group Home, Vantage Place.

Variable	CLM members(18) mean (s.d.)	Ward 51-A (8) mean (s.d.)	Vantage Pl. (9) mean (s.d.)	F ratio$_{df}$	Prob. of F
Creativity /HDYT					
Total Creativity	278.78 (59.02)	311.75 (38.22)	286.22 (45.68)	$1.13_{2,32}$	.34
Coping/ WOC					
Planful Problem Solving	10.11 (4.40)	12.75 (4.17)	8.56 (4.10)	$2.08_{2,32}$	.14
Escape Avoidance	7.28 (5.99)	12.00 (3.85)	10.44 (5.94)	$2.30_{2,32}$	.12
Distancing	6.50[a] (4.59)	10.75[a,b] (2.66)	10.67[b] (4.50)	$4.34_{2,32}$	.02
Confrontive Coping	6.00 (4.65)	10.12 (6.01)	6.44 (5.55)	$1.82_{2,32}$	.18
Pos. Reappraisal	11.22[b] (6.18)	16.75[a] (4.06)	10.67[a,b] (6.69)	$2.89_{2,32}$	.07
Accepting Responsibility	4.17 (3.79)	7.25 (2.92)	5.11 (2.89)	$2.27_{2,32}$	.12
Social Support Var.					
Size of Social Network	4.85 (2.54)	4.87 (1.81)	3.50 (0.76)	$1.33_{2,26}$	.28
Closeness	7.82 (1.99)	8.92 (1.26)	7.91 (2.63)	$0.81_{2,26}$	.46
Frequency of Contact	4.47 (1.02)	4.84 (1.22)	4.23 (1.32)	$0.47_{2,26}$	.63
Total Helpfulness	4.24 (0.94)	4.76 (1.06)	3.70 (1.60)	$1.63_{2,26}$	.22
Total Upset	2.22 (0.93)	2.18 (0.76)	1.77 (0.78)	$0.76_{2,26}$	.48

[a,b] Superscripts that are different from each other indicate that values are significantly different from each other. Means with no superscript are not significantly different.

Table 5. ANOVA Results Showing Differences Among Schizophrenic Subjects who Read Measures, were Read to Because of Poor Health or Eyesight, or who were Read to Because their Psychotic Symptoms or Medication Made Reading Difficult.

	Patient read (23) mean (S. D.)	Difficulty reading (7) mean (S. D.)	Poor Health/ Eyesight (5) mean (S. D.)	F ratio$_{df}$	Prob. of F
Demographic Var.					
Age	47.04 (9.61)	46.43 (4.54)	56.00 (12.59)	$2.05_{2,65}$	.15
Education	2.27[b] (.88)	1.43[a] .54)	3.00[b] (.82)	$5.10_{2,63}$	.01
Age at Diagnosis	22.90 (8.67)	22.00 (7.77)	27.80 (11.63)	$0.72_{2,61}$	.49
GAF	53.91 (11.50)	43.57 (7.46)	49.00 (11.56)	$2.44_{2,65}$	.10
Hardiness					
Control	26.04 (4.27)	27.00 (5.62)	25.80 (3.11)	$0.13_{2,64}$	.87
Committment	29.85 (8.82)	29.60 (11.50)	33.00 (8.77)	$0.22_{2,58}$	.81
Challenge	21.14 (4.87)	18.20 (2.59)	19.20 (2.68)	$1.13_{2,60}$	.34
CTI					
Global scale	107.22(18.81)	117.29(21.39)	93.40 (12.22)	$2.39_{2,65}$	.10
Behavioral Coping	55.00 (11.17)	59.00 (9.17)	53.80 (4.44)	$0.51_{2,65}$	.61
Emotional Coping	64.78 (15.46)	77.57 (15.83)	61.00 (12.73)	$2.32_{2,64}$	.11
Categorical Thinking	35.09 (7.45)	33.71 (11.44)	38.20 (10.76)	$0.39_{2,65}$	.68
Superstitious Thinking	21.78 (7.23)	20.86 (7.47)	27.40 (6.80)	$1.44_{2,65}$	.25
Naive Optimism	31.39 (7.64)	35.43 (7.16)	33.00 (9.43)	$0.73_{2,65}$	.49

[a,b,c] Superscripts that are different from each other indicate that values are significantly different from each other. Means with no superscript are not significantly different.

Table 5, continued. ANOVA Results Showing Differences Among Subjects with Schizophrenia who Read Measures, were Read to Because of Poor Health or Eyesight, or who were Read to Because their Psychotic Symptoms or Medication Made Reading Difficult.

Variable	Patient read (23) mean (S. D.)	Difficulty reading (7) mean (S. D.)	Poor Health/ Eyesight (5) mean (S. D.)	F ratio$_{df}$	Prob. of F
Creativity /HDYT					
Total Creativity	289.61(51.97)	280.43 (61.00)	292.80 (49.74)	$0.10_{2,65}$	.91
Coping/ WOC					
Planful Problem Solving	10.04 (4.14)	12.29 (4.61)	8.80 (5.40)	$1.04_{2,65}$	.37
Escape-Avoidance	8.39 (5.57)	9.14 (3.93)	12.80 (8.41)	$1.21_{2,65}$	.31
Distancing	8.09 (4.79)	9.29 (4.75)	9.60 (4.16)	$0.32_{2,65}$	.73
Confrontive Coping	7.22 (5.36)	6.29 (4.68)	7.40 (7.02)	$0.09_{2,65}$	.92
Positive Reappraisal	11.61 (6.34)	15.14 (5.37)	11.80 (7.12)	$0.87_{2,65}$	.43
Accept Responsibility	4.91 (3.45)	5.14 (3.24)	6.00 (4.85)	$0.19_{2,64}$	.83
Social Support Variables.					
Network Size	3.89 (1.49)	6.00 (2.55)	5.20 (2.68)	$2.84_{2,59}$	.08
Closeness	8.01 (2.05)	8.46 (1.97)	8.38 (2.31)	$0.13_{2,59}$	.88
Frequency of Contact	4.35 (1.14)	4.38 (0.95)	5.32 (1.17)	$1.55_{2,59}$	.23
Total Helpfulness	4.07 (1.22)	4.93 (0.77)	4.16 (1.46)	$1.03_{2,59}$	.37
Total Upset	2.14 (0.84)	1.95 (0.88)	2.02 (0.97)	$0.12_{2,59}$	.89

[a,b,c,] Superscripts that are different from each other indicate that values are significantly different from each other. Means with no superscript are not significantly different.

Table 6. A List of Variables Recorded in the Interview Form for this Research Project

Basic Demographic Variables Date of Birth Age Education Social Security I.D. Pets	**Military History** Branch of Service Length of Military Service Type of Service (combat) Theater of Service Type of Discharge Service Con. Disability	**Work History** Type of jobs Number of Jobs periods of unemployment Length of longest job
Social History Marital Status Living Situation Number of Divorces Household members Birth Order Abuse, Physical, emotional, or Sexual	**Mother's Demographics and History** Age, if living or at death Education Marital status Occupation Psych. & medical history Alcohol and/or drug abuse	**Father's Demographics and History** Age, if living or at death Education Marital status Occupation Psych. & Medical History Alcohol and/or drug abuse
Medical History Medical Diagnoses Date of Diagnoses Number of Hospitalizations Current and past Medication	**Legal History** Juvenile Adult Military (Art. 15/Ct. Mar.)	**Siblings Demographics** Number and gender of sibs Legal History Medical and Psych. History Marital Status
Substance Abuse History Alcohol and Drug Abuse Currently Abusing? Abuse Treatment History	**Psychiatric History** Age First Mental Symptoms Current Psych. Diagnosis Second Psych. Diagnosis Current, past Medications	

Note: Not all of these variables were available to be recorded for all subjects.

Table 7. Demographic Characteristics of Three Groups of Veterans that Show Differences Between the Groups.

Variable	Schizophrenia	PTSD	Controls	Statistic	probability
Able to work	1 .0 (unable)	2.3 (sporadic)	2.9 (steady)	$F_{2,94} = 23.3$	.0000
Combat Service	2 of 35 subs.	33 of 33 subs.	10 of 29 subs.	$F_{2,94} = 67.8$	.0000
living Situation (modal)	rent or group home	own home	own home	$\chi^2_{2,92} = 27.88$	.0000
persons in home with Subject	kin (7) group home(13)	wife/lover (22) alone (7)	wife/kids (25)	$\chi^2_{2,92} = 37.3$	.0000
Married	5 of 35 subs.	18 of 33 subs.	20 of 29 subs.	$\chi^2_{2,93} = 18.7$	.0000
Number of Divorces	one-7 of 35 subs. two-3 of 35 subs.	one-10 of 33 subs. two-9 of 33 subs. 3+ -3 of 33 subs.	one-5 of 29 subs. two-5 of 29 subs.	$F_{2,90} = 6.97$	.0000
Current substance Abuse	10 of 35 subs.	1 of 33 subs.	0 of 29 subs.	$F_{2,94} = 20.9$	.0000
Treatment for Substance Abuse	23 of 35 subs.	22 of 33 subs.	3 of 27 subs.	$F_{2,93} = 11.2$	.0000
Alcoholic Father	12 of 35 subs.	23 of 33 subs.	4 of 29 subs.	$F_{2,88} = 13.9$	.0000
Legal Trouble					
Juvenile	8 of 35 subs.	10 of 33 subs.	3 of 29 subs.	$F_{2,93} = 2.7$	.07
Adult	11 of 35 subs.	16 of 33 subs.	3 Of 29 subs.	$F_{2,93} = 5.7$	.0046
Both	2 of 35 subs.	7 of 33 subs.	1 of 29 subs.		
Discipline in Service	5 of 35 subs.	12 of 33 subs.	8 of 29 subs.	$F_{2,90} = 3.3$	.04

Table 8. Means, Standard Deviations, and Statistics for Variables of Interest

Variable	Schizophrenia Group Mean (sd)	PTSD Group Mean (sd)	Control Group Mean (sd)	F Value	Prob. F
Hardiness					
Control	26.18 (4.27)[a]	25.97 (5.81)[a]	32.96 (5.01)[b]	$18.28_{2,92}$	.0000
Commitment	30.24 (8.77)[a]	25.00 (8.45)[b]	34.43 (6.03)[c]	$10.78_{2,86}$	.0001
Challenge	20.35 (4.37)[a]	22.06 (5.92)[a]	25.93 (3.96)[b]	$10.04_{2,88}$	.0001
Constructive Thinking					
Global Scale	107.26 (19.4)[a]	90.73 (23.29)[b]	124.69 (18.4)[c]	$21.16_{2,94}$	.0000
Beh. Cope	55.63 (10.05)[a]	50.00 (11.21)[b]	60.83 (6.38)[c]	$9.93_{2,94}$	.0001
Emot. Cope	66.80 (15.80)[a]	54.63 (15.45)[b]	78.24(13.53)[c]	$18.83_{2,93}$	.0000
Superstition	22.40 (7.32)[a]	25.24 (7.04)[a]	18.07 (6.66)[b]	$8.08_{2,94}$	.0000
Categorical Thinking	35.26 (8.62)[a]	41.91 (9.08)[b]	31.55 (8.61)[a]	$11.22_{2,94}$	.0000
Naive Optimism	32.43 (7.74)[a]	27.67 (5.99)[b]	31.69 (3.87)[a]	$5.67_{2,94}$	.0047
How Do You Think					
Global Scale	288.23 (52.1)[a]	277.87 (42.4)[a]	291.17 (35.8)[a]	$0.79_{2,94}$	.4580
Activities	42.60 (10.67)[a]	37.48 (7.12)[b]	38.10 (8.43)[b]	$3.31_{2,94}$	.0409
Arousal	64.54 (12.86)[a]	69.94 (13.69)[a,b]	72.62(10.73)[b]	$3.49_{2,94}$	.0347
Humor	42.66 (7.67)[a,b]	41.30 (7.99)[a]	46.00 (5.29)[b]	$3.47_{2,94}$	.0352
Ways of Coping					
Planful Prob. Solving	10.31 (4.41)[a]	7.85 (4.17)[b]	9.24 (3.43)[a,b]	$3.15_{2,94}$	.0475
Escape-Avoidance	9.17 (5.79)[a]	9.7 (5.19)[a]	5.07 (3.92)[b]	$7.56_{2,94}$	.0009
Pos. Reappraisal	12.34 (6.25)[a]	7.09 (5.59)[b]	8.66 (4.58)[b]	$7.97_{2,94}$	.0006
Distancing	8.54 (4.62)[a]	7.30 (3.75)[a,b]	5.48 (2.82)[b]	$5.01_{2,94}$	.0086
Confrontive Coping	7.06 (5.33)[a,b]	8.09 (4.02)[a]	5.83 (3.73)[b]	$1.98_{2,94}$	.1431

[a,b,c,] Superscripts that are different from each other indicate that values are significantly different from each other.

Table 9. Means, Standard Deviations, and Statistics for Social Support Variables

Variable	Schizophrenia Group Mean (sd)	PTSD Group Mean (sd)	Control Group Mean (sd)	F df Value	Prob. F
Mean Number					
Total	4.48 (2.03)[a]	3.36 (1.19)[b]	4.52 (2.28)[a]	$3.91_{2,87}$	.02
Kin	3.14 (2.53)[a]	1.61 (1.14)[b]	2.28 (2.02)[a,b]	$4.76_{2,85}$	.01
Friends	0.48 (0.95)[a]	1.03 (1.21)[b]	1.38 (0.98)[b]	$5.27_{2,82}$	.01
Others	0.69 (1.31)[a]	0.15 (0.44)[b]	0.03 (0.19)[b]	$5.68_{2,60}$	.00
Mean Closeness					
Total	8.15 (2.02)[a]	8.15 (1.57)[a]	8.35 (1.08)[a]	$0.15_{2,87}$	.86
Kin	7.39 (3.25)[a]	7.45 (3.22)[a]	7.90 (2.59)[a]	$0.24_{2,85}$	.79
Friends	1.38 (2.94)[a]	4.28 (4.12)[b]	7.68 (1.26)[c]	$24.96_{2,82}$	.00
Lover	7.50 (2.29)[a]	9.00 (1.63)[b]	9.62 (0.59)[b]	$4.13_{2,40}$	.02
Mean Frequency					
Total	4.52 (1.14)[a]	5.70 (0.90)[b]	5.23 (1.24)[b]	$9.13_{2,87}$	.00
Kin	3.71 (1.72)[a]	4.99 (2.26)[b]	5.22 (1.66)[b]	$5.07_{2,85}$	.01
Friends	1.03 (2.13)[a] 3.67	2.86 (2.79)[b]	4.67 (1.39)[c]	$16.72_{2,82}$	.00
Lover	(1.53)[a]	6.89 (0.32)[b]	6.85 (0.48)[b]	$52.12_{2,40}$	.00
Mean Helpfulness					
Total	4.24 (1.21)[a]	4.22 (1.24)[a]	4.33 (1.07)[a]	$0.08_{2,87}$	.93
Kin	3.87 (1.78)[a]	3.51 (1.89)[a]	3.84 (1.23)[a]	$0.44_{2,85}$	.65
Friends	0.84 (1.79)[a]	2.42 (2.34)[b]	4.32 (0.98)[c]	$22.31_{2,82}$	.00
Lover	4.58 (0.52)[a]	4.89 (1.02)[a]	5.39 (0.58)[a]	$2.57_{2,40}$	.09
Mean Upset					
Total	2.09 (0.84)[a]	2.57 (1.03)[b]	1.97 (0.77)[a]	$3.84_{2,87}$	.02
Kin	1.98 (1.14)[a]	2.44 (1.39)[a]	2.03 (0.73)[a]	$1.54_{2,85}$	.22
Friends	0.44 (0.92)[a]	1.12 (1.19)[b]	1.77 (0.80)[c]	$11.43_{2,82}$	.00
Lover	2.54 (0.59)[a]	2.84 (1.04)[a]	2.33 (1.14)[a]	$1.11_{2,40}$	.34

[a,b,c] Superscripts that are different from each other indicate that values are significantly different from each other.

Table 10. The Relationship Between Closeness and Perceived Helpfulness in Patients with Schizophrenia, Patients with PTSD and Controls.

Correlates	r Cont/Schiz	z trans. Cont/Schiz	r Schiz/PTSD	z trans. Schiz/PTSD	r Cont/PTSD	z Trans. Cont/PTSD
Total network						
Close/help	.326/.479	0.338/.522	.479/.605	0.522/0.701	.326/.605	0.338/.701
result/prob.		0.694/.244		0.706/.240		1.353/.088
Kin						
Close/help	.290/.834	0.299/1.201	.834/.795	1.201/1.085	.290/.795	0.299/1.085
result/prob.		3.418/.001		0.457/.324		2.935/.002
Friends						
Close/help	.158/.964	0.159/2.000	.964/.961	0.452/0.403	.158/.961	0.591/1.959
result/prob.		6.970/.000		0.193/.428		6.716/.000

Note: Cont = Controls; z trans. = Test statistic for Fisher's z transformation.

Table 11 . Means and Standard Deviations for Perceived Helpful Functional Social Support Variables.

Functional Variable	Schizophrenia Group Mean (sd)	PTSD Group Mean (sd)	Control Group Mean (sd)	F Ratio or t value	Prob. F
Perceived Helpful	**Socializing**				
Kin	3.94 (1.97)[a]	3.63 (1.99)[a]	4.01 (1.32)[a]	$0.29_{2,85}$	.6808
Friends	0.81 (1.72)[a]	2.41 (2.35)[b]	4.41 (1.05)[c]	$23.99_{2,82}$	.0000
Others	1.27 (2.16)[a]	0.48 (1.48)[b]	5 (0)*	$-3.00_{2,60}$*	.005
Spouse/Lover	4.00 (1.73)[a]	5.16 (0.90)[b]	5.37 (0.75)[b]	$3.09_{2,40}$	.0563
Perceived Helpful	**Tangible Assistance**				
Kin	3.58 (1.82)[a]	3.75 (2.03)[a]	3.79 (1.57)[a]	$0.11_{2,85}$	.8946
Friends	0.83 (1.82)[a]	2.48 (2.45)[b]	3.86 (1.52)[c]	$14.67_{2,82}$	.0000
Others	0.89 (1.83)[a]	0.55 (1.52)[b]	5 (0)*	$-2.88_{2,60}$*	.007
Spouse/Lover	4.67 (0.58)[a]	4.47 (1.61)[a]	5.43 (0.87)[a]	$2.99_{2,40}$	.0615
Perceived Helpful	**Emotional Support**				
Kin	3.88 (2.02)[a]	3.34 (2.03)[a]	3.96 (1.39)[a]	$0.99_{2,85}$	.3775
Friends	0.86 (1.92)[a]	2.41 (2.40)[b]	4.66 (1.11)[c]	$24.22_{2,82}$	.0000
Others	1.35 (2.38)[a]	0.61 (1.71)[b]	6 (0)*	$-3.10_{2,60}$*	.004
Spouse/Lover	4.33 (1.53)[a]	5.11 (0.99)[a]	5.57 (0.51)[a]	$3.66_{2,40}$	.034
Perceived Helpful	**Cognitive Guidance**				
Kin	4.07 (1.96)[a]	3.31 (2.01)[a]	3.62 (1.57)[a]	$1.26_{2,85}$	.2881
Friends	0.85 (1.78)[a]	2.36 (2.38)[b]	4.36 (1.22)[c]	$21.43_{2,82}$	.0000
Others	1.18 (2.13)[a]	0.58 (1.68)[b]	6 (0)*	$-3.19_{2,60}$*	.003
Spouse/Lover	5.33 (1.15)[a]	4.84 (1.21)[a]	5.19 (0.81)[a]	$0.70_{2,40}$	.5047

[a,b,c] Superscripts that are different from each other indicate that values are significantly different from each other.

* Only one control subject listed an "other". The statistic listed is a "t" score comparing the means for PTSD and Schizophrenia.

Table 12. Means and Standard Deviations for Perceived Upsetting Functional Social Support Variables.

Functional Variable	Schizophrenia Group Mean (sd)	PTSD Group Mean (sd)	Control Group Mean (sd)	F_{df} Ratio or t_{df} value	Prob. F
Perceived Upsetting	**Socializing**				
Kin	1.70 (1.24)[a]	2.13 (1.39)[a]	1.94 (0.77)[a]	$1.04_{2,85}$	.3595
Friends	0.28 (0.61)[a]	1.13 (1.27)[b]	1.89 (1.09)[c]	$15.86_{2,82}$	.0000
Others	0.59 (1.19)[a]	0.27 (0.88)[a]	2 (0)*	$1.86_{2,60}$*	.1643
Spouse/Lover	2.33 (1.15)[a]	2.47 (1.17)[a]	2.36 (1.37)[a]	$.05_{2,40}$	.9541
Perceived Upsetting	**Tangible Assistance**				
Kin	2.22 (1.61)[a]	2.69 (1.73)[a]	2.13 (0.95)[a]	$1.24_{2,85}$	.2933
Friends	0.61 (1.38)[a]	1.12 (1.24)[a,b]	1.66 (0.89)[b]	$4.88_{2,82}$	.0100
Others	0.55 (1.27)[a]	0.24 (0.90)[a]	2 (0)*	$1.70_{2,60}$*	.1913
Spouse/Lover	3.33 (2.31)[a]	3.05 (1.51)[a]	2.29 (1.52)[a]	$1.46_{2,40}$	.2433
Perceived Upsetting	**Emotional Support**				
Kin	1.96 (1.60)[a]	2.71 (1.82)[a]	1.96 (0.89)[a]	$2.52_{2,85}$	.0867
Friends	0.47 (1.07)[a]	1.03 (1.24)[b]	1.73 (0.71)[c]	$9.04_{2,82}$	.0003
Others	0.51 (1.07)[a]	0.27 (0.94)[a]	2 (0)*	$1.72_{2,60}$*	.1886
Spouse/Lover	3.00 (1.73)[a]	2.68 (1.57)[a]	2.55 (1.38)[a]	$0.14_{2,40}$	.8720
Perceived Upsetting	**Cognitive Guidance**				
Kin	2.03 (1.55)[a]	2.23 (1.55)[a]	2.08 (1.07)[a]	$0.16_{2,85}$	.8515
Friends	0.38 (0.85)[a]	1.21 (1.44)[b]	1.80 (1.07)[b]	$9.83_{2,82}$	.0001
Others	0.56 (1.14)[a]	0.36 (1.25)[a]	3 (0)*	$2.42_{2,60}$*	.0973
Spouse/Lover	1.50 (0.50)[a]	3.16 (1.30)[b]	2.14 (1.11)[a,b]	$4.97_{2,40}$	.0118

[a,b,c,] Superscripts that are different from each other indicate that values are significantly different from each other.

* Only one control subjet listed an "other". The statistic listed is a "t" score comparing the means for PTSD and Schizophrenia.

Table 13. Correlations Between Functional Social Support Variables and GSI or GAF.

Variable	Schizophrenia Patients		PTSD Patients		Controls	
	GAF	GSI	GAF	GSI	GAF	GSI
Perceived Helpfulness						
Total	-.0745	-.0787	.0031	-.0263	.2459	-.2757
Kin	-.1368	-.1031	.0180	.0775	.1459	-.1338
Friends	.0027	.0956	.2413	-.1214	.0449	.0555
Others	-.0800	.2677	.1860	-.2060	/	/
Spouse/Lover	.2774	-.7993*	-.0718	-.5351	-.2415	.2416
Perceived Upset						
Total	-.1098	.5207*	-.2259	.3920*	.1521	.0162
Kin	-.1670	.4657*	-.0627	.3497	.0123	.0222
Friends	.0931	.1492	.2842	-.0100	.1659	.0742
Others	-.0717	.5258*	-.0699	-.1529	/	/
Spouse/Lover	.3054	.9986*	-.1178	.7577*	.1872	-.0017

* Starred values are significant , $p. < .05$.

Table 14. Means, Standard Deviations, and Statistics for the SCL-90-R.

SCL-90-R Variable	Schizophrenia Group mean (sd)	PTSD Patient Group mean (sd)	Control Group mean (sd)	F Value	Prob. F
Anxiety	10.73 (8.44)[a]	22.27 (9.59)[b]	3.59 (4.83)[c]	40.22	.0000
Depression	15.12 (9.66)[a]	29.37 (11.89)[b]	7.59 (7.94)[c]	34.77	.0000
Hostility	3.50 (3.35)[b]	12.30 (6.62)[a]	4.15 (5.05)[b]	24.93	.0000
Interpersonal Sensitivity	9.12 (6.86)[a]	17.83 (9.74)[b]	4.81 (5.70)[c]	21.17	.0000
Obsessive/Comp.	13.23 (7.80)[a]	22.63 (9.29)[b]	7.81 (6.74)[c]	24.74	.0000
Paranoia	6.96 (5.01)[a]	11.70 (5.78)[b]	3.85 (5.93)[c]	17.93	.0000
Phobias	6.62 (6.33)[a]	11.43 (8.03)[b]	1.00 (1.98)[c]	20.80	.0000
Psychoticism	9.96 (7.59)[a]	14.27 (8.74)[b]	4.07 (5.05)[c]	13.73	.0000
Global Severity Index (GSI)	95.19 (62.14)[a]	180.00 (73.27)[b]	45.14 (44.20)[c]	35.14	.0000
Pos. S_x Distress Index (PSDI)	1.99 (0.68)[a]	2.47 (0.67)[b]	1.41 (0.42)[c]	22.34	.0000
Pos. S_x Total (PST)	48.12 (25.11)[a]	70.43 (13.84)[b]	26.34 (20.77)[c]	35.20	.0000

[a,b,c] Superscripts that are different from each other indicate that values are significantly different from each other. Degrees of freedom for all F' are 2,80.

Table 15. Within Groups Regression Equations Using GAF or SCL-90-R GSI as the Dependent Variable.

Group/Dependent Variable Independent Variable	Multiple R	R^2	Change in R^2	r	Probability r
Schizophrenics/GAF					
Escape Avoidance	.5459	.2980	.2980	-.55	.001
CTI Emotional Coping	.6907	.4770	.179	-.15	.374
Schizophrenics/GSI					
Flexibility/Freedom	.5730	.3283	.3283	.61	.001
Confrontive Coping	.6775	.4590	.1307	.61	.001
Upset with Kin	.7330	.5373	.0783	.47	.025
Creative Actions	.7875	.6201	.0828	.26	.194
Upset with Lover	.8276	.6849	.0648	.99	.034
Categorical Thinking	.8662	.7502	.0653	.53	.005
Closeness to Kin	.8907	.7934	.0432	.08	.732
OUT Flex/Free	.8867	.7863			
Commitment (Hardiness)	.9043	.8177	.0243	-.16	.452
PTSD Patients/GAF					
Network, size	.4297	.1846	.1846	.43	.013
Number of Kin	.5673	.3218	.1372	-.09	.607
Closeness to Friends	.6759	.4569	.1351	.22	.225
Frequency with Lover	.7317	.5355	.0786	.46	.049
Planful Problem Solving	.7893	.6229	.0874	-.06	.730
Take Responsibility Coping	.8235	.6782	.0553	-.34	.057
PTSD Patients/GSI					
CTI Superstition	.5784	.3345	.3345	.58	.001
Helpfulness of Lover	.6963	.4848	.1503	-.54	.027
Confrontive Coping	.7584	.5752	.0904	.24	.200
Controls/GAF					
Flexibility/Freedom	.3855	.1486	.1486	-.39	.039
Positive Reappraisal	.5286	.2794	.1308	-.16	.408
Controls /GSI					
CTI / Emotional Coping	.6058	.3669	.3669	-.62	.001
Number of Kin	.6759	.4569	.09	.22	.262

Table 16. Classification Results of a Discriminant Model Predicting SMI Group Membership.

Development Sub-Sample	# Cases:	Predicted Group Membership: Pts. with Schiz.	Pts. with PTSD	Controls	Total % Correctly Classified
Schiz Pts	16	13	3	0	
		81.3%	18.8%	0%	84.44
PTSD Pts.	17	1	15	1	
		5.9%	88.2%	5.9%	
Control Group	12	1	1	10	
		8.3%	8.3%	83.3%	
Validation Sub-Sample					62.75
Schiz. Pts	19	11	4	4	
		57.9%	21.1%	21.1%	
PTSD Pts.	15	6	8	1	
		40.0%	53.3%	6.7%	
Control Group	17	0	4	13	
		0%	23.5%	76.5%	

Note: Details of the model tabled above

Step	Variables	Discriminant Function Coefficients: Function 1	Function 2
1	GAF	.87496	.15564
2	Categorical Think'g	.44274	1.06905
3	Distancing Coping	-.83324	-.30280
4	Taking Responsibility	.67939	-.64559
5	CTI Emotional Coping	.66530	-.23226

Table 17. Results for an Omnibus Regression Model Predicting GAF. All Subjects were Included with Psychiatric Diagnosis Coded in Two Dummy Variables.

Variable	Beta	Probability Beta	R^2	R^2 Change	Probability Change
Schizophrenia Dx	-.532	.000	.283	.283	.000
PTSD Diagnosis	-.789	.000	.444	.161	.000
WOC Escape-Avoidance	-.271	.001	.507	.063	.001
Categorical Thinking	-.180	.036	.530	.023	.036
CTI Emotional Coping	-.206	.029	.554	.024	.029

Table 18. Results for an Omnibus Regression Model Predicting GAF for Two Groups of SMI Patients.

Variable	Beta	Probability Beta	R^2	R^2 Change	Probability Change
Diagnosis	-.3721	.002	.138	.138	.002
WOC Escape-Avoidance	-.350	.000	.261	.122	.000

Table 19. Means of CTI Scales for Adults, College Males, Schizophrenia patients, PTSD patients, and Controls.

CTI Scale	College Males*	Adults*	Schizophrenia Group	PTSD Group	Control Group
Global Scale	100.28	107.76	107.26	90.73	124.69
Behhavioral Coping	52.04	56.02	55.63	50.00	60.83
Emotional Coping	62.12	88.51	66.80	54.63	78.24
Superstition	16.33	13,52	22.40	25.24	18.07
Categorical Thinking	39.66	37.24	35.26	41.91	31.55
Naive Optimism	47.81	47.78	32.43	27.67	31.69

* Data for these groups are from the Manual for the Constructive Thinking Inventory Data for the "Adult" group were combined from 87 males and 80 females since these subjects were "highly similar on all scales" (Epstein, 1993).

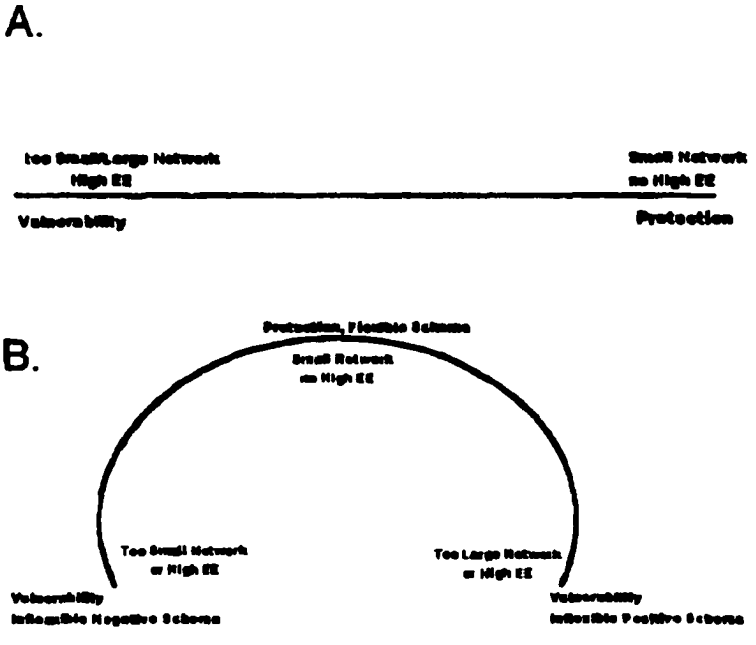

Figure 1. Two diagrams showing the relationships between vulnerability and protection for personality characteristics. Diagram A. shows a possible linear model. Diagram B. depicts a possible nonlinear relationship, taken from Elliot and Lassen (1997). Social network size and emotional intensity of interactions (High EE) in the case of patients with schizophrenia are used as examples and placed on these two models. This paper presumes Model A is an accurate depiction of the variables used for this research.

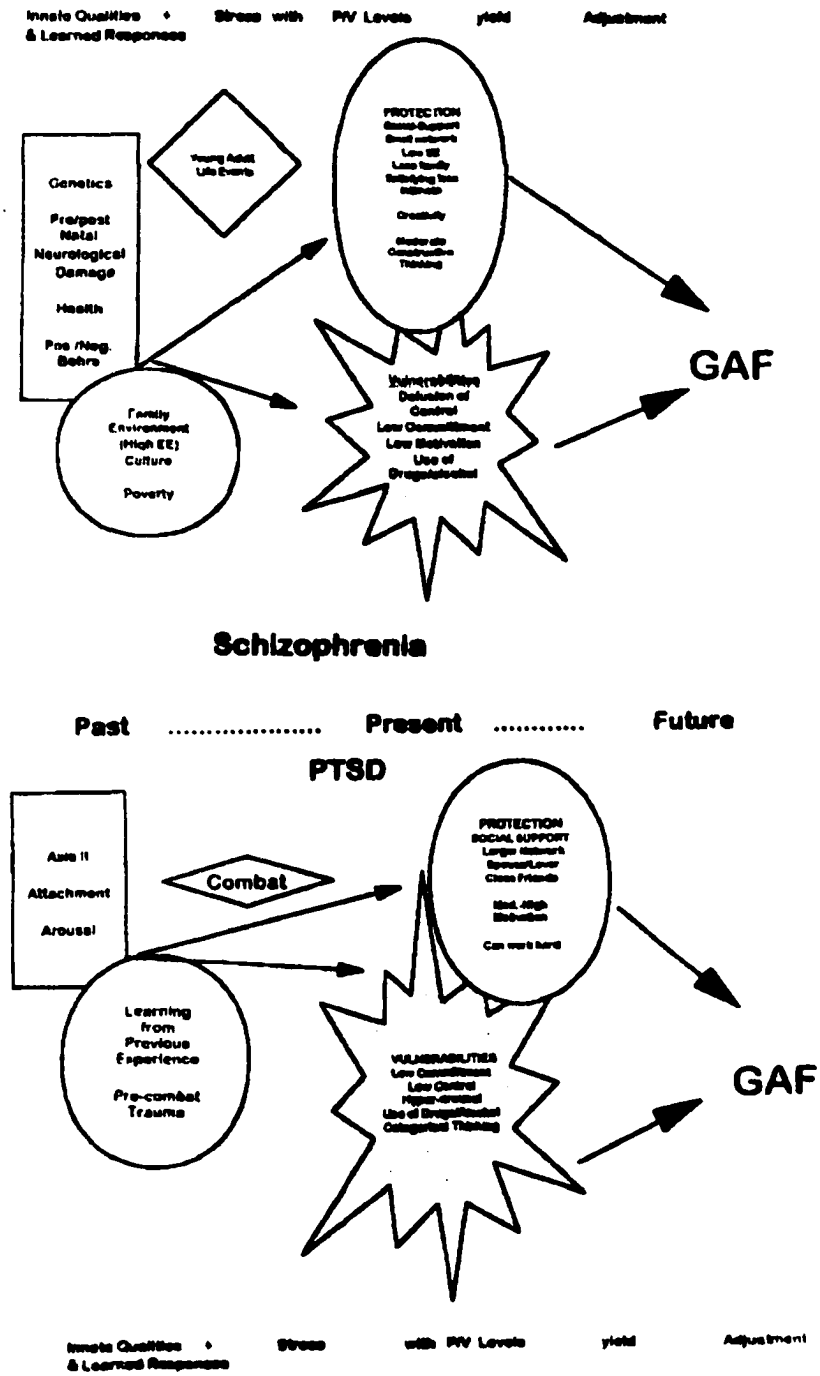

Figure 2. A possible model depicting components of internal qualities, learning, environmental stressors, and P/V characteristics in the case of patients with schizophrenia or PTSD. Innate qualities, learned responses environmental experience interact in the presence of P/V characteristics, yielding adjustment. No assumptions are made as to *quantity* of each of these elements.

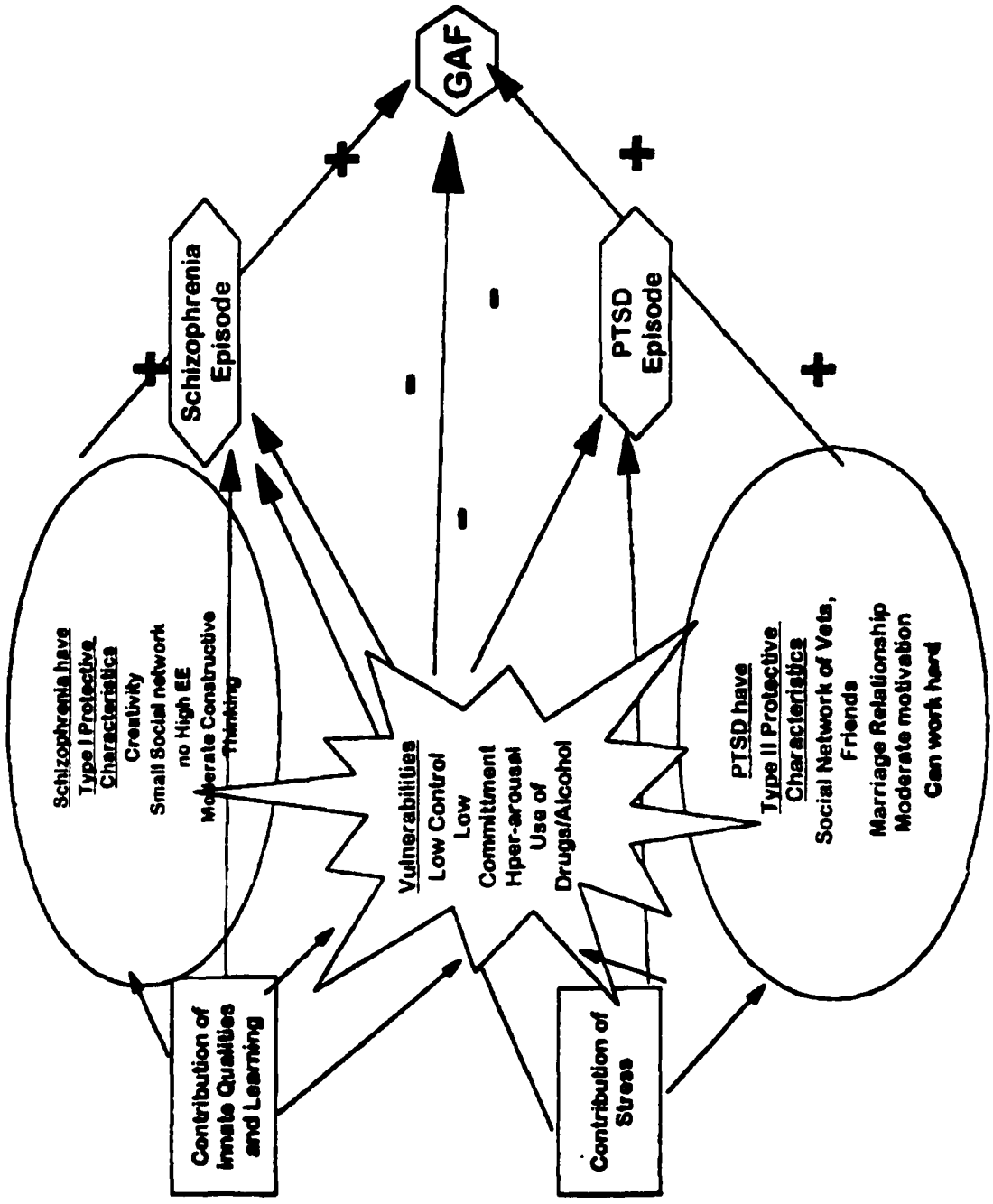

Figure 3. A combined model for both of the patient groups of interest in this research. with expected pathways of influence delineated.

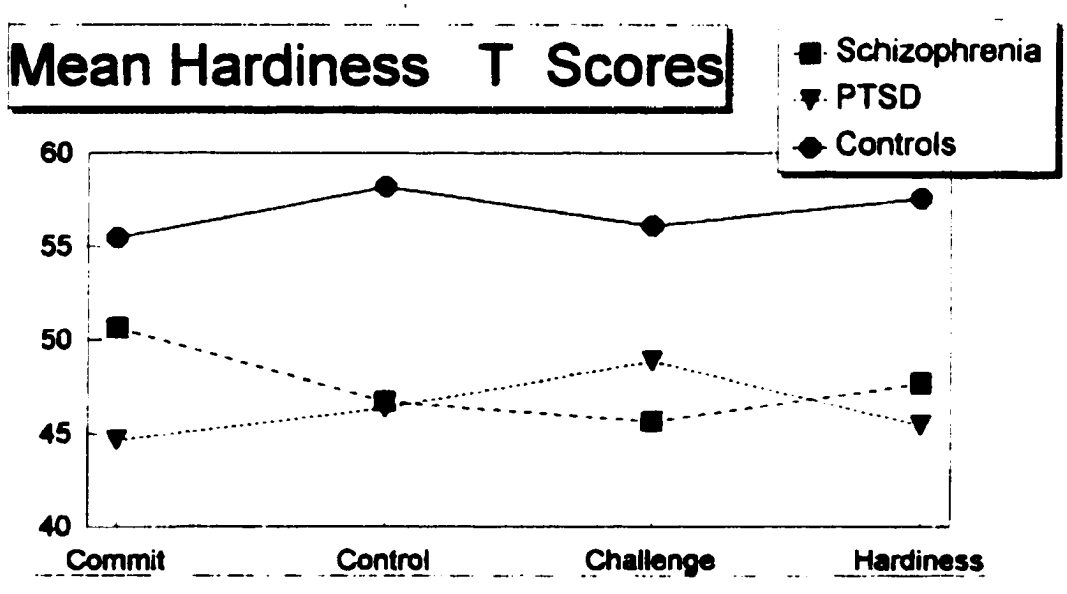

Figure 4. Mean Hardiness T scores for the three groups. Note that patients with schizophrenia appear to be more committed than patients with PTSD, but not as committed as members of the control group, who establish a comparison for the two patient groups.

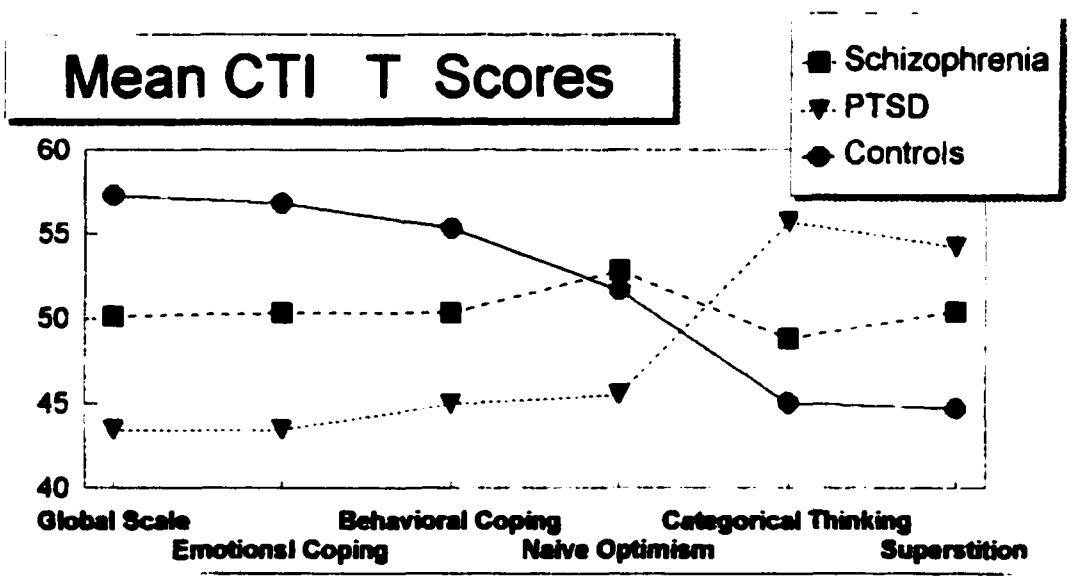

Figure 5. Mean CTI T Scores for all three groups. Categorical Thinking and Superstition scores indicate Destructive Thinking, that is lower scores indicate more adaptive thinking patterns. Note that patients with schizophrenia's scores indicated more constructive thought patterns than patients with PTSD's scores.

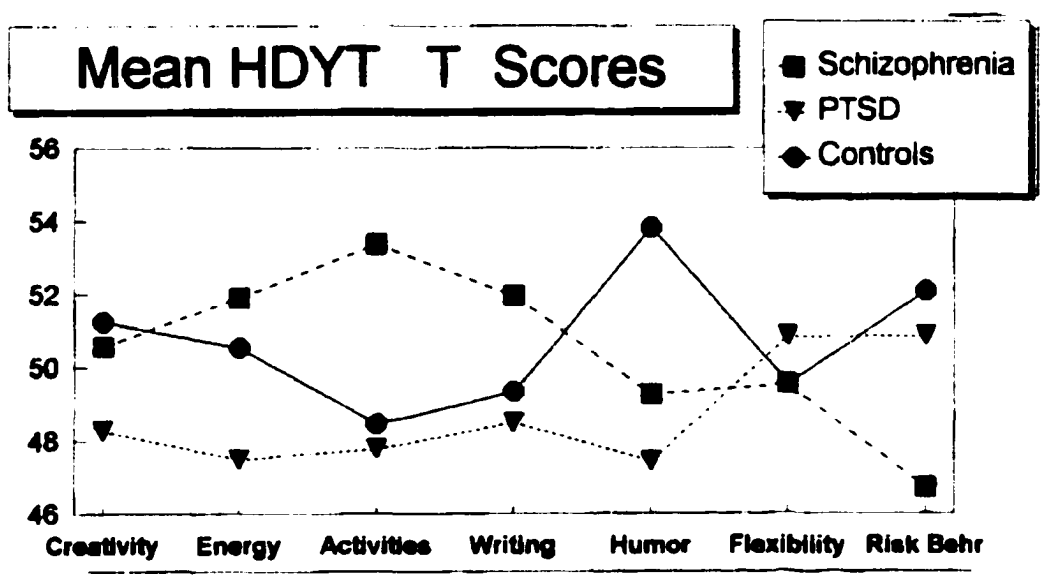

Figure 6. Mean HDYT (creativity) T Scores for the three groups. Note that patients with schizophrenia rated their creative activities higher than did the other two groups.

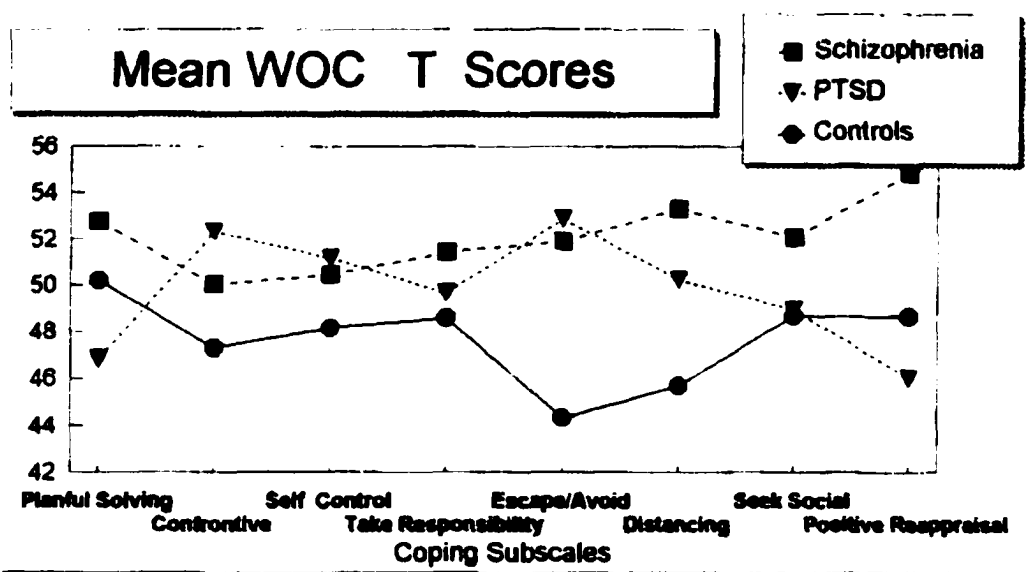

Figure 7. Mean Ways of Coping T scores for the three groups. Note that patients with schizophrenia reported higher problem-focused coping scores than did Controls.

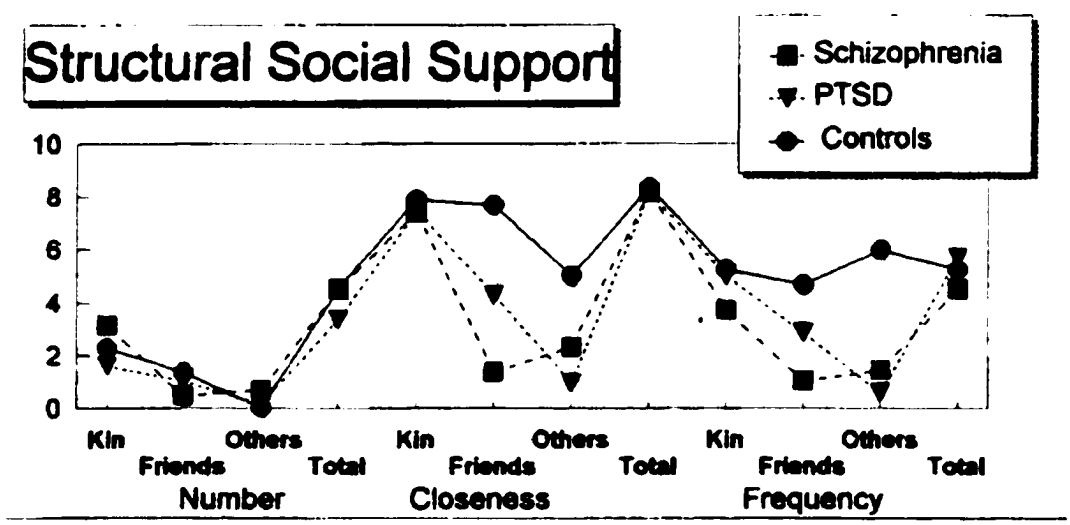

Figure 8. Structural Social Support variables for the three groups.

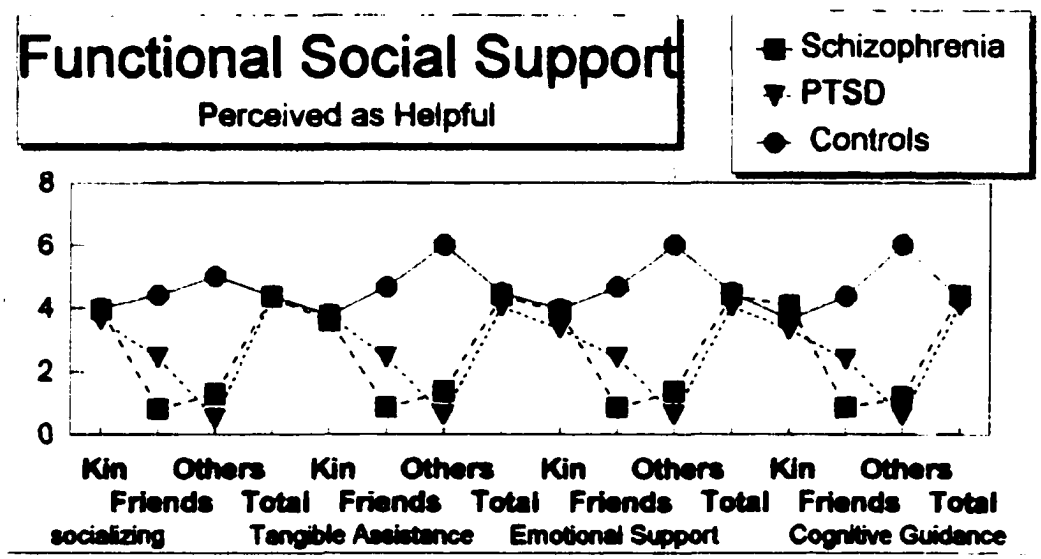

Figure 9. Functional Social Support perceived as helpful for three groups. Note that while the groups appear to rate kin alike, differences in ratings are seen for friends and others.

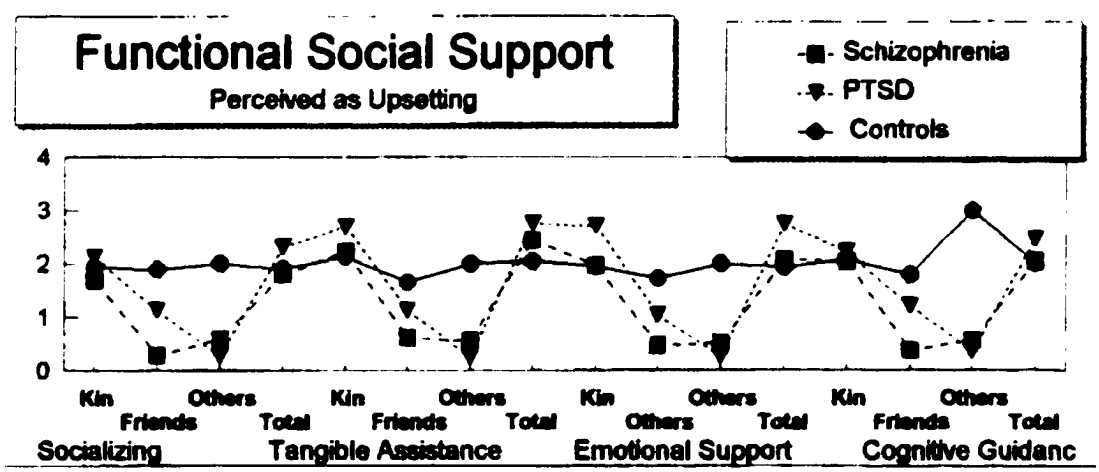

Figure 10. Functional Social support perceived as upsetting for three groups. Note that while Control subjects ratings were fairly stable for the social network members, the two groups of patients ratings varied.

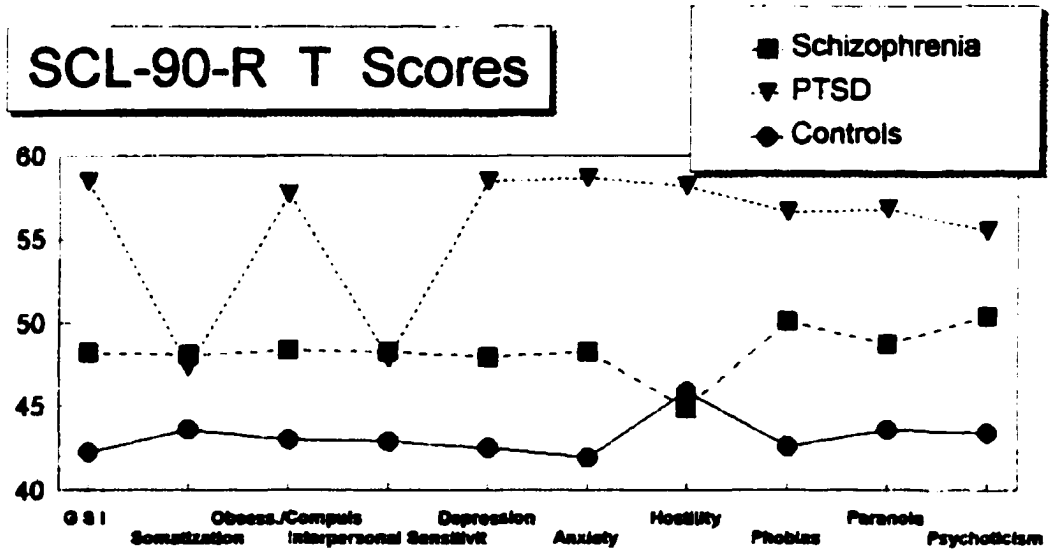

Figure 11. Mean SCL-90-R T scores for three groups. Note that patients with PTSD reported much higher scores than patients with schizophrenia or Control subjects.

Appendix A

Computerized assessment instruments utilizing the Apple Macintosh and HyperCard® environment give the user all the advantages of computer-assisted testing plus the ability to present graphic images easily. The Macintosh HyperCard® program was used to present a social support interview, which is based on Hirsch (1980), Fiore et al. (1983), and Kiecolt-Glaser et al. (1988), and assesses both structural and functional support. HyperCard® program scripts allow the collecting and recording of data about significant others. One advantage of this presentation of the interview is that the HyperCard® screens present the name of each person on screen as the subject is responding, ensuring that no confusion about identity of supporting persons can occur. Another advantage we have observed is that assessments can be completed in 10 to 15 minutes, as against an hour or more for face to face interviews.

Each subject is asked to name between three and ten "persons who are important to you, whom you like and interact with on a regular basis. Include all those persons who depend on you and on whom you depend." Subjects were then asked for the following information about each person named:

1. Frequencies of contact: Subjects responded on a Likert-type scale of 0 = "less than twice a year" to 6 = "daily".

2. Relationship to the subject: (1 = "parent"; 2 = "spouse or lover"; 3 = "child"; 4 = "sibling"; 5 = "other relative"; 6 = "friend"; 7 = "coworker"; 8 = "professional helper, clergy, etc."; 9 = "other relationship").

3. "How close do you feel" to the person named on a scale where 10 = "as close as possible" and 0 = "not at all close".

Responses in this first section of the MSSI provided a rough index of structural social support from the persons closest to the subject by computing means of the responses to frequency of contact or closeness for individuals designated as family members (parent, spouse/lover, sibling, grandparent, child, or other relative), kin (parent, , sibling, grandparent, child, or other blood relative) friends (friend, co-worker), Other (mostly professional helpers such as doctors, nurses, or psychologists) or the total network. (Closeness and frequency of contact can also be isolated for a particular network member, such as a spouse/lover.)

Subsequent computer screens define and describe four dimensions of functional social support: Tangible Assistance, Emotional Support, Cognitive Guidance, and Socializing. The subject was asked to rate each of these by using two six point scales (varying from "not at all" to "extremely") to quantify subjective evaluations of the subject's impressions of the degree to which each person named as important is "helpful" and/or "upsetting" on each of these dimensions. The computer program shows each name typed in by the subject as an identifying cue to make sure that the subject does not "get lost" when responding.

Therefore, the MSSI records the following data for each of three to ten persons named: relationship, frequency of contact, closeness, and level of satisfaction and dissatisfaction with Socializing, Emotional Support, Cognitive Guidance (advice) and

Tangible Assistance. This gives eleven pieces of data for each person named that yielded the following variables:

1. Mean frequency of contact with family, friends, total network, or any subset of these (e.g. first degree relatives, spouse/lover)

2. Mean closeness to family, friends, total network, or any subset of these.

3. Mean perceived positive (Helpful) social support from any or all functions of social support from family, friends, total network, or any subset of these.

4. Mean perceived negative (upsetting) social support from any or all functions of social support from family, friends, total network, or any subset of these.

The MSSI provides global measures of structural support from important social contacts by allowing the researcher to sum: the total number of persons named, separate categories of important contacts named, such as family members, friends, coworkers, same generation family, or parents, and frequencies of contact with important others. Mean frequencies of contact and closeness can also be constructed for the global network reported as well as for a variety of subsets of contacts (parents, friends, etc.). The ability to separate out levels of structural social support and/or satisfaction with levels functional social support from the total network or subsets thereof for the same person at the same moment in time makes this instrument unique, useful, and convenient to use. Two revisions of the "nuts and bolts" of the MSSI have made instructions easier to follow and data recording more accurate, although from the subject's point of view no changes were apparent.

Appendix B

This appendix lists the questionnaires for the present study, with the exception of the MSSI, described in Appendix A. These are standard research instruments, typed in 14 point type with answer keys placed as close to each item as possible so as to make responding to the questions easier for subjects.

The IRB committee of the CVAMC made suggestions that have been followed as follows: Questionnaires have been designated as Questionnaire "A", "B", "C", and "D" to remove demand characteristics that might be associated with the standard name of the questionnaire. Questionnaire A is the Ways of Coping, revised. Questionnaire B is The Constructive Thinking Inventory. Questionnaire C is the How Do You Think?. Questionnaire D is The Dispositional Resilience Scale, a shortened adaptation of the Hardiness Scale.

One of the reviewers on the CVAMC IRB suggested alternate statements for 14 items of the How Do You Think?. These alternate statements have been added at the end of the standard measure, numbered to allow easy comparison with the standard statement. By including both standard and changed statements, the integrity of the instrument as well as the concerns of the IRB have been addressed. The changes have been added at the end so as to maintain as close to a standard administration of the instrument as possible.

Several other differences between administration of these instruments in a clinical or college research setting were planned. Subjects responded to the questionnaires on an individual basis with the researcher sitting unobtrusively nearby so that the subject could

ask for any help desired while responding to the questionnaires. The subject was permitted to "take a break" whenever he wished. The time required for completing each questionnaire was recorded, as well as break time and requests for help. These data were not analyzed, but having these notes may be of help in future research involving the activities of SMI patients doing paper and pencil measures.

Subject Number _____ M /F DOB_____ Age _____ SC / NSC____
Last four _____ HS / GED / Tech/Coll 1-2-3/B.s-A/Post/M S_A/Dr. Disab._____
Army/Navy/AirForce/Marine. Discharge = Hon/Gen/Med/Dishon. _Basic/Combat/Non-combat
Sub. Abuse_ETOH/MJ/Coke/Haroin/Speed/Crack_____
Sub. Tx_____Legal Juv./ Adult/ Art 15 Ct. Mart /Current
Work Hx_____

Current Psych. Diagnosis _____Age first Sx _____
Where do you live? _____
With whom? _____ Pet _____
Married / Divorced ,1,2,3,4,5,/ Never married
Current Medications_____

_____ Ever without Meds?

Second Psych Diagnoses _____
Ever M Depr Anx. PTSD Schiz./Psychosis
Family Data Mother Father
Living/Deceased Age_____ Living/Deceased. Age_____
Married/Divorced /Never married Married/Divorced./Never married
Ed _____ Ed._____ ___
Work_____ Work_____
Psychiatric Dx_____ Psychiatric Dx_____
Medical DX _____ Medical DX _____
ETOH/Drugs _____ ETOH/drugs_____

SIBS: Order in family 1 2 3 4 5 6 7 Child Abuse/Sex/Physical/Emot./ETOH
1 M/F Living/Deceased: Age____ Married/Divorced./Never married Legal _____
Psychiatric Dx_____ Medical DX _____

2 M/F Living/Deceased: Age____ Married/Divorced./Never married Legal _____
Psychiatric Dx_____ Medical DX _____

3. M/F Living/Deceased: Age____ Married/Divorced./Never married Legal _____
Psychiatric Dx_____ Medical DX _____

4 M/F Living/Deceased: Age____ Married/Divorced./Never married Legal _____
Psychiatric Dx_____ Medical DX _____

Chart
First Diagnosis_____ Date
Treatment Hx _____

Medication Hx_____

Second Dx and Hx_____

Medication Hx_____

PTSD Symptom Screening Checklist

Name _____ Phone _____

You have been asked tc take part of a research study of signs of positive functioning in veterans who have serious mental disorders like schizophrenia and PTSD (Post-traumatic Stress Disorder) because you do not have a serious disorder. We hope that this study will help us to understand serious disorders and plan treatments that will help veterans with these disorders live better.

I would like to ask you some questions about your military experience as background information for this study. ***(Get permission to continue.)***

In What branch of the Armed Forces did you serve?_____

Did you serve in a combat zone?_____

Sometimes things happen to people that are very disturbing or stressful - things that do not happen to most people and are so bad that they would be distressing, upsetting, or frightening to almost everyone. By that I mean things like major earthquakes, hurricanes, or floods, very serious accidents or fires, physical assault or crimes, seeing other people killed or dead, being in a war or heavy combat. At any time of your life have any of these kinds of things happened to you?

If Yes - continue, If no, schedule

I'D like to ask a few questions about ways that (this event) may have affected you. Have you experienced....***(Circle any yes)***

recurrent, intrusive thoughts
recurring distressing dreams
acting or feeling as if you were back in (event)
exposure to things that remind you of (event)

If one is circled - continue; if none is circled - schedule

AVOIDANCE SYMPTOMS
Have you experienced...
avoiding thoughts about (event)
avoiding activities that arouse recollections
inability to recall important parts of (event)
diminished interest
felling detached from people
restricted range of feelings
foreshortened future

If three are circled - continue; if not schedule

Since the (event) Have you experienced:
trouble falling or staying asleep
irritability or bursts of anger
difficulty concentrating
watchful or on guard when no reason to be
jumpy or easily startled
reacting physically to things that remind you of (event)
- sweat
- breathing affected
- heart pounding

1 2 are circled, continue; if not schedule

How long did these (circled symptoms last)

If duration is at least a month - refer to CSR - send pamphlet, if not schedule